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# SMD POWER INDUCTORS(NR SERIES/NR SERIES H TYPE/S TYPE/V TYPE)



REFLOW

## PARTS NUMBER

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | R | △ | 4 | 0 | 1 | 8 | T | △ | 1 | 0 | 0 | M | △ |
| ① |   |   | ② |   |   |   | ③ |   | ④ |   |   | ⑤ | ⑥ |

△=Blank space

### ①Series name

| Code | Series name                 |
|------|-----------------------------|
| NR△  | Coating resin specification |
| NRH  |                             |
| NRS  |                             |
| NRV  |                             |

### ②Dimensions (L × W × H)

| Code | Dimensions (L × W × H) [mm] |
|------|-----------------------------|
| 2010 | 2.0 × 2.0 × 1.0             |
| 2012 | 2.0 × 2.0 × 1.2             |
| 2410 | 2.4 × 2.4 × 1.0             |
| 2412 | 2.4 × 2.4 × 1.2             |
| 3010 | 3.0 × 3.0 × 1.0             |
| 3012 | 3.0 × 3.0 × 1.2             |
| 4010 | 4.0 × 4.0 × 1.0             |
| 4012 | 4.0 × 4.0 × 1.2             |
| 4018 | 4.0 × 4.0 × 1.8             |
| 5010 | 4.9 × 4.9 × 1.0             |
| 5012 | 4.9 × 4.9 × 1.2             |
| 5014 | 4.9 × 4.9 × 1.4             |
| 5020 | 4.9 × 4.9 × 2.0             |
| 5024 | 4.9 × 4.9 × 2.4             |
| 5030 | 4.9 × 4.9 × 3.0             |
| 5040 | 4.9 × 4.9 × 4.0             |
| 6010 | 6.0 × 6.0 × 1.0             |
| 6012 | 6.0 × 6.0 × 1.2             |
| 6014 | 6.0 × 6.0 × 1.4             |
| 6020 | 6.0 × 6.0 × 2.0             |
| 6028 | 6.0 × 6.0 × 2.8             |
| 6045 | 6.0 × 6.0 × 4.5             |
| 8030 | 8.0 × 8.0 × 3.0             |
| 8040 | 8.0 × 8.0 × 4.0             |

### ③Packaging

| Code | Packaging |
|------|-----------|
| T△   | Taping    |

### ④Nominal inductance

| Code (example) | Nominal inductance [μH] |
|----------------|-------------------------|
| 2R2            | 2.2                     |
| 100            | 10                      |
| 101            | 100                     |

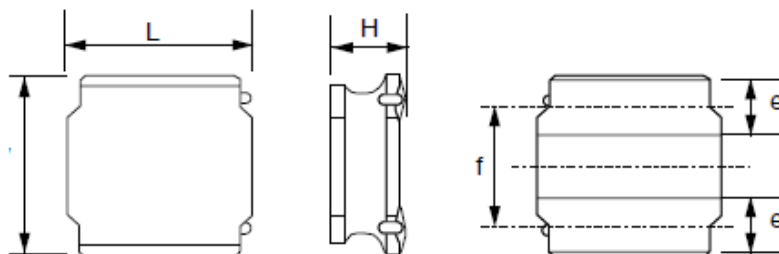
※R=Decimal point

### ⑤Inductance tolerance

| Code | Inductance tolerance |
|------|----------------------|
| M    | ±20%                 |
| N    | ±30%                 |

### ⑥Internal code

## STANDARD EXTERNAL DIMENSIONS / STANDARD QUANTITY



| Type    | L                        | W                        | H                      | e                        | f                         | Standard quantity [pcs] Taping |
|---------|--------------------------|--------------------------|------------------------|--------------------------|---------------------------|--------------------------------|
| NRV2010 | 2.0±0.1<br>(0.079±0.004) | 2.0±0.1<br>(0.079±0.004) | 1.0 max<br>(0.039 max) | 0.5±0.2<br>(0.020±0.008) | 1.25±0.2<br>(0.050±0.008) | 2500                           |
| NRS2012 | 2.0±0.1<br>(0.079±0.004) | 2.0±0.1<br>(0.079±0.004) | 1.2 max<br>(0.047 max) | 0.5±0.2<br>(0.020±0.008) | 1.25±0.2<br>(0.050±0.008) | 2500                           |
| NRH2410 | 2.4±0.1<br>(0.095±0.004) | 2.4±0.1<br>(0.095±0.004) | 1.0 max<br>(0.039 max) | 0.6±0.2<br>(0.024±0.008) | 1.45±0.2<br>(0.057±0.008) | 2500                           |
| NRH2412 | 2.4±0.1<br>(0.095±0.004) | 2.4±0.1<br>(0.095±0.004) | 1.2 max<br>(0.047 max) | 0.6±0.2<br>(0.024±0.008) | 1.45±0.2<br>(0.057±0.008) | 2500                           |
| NR 3010 | 3.0±0.1<br>(0.118±0.004) | 3.0±0.1<br>(0.118±0.004) | 1.0 max<br>(0.039 max) | 0.9±0.2<br>(0.035±0.008) | 1.9±0.2<br>(0.075±0.008)  | 2000                           |
| NRH3010 |                          |                          |                        |                          |                           |                                |

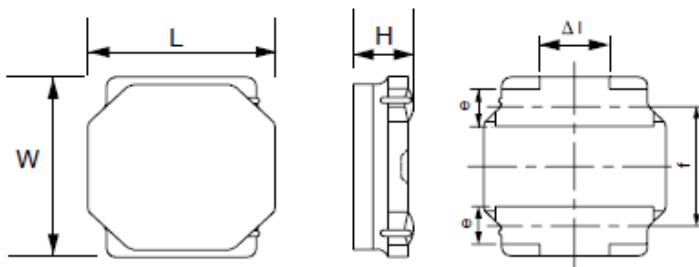
► This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

|                               |                          |                          |                                                          |                           |                          |      |
|-------------------------------|--------------------------|--------------------------|----------------------------------------------------------|---------------------------|--------------------------|------|
| NR 3012<br>NRH3012<br>NRV3012 | 3.0±0.1<br>(0.118±0.004) | 3.0±0.1<br>(0.118±0.004) | 1.2 max<br>(0.047 max)                                   | 0.9±0.2<br>(0.035±0.008)  | 1.9±0.2<br>(0.075±0.008) | 2000 |
| NR 3015<br>NRS3015            | 3.0±0.1<br>(0.118±0.004) | 3.0±0.1<br>(0.118±0.004) | 1.5 max<br>(0.059 max)                                   | 0.9±0.2<br>(0.035±0.008)  | 1.9±0.2<br>(0.075±0.008) | 2000 |
| NR 4010<br>NRS4010            | 4.0±0.2<br>(0.157±0.008) | 4.0±0.2<br>(0.157±0.008) | 1.0 max<br>(0.039 max)                                   | 1.1±0.2<br>(0.043±0.008)  | 2.5±0.2<br>(0.098±0.008) | 5000 |
| NR 4012<br>NRS4012            | 4.0±0.2<br>(0.157±0.008) | 4.0±0.2<br>(0.157±0.008) | 1.2 max<br>(0.047 max)                                   | 1.1±0.2<br>(0.043±0.008)  | 2.5±0.2<br>(0.098±0.008) | 4500 |
| NR 4018<br>NRS4018            | 4.0±0.2<br>(0.157±0.008) | 4.0±0.2<br>(0.157±0.008) | 1.8 max<br>(0.071 max)                                   | 1.1±0.2<br>(0.043±0.008)  | 2.5±0.2<br>(0.098±0.008) | 3500 |
| NRS8030                       | 8.0±0.2<br>(0.315±0.008) | 8.0±0.2<br>(0.315±0.008) | 3.0 max<br>(0.118 max)                                   | 1.60±0.3<br>(0.063±0.012) | 5.6±0.3<br>(0.22±0.012)  | 1000 |
| NR 8040<br>NRS8040            | 8.0±0.2<br>(0.315±0.008) | 8.0±0.2<br>(0.315±0.008) | *1) 4.2 max<br>(0.165 max)<br>*2) 4.0 max<br>(0.157 max) | 1.60±0.3<br>(0.063±0.012) | 5.6±0.3<br>(0.22±0.012)  | 1000 |

Unit: mm (inch)

\*1) 0R9~6R8 type

\*2) 100~101type



| Type               | L                        | W                        | H                                                        | e                         | f                        | Δl                   | Standard quantity<br>[pcs] Taping |
|--------------------|--------------------------|--------------------------|----------------------------------------------------------|---------------------------|--------------------------|----------------------|-----------------------------------|
| NRS5010            | 4.9±0.2<br>(0.193±0.008) | 4.9±0.2<br>(0.193±0.008) | 1.0 max<br>(0.039 max)                                   | 1.2±0.2<br>(0.047±0.008)  | 3.3±0.2<br>(0.130±0.008) | 1.3typ<br>(0.051typ) | 1000                              |
| NRS5012            | 4.9±0.2<br>(0.193±0.008) | 4.9±0.2<br>(0.193±0.008) | 1.2 max<br>(0.047 max)                                   | 1.2±0.2<br>(0.047±0.008)  | 3.3±0.2<br>(0.130±0.008) | 1.3typ<br>(0.051typ) | 1000                              |
| NRS5014            | 4.9±0.2<br>(0.193±0.008) | 4.9±0.2<br>(0.193±0.008) | 1.4 max<br>(0.055 max)                                   | 1.2±0.2<br>(0.047±0.008)  | 3.3±0.2<br>(0.130±0.008) | 1.3typ<br>(0.051typ) | 1000                              |
| NRS5020            | 4.9±0.2<br>(0.193±0.008) | 4.9±0.2<br>(0.193±0.008) | 2.0 max<br>(0.079 max)                                   | 1.2±0.2<br>(0.047±0.008)  | 3.3±0.2<br>(0.130±0.008) | 1.3typ<br>(0.051typ) | 800                               |
| NRS5024            | 4.9±0.2<br>(0.193±0.008) | 4.9±0.2<br>(0.193±0.008) | 2.4 max<br>(0.094 max)                                   | 1.2±0.2<br>(0.047±0.008)  | 3.3±0.2<br>(0.130±0.008) | 1.3typ<br>(0.051typ) | 2500                              |
| NRS5030            | 4.9±0.2<br>(0.193±0.008) | 4.9±0.2<br>(0.193±0.008) | 3.0 max<br>(0.118 max)                                   | 1.2±0.2<br>(0.047±0.008)  | 3.3±0.2<br>(0.130±0.008) | 1.3typ<br>(0.051typ) | 500                               |
| NR 5040<br>NRS5040 | 4.9±0.2<br>(0.193±0.008) | 4.9±0.2<br>(0.193±0.008) | *3) 4.1 max<br>(0.161 max)<br>*4) 4.0 max<br>(0.157 max) | 1.2±0.2<br>(0.047±0.008)  | 3.3±0.2<br>(0.130±0.008) | 1.3typ<br>(0.051typ) | 1500                              |
| NRS6010            | 6.0±0.2<br>(0.236±0.008) | 6.0±0.2<br>(0.236±0.008) | 1.0 max<br>(0.039 max)                                   | 1.35±0.2<br>(0.053±0.008) | 4.0±0.2<br>(0.157±0.008) | 2.3typ<br>(0.091typ) | 1000                              |
| NR 6012<br>NRS6012 | 6.0±0.2<br>(0.236±0.008) | 6.0±0.2<br>(0.236±0.008) | 1.2 max<br>(0.047 max)                                   | 1.35±0.2<br>(0.053±0.008) | 4.0±0.2<br>(0.157±0.008) | 2.3typ<br>(0.091typ) | 1000                              |
| NRS6014            | 6.0±0.2<br>(0.236±0.008) | 6.0±0.2<br>(0.236±0.008) | 1.4 max<br>(0.055 max)                                   | 1.35±0.2<br>(0.053±0.008) | 4.0±0.2<br>(0.157±0.008) | 2.3typ<br>(0.091typ) | 1000                              |
| NR 6020<br>NRS6020 | 6.0±0.2<br>(0.236±0.008) | 6.0±0.2<br>(0.236±0.008) | 2.0 max<br>(0.079 max)                                   | 1.35±0.2<br>(0.053±0.008) | 4.0±0.2<br>(0.157±0.008) | 2.3typ<br>(0.091typ) | 2500                              |
| NR 6028<br>NRS6028 | 6.0±0.2<br>(0.236±0.008) | 6.0±0.2<br>(0.236±0.008) | 2.8 max<br>(0.110 max)                                   | 1.35±0.2<br>(0.053±0.008) | 4.0±0.2<br>(0.157±0.008) | 2.3typ<br>(0.091typ) | 2000                              |
| NR 6045<br>NRS6045 | 6.0±0.2<br>(0.236±0.008) | 6.0±0.2<br>(0.236±0.008) | 4.5 max<br>(0.177 max)                                   | 1.35±0.2<br>(0.053±0.008) | 4.0±0.2<br>(0.157±0.008) | 2.3typ<br>(0.091typ) | 1500                              |

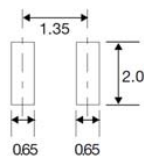
Unit: mm (inch)

\*3) 1R5~100 type

\*4) 150~470 type

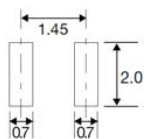
## Recommended Land Patterns

NRV2010, NRS2012, NRV2012

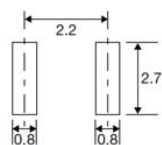


Unit: mm

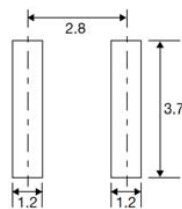
NRH2410, NRH2412



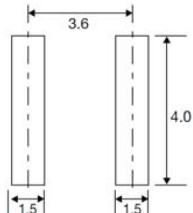
Unit: mm

NR 3010, NRH3010, NR 3012, NRH3012,  
NRV3012, NR 3015, NRS3015


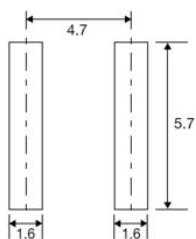
Unit: mm

NR 4010, NRS4010, NR 4012, NRS4012,  
NR 4018, NRS4018


Unit: mm

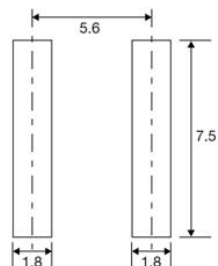
NRS5010, NRS5012, NRS5014, NRS5020,  
NRS5024, NRS5030, NR 5040, NRS5040


Unit: mm

NRS6010, NR 6012, NRS6012, NRS6014,  
NR 6020, NRS6020, NR 6028, NRS6028,  
NR 6045, NRS6045


Unit: mm

NRS8030, NR 8040, NRS8040



Unit: mm

## PARTS NUMBER

## ● NRS2012 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS2012T 1R0N GJ | RoHS | 1.0                              | $\pm 30\%$           | —                                          | 0.070                                        | 1,900                      | 1,700                            | 100                         |
| NRS2012T 1R5N GJ | RoHS | 1.5                              | $\pm 30\%$           | —                                          | 0.090                                        | 1,650                      | 1,500                            | 100                         |
| NRS2012T 2R2M GJ | RoHS | 2.2                              | $\pm 20\%$           | —                                          | 0.107                                        | 1,350                      | 1,370                            | 100                         |
| NRS2012T 3R3M GJ | RoHS | 3.3                              | $\pm 20\%$           | —                                          | 0.190                                        | 1,000                      | 1,020                            | 100                         |
| NRS2012T 4R7M GJ | RoHS | 4.7                              | $\pm 20\%$           | —                                          | 0.241                                        | 900                        | 910                              | 100                         |

## ● NRV2010 type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRV2010T R47N GF | RoHS | 0.47                             | $\pm 30\%$           | —                                          | 0.052                                        | 2,100                      | 2,000                            | 100                         |
| NRV2010T R68N GF | RoHS | 0.68                             | $\pm 30\%$           | —                                          | 0.060                                        | 1,850                      | 1,850                            | 100                         |
| NRV2010T 1R0N GF | RoHS | 1.0                              | $\pm 30\%$           | —                                          | 0.080                                        | 1,550                      | 1,600                            | 100                         |
| NRV2010T 1R5M GF | RoHS | 1.5                              | $\pm 20\%$           | —                                          | 0.100                                        | 1,350                      | 1,450                            | 100                         |
| NRV2010T 2R2M GF | RoHS | 2.2                              | $\pm 20\%$           | —                                          | 0.175                                        | 1,100                      | 1,100                            | 100                         |
| NRV2010T 3R3M GF | RoHS | 3.3                              | $\pm 20\%$           | —                                          | 0.250                                        | 880                        | 1,000                            | 100                         |
| NRV2010T 4R7M GF | RoHS | 4.7                              | $\pm 20\%$           | —                                          | 0.320                                        | 760                        | 820                              | 100                         |

## ● NRV2012 type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRV2012T 1R0N GF | RoHS | 1.0                              | $\pm 30\%$           | —                                          | 0.073                                        | 2,200                      | 1,650                            | 100                         |
| NRV2012T 1R5N GF | RoHS | 1.5                              | $\pm 30\%$           | —                                          | 0.100                                        | 1,800                      | 1,400                            | 100                         |
| NRV2012T 2R2M GF | RoHS | 2.2                              | $\pm 20\%$           | —                                          | 0.129                                        | 1,600                      | 1,200                            | 100                         |
| NRV2012T 3R3M GF | RoHS | 3.3                              | $\pm 20\%$           | —                                          | 0.227                                        | 1,250                      | 900                              | 100                         |
| NRV2012T 4R7M GF | RoHS | 4.7                              | $\pm 20\%$           | —                                          | 0.325                                        | 1,100                      | 750                              | 100                         |

## ● NRH2410 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRH2410T R68NN 4 | RoHS | 0.68                             | $\pm 30\%$           | 120                                        | 0.060                                        | 2,200                      | 1,570                            | 100                         |
| NRH2410T 1R0NN 4 | RoHS | 1.0                              | $\pm 30\%$           | 106                                        | 0.070                                        | 1,800                      | 1,410                            | 100                         |
| NRH2410T 1R5MN   | RoHS | 1.5                              | $\pm 20\%$           | 94                                         | 0.110                                        | 1,550                      | 1,160                            | 100                         |
| NRH2410T 2R2MN   | RoHS | 2.2                              | $\pm 20\%$           | 77                                         | 0.150                                        | 1,290                      | 970                              | 100                         |
| NRH2410T 3R3MN   | RoHS | 3.3                              | $\pm 20\%$           | 56                                         | 0.220                                        | 1,000                      | 770                              | 100                         |
| NRH2410T 4R7MN   | RoHS | 4.7                              | $\pm 20\%$           | 50                                         | 0.290                                        | 880                        | 670                              | 100                         |
| NRH2410T 6R8MN   | RoHS | 6.8                              | $\pm 20\%$           | 43                                         | 0.410                                        | 750                        | 570                              | 100                         |
| NRH2410T 100MN   | RoHS | 10                               | $\pm 20\%$           | 32                                         | 0.690                                        | 550                        | 450                              | 100                         |
| NRH2410T 150MN   | RoHS | 15                               | $\pm 20\%$           | 27                                         | 1.02                                         | 470                        | 370                              | 100                         |
| NRH2410T 220MN   | RoHS | 22                               | $\pm 20\%$           | 22                                         | 1.47                                         | 390                        | 300                              | 100                         |

## ● NRH2412 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRH2412T R47NNGJ | RoHS | 0.47                             | $\pm 30\%$           | 180                                        | 0.050                                        | 2,900                      | 2,100                            | 100                         |
| NRH2412T 1R0NNGH | RoHS | 1.0                              | $\pm 30\%$           | 101                                        | 0.077                                        | 2,350                      | 1,300                            | 100                         |
| NRH2412T 1R5NNGH | RoHS | 1.5                              | $\pm 30\%$           | 89                                         | 0.100                                        | 2,100                      | 1,150                            | 100                         |
| NRH2412T 2R2MNGH | RoHS | 2.2                              | $\pm 20\%$           | 72                                         | 0.140                                        | 1,700                      | 1,000                            | 100                         |
| NRH2412T 3R3MNGH | RoHS | 3.3                              | $\pm 20\%$           | 56                                         | 0.225                                        | 1,400                      | 750                              | 100                         |
| NRH2412T 4R7MNGH | RoHS | 4.7                              | $\pm 20\%$           | 45                                         | 0.300                                        | 1,150                      | 650                              | 100                         |
| NRH2412T 6R8MNGH | RoHS | 6.8                              | $\pm 20\%$           | 34                                         | 0.420                                        | 950                        | 550                              | 100                         |
| NRH2412T 100MNGH | RoHS | 10                               | $\pm 20\%$           | 29                                         | 0.600                                        | 810                        | 450                              | 100                         |

## ● NRH3010 Shielded type

| Parts number   | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRH3010T 1R2NN | RoHS | 1.2                              | $\pm 30\%$           | 120                                        | 0.065                                        | 1,700                      | 1,480                            | 100                         |
| NRH3010T 1R5NN | RoHS | 1.5                              | $\pm 30\%$           | 99                                         | 0.075                                        | 1,440                      | 1,370                            | 100                         |
| NRH3010T 2R2MN | RoHS | 2.2                              | $\pm 20\%$           | 86                                         | 0.083                                        | 1,300                      | 1,300                            | 100                         |
| NRH3010T 3R3MN | RoHS | 3.3                              | $\pm 20\%$           | 64                                         | 0.130                                        | 1,000                      | 1,030                            | 100                         |
| NRH3010T 4R7MN | RoHS | 4.7                              | $\pm 20\%$           | 50                                         | 0.170                                        | 850                        | 900                              | 100                         |
| NRH3010T 6R8MN | RoHS | 6.8                              | $\pm 20\%$           | 44                                         | 0.250                                        | 700                        | 745                              | 100                         |
| NRH3010T 100MN | RoHS | 10                               | $\pm 20\%$           | 34                                         | 0.350                                        | 600                        | 620                              | 100                         |
| NRH3010T 150MN | RoHS | 15                               | $\pm 20\%$           | 25                                         | 0.550                                        | 450                        | 480                              | 100                         |
| NRH3010T 220MN | RoHS | 22                               | $\pm 20\%$           | 22                                         | 0.770                                        | 380                        | 410                              | 100                         |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

## ●NRH3012 Shielded type

| Parts number   | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRH3012T R47NN | RoHS | 0.47                             | $\pm 30\%$           | 160                                        | 0.033                                        | 2,600                      | 1,900                            | 100                         |
| NRH3012T 1R0NN | RoHS | 1.0                              | $\pm 30\%$           | 111                                        | 0.048                                        | 2,200                      | 1,710                            | 100                         |
| NRH3012T 1R5NN | RoHS | 1.5                              | $\pm 30\%$           | 95                                         | 0.055                                        | 1,700                      | 1,600                            | 100                         |
| NRH3012T 2R2MN | RoHS | 2.2                              | $\pm 20\%$           | 78                                         | 0.075                                        | 1,500                      | 1,370                            | 100                         |
| NRH3012T 3R3MN | RoHS | 3.3                              | $\pm 20\%$           | 61                                         | 0.100                                        | 1,200                      | 1,210                            | 100                         |
| NRH3012T 4R7MN | RoHS | 4.7                              | $\pm 20\%$           | 50                                         | 0.130                                        | 1,000                      | 1,060                            | 100                         |
| NRH3012T 6R8MN | RoHS | 6.8                              | $\pm 20\%$           | 43                                         | 0.190                                        | 850                        | 890                              | 100                         |
| NRH3012T 100MN | RoHS | 10                               | $\pm 20\%$           | 32                                         | 0.270                                        | 730                        | 720                              | 100                         |
| NRH3012T 150MN | RoHS | 15                               | $\pm 20\%$           | 26                                         | 0.450                                        | 530                        | 570                              | 100                         |
| NRH3012T 220MN | RoHS | 22                               | $\pm 20\%$           | 22                                         | 0.630                                        | 500                        | 500                              | 100                         |

## ●NRV3012 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRV3012T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 110                                        | 0.065                                        | 2,500                      | 1,600                            | 100                         |
| NRV3012T 1R5N | RoHS | 1.5                              | $\pm 30\%$           | 92                                         | 0.075                                        | 2,100                      | 1,400                            | 100                         |
| NRV3012T 2R2M | RoHS | 2.2                              | $\pm 20\%$           | 70                                         | 0.120                                        | 1,800                      | 1,100                            | 100                         |
| NRV3012T 3R3M | RoHS | 3.3                              | $\pm 20\%$           | 55                                         | 0.150                                        | 1,600                      | 1,000                            | 100                         |
| NRV3012T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 48                                         | 0.190                                        | 1,250                      | 850                              | 100                         |
| NRV3012T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 40                                         | 0.300                                        | 950                        | 650                              | 100                         |
| NRV3012T 100M | RoHS | 10                               | $\pm 20\%$           | 32                                         | 0.470                                        | 800                        | 550                              | 100                         |

## ●NRS3015 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS3015T 1R0NNGH | RoHS | 1.0                              | $\pm 30\%$           | 100                                        | 0.030                                        | 2,100                      | 2,100                            | 100                         |
| NRS3015T 1R5NNGH | RoHS | 1.5                              | $\pm 30\%$           | 87                                         | 0.038                                        | 1,800                      | 1,820                            | 100                         |
| NRS3015T 2R2MNGH | RoHS | 2.2                              | $\pm 20\%$           | 64                                         | 0.058                                        | 1,480                      | 1,500                            | 100                         |
| NRS3015T 3R3MNGH | RoHS | 3.3                              | $\pm 20\%$           | 49                                         | 0.078                                        | 1,210                      | 1,230                            | 100                         |
| NRS3015T 4R7MNGH | RoHS | 4.7                              | $\pm 20\%$           | 40                                         | 0.120                                        | 1,020                      | 1,040                            | 100                         |
| NRS3015T 6R8MNGH | RoHS | 6.8                              | $\pm 20\%$           | 36                                         | 0.160                                        | 870                        | 880                              | 100                         |
| NRS3015T 100MNGH | RoHS | 10                               | $\pm 20\%$           | 28                                         | 0.220                                        | 700                        | 710                              | 100                         |
| NRS3015T 220MNGH | RoHS | 22                               | $\pm 20\%$           | 20                                         | 0.520                                        | 470                        | 470                              | 100                         |

## ●NRS4010 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS4010T 1R0NDGG | RoHS | 1.0                              | $\pm 30\%$           | 116                                        | 0.056                                        | 2,000                      | 1,900                            | 100                         |
| NRS4010T 2R2MDGG | RoHS | 2.2                              | $\pm 20\%$           | 73                                         | 0.085                                        | 1,200                      | 1,500                            | 100                         |
| NRS4010T 3R3MDGG | RoHS | 3.3                              | $\pm 20\%$           | 58                                         | 0.100                                        | 1,100                      | 1,400                            | 100                         |
| NRS4010T 4R7MDGG | RoHS | 4.7                              | $\pm 20\%$           | 47                                         | 0.140                                        | 950                        | 1,200                            | 100                         |
| NRS4010T 6R8MDGG | RoHS | 6.8                              | $\pm 20\%$           | 38                                         | 0.200                                        | 800                        | 1,000                            | 100                         |
| NRS4010T 100MDGG | RoHS | 10                               | $\pm 20\%$           | 31                                         | 0.300                                        | 620                        | 750                              | 100                         |
| NRS4010T 150MDGG | RoHS | 15                               | $\pm 20\%$           | 24                                         | 0.430                                        | 540                        | 600                              | 100                         |
| NRS4010T 220MDGG | RoHS | 22                               | $\pm 20\%$           | 19                                         | 0.570                                        | 450                        | 500                              | 100                         |

## ●NRS4012 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS4012T 1R0NDGG | RoHS | 1.0                              | $\pm 30\%$           | 100                                        | 0.042                                        | 2,800                      | 2,200                            | 100                         |
| NRS4012T 2R2MDGJ | RoHS | 2.2                              | $\pm 20\%$           | 70                                         | 0.060                                        | 1,650                      | 1,900                            | 100                         |
| NRS4012T 3R3MDGJ | RoHS | 3.3                              | $\pm 20\%$           | 60                                         | 0.070                                        | 1,400                      | 1,700                            | 100                         |
| NRS4012T 4R7MDGJ | RoHS | 4.7                              | $\pm 20\%$           | 45                                         | 0.095                                        | 1,200                      | 1,500                            | 100                         |
| NRS4012T 6R8MDGJ | RoHS | 6.8                              | $\pm 20\%$           | 35                                         | 0.125                                        | 900                        | 1,300                            | 100                         |
| NRS4012T 100MDGJ | RoHS | 10                               | $\pm 20\%$           | 30                                         | 0.170                                        | 800                        | 1,100                            | 100                         |
| NRS4012T 150MDGJ | RoHS | 15                               | $\pm 20\%$           | 24                                         | 0.260                                        | 650                        | 750                              | 100                         |
| NRS4012T 220MDGJ | RoHS | 22                               | $\pm 20\%$           | 18                                         | 0.400                                        | 500                        | 620                              | 100                         |

## ●NRS4018 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS4018T 1R0NDGJ | RoHS | 1.0                              | $\pm 30\%$           | 90                                         | 0.027                                        | 4,000                      | 3,200                            | 100                         |
| NRS4018T 2R2MDGJ | RoHS | 2.2                              | $\pm 20\%$           | 60                                         | 0.042                                        | 3,000                      | 2,200                            | 100                         |
| NRS4018T 3R3MDGJ | RoHS | 3.3                              | $\pm 20\%$           | 45                                         | 0.055                                        | 2,300                      | 2,000                            | 100                         |
| NRS4018T 4R7MDGJ | RoHS | 4.7                              | $\pm 20\%$           | 35                                         | 0.070                                        | 2,000                      | 1,700                            | 100                         |
| NRS4018T 6R8MDGJ | RoHS | 6.8                              | $\pm 20\%$           | 30                                         | 0.098                                        | 1,600                      | 1,450                            | 100                         |
| NRS4018T 100MDGJ | RoHS | 10                               | $\pm 20\%$           | 25                                         | 0.150                                        | 1,300                      | 1,200                            | 100                         |
| NRS4018T 150MDGJ | RoHS | 15                               | $\pm 20\%$           | 18                                         | 0.210                                        | 1,100                      | 850                              | 100                         |
| NRS4018T 220MDGJ | RoHS | 22                               | $\pm 20\%$           | 15                                         | 0.290                                        | 900                        | 720                              | 100                         |
| NRS4018T 330MDGJ | RoHS | 33                               | $\pm 20\%$           | 12                                         | 0.460                                        | 700                        | 550                              | 100                         |
| NRS4018T 101MDGJ | RoHS | 100                              | $\pm 20\%$           | 6.5                                        | 1.45                                         | 420                        | 280                              | 100                         |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

## PARTS NUMBER

## ● NRS5010 type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS5010T 1R0NMGF | RoHS | 1.0                              | $\pm 30\%$           | 95                                         | 0.070                                        | 2,350                      | 1,750                            | 100                         |
| NRS5010T 2R2NMGF | RoHS | 2.2                              | $\pm 30\%$           | 65                                         | 0.105                                        | 1,500                      | 1,400                            | 100                         |
| NRS5010T 3R3MMGF | RoHS | 3.3                              | $\pm 20\%$           | 42                                         | 0.125                                        | 1,400                      | 1,250                            | 100                         |
| NRS5010T 4R7MMGF | RoHS | 4.7                              | $\pm 20\%$           | 37                                         | 0.145                                        | 1,200                      | 1,150                            | 100                         |
| NRS5010T 6R8MMGF | RoHS | 6.8                              | $\pm 20\%$           | 33                                         | 0.185                                        | 1,000                      | 1,000                            | 100                         |
| NRS5010T 100MMGF | RoHS | 10                               | $\pm 20\%$           | 23                                         | 0.250                                        | 850                        | 900                              | 100                         |
| NRS5010T 150MMGF | RoHS | 15                               | $\pm 20\%$           | 19                                         | 0.400                                        | 680                        | 650                              | 100                         |
| NRS5010T 220MMGF | RoHS | 22                               | $\pm 20\%$           | 15                                         | 0.600                                        | 550                        | 450                              | 100                         |

## ● NRS5012 type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS5012T 1R0NMGF | RoHS | 1.0                              | $\pm 30\%$           | 100                                        | 0.053                                        | 4,500                      | 2,300                            | 100                         |
| NRS5012T 1R5NMGF | RoHS | 1.5                              | $\pm 30\%$           | 86                                         | 0.070                                        | 3,800                      | 2,200                            | 100                         |
| NRS5012T 2R2MMGF | RoHS | 2.2                              | $\pm 20\%$           | 70                                         | 0.085                                        | 3,100                      | 2,000                            | 100                         |
| NRS5012T 3R3MMGF | RoHS | 3.3                              | $\pm 20\%$           | 48                                         | 0.160                                        | 2,400                      | 1,450                            | 100                         |
| NRS5012T 4R7MMGF | RoHS | 4.7                              | $\pm 20\%$           | 40                                         | 0.180                                        | 2,200                      | 1,400                            | 100                         |
| NRS5012T 6R8MMGF | RoHS | 6.8                              | $\pm 20\%$           | 36                                         | 0.260                                        | 1,700                      | 1,100                            | 100                         |
| NRS5012T 100MMGF | RoHS | 10                               | $\pm 20\%$           | 26                                         | 0.420                                        | 1,400                      | 850                              | 100                         |
| NRS5012T 150MMGF | RoHS | 15                               | $\pm 20\%$           | 22                                         | 0.670                                        | 1,200                      | 640                              | 100                         |

## ● NRS5014 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS5014T R47NMGG | RoHS | 0.47                             | $\pm 30\%$           | 185                                        | 0.025                                        | 5,800                      | 3,300                            | 100                         |
| NRS5014T 1R2NMGG | RoHS | 1.2                              | $\pm 30\%$           | 86                                         | 0.045                                        | 3,800                      | 2,400                            | 100                         |
| NRS5014T 2R2NMGG | RoHS | 2.2                              | $\pm 30\%$           | 56                                         | 0.065                                        | 2,800                      | 2,000                            | 100                         |
| NRS5014T 3R3NMGG | RoHS | 3.3                              | $\pm 30\%$           | 48                                         | 0.080                                        | 2,350                      | 1,700                            | 100                         |
| NRS5014T 4R7NMGG | RoHS | 4.7                              | $\pm 30\%$           | 41                                         | 0.100                                        | 2,050                      | 1,400                            | 100                         |
| NRS5014T 6R8MMGG | RoHS | 6.8                              | $\pm 20\%$           | 33                                         | 0.150                                        | 1,600                      | 1,200                            | 100                         |
| NRS5014T 100MMGG | RoHS | 10                               | $\pm 20\%$           | 27                                         | 0.200                                        | 1,400                      | 1,050                            | 100                         |
| NRS5014T 150MMGG | RoHS | 15                               | $\pm 20\%$           | 20                                         | 0.320                                        | 1,100                      | 650                              | 100                         |
| NRS5014T 220MMGG | RoHS | 22                               | $\pm 20\%$           | 16                                         | 0.450                                        | 900                        | 550                              | 100                         |

## ● NRS5020 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS5020T R47NMGG | RoHS | 0.47                             | $\pm 30\%$           | 230                                        | 0.012                                        | 6,100                      | 5,000                            | 100                         |
| NRS5020T 1R0NMGG | RoHS | 1.0                              | $\pm 30\%$           | 81                                         | 0.021                                        | 4,000                      | 3,600                            | 100                         |
| NRS5020T 1R5NMGG | RoHS | 1.5                              | $\pm 30\%$           | 68                                         | 0.026                                        | 3,350                      | 3,200                            | 100                         |
| NRS5020T 2R2NMGG | RoHS | 2.2                              | $\pm 30\%$           | 57                                         | 0.035                                        | 2,900                      | 2,900                            | 100                         |
| NRS5020T 3R3NMGG | RoHS | 3.3                              | $\pm 30\%$           | 46                                         | 0.048                                        | 2,400                      | 2,400                            | 100                         |
| NRS5020T 4R7NMGG | RoHS | 4.7                              | $\pm 20\%$           | 37                                         | 0.060                                        | 2,000                      | 2,000                            | 100                         |
| NRS5020T 6R8MMGG | RoHS | 6.8                              | $\pm 20\%$           | 30                                         | 0.090                                        | 1,600                      | 1,650                            | 100                         |
| NRS5020T 100MMGG | RoHS | 10                               | $\pm 20\%$           | 24                                         | 0.120                                        | 1,300                      | 1,450                            | 100                         |
| NRS5020T 150MMGG | RoHS | 15                               | $\pm 20\%$           | 20                                         | 0.165                                        | 1,100                      | 1,200                            | 100                         |
| NRS5020T 220MMGG | RoHS | 22                               | $\pm 20\%$           | 17                                         | 0.260                                        | 900                        | 1,000                            | 100                         |

## ● NRS5024 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS5024T 1R0NMGG | RoHS | 1.0                              | $\pm 30\%$           | 85                                         | 0.016                                        | 5,800                      | 4,400                            | 100                         |
| NRS5024T 1R5NMGG | RoHS | 1.5                              | $\pm 30\%$           | 67                                         | 0.022                                        | 5,200                      | 3,600                            | 100                         |
| NRS5024T 2R2NMGG | RoHS | 2.2                              | $\pm 30\%$           | 51                                         | 0.029                                        | 4,100                      | 3,100                            | 100                         |
| NRS5024T 3R3NMGG | RoHS | 3.3                              | $\pm 30\%$           | 41                                         | 0.043                                        | 3,100                      | 2,400                            | 100                         |
| NRS5024T 4R7MMGG | RoHS | 4.7                              | $\pm 20\%$           | 37                                         | 0.055                                        | 2,700                      | 2,000                            | 100                         |
| NRS5024T 6R8MMGG | RoHS | 6.8                              | $\pm 20\%$           | 28                                         | 0.080                                        | 2,200                      | 1,600                            | 100                         |
| NRS5024T 100MMGG | RoHS | 10                               | $\pm 20\%$           | 21                                         | 0.125                                        | 1,700                      | 1,200                            | 100                         |
| NRS5024T 150MMGG | RoHS | 15                               | $\pm 20\%$           | 18                                         | 0.170                                        | 1,400                      | 1,000                            | 100                         |
| NRS5024T 220MMGG | RoHS | 22                               | $\pm 20\%$           | 15                                         | 0.230                                        | 1,200                      | 820                              | 100                         |
| NRS5024T 330MMGG | RoHS | 33                               | $\pm 20\%$           | 11                                         | 0.370                                        | 1,000                      | 630                              | 100                         |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

## PARTS NUMBER

## ● NRS5030 type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| NRS5030T R47NMGJ | RoHS | 0.47                             | $\pm 30\%$           | 185                                        | 0.010                                        | 9,000                      | 5,000                            | 100                          |
| NRS5030T 1R0NMGJ | RoHS | 1.0                              | $\pm 30\%$           | 110                                        | 0.015                                        | 6,600                      | 4,000                            | 100                          |
| NRS5030T 2R2NMGJ | RoHS | 2.2                              | $\pm 30\%$           | 46                                         | 0.023                                        | 4,200                      | 3,500                            | 100                          |
| NRS5030T 3R3NMGJ | RoHS | 3.3                              | $\pm 20\%$           | 36                                         | 0.030                                        | 3,600                      | 3,000                            | 100                          |
| NRS5030T 4R7MMGJ | RoHS | 4.7                              | $\pm 20\%$           | 31                                         | 0.035                                        | 3,100                      | 2,600                            | 100                          |
| NRS5030T 6R8MMGJ | RoHS | 6.8                              | $\pm 20\%$           | 22                                         | 0.052                                        | 2,500                      | 2,300                            | 100                          |
| NRS5030T 100MMGJ | RoHS | 10                               | $\pm 20\%$           | 20                                         | 0.070                                        | 2,100                      | 1,700                            | 100                          |
| NRS5030T 150MMGJ | RoHS | 15                               | $\pm 20\%$           | 14                                         | 0.125                                        | 1,600                      | 1,400                            | 100                          |
| NRS5030T 220MMGJ | RoHS | 22                               | $\pm 20\%$           | 13                                         | 0.180                                        | 1,400                      | 1,050                            | 100                          |
| NRS5030T 330MMGJ | RoHS | 33                               | $\pm 20\%$           | 10                                         | 0.225                                        | 1,150                      | 800                              | 100                          |
| NRS5030T 470MMGJ | RoHS | 47                               | $\pm 20\%$           | 9                                          | 0.325                                        | 950                        | 700                              | 100                          |

## ● NRS5040 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| NRS5040T 1R5NMGJ | RoHS | 1.5                              | $\pm 30\%$           | 60                                         | 0.017                                        | 6,400                      | 4,500                            | 100                          |
| NRS5040T 2R2NMGJ | RoHS | 2.2                              | $\pm 30\%$           | 42                                         | 0.022                                        | 5,000                      | 3,700                            | 100                          |
| NRS5040T 3R3NMGJ | RoHS | 3.3                              | $\pm 30\%$           | 32                                         | 0.027                                        | 4,000                      | 3,300                            | 100                          |
| NRS5040T 4R7NMGK | RoHS | 4.7                              | $\pm 30\%$           | 28                                         | 0.029                                        | 3,300                      | 3,100                            | 100                          |
| NRS5040T 6R8MMGJ | RoHS | 6.8                              | $\pm 20\%$           | 21                                         | 0.049                                        | 2,800                      | 2,400                            | 100                          |
| NRS5040T 100MMGJ | RoHS | 10                               | $\pm 20\%$           | 18                                         | 0.056                                        | 2,300                      | 2,100                            | 100                          |
| NRS5040T 150MMGJ | RoHS | 15                               | $\pm 20\%$           | 13                                         | 0.080                                        | 2,000                      | 1,800                            | 100                          |
| NRS5040T 220MMGK | RoHS | 22                               | $\pm 20\%$           | 9                                          | 0.126                                        | 1,500                      | 1,400                            | 100                          |
| NRS5040T 330MMGJ | RoHS | 33                               | $\pm 20\%$           | 7                                          | 0.180                                        | 1,300                      | 1,200                            | 100                          |
| NRS5040T 470MMGJ | RoHS | 47                               | $\pm 20\%$           | 6                                          | 0.310                                        | 1,100                      | 900                              | 100                          |

## ● NRS6010 type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| NRS6010T 1R5MMGF | RoHS | 1.5                              | $\pm 20\%$           | 77                                         | 0.090                                        | 2,400                      | 1,900                            | 100                          |
| NRS6010T 2R2MMGF | RoHS | 2.2                              | $\pm 20\%$           | 56                                         | 0.110                                        | 1,900                      | 1,700                            | 100                          |
| NRS6010T 3R3MMGF | RoHS | 3.3                              | $\pm 20\%$           | 42                                         | 0.135                                        | 1,600                      | 1,500                            | 100                          |
| NRS6010T 4R7MMGF | RoHS | 4.7                              | $\pm 20\%$           | 36                                         | 0.165                                        | 1,300                      | 1,400                            | 100                          |
| NRS6010T 6R8MMGF | RoHS | 6.8                              | $\pm 20\%$           | 30                                         | 0.220                                        | 1,200                      | 1,200                            | 100                          |
| NRS6010T 100MMGF | RoHS | 10                               | $\pm 20\%$           | 25                                         | 0.270                                        | 1,000                      | 1,100                            | 100                          |
| NRS6010T 220MMGF | RoHS | 22                               | $\pm 20\%$           | 12                                         | 0.580                                        | 650                        | 700                              | 100                          |

## ● NRS6012 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| NRS6012T 1R0NMGJ | RoHS | 1.0                              | $\pm 30\%$           | 95                                         | 0.050                                        | 3,000                      | 2,400                            | 100                          |
| NRS6012T 1R5NMGJ | RoHS | 1.5                              | $\pm 30\%$           | 69                                         | 0.067                                        | 2,600                      | 2,100                            | 100                          |
| NRS6012T 2R5NMGJ | RoHS | 2.5                              | $\pm 30\%$           | 45                                         | 0.090                                        | 2,100                      | 1,800                            | 100                          |
| NRS6012T 3R3NMGJ | RoHS | 3.3                              | $\pm 30\%$           | 42                                         | 0.105                                        | 1,800                      | 1,700                            | 100                          |
| NRS6012T 4R7MMGJ | RoHS | 4.7                              | $\pm 20\%$           | 36                                         | 0.125                                        | 1,600                      | 1,550                            | 100                          |
| NRS6012T 5R3MMGJ | RoHS | 5.3                              | $\pm 20\%$           | 34                                         | 0.125                                        | 1,500                      | 1,550                            | 100                          |
| NRS6012T 6R8MMGJ | RoHS | 6.8                              | $\pm 20\%$           | 30                                         | 0.165                                        | 1,300                      | 1,350                            | 100                          |
| NRS6012T 100MMGJ | RoHS | 10                               | $\pm 20\%$           | 22                                         | 0.200                                        | 1,000                      | 1,200                            | 100                          |
| NRS6012T 150MMGJ | RoHS | 15                               | $\pm 20\%$           | 18                                         | 0.295                                        | 800                        | 800                              | 100                          |
| NRS6012T 220MMGJ | RoHS | 22                               | $\pm 20\%$           | 12                                         | 0.465                                        | 760                        | 650                              | 100                          |
| NRS6012T 330MMGJ | RoHS | 33                               | $\pm 20\%$           | 8                                          | 0.580                                        | 590                        | 550                              | 100                          |
| NRS6012T 470MMGJ | RoHS | 47                               | $\pm 20\%$           | 6                                          | 0.965                                        | 520                        | 460                              | 100                          |
| NRS6012T 680MMGJ | RoHS | 68                               | $\pm 20\%$           | 3                                          | 1.16                                         | 440                        | 410                              | 100                          |
| NRS6012T 101MMGJ | RoHS | 100                              | $\pm 20\%$           | 1                                          | 1.67                                         | 350                        | 320                              | 100                          |

## ● NRS6014 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| NRS6014T 1R2NMGJ | RoHS | 1.2                              | $\pm 30\%$           | 77                                         | 0.042                                        | 4,000                      | 2,750                            | 100                          |
| NRS6014T 2R2NMGJ | RoHS | 2.2                              | $\pm 30\%$           | 61                                         | 0.055                                        | 3,000                      | 2,300                            | 100                          |
| NRS6014T 3R3NMGJ | RoHS | 3.3                              | $\pm 30\%$           | 41                                         | 0.075                                        | 2,500                      | 2,000                            | 100                          |
| NRS6014T 4R7MMGJ | RoHS | 4.7                              | $\pm 20\%$           | 36                                         | 0.090                                        | 2,000                      | 1,900                            | 100                          |
| NRS6014T 6R8MMGJ | RoHS | 6.8                              | $\pm 20\%$           | 30                                         | 0.115                                        | 1,700                      | 1,650                            | 100                          |
| NRS6014T 100MMGJ | RoHS | 10                               | $\pm 20\%$           | 24                                         | 0.140                                        | 1,400                      | 1,400                            | 100                          |
| NRS6014T 150MMGJ | RoHS | 15                               | $\pm 20\%$           | 20                                         | 0.210                                        | 1,150                      | 1,200                            | 100                          |
| NRS6014T 220MMGJ | RoHS | 22                               | $\pm 20\%$           | 16                                         | 0.300                                        | 950                        | 1,000                            | 100                          |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

## PARTS NUMBER

## ● NRS6020 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS6020T 0R8NMGG | RoHS | 0.8                              | $\pm 30\%$           | 110                                        | 0.020                                        | 6,400                      | 4,100                            | 100                         |
| NRS6020T 1R5NMGG | RoHS | 1.5                              | $\pm 30\%$           | 93                                         | 0.026                                        | 4,300                      | 3,600                            | 100                         |
| NRS6020T 2R2NMGG | RoHS | 2.2                              | $\pm 30\%$           | 73                                         | 0.034                                        | 3,200                      | 2,900                            | 100                         |
| NRS6020T 3R3NMGG | RoHS | 3.3                              | $\pm 30\%$           | 55                                         | 0.040                                        | 2,800                      | 2,750                            | 100                         |
| NRS6020T 4R7NMGG | RoHS | 4.7                              | $\pm 30\%$           | 43                                         | 0.058                                        | 2,400                      | 2,150                            | 100                         |
| NRS6020T 6R8NMGG | RoHS | 6.8                              | $\pm 30\%$           | 30                                         | 0.085                                        | 2,000                      | 1,800                            | 100                         |
| NRS6020T 100MMGG | RoHS | 10                               | $\pm 20\%$           | 18                                         | 0.125                                        | 1,900                      | 1,500                            | 100                         |
| NRS6020T 220MMGG | RoHS | 22                               | $\pm 20\%$           | 11                                         | 0.290                                        | 1,250                      | 950                              | 100                         |

## ● NRS6028 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS6028T 0R9NMGG | RoHS | 0.9                              | $\pm 30\%$           | 90                                         | 0.013                                        | 6,700                      | 4,600                            | 100                         |
| NRS6028T 1R5NMGG | RoHS | 1.5                              | $\pm 30\%$           | 78                                         | 0.016                                        | 5,100                      | 4,200                            | 100                         |
| NRS6028T 2R2NMGG | RoHS | 2.2                              | $\pm 30\%$           | 68                                         | 0.020                                        | 4,200                      | 3,700                            | 100                         |
| NRS6028T 3R0NMGG | RoHS | 3.0                              | $\pm 30\%$           | 55                                         | 0.023                                        | 3,600                      | 3,400                            | 100                         |
| NRS6028T 4R7MMGG | RoHS | 4.7                              | $\pm 20\%$           | 39                                         | 0.031                                        | 2,700                      | 3,000                            | 100                         |
| NRS6028T 6R0MMGG | RoHS | 6.0                              | $\pm 20\%$           | 30                                         | 0.040                                        | 2,500                      | 2,500                            | 100                         |
| NRS6028T 100MMGG | RoHS | 10                               | $\pm 20\%$           | 20                                         | 0.065                                        | 1,900                      | 1,900                            | 100                         |
| NRS6028T 150MMGG | RoHS | 15                               | $\pm 20\%$           | 17                                         | 0.095                                        | 1,600                      | 1,800                            | 100                         |
| NRS6028T 220MMGG | RoHS | 22                               | $\pm 20\%$           | 12                                         | 0.135                                        | 1,300                      | 1,400                            | 100                         |
| NRS6028T 330MMGG | RoHS | 33                               | $\pm 20\%$           | 10                                         | 0.220                                        | 1,100                      | 1,100                            | 100                         |
| NRS6028T 470MMGG | RoHS | 47                               | $\pm 20\%$           | 8                                          | 0.300                                        | 1,000                      | 920                              | 100                         |
| NRS6028T 680MMGG | RoHS | 68                               | $\pm 20\%$           | 5                                          | 0.420                                        | 800                        | 770                              | 100                         |
| NRS6028T 101MMGG | RoHS | 100                              | $\pm 20\%$           | 3                                          | 0.600                                        | 650                        | 660                              | 100                         |

## ● NRS6045 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS6045T 1R0NMGG | RoHS | 1.0                              | $\pm 30\%$           | 110                                        | 0.014                                        | 9,800                      | 4,500                            | 100                         |
| NRS6045T 1R3NMGG | RoHS | 1.3                              | $\pm 30\%$           | 95                                         | 0.016                                        | 8,200                      | 4,200                            | 100                         |
| NRS6045T 1R8NMGG | RoHS | 1.8                              | $\pm 30\%$           | 80                                         | 0.019                                        | 7,200                      | 3,900                            | 100                         |
| NRS6045T 2R3NMGG | RoHS | 2.3                              | $\pm 30\%$           | 60                                         | 0.022                                        | 6,400                      | 3,600                            | 100                         |
| NRS6045T 3R0NMGG | RoHS | 3.0                              | $\pm 30\%$           | 45                                         | 0.024                                        | 5,600                      | 3,300                            | 100                         |
| NRS6045T 4R5MMGG | RoHS | 4.5                              | $\pm 20\%$           | 25                                         | 0.030                                        | 4,400                      | 3,100                            | 100                         |
| NRS6045T 6R3MMGG | RoHS | 6.3                              | $\pm 20\%$           | 15                                         | 0.036                                        | 3,600                      | 3,000                            | 100                         |
| NRS6045T 100MMGG | RoHS | 10                               | $\pm 20\%$           | 12                                         | 0.046                                        | 3,100                      | 2,400                            | 100                         |
| NRS6045T 150MMGG | RoHS | 15                               | $\pm 20\%$           | 10                                         | 0.070                                        | 2,500                      | 1,900                            | 100                         |
| NRS6045T 220MMGG | RoHS | 22                               | $\pm 20\%$           | 7                                          | 0.107                                        | 2,000                      | 1,600                            | 100                         |
| NRS6045T 330MMGG | RoHS | 33                               | $\pm 20\%$           | 6                                          | 0.141                                        | 1,650                      | 1,400                            | 100                         |
| NRS6045T 470MMGG | RoHS | 47                               | $\pm 20\%$           | 5                                          | 0.211                                        | 1,400                      | 1,150                            | 100                         |
| NRS6045T 680MMGG | RoHS | 68                               | $\pm 20\%$           | 4                                          | 0.304                                        | 1,100                      | 950                              | 100                         |
| NRS6045T 101MMGG | RoHS | 100                              | $\pm 20\%$           | 3                                          | 0.466                                        | 900                        | 750                              | 100                         |

## ● NRS8030 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS8030T 1R0NJGJ | RoHS | 1.0                              | $\pm 30\%$           | 120                                        | 0.009                                        | 7,800                      | 6,200                            | 100                         |
| NRS8030T 1R5NJGJ | RoHS | 1.5                              | $\pm 30\%$           | 80                                         | 0.012                                        | 6,200                      | 5,300                            | 100                         |
| NRS8030T 2R2NJGJ | RoHS | 2.2                              | $\pm 30\%$           | 60                                         | 0.015                                        | 4,900                      | 4,800                            | 100                         |
| NRS8030T 3R3MJGJ | RoHS | 3.3                              | $\pm 20\%$           | 50                                         | 0.019                                        | 4,200                      | 4,300                            | 100                         |
| NRS8030T 4R7MJGJ | RoHS | 4.7                              | $\pm 20\%$           | 40                                         | 0.022                                        | 3,600                      | 4,000                            | 100                         |
| NRS8030T 6R8MJGJ | RoHS | 6.8                              | $\pm 20\%$           | 32                                         | 0.029                                        | 3,000                      | 3,400                            | 100                         |
| NRS8030T 100MJGJ | RoHS | 10                               | $\pm 20\%$           | 27                                         | 0.033                                        | 2,400                      | 3,000                            | 100                         |
| NRS8030T 150MJGJ | RoHS | 15                               | $\pm 20\%$           | 20                                         | 0.060                                        | 2,000                      | 2,200                            | 100                         |
| NRS8030T 220MJGJ | RoHS | 22                               | $\pm 20\%$           | 16                                         | 0.070                                        | 1,750                      | 1,900                            | 100                         |
| NRS8030T 330MJGJ | RoHS | 33                               | $\pm 20\%$           | 13                                         | 0.120                                        | 1,300                      | 1,500                            | 100                         |
| NRS8030T 470MJGJ | RoHS | 47                               | $\pm 20\%$           | 11                                         | 0.170                                        | 1,100                      | 1,300                            | 100                         |

## ● NRS8040 Shielded type

| Parts number     | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|------------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                  |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NRS8040T 0R9NJGJ | RoHS | 0.9                              | $\pm 30\%$           | 85                                         | 0.006                                        | 13,000                     | 7,800                            | 100                         |
| NRS8040T 1R4NJGJ | RoHS | 1.4                              | $\pm 30\%$           | 63                                         | 0.007                                        | 10,000                     | 7,000                            | 100                         |
| NRS8040T 2R0NJGJ | RoHS | 2.0                              | $\pm 30\%$           | 50                                         | 0.009                                        | 8,100                      | 6,300                            | 100                         |
| NRS8040T 3R6NJGJ | RoHS | 3.6                              | $\pm 30\%$           | 34                                         | 0.015                                        | 6,400                      | 4,900                            | 100                         |
| NRS8040T 4R7NJGJ | RoHS | 4.7                              | $\pm 30\%$           | 30                                         | 0.018                                        | 5,400                      | 4,100                            | 100                         |
| NRS8040T 6R8NJGJ | RoHS | 6.8                              | $\pm 30\%$           | 24                                         | 0.025                                        | 4,400                      | 3,700                            | 100                         |
| NRS8040T 100MJGJ | RoHS | 10                               | $\pm 20\%$           | 22                                         | 0.034                                        | 3,800                      | 3,100                            | 100                         |
| NRS8040T 150MJGJ | RoHS | 15                               | $\pm 20\%$           | 16                                         | 0.050                                        | 2,900                      | 2,400                            | 100                         |
| NRS8040T 220MJGJ | RoHS | 22                               | $\pm 20\%$           | 13                                         | 0.066                                        | 2,400                      | 2,200                            | 100                         |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

## PARTS NUMBER

## ● NR 3010 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 3010T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 126                                        | 0.065                                        | 1,300                      | 1,400                            | 100                         |
| NR 3010T 1R5N | RoHS | 1.5                              | $\pm 30\%$           | 98                                         | 0.080                                        | 1,200                      | 1,300                            | 100                         |
| NR 3010T 2R2M | RoHS | 2.2                              | $\pm 20\%$           | 82                                         | 0.095                                        | 1,100                      | 1,100                            | 100                         |
| NR 3010T 3R3M | RoHS | 3.3                              | $\pm 20\%$           | 63                                         | 0.140                                        | 870                        | 940                              | 100                         |
| NR 3010T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 56                                         | 0.190                                        | 750                        | 780                              | 100                         |
| NR 3010T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 46                                         | 0.300                                        | 610                        | 630                              | 100                         |
| NR 3010T 100M | RoHS | 10                               | $\pm 20\%$           | 35                                         | 0.450                                        | 500                        | 510                              | 100                         |
| NR 3010T 150M | RoHS | 15                               | $\pm 20\%$           | 30                                         | 0.740                                        | 400                        | 400                              | 100                         |
| NR 3010T 220M | RoHS | 22                               | $\pm 20\%$           | 25                                         | 1.03                                         | 350                        | 350                              | 100                         |
| NR 3010T 330M | RoHS | 33                               | $\pm 20\%$           | 20                                         | 1.55                                         | 260                        | 275                              | 100                         |
| NR 3010T 470M | RoHS | 47                               | $\pm 20\%$           | 17                                         | 2.05                                         | 220                        | 235                              | 100                         |

## ● NR 3012 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 3012T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 110                                        | 0.050                                        | 1,500                      | 1,490                            | 100                         |
| NR 3012T 1R5N | RoHS | 1.5                              | $\pm 30\%$           | 92                                         | 0.060                                        | 1,360                      | 1,400                            | 100                         |
| NR 3012T 2R2M | RoHS | 2.2                              | $\pm 20\%$           | 70                                         | 0.080                                        | 1,100                      | 1,200                            | 100                         |
| NR 3012T 3R3M | RoHS | 3.3                              | $\pm 20\%$           | 55                                         | 0.100                                        | 910                        | 1,050                            | 100                         |
| NR 3012T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 48                                         | 0.130                                        | 770                        | 980                              | 100                         |
| NR 3012T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 40                                         | 0.190                                        | 670                        | 740                              | 100                         |
| NR 3012T 100M | RoHS | 10                               | $\pm 20\%$           | 32                                         | 0.290                                        | 540                        | 630                              | 100                         |
| NR 3012T 150M | RoHS | 15                               | $\pm 20\%$           | 27                                         | 0.450                                        | 440                        | 485                              | 100                         |
| NR 3012T 220M | RoHS | 22                               | $\pm 20\%$           | 22                                         | 0.630                                        | 375                        | 420                              | 100                         |
| NR 3012T 330M | RoHS | 33                               | $\pm 20\%$           | 19                                         | 1.03                                         | 310                        | 330                              | 100                         |
| NR 3012T 470M | RoHS | 47                               | $\pm 20\%$           | 17                                         | 1.45                                         | 250                        | 280                              | 100                         |

## ● NR 3015 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 3015T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 100                                        | 0.030                                        | 2,100                      | 2,100                            | 100                         |
| NR 3015T 1R5N | RoHS | 1.5                              | $\pm 30\%$           | 87                                         | 0.040                                        | 1,800                      | 1,820                            | 100                         |
| NR 3015T 2R2M | RoHS | 2.2                              | $\pm 20\%$           | 64                                         | 0.060                                        | 1,480                      | 1,500                            | 100                         |
| NR 3015T 3R3M | RoHS | 3.3                              | $\pm 20\%$           | 49                                         | 0.080                                        | 1,210                      | 1,230                            | 100                         |
| NR 3015T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 40                                         | 0.120                                        | 1,020                      | 1,040                            | 100                         |
| NR 3015T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 36                                         | 0.160                                        | 870                        | 880                              | 100                         |
| NR 3015T 100M | RoHS | 10                               | $\pm 20\%$           | 28                                         | 0.230                                        | 700                        | 710                              | 100                         |
| NR 3015T 150M | RoHS | 15                               | $\pm 20\%$           | 23                                         | 0.360                                        | 560                        | 560                              | 100                         |
| NR 3015T 220M | RoHS | 22                               | $\pm 20\%$           | 20                                         | 0.520                                        | 470                        | 470                              | 100                         |
| NR 3015T 330M | RoHS | 33                               | $\pm 20\%$           | 18                                         | 0.840                                        | 390                        | 370                              | 100                         |
| NR 3015T 470M | RoHS | 47                               | $\pm 20\%$           | 17                                         | 1.34                                         | 320                        | 300                              | 100                         |

## ● NR 4010 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 4010T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 116                                        | 0.100                                        | 1,800                      | 1,050                            | 100                         |
| NR 4010T 2R2N | RoHS | 2.2                              | $\pm 30\%$           | 73                                         | 0.150                                        | 1,150                      | 890                              | 100                         |
| NR 4010T 3R3M | RoHS | 3.3                              | $\pm 20\%$           | 58                                         | 0.180                                        | 1,100                      | 820                              | 100                         |
| NR 4010T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 47                                         | 0.210                                        | 900                        | 750                              | 100                         |
| NR 4010T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 38                                         | 0.300                                        | 740                        | 620                              | 100                         |
| NR 4010T 100M | RoHS | 10                               | $\pm 20\%$           | 31                                         | 0.380                                        | 560                        | 600                              | 100                         |
| NR 4010T 150M | RoHS | 15                               | $\pm 20\%$           | 24                                         | 0.510                                        | 470                        | 510                              | 100                         |
| NR 4010T 220M | RoHS | 22                               | $\pm 20\%$           | 19                                         | 0.870                                        | 360                        | 400                              | 100                         |
| NR 4010T 330M | RoHS | 33                               | $\pm 20\%$           | 15                                         | 1.54                                         | 280                        | 300                              | 100                         |
| NR 4010T 470M | RoHS | 47                               | $\pm 20\%$           | 13                                         | 1.81                                         | 240                        | 280                              | 100                         |

## ● NR 4012 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 4012T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 131                                        | 0.060                                        | 2,500                      | 1,500                            | 100                         |
| NR 4012T 2R2M | RoHS | 2.2                              | $\pm 20\%$           | 66                                         | 0.090                                        | 1,650                      | 1,200                            | 100                         |
| NR 4012T 3R3M | RoHS | 3.3                              | $\pm 20\%$           | 50                                         | 0.130                                        | 1,200                      | 980                              | 100                         |
| NR 4012T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 45                                         | 0.140                                        | 1,050                      | 960                              | 100                         |
| NR 4012T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 35                                         | 0.180                                        | 900                        | 840                              | 100                         |
| NR 4012T 100M | RoHS | 10                               | $\pm 20\%$           | 28                                         | 0.240                                        | 740                        | 770                              | 100                         |
| NR 4012T 150M | RoHS | 15                               | $\pm 20\%$           | 23                                         | 0.400                                        | 560                        | 600                              | 100                         |
| NR 4012T 220M | RoHS | 22                               | $\pm 20\%$           | 18                                         | 0.480                                        | 510                        | 540                              | 100                         |
| NR 4012T 330M | RoHS | 33                               | $\pm 20\%$           | 15                                         | 0.810                                        | 400                        | 420                              | 100                         |
| NR 4012T 470M | RoHS | 47                               | $\pm 20\%$           | 12                                         | 1.00                                         | 350                        | 370                              | 100                         |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

## PARTS NUMBER

## ● NR 4018 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 4018T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 80                                         | 0.030                                        | 4,000                      | 1,830                            | 100                         |
| NR 4018T 2R2M | RoHS | 2.2                              | $\pm 20\%$           | 52                                         | 0.060                                        | 2,700                      | 1,440                            | 100                         |
| NR 4018T 3R3M | RoHS | 3.3                              | $\pm 20\%$           | 44                                         | 0.070                                        | 2,000                      | 1,230                            | 100                         |
| NR 4018T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 34                                         | 0.090                                        | 1,700                      | 1,200                            | 100                         |
| NR 4018T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 29                                         | 0.110                                        | 1,450                      | 1,060                            | 100                         |
| NR 4018T 100M | RoHS | 10                               | $\pm 20\%$           | 24                                         | 0.180                                        | 1,200                      | 840                              | 100                         |
| NR 4018T 150M | RoHS | 15                               | $\pm 20\%$           | 19                                         | 0.250                                        | 940                        | 650                              | 100                         |
| NR 4018T 220M | RoHS | 22                               | $\pm 20\%$           | 16                                         | 0.360                                        | 800                        | 590                              | 100                         |
| NR 4018T 330M | RoHS | 33                               | $\pm 20\%$           | 12                                         | 0.530                                        | 650                        | 490                              | 100                         |
| NR 4018T 470M | RoHS | 47                               | $\pm 20\%$           | 10                                         | 0.650                                        | 570                        | 420                              | 100                         |
| NR 4018T 680M | RoHS | 68                               | $\pm 20\%$           | 8.3                                        | 1.00                                         | 470                        | 320                              | 100                         |
| NR 4018T 101M | RoHS | 100                              | $\pm 20\%$           | 6.5                                        | 1.50                                         | 400                        | 270                              | 100                         |
| NR 4018T 151M | RoHS | 150                              | $\pm 20\%$           | 5.5                                        | 2.50                                         | 310                        | 220                              | 100                         |
| NR 4018T 221M | RoHS | 220                              | $\pm 20\%$           | 4.0                                        | 4.00                                         | 270                        | 170                              | 100                         |

## ● NR 5040 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 5040T 1R5N | RoHS | 1.5                              | $\pm 30\%$           | 60                                         | 0.020                                        | 6,000                      | 3,600                            | 100                         |
| NR 5040T 2R2N | RoHS | 2.2                              | $\pm 30\%$           | 42                                         | 0.022                                        | 4,600                      | 3,500                            | 100                         |
| NR 5040T 3R3N | RoHS | 3.3                              | $\pm 30\%$           | 32                                         | 0.027                                        | 3,800                      | 3,300                            | 100                         |
| NR 5040T 4R7N | RoHS | 4.7                              | $\pm 30\%$           | 28                                         | 0.029                                        | 3,300                      | 3,100                            | 100                         |
| NR 5040T 6R8M | RoHS | 6.8                              | $\pm 20\%$           | 21                                         | 0.049                                        | 2,600                      | 2,300                            | 100                         |
| NR 5040T 100M | RoHS | 10                               | $\pm 20\%$           | 18                                         | 0.056                                        | 2,300                      | 2,100                            | 100                         |
| NR 5040T 150M | RoHS | 15                               | $\pm 20\%$           | 13                                         | 0.080                                        | 2,000                      | 1,800                            | 100                         |
| NR 5040T 220M | RoHS | 22                               | $\pm 20\%$           | 9                                          | 0.126                                        | 1,600                      | 1,400                            | 100                         |
| NR 5040T 330M | RoHS | 33                               | $\pm 20\%$           | 7                                          | 0.180                                        | 1,300                      | 1,200                            | 100                         |
| NR 5040T 470M | RoHS | 47                               | $\pm 20\%$           | 6                                          | 0.310                                        | 1,100                      | 900                              | 100                         |

## ● NR 6012 Shielded type

| Parts number   | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|                |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 6012T 2R5NE | RoHS | 2.5                              | $\pm 30\%$           | 45                                         | 0.090                                        | 2,100                      | 1,730                            | 100                         |
| NR 6012T 4R0NE | RoHS | 4.0                              | $\pm 30\%$           | 39                                         | 0.105                                        | 1,800                      | 1,570                            | 100                         |
| NR 6012T 5R3ME | RoHS | 5.3                              | $\pm 20\%$           | 34                                         | 0.125                                        | 1,500                      | 1,400                            | 100                         |
| NR 6012T 6R8ME | RoHS | 6.8                              | $\pm 20\%$           | 30                                         | 0.165                                        | 1,300                      | 1,180                            | 100                         |
| NR 6012T 100ME | RoHS | 10                               | $\pm 20\%$           | 22                                         | 0.235                                        | 1,000                      | 1,000                            | 100                         |
| NR 6012T 150ME | RoHS | 15                               | $\pm 20\%$           | 18                                         | 0.330                                        | 800                        | 790                              | 100                         |
| NR 6012T 220ME | RoHS | 22                               | $\pm 20\%$           | 12                                         | 0.530                                        | 760                        | 630                              | 100                         |
| NR 6012T 330ME | RoHS | 33                               | $\pm 20\%$           | 8                                          | 0.700                                        | 590                        | 530                              | 100                         |
| NR 6012T 470ME | RoHS | 47                               | $\pm 20\%$           | 6                                          | 1.05                                         | 520                        | 460                              | 100                         |
| NR 6012T 680ME | RoHS | 68                               | $\pm 20\%$           | 3                                          | 1.35                                         | 440                        | 410                              | 100                         |
| NR 6012T 101ME | RoHS | 100                              | $\pm 20\%$           | 1                                          | 2.18                                         | 350                        | 320                              | 100                         |

## ● NR 6020 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 6020T 0R8N | RoHS | 0.8                              | $\pm 30\%$           | 110                                        | 0.020                                        | 5,500                      | 3,800                            | 100                         |
| NR 6020T 1R5N | RoHS | 1.5                              | $\pm 30\%$           | 93                                         | 0.026                                        | 4,000                      | 3,200                            | 100                         |
| NR 6020T 2R2N | RoHS | 2.2                              | $\pm 30\%$           | 73                                         | 0.034                                        | 3,200                      | 2,700                            | 100                         |
| NR 6020T 3R3N | RoHS | 3.3                              | $\pm 30\%$           | 55                                         | 0.040                                        | 2,800                      | 2,600                            | 100                         |
| NR 6020T 4R7N | RoHS | 4.7                              | $\pm 30\%$           | 43                                         | 0.058                                        | 2,400                      | 2,000                            | 100                         |
| NR 6020T 6R8N | RoHS | 6.8                              | $\pm 30\%$           | 30                                         | 0.085                                        | 2,000                      | 1,800                            | 100                         |
| NR 6020T 100M | RoHS | 10                               | $\pm 20\%$           | 18                                         | 0.125                                        | 1,700                      | 1,400                            | 100                         |
| NR 6020T 220M | RoHS | 22                               | $\pm 20\%$           | 11                                         | 0.290                                        | 1,050                      | 950                              | 100                         |

## ● NR 6028 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency[kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|-----------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                             |
| NR 6028T 0R9N | RoHS | 0.9                              | $\pm 30\%$           | 90                                         | 0.013                                        | 6,600                      | 4,600                            | 100                         |
| NR 6028T 1R5N | RoHS | 1.5                              | $\pm 30\%$           | 78                                         | 0.016                                        | 5,000                      | 4,200                            | 100                         |
| NR 6028T 2R2N | RoHS | 2.2                              | $\pm 30\%$           | 68                                         | 0.020                                        | 4,200                      | 3,700                            | 100                         |
| NR 6028T 3R0N | RoHS | 3.0                              | $\pm 30\%$           | 55                                         | 0.023                                        | 3,600                      | 3,400                            | 100                         |
| NR 6028T 4R7M | RoHS | 4.7                              | $\pm 20\%$           | 39                                         | 0.031                                        | 2,700                      | 3,000                            | 100                         |
| NR 6028T 6R0M | RoHS | 6.0                              | $\pm 20\%$           | 30                                         | 0.040                                        | 2,500                      | 2,500                            | 100                         |
| NR 6028T 100M | RoHS | 10                               | $\pm 20\%$           | 20                                         | 0.065                                        | 1,900                      | 1,900                            | 100                         |
| NR 6028T 150M | RoHS | 15                               | $\pm 20\%$           | 17                                         | 0.095                                        | 1,600                      | 1,800                            | 100                         |
| NR 6028T 220M | RoHS | 22                               | $\pm 20\%$           | 12                                         | 0.135                                        | 1,300                      | 1,400                            | 100                         |
| NR 6028T 330M | RoHS | 33                               | $\pm 20\%$           | 10                                         | 0.220                                        | 1,100                      | 1,100                            | 100                         |
| NR 6028T 470M | RoHS | 47                               | $\pm 20\%$           | 8                                          | 0.300                                        | 950                        | 920                              | 100                         |
| NR 6028T 680M | RoHS | 68                               | $\pm 20\%$           | 5                                          | 0.420                                        | 760                        | 770                              | 100                         |
| NR 6028T 101M | RoHS | 100                              | $\pm 20\%$           | 3                                          | 0.600                                        | 620                        | 660                              | 100                         |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

## ● NR 6045 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| NR 6045T 1R0N | RoHS | 1.0                              | $\pm 30\%$           | 110                                        | 0.014                                        | 8,500                      | 4,200                            | 100                          |
| NR 6045T 1R3N | RoHS | 1.3                              | $\pm 30\%$           | 95                                         | 0.016                                        | 8,000                      | 4,000                            | 100                          |
| NR 6045T 1R8N | RoHS | 1.8                              | $\pm 30\%$           | 80                                         | 0.018                                        | 7,000                      | 3,700                            | 100                          |
| NR 6045T 2R3N | RoHS | 2.3                              | $\pm 30\%$           | 60                                         | 0.021                                        | 6,000                      | 3,500                            | 100                          |
| NR 6045T 3R0N | RoHS | 3.0                              | $\pm 30\%$           | 45                                         | 0.024                                        | 5,000                      | 3,200                            | 100                          |
| NR 6045T 4R5M | RoHS | 4.5                              | $\pm 20\%$           | 25                                         | 0.031                                        | 4,000                      | 3,000                            | 100                          |
| NR 6045T 6R3M | RoHS | 6.3                              | $\pm 20\%$           | 15                                         | 0.038                                        | 3,800                      | 2,800                            | 100                          |
| NR 6045T 100M | RoHS | 10                               | $\pm 20\%$           | 12                                         | 0.047                                        | 3,000                      | 2,500                            | 100                          |
| NR 6045T 150M | RoHS | 15                               | $\pm 20\%$           | 10                                         | 0.077                                        | 2,300                      | 1,900                            | 100                          |
| NR 6045T 220M | RoHS | 22                               | $\pm 20\%$           | 7                                          | 0.115                                        | 1,900                      | 1,500                            | 100                          |
| NR 6045T 330M | RoHS | 33                               | $\pm 20\%$           | 6                                          | 0.145                                        | 1,500                      | 1,400                            | 100                          |
| NR 6045T 470M | RoHS | 47                               | $\pm 20\%$           | 5                                          | 0.220                                        | 1,300                      | 1,100                            | 100                          |
| NR 6045T 680M | RoHS | 68                               | $\pm 20\%$           | 4                                          | 0.330                                        | 1,000                      | 900                              | 100                          |
| NR 6045T 101M | RoHS | 100                              | $\pm 20\%$           | 3                                          | 0.500                                        | 800                        | 700                              | 100                          |

## ● NR 8040 Shielded type

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [kHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| NR 8040T 0R9N | RoHS | 0.9                              | $\pm 30\%$           | 85                                         | 0.006                                        | 11,000                     | 7,800                            | 100                          |
| NR 8040T 1R4N | RoHS | 1.4                              | $\pm 30\%$           | 63                                         | 0.007                                        | 9,000                      | 7,000                            | 100                          |
| NR 8040T 2R0N | RoHS | 2.0                              | $\pm 30\%$           | 50                                         | 0.009                                        | 7,400                      | 6,300                            | 100                          |
| NR 8040T 3R6N | RoHS | 3.6                              | $\pm 30\%$           | 34                                         | 0.015                                        | 5,300                      | 4,900                            | 100                          |
| NR 8040T 4R7N | RoHS | 4.7                              | $\pm 30\%$           | 30                                         | 0.018                                        | 4,700                      | 4,100                            | 100                          |
| NR 8040T 6R8N | RoHS | 6.8                              | $\pm 30\%$           | 24                                         | 0.025                                        | 4,000                      | 3,700                            | 100                          |
| NR 8040T 100M | RoHS | 10                               | $\pm 20\%$           | 22                                         | 0.034                                        | 3,400                      | 3,100                            | 100                          |
| NR 8040T 150M | RoHS | 15                               | $\pm 20\%$           | 16                                         | 0.050                                        | 2,700                      | 2,400                            | 100                          |
| NR 8040T 220M | RoHS | 22                               | $\pm 20\%$           | 13                                         | 0.066                                        | 2,200                      | 2,200                            | 100                          |
| NR 8040T 330M | RoHS | 33                               | $\pm 20\%$           | 12                                         | 0.100                                        | 1,900                      | 1,700                            | 100                          |
| NR 8040T 470M | RoHS | 47                               | $\pm 20\%$           | 8                                          | 0.150                                        | 1,500                      | 1,400                            | 100                          |
| NR 8040T 680M | RoHS | 68                               | $\pm 20\%$           | 7                                          | 0.230                                        | 1,200                      | 1,100                            | 100                          |
| NR 8040T 101M | RoHS | 100                              | $\pm 20\%$           | 6                                          | 0.290                                        | 1,000                      | 1,000                            | 100                          |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

# SMD POWER INDUCTORS (NR SERIES/NR SERIES H TYPE/S TYPE/V TYPE)

## PACKAGING

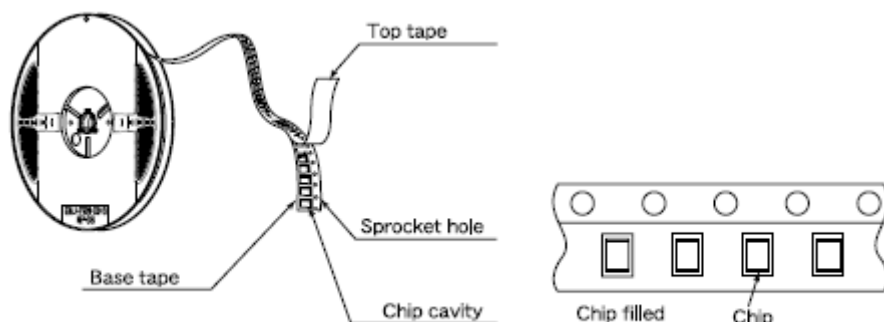
### ① Minimum Quantity

| Type    | Standard Quantity [pcs] |
|---------|-------------------------|
|         | Tape & Reel             |
| NRV2010 | 2500                    |
| NRS2012 | 2500                    |
| NRV2012 | 2500                    |
| NRH2410 | 2500                    |
| NRH2412 | 2500                    |
| NR 3010 | 2000                    |
| NRH3010 | 2000                    |
| NR 3012 | 2000                    |
| NRH3012 | 2000                    |
| NRV3012 | 2000                    |
| NR 3015 | 2000                    |
| NRS3015 | 2000                    |
| NR 4010 | 5000                    |
| NRS4010 | 5000                    |
| NR 4012 | 4500                    |
| NRS4012 | 4500                    |
| NR 4018 | 3500                    |
| NRS4018 | 3500                    |

| Type    | Standard Quantity [pcs] |
|---------|-------------------------|
|         | Tape & Reel             |
| NRS5010 | 1000                    |
| NRS5012 | 1000                    |
| NRS5014 | 1000                    |
| NRS5020 | 800                     |
| NRS5024 | 2500                    |
| NRS5030 | 500                     |
| NR 5040 | 1500                    |
| NRS5040 | 1500                    |
| NRS6010 | 1000                    |
| NR 6012 | 1000                    |
| NRS6012 | 1000                    |
| NRS6014 | 1000                    |
| NR 6020 | 2500                    |
| NRS6020 | 2500                    |
| NR 6028 | 2000                    |
| NRS6028 | 2000                    |
| NR 6045 | 1500                    |
| NRS6045 | 1500                    |
| NRS8030 | 1000                    |
| NR 8040 | 1000                    |
| NRS8040 | 1000                    |

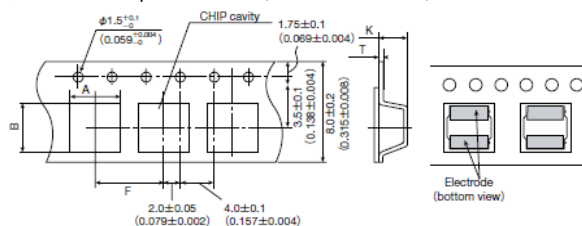
### ② Tape Material

#### ● Embossed Tape



### ③ Taping dimensions

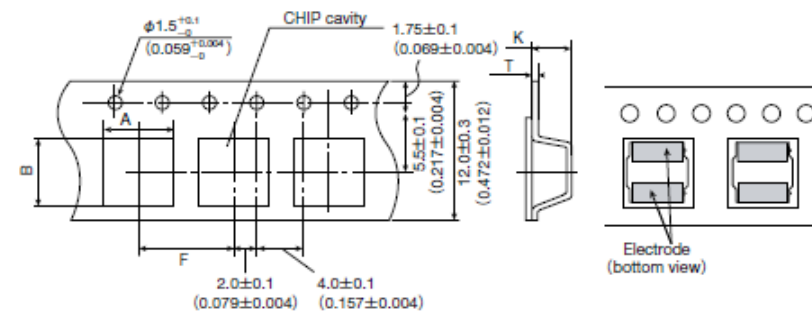
#### ● Embossed tape 8mm wide (0.315 inches wide)



| Type    | Chip cavity              |                          | Insertion pitch          | Tape thickness             |                          |
|---------|--------------------------|--------------------------|--------------------------|----------------------------|--------------------------|
|         | A                        | B                        | F                        | T                          | K                        |
| NRV2010 | 2.2±0.1<br>(0.102±0.004) | 2.2±0.1<br>(0.102±0.004) | 4.0±0.1<br>(0.157±0.004) | 0.25±0.05<br>(0.009±0.002) | 1.3±0.1<br>(0.051±0.004) |
| NRS2012 |                          |                          |                          |                            |                          |
| NRV2012 |                          |                          |                          |                            |                          |
| NRH2410 | 2.6±0.1<br>(0.087±0.004) | 2.6±0.1<br>(0.102±0.004) |                          | 0.25±0.05<br>(0.009±0.002) | 1.3±0.1<br>(0.051±0.004) |
| NRH2412 |                          |                          |                          |                            |                          |
| NR 3010 | 3.2±0.1<br>(0.126±0.004) | 3.2±0.1<br>(0.126±0.004) |                          | 0.3±0.05<br>(0.012±0.002)  | 1.4±0.1<br>(0.055±0.004) |
| NRH3010 |                          |                          |                          |                            |                          |
| NR 3012 |                          |                          |                          |                            |                          |
| NRH3012 |                          |                          |                          |                            |                          |
| NRV3012 |                          |                          | 1.9±0.1<br>(0.075±0.004) |                            |                          |
| NR 3015 |                          |                          |                          |                            |                          |
| NRS3015 |                          |                          |                          |                            |                          |

Unit : mm (inch)

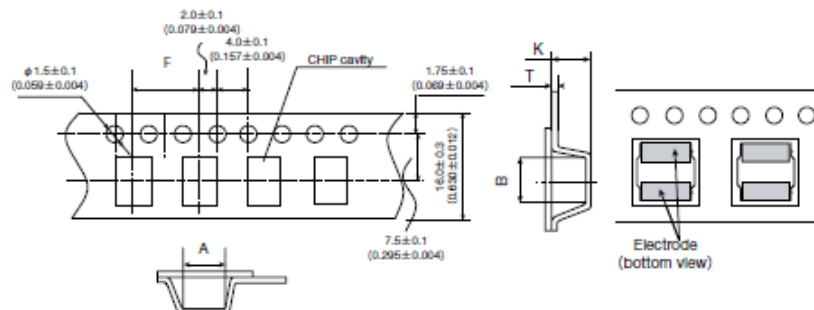
● Embossed tape 12mm wide (0.47 inches wide)



| Type               | Chip cavity               |                           | Insertion pitch          | Tape thickness           |                          |
|--------------------|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|
|                    | A                         | B                         |                          | T                        | K                        |
| NR 4010<br>NRS4010 | 4.3±0.1<br>(0.169±0.004)  | 4.3±0.1<br>(0.169±0.004)  | 8.0±0.1<br>(0.315±0.004) | 0.3±0.1<br>(0.012±0.004) | 1.4±0.1<br>(0.055±0.004) |
| NR 4012<br>NRS4012 |                           |                           |                          |                          | 1.6±0.1<br>(0.063±0.004) |
| NR 4018<br>NRS4018 |                           |                           |                          |                          | 2.1±0.1<br>(0.083±0.004) |
| NRS5010            |                           |                           |                          |                          | 1.4±0.1<br>(0.055±0.004) |
| NRS5012            | 1.4±0.1<br>(0.055±0.004)  |                           |                          |                          |                          |
| NRS5014            | 1.6±0.1<br>(0.063±0.004)  |                           |                          |                          |                          |
| NRS5020            | 2.3±0.1<br>(0.091±0.004)  |                           |                          |                          |                          |
| NRS5024            | 2.7±0.1<br>(0.106±0.004)  |                           |                          |                          |                          |
| NRS5030            | 5.15±0.1<br>(0.203±0.004) | 5.15±0.1<br>(0.203±0.004) |                          | 0.4±0.1<br>(0.016±0.004) | 3.2±0.1<br>(0.126±0.004) |
| NR 5040<br>NRS5040 | 5.15±0.1<br>(0.203±0.004) | 5.15±0.1<br>(0.203±0.004) |                          |                          | 4.2±0.1<br>(0.165±0.004) |
| NRS6010            | 6.3±0.1<br>(0.248±0.004)  | 6.3±0.1<br>(0.248±0.004)  |                          |                          | 1.4±0.1<br>(0.055±0.004) |
| NR 6012<br>NRS6012 |                           |                           |                          |                          | 1.6±0.1<br>(0.063±0.00)  |
| NRS6014            |                           |                           |                          |                          | 1.6±0.1<br>(0.063±0.04)  |
| NR 6020<br>NRS6020 |                           |                           |                          |                          | 2.3±0.1<br>(0.090±0.004) |
| NR 6028<br>NRS6028 |                           |                           |                          |                          | 3.1±0.1<br>(0.122±0.004) |
| NR 6045<br>NRS6045 |                           |                           |                          |                          | 4.7±0.1<br>(0.185±0.004) |

Unit : mm (inch)

● Embossed tape 16mm wide (0.63 inches wide)

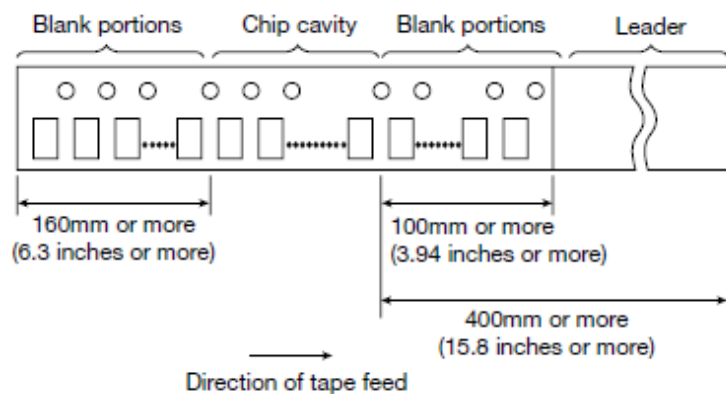


| Type    | Chip cavity              |                          | Insertion pitch           | Tape thickness           |                          |
|---------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
|         | A                        | B                        |                           | T                        | K                        |
| NRS8030 | 8.3±0.1<br>(0.327±0.004) | 8.3±0.1<br>(0.327±0.004) | 12.0±0.1<br>(0.472±0.004) | 0.5±0.1<br>(0.020±0.004) | 3.4±0.1<br>(0.134±0.004) |
| NR 8040 |                          |                          |                           |                          | 4.5±0.1<br>(0.177±0.004) |
| NRS8040 |                          |                          |                           |                          |                          |

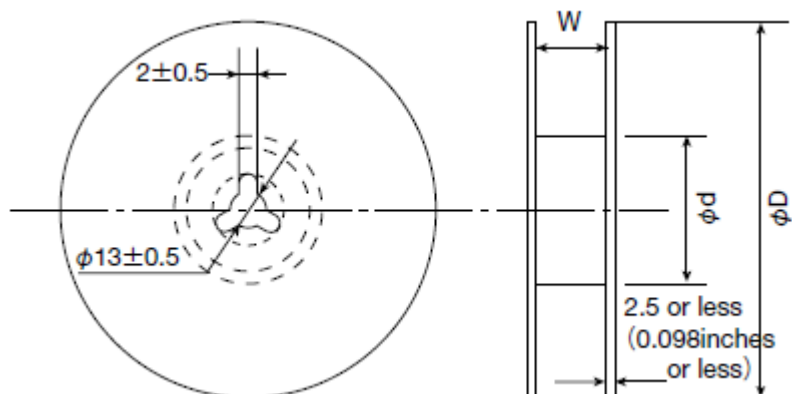
Unit : mm (inch)

#### ④ Leader and Blank portion

● NR, NRH, NRS, NRV

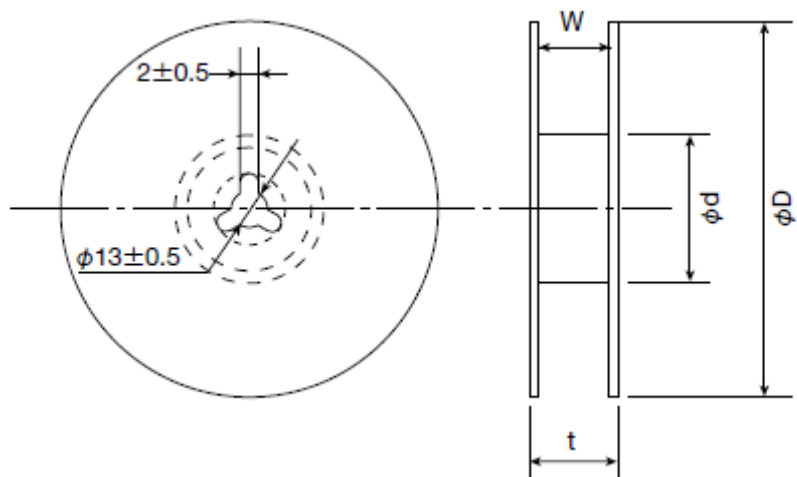


#### ⑤ Reel size



| Type    | Reel size (Reference values) |                       |                           |
|---------|------------------------------|-----------------------|---------------------------|
|         | φ D                          | φ d                   | W                         |
| NRV2010 | 180±0.5<br>(7.087±0.019)     | 60±1.0<br>(2.36±0.04) | 10.0±1.5<br>(0.394±0.059) |
| NRS2012 |                              |                       |                           |
| NRV2012 |                              |                       |                           |
| NRH2410 |                              |                       |                           |
| NRH2412 |                              |                       |                           |
| NR 3010 |                              |                       |                           |
| NRH3010 |                              |                       |                           |
| NR 3012 |                              |                       |                           |
| NRH3012 |                              |                       |                           |
| NRV3012 |                              |                       |                           |
| NR 3015 | 180±3.0<br>(7.087±0.118)     | 60±2.0<br>(2.36±0.08) | 14.0±1.5<br>(0.551±0.059) |
| NRS3015 |                              |                       |                           |
| NRS5010 |                              |                       |                           |
| NRS5012 |                              |                       |                           |
| NRS5014 |                              |                       |                           |
| NRS5020 |                              |                       |                           |
| NRS5030 |                              |                       |                           |
| NRS6010 |                              |                       |                           |
| NR 6012 |                              |                       |                           |
| NRS6012 |                              |                       |                           |
| NRS6014 |                              |                       |                           |

Unit: mm (inch)

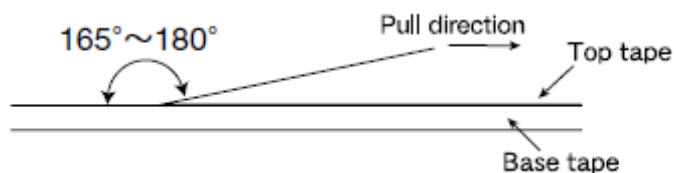


| Type    | Reel size (Reference values) |                        |                |                          |
|---------|------------------------------|------------------------|----------------|--------------------------|
|         | ϕ D                          | ϕ d                    | t (max.)       | W                        |
| NR 4010 | 330±3.0<br>(12.99±0.118)     | 80±2.0<br>(3.15±0.078) | 18.5<br>(0.72) | 13.5±1.0<br>(0.531±0.04) |
| NRS4010 |                              |                        |                |                          |
| NR 4012 |                              |                        |                |                          |
| NRS4012 |                              |                        |                |                          |
| NR 4018 |                              |                        |                |                          |
| NRS4018 |                              |                        |                |                          |
| NRS5024 |                              |                        |                |                          |
| NR 5040 |                              |                        |                |                          |
| NRS5040 |                              |                        |                |                          |
| NR 6020 |                              |                        |                |                          |
| NRS6020 |                              |                        |                |                          |
| NR 6028 |                              |                        |                |                          |
| NRS6028 |                              |                        |                |                          |
| NR 6045 |                              |                        |                |                          |
| NRS6045 |                              |                        |                |                          |
| NRS8030 |                              |                        | 22.5<br>(0.89) | 17.5±1.0<br>(0.689±0.04) |
| NR 8040 |                              |                        |                |                          |
| NRS8040 |                              |                        |                |                          |

Unit : mm (inch)

## ⑥Top Tape Strength

The top tape requires a peel-off force of 0.1 to 1.3N in the direction of the arrow as illustrated below.



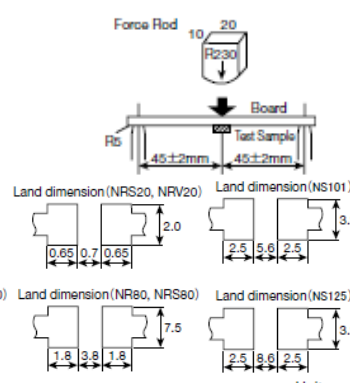
# SMD inductor (NR□, NS series)

## RELIABILITY DATA

| 1. Operating Temperature Range |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Specified Value                | NR30/40/50/60/80, NRS20, NRV20/30, NRH24/30 Type                                                                                                                                                                                                                                                                                                                                                                        | −25~+120℃                      |
|                                | NRS40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                                                                                     | −25~+125℃                      |
|                                | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                            | −25~+105℃                      |
|                                | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                                       | −40~+125℃                      |
| Test Methods and Remarks       | Including self-generated heat                                                                                                                                                                                                                                                                                                                                                                                           |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| 2. Storage Temperature Range   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Specified Value                | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                                            | −40~+85℃                       |
|                                | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                            |                                |
|                                | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                                       |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Test Methods and Remarks       | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>−5 to 40℃ for the product with taping.                                                                                                                                                                                                                                                                                  |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| 3. Rated current               |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Specified Value                | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                                            | Within the specified tolerance |
|                                | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                            |                                |
|                                | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                                       |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| 4. Inductance                  |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Specified Value                | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                                            | Within the specified tolerance |
|                                | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                            |                                |
|                                | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                                       |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Test Methods and Remarks       | Measuring equipment : LCR Meter (HP 4285A or equivalent)<br>Measuring frequency : Specified frequency<br>NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>Measuring equipment : LCR Meter (HP 4285A or equivalent)<br>Measuring frequency : 100kHz, 1V<br>NR10050 Type :<br>Measuring equipment : LCR Meter (HP 4263A or equivalent)<br>Measuring frequency : 100kHz, 1V |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| 5. DC Resistance               |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Specified Value                | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                                            | Within the specified tolerance |
|                                | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                            |                                |
|                                | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                                       |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Test Methods and Remarks       | Measuring equipment : DC ohmmeter (HIOKI 3227 or equivalent)                                                                                                                                                                                                                                                                                                                                                            |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| 6. Self resonance frequency    |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Specified Value                | NR30/40/50/60/80, NRV30, NRH24/30, NRS40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                                                  | Within the specified tolerance |
|                                | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                            |                                |
|                                | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                                       |                                |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
| Test Methods and Remarks       | NR30/40/50/60/80, NRV30, NRH24/30, NRS40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>Measuring equipment : Impedance analyzer/material analyzer (HP4291A or equivalent HP4191A, 4192A or equivalent)                                                                                                                                                                                                               |                                |

▶ This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification.  
For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

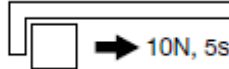
| 7. Temperature characteristic |                                                                                                                                                                                                                                                                                                           |                                       |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Specified Value               | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                              | Inductance change : Within $\pm 20\%$ |
|                               | NR10050 Type                                                                                                                                                                                                                                                                                              |                                       |
|                               | NS101, NS125 Type                                                                                                                                                                                                                                                                                         | Inductance change : Within $\pm 15\%$ |
| Test Methods and Remarks      | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type :<br>Measurement of inductance shall be taken at temperature range within $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$ .<br>With reference to inductance value at $+20^{\circ}\text{C}$ ., change rate shall be calculated.  |                                       |
|                               | NS101, NS125 Type :<br>Measurement of inductance shall be taken at temperature range within $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ .<br>With reference to inductance value at $+20^{\circ}\text{C}$ ., change rate shall be calculated.<br>Change of maximum inductance deviation in step 1 to 5 |                                       |
|                               | Step                                                                                                                                                                                                                                                                                                      | Temperature ( $^{\circ}\text{C}$ )    |
|                               | 1                                                                                                                                                                                                                                                                                                         | 20                                    |
|                               | 2                                                                                                                                                                                                                                                                                                         | Minimum operating temperature         |
|                               | 3                                                                                                                                                                                                                                                                                                         | 20 (Standard temperature)             |
|                               | 4                                                                                                                                                                                                                                                                                                         | Maximum operating temperature         |
|                               | 5                                                                                                                                                                                                                                                                                                         | 20                                    |

| 8. Resistance to flexure of substrate |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Specified Value                       | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | No damage |
|                                       | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | —         |
|                                       | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | No damage |
| Test Methods and Remarks              | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NS101/125 Type :<br>The test samples shall be soldered to the test board by the reflow. As illustrated below, apply force in the direction of the arrow indicating until deflection of the test board reaches to 2 mm.<br>Test board size : $100 \times 40 \times 1.0$<br>Test board material : glass epoxy-resin<br>Solder cream thickness : 0.10 (NR30, NRS20, NRH24/30, NRV20/30)<br>: 0.15 (NR40/50/60/80, NRS40/50/60, NS101/125Type)                                       |           |
|                                       |  <p>Land dimension (NRH24) : 0.7, 0.75, 0.7, 2.0<br/>Land dimension (NR30, NRH30, NRV30) : 0.8, 1.4, 0.8, 2.7<br/>Land dimension (NR40, NRS40) : 1.2, 1.6, 1.2, 3.7<br/>Land dimension (NR50, NRS50) : 1.5, 2.1, 1.5, 4.0<br/>Land dimension (NR60, NRS60) : 1.6, 3.1, 1.6, 5.7<br/>Land dimension (NR80, NRS80) : 1.8, 3.8, 1.8, 7.5<br/>Land dimension (NS101) : 2.5, 5.6, 2.5, 3.2<br/>Land dimension (NS125) : 2.5, 8.6, 2.5, 3.2</p> <p>Unit : mm</p> |           |

| 9. Insulation resistance : between wires |                                                              |   |
|------------------------------------------|--------------------------------------------------------------|---|
| Specified Value                          | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type | — |
|                                          | NR10050 Type                                                 |   |
|                                          | NS101, NS125 Type                                            |   |

| 10. Insulation resistance : between wire and core |                                                              |   |
|---------------------------------------------------|--------------------------------------------------------------|---|
| Specified Value                                   | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type | — |
|                                                   | NR10050 Type                                                 |   |
|                                                   | NS101, NS125 Type                                            |   |

| 11. Withstanding voltage : between wire and core |                                                              |   |
|--------------------------------------------------|--------------------------------------------------------------|---|
| Specified Value                                  | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type | — |
|                                                  | NR10050 Type                                                 |   |
|                                                  | NS101, NS125 Type                                            |   |

| 12. Adhesion of terminal electrode |                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------|---------|------|-----------------|---------------------------------------------|--|-----------------|--------------------------------|--|------|---|---------------------------------------|---|
| Specified Value                    | NR30/40/50/60/80, NRV20/30,<br>NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                               | Shall not come off PC board                                                  |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Test Methods and Remarks           | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NS101/125 Type :<br>The test samples shall be soldered to the test board by the reflow.                                                                                                                                                                                                                                                         |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | Applied force : 10N to X and Y directions.<br>Duration : 5s.<br>Solder cream thickness : 0.15mm.<br>                                                                                                                                                                                                                        |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NR10050 Type :<br>Applied force : 5N to X and Y directions.<br>Duration : 5s.                                                                                                                                                                                                                                                                                                                                 |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| 13. Resistance to vibration        |                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Specified Value                    | NR30/40/50/60/80, NRV20/30,<br>NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                               | Inductance change : Within ±10%<br>No significant abnormality in appearance. |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Test Methods and Remarks           | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>The test samples shall be soldered to the test board by the reflow.<br>Then it shall be submitted to below test conditions.                                                                                                                                                                                   |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | <table><tr><td>Frequency Range</td><td colspan="2">10~55Hz</td></tr><tr><td>Total Amplitude</td><td colspan="2">1.5mm (May not exceed acceleration 196m/s²)</td></tr><tr><td>Sweeping Method</td><td colspan="2">10Hz to 55Hz to 10Hz for 1min.</td></tr><tr><td rowspan="3">Time</td><td>X</td><td rowspan="3">For 2 hours on each X, Y, and Z axis.</td></tr><tr><td>Y</td></tr><tr><td>Z</td></tr></table> |                                                                              | Frequency Range    | 10~55Hz |      | Total Amplitude | 1.5mm (May not exceed acceleration 196m/s²) |  | Sweeping Method | 10Hz to 55Hz to 10Hz for 1min. |  | Time | X | For 2 hours on each X, Y, and Z axis. | Y |
| Frequency Range                    | 10~55Hz                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Total Amplitude                    | 1.5mm (May not exceed acceleration 196m/s²)                                                                                                                                                                                                                                                                                                                                                                   |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Sweeping Method                    | 10Hz to 55Hz to 10Hz for 1min.                                                                                                                                                                                                                                                                                                                                                                                |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Time                               | X                                                                                                                                                                                                                                                                                                                                                                                                             | For 2 hours on each X, Y, and Z axis.                                        |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | Y                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | Z                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs.                                                                                                                                                                                                                                                                                   |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| 14. Solderability                  |                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Specified Value                    | NR30/40/50/60/80, NRV20/30,<br>NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                               | At least 90% of surface of terminal electrode is covered by new solder.      |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Test Methods and Remarks           | The test samples shall be dipped in flux, and then immersed in molten solder as shown in below table.<br>Flux : Methanol solution containing rosin 25%.                                                                                                                                                                                                                                                       |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type<br><table><tr><td>Solder Temperature</td><td>245±5℃</td></tr><tr><td>Time</td><td>5±1.0 sec.</td></tr></table><br>※Immersion depth : All sides of mounting terminal shall be immersed.                                                                                                                             |                                                                              | Solder Temperature | 245±5℃  | Time | 5±1.0 sec.      |                                             |  |                 |                                |  |      |   |                                       |   |
| Solder Temperature                 | 245±5℃                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Time                               | 5±1.0 sec.                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| 15. Resistance to soldering heat   |                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Specified Value                    | NR30/40/50/60/80, NRV20/30,<br>NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                                                               | Inductance change : Within ±10%<br>No significant abnormality in appearance. |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NR10050 Type                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
| Test Methods and Remarks           | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>The test sample shall be exposed to reflow oven at 230±5℃ for 40 seconds, with peak temperature at 260±5℃ for 5 seconds, 2 times.                                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |
|                                    | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80Type, NS101/125 Type<br>Test board material : glass epoxy-resin<br>Test board thickness : 1.0mm<br>NR10050 Type<br>Test board material : glass epoxy-resin<br>Test board thickness : 1.6mm                                                                                                                                                             |                                                                              |                    |         |      |                 |                                             |  |                 |                                |  |      |   |                                       |   |

| 16. Thermal shock             |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------|
| Specified Value               | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                  |                                    | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |
|                               | NR10050 Type                                                                                                                                                                                                                                                                                                                                                  |                                    |                                                                                    |
|                               | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                             |                                    |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| Test Methods and Remarks      | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>The test samples shall be soldered to the test board by the reflow. The test samples shall be placed at specified temperature for specified time by step 1 to step 4 as shown in below table in sequence. The temperature cycle shall be repeated 100 cycles. |                                    |                                                                                    |
|                               | Conditions of 1 cycle                                                                                                                                                                                                                                                                                                                                         |                                    |                                                                                    |
|                               | Step                                                                                                                                                                                                                                                                                                                                                          | Temperature ( $^{\circ}\text{C}$ ) | Duration (min)                                                                     |
|                               | 1                                                                                                                                                                                                                                                                                                                                                             | $-40\pm 3$                         | $30\pm 3$                                                                          |
|                               | 2                                                                                                                                                                                                                                                                                                                                                             | Room temperature                   | Within 3                                                                           |
|                               | 3                                                                                                                                                                                                                                                                                                                                                             | $+85\pm 2$                         | $30\pm 3$                                                                          |
|                               | 4                                                                                                                                                                                                                                                                                                                                                             | Room temperature                   | Within 3                                                                           |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| 17. Damp heat                 |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| Specified Value               | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                  |                                    | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |
|                               | NR10050 Type                                                                                                                                                                                                                                                                                                                                                  |                                    |                                                                                    |
|                               | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                             |                                    | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| Test Methods and Remarks      | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NS101/125 Type :<br>The test samples shall be soldered to the test board by the reflow.<br>The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below table.                                                                             |                                    |                                                                                    |
|                               | Temperature                                                                                                                                                                                                                                                                                                                                                   | $60\pm 2^{\circ}\text{C}$          |                                                                                    |
|                               | Humidity                                                                                                                                                                                                                                                                                                                                                      | $90\sim 95\%\text{RH}$             |                                                                                    |
|                               | Time                                                                                                                                                                                                                                                                                                                                                          | $500+24/-0$ hour                   |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| 18. Loading under damp heat   |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| Specified Value               | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                  |                                    | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |
|                               | NR10050 Type                                                                                                                                                                                                                                                                                                                                                  |                                    |                                                                                    |
|                               | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                             |                                    |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| Test Methods and Remarks      | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>The test samples shall be soldered to the test board by the reflow.<br>The test samples shall be placed in thermostatic oven set at specified temperature and humidity and applied the rated current continuously as shown in below table.                    |                                    |                                                                                    |
|                               | Temperature                                                                                                                                                                                                                                                                                                                                                   | $60\pm 2^{\circ}\text{C}$          |                                                                                    |
|                               | Humidity                                                                                                                                                                                                                                                                                                                                                      | $90\sim 95\%\text{RH}$             |                                                                                    |
|                               | Applied current                                                                                                                                                                                                                                                                                                                                               | Rated current                      |                                                                                    |
|                               | Time                                                                                                                                                                                                                                                                                                                                                          | $500+24/-0$ hour                   |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| 19. Low temperature life test |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| Specified Value               | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                                                                                                                                                                                                                                                                                                  |                                    | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |
|                               | NR10050 Type                                                                                                                                                                                                                                                                                                                                                  |                                    |                                                                                    |
|                               | NS101, NS125 Type                                                                                                                                                                                                                                                                                                                                             |                                    |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
| Test Methods and Remarks      | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :<br>The test samples shall be soldered to the test board by the reflow. After that, the test samples shall be placed at test conditions as shown in below table.                                                                                                  |                                    |                                                                                    |
|                               | Temperature                                                                                                                                                                                                                                                                                                                                                   | $-40\pm 2^{\circ}\text{C}$         |                                                                                    |
|                               | Time                                                                                                                                                                                                                                                                                                                                                          | $500+24/-0$ hour                   |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |
|                               |                                                                                                                                                                                                                                                                                                                                                               |                                    |                                                                                    |

| 20. High temperature life test                                                                                              |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Specified Value                                                                                                             | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                             | —                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                             | NR10050 Type                                                                             | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance.                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                             | NS101, NS125 Type                                                                        | —                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test Methods and Remarks                                                                                                    | NR10050 Type :                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                             | Temperature                                                                              | 105 $\pm$ 3 $^{\circ}$ C                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                             | Time                                                                                     | 500+24/—0 hour                                                                                                                                                                                                                                                                                                                                                                                           |
| Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs. |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                          |
| 21. Loading at high temperature life test                                                                                   |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                          |
| Specified Value                                                                                                             | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                             | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance.                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                             | NR10050 Type                                                                             | —                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                             | NS101, NS125 Type                                                                        | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance.                                                                                                                                                                                                                                                                                                                       |
| Test Methods and Remarks                                                                                                    | NR30/40/50/60/80, NRV30, NRH24/30, NRS40/50/60/80 Type, NS12555, NS12565, NS12575 Type : |                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                             | The test samples shall be soldered to the test board by the reflow soldering.            |                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                             | Temperature                                                                              | 85 $\pm$ 2 $^{\circ}$ C                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                             | Applied current                                                                          | Rated current                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                             | Time                                                                                     | 500+24/—0 hour                                                                                                                                                                                                                                                                                                                                                                                           |
| 22. Standard condition                                                                                                      |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                          |
| Specified Value                                                                                                             | NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type                             | Standard test condition :<br>Unless otherwise specified, temperature is 20 $\pm$ 15 $^{\circ}$ C and 65 $\pm$ 20% of relative humidity.<br>When there is any question concerning measurement result: In order to provide correlation data, the test shall be condition of 20 $\pm$ 2 $^{\circ}$ C of temperature, 65 $\pm$ 5% relative humidity.<br>Inductance is in accordance with our measured value. |
|                                                                                                                             | NR10050 Type                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                             | NS101, NS125 Type                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                          |

# SMD inductor (NR□, NS series)

## ■ PRECAUTIONS

| 1. Circuit Design                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions                               | <p>◆Operating environment</p> <ol style="list-style-type: none"> <li>The products described in this specification are intended for use in general electronic equipment,(office supply equipment, telecommunications systems, measuring equipment, and household equipment). They are not intended for use in mission-critical equipment or systems requiring special quality and high reliability (traffic systems, safety equipment, aerospace systems, nuclear control systems and medical equipment including life-support systems,) where product failure might result in loss of life, injury or damage. For such uses, contact TAIYO YUDEN Sales Department in advance.</li> </ol>                                                                                                                                                                                                                                                                       |
| 2. PCB Design                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Precautions                               | <p>◆Land pattern design</p> <ol style="list-style-type: none"> <li>Please refer to a recommended land pattern.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Technical considerations                  | <p>◆Land pattern design</p> <p>Surface Mounting</p> <ul style="list-style-type: none"> <li>Mounting and soldering conditions should be checked beforehand.</li> <li>Applicable soldering process to this products is reflow soldering only.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3. Considerations for automatic placement |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Precautions                               | <p>◆Adjustment of mounting machine</p> <ol style="list-style-type: none"> <li>Excessive impact load should not be imposed on the products when mounting onto the PC boards.</li> <li>Mounting and soldering conditions should be checked beforehand.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Technical considerations                  | <p>◆Adjustment of mounting machine</p> <ol style="list-style-type: none"> <li>When installing products, care should be taken not to apply distortion stress as it may deform the products.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4. Soldering                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Precautions                               | <p>◆Reflow soldering</p> <ol style="list-style-type: none"> <li>Please contact any of our offices for a reflow soldering, and refer to the recommended condition specified.</li> <li>The product shall be used reflow soldering only.</li> <li>Please do not add any stress to a product until it returns in normal temperature after reflow soldering.</li> </ol> <p>◆Lead free soldering</p> <ol style="list-style-type: none"> <li>When using products with lead free soldering, we request to use them after confirming adhesion, temperature of resistance to soldering heat, soldering etc sufficiently.</li> </ol> <p>◆Recommended conditions for using a soldering iron (NR10050 Type)</p> <ul style="list-style-type: none"> <li>Put the soldering iron on the land-pattern.</li> <li>Soldering iron's temperature – Below 350°C</li> <li>Duration – 3 seconds or less</li> <li>The soldering iron should not directly touch the inductor.</li> </ul> |
| Technical considerations                  | <p>◆Reflow soldering</p> <ol style="list-style-type: none"> <li>If products are used beyond the range of the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of the products.</li> </ol> <p>•NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type</p> <p>Recommended reflow condition (Pb free solder)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5. Cleaning                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Precautions                               | <p>◆Cleaning conditions</p> <ol style="list-style-type: none"> <li>Washing by supersonic waves shall be avoided.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Technical considerations                  | <p>◆Cleaning conditions</p> <ol style="list-style-type: none"> <li>If washed by supersonic waves, the products might be broken.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| 6. Handling              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions              | <ul style="list-style-type: none"> <li>◆Handling               <ol style="list-style-type: none"> <li>1. Keep the product away from all magnets and magnetic objects.</li> </ol> </li> <li>◆Breakaway PC boards (splitting along perforations)               <ol style="list-style-type: none"> <li>1. When splitting the PC board after mounting product, care should be taken not to give any stresses of deflection or twisting to the board.</li> <li>2. Board separation should not be done manually, but by using the appropriate devices.</li> </ol> </li> <li>◆Mechanical considerations               <ol style="list-style-type: none"> <li>1. Please do not give the product any excessive mechanical shocks.</li> <li>2. Please do not add any shock and power to a product in transportation.</li> </ol> </li> <li>◆Pick-up pressure               <ol style="list-style-type: none"> <li>1. Please do not push to add any pressure to a winding part. Please do not give any shock and push into a ferrite core exposure part.</li> </ol> </li> <li>◆Packing               <ol style="list-style-type: none"> <li>1. Please avoid accumulation of a packing box as much as possible.</li> </ol> </li> </ul> |
| Technical considerations | <ul style="list-style-type: none"> <li>◆Handling               <ol style="list-style-type: none"> <li>1. There is a case that a characteristic varies with magnetic influence.</li> </ol> </li> <li>◆Breakaway PC boards (splitting along perforations)               <ol style="list-style-type: none"> <li>1. The position of the product on PCBs shall be carefully considered to minimize the stress caused from splitting of the PCBs.</li> </ol> </li> <li>◆Mechanical considerations               <ol style="list-style-type: none"> <li>1. There is a case to be damaged by a mechanical shock.</li> <li>2. There is a case to be broken by the handling in transportation.</li> </ol> </li> <li>◆Pick-up pressure               <ol style="list-style-type: none"> <li>1. Damage and a characteristic can vary with an excessive shock or stress.</li> </ol> </li> <li>◆Packing               <ol style="list-style-type: none"> <li>1. If packing boxes are accumulated, that could cause a deformation on packing tapes or a damage on the products.</li> </ol> </li> </ul>                                                                                                                                   |
| 7. Storage conditions    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Precautions              | <ul style="list-style-type: none"> <li>◆Storage               <ol style="list-style-type: none"> <li>1. To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled.                   <ul style="list-style-type: none"> <li>▪ Recommended conditions                       <div style="margin-left: 20px;">Ambient temperature : <math>-5\sim 40^{\circ}\text{C}</math></div> <div style="margin-left: 20px;">Humidity : Below 70% RH</div> </li> <li>▪ The ambient temperature must be kept below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes.</li> </ul> </li> </ol> </li> </ul> <p style="margin-left: 40px;">For this reason, product should be used within 6 months from the time of delivery.<br/>In case of storage over 6 months, solderability shall be checked before actual usage.</p>                                                                                                                                                                                                                                        |
| Technical considerations | <ul style="list-style-type: none"> <li>◆Storage               <ol style="list-style-type: none"> <li>1. Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place.</li> </ol> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |