1 Scope

This specification applies to the HDFI series of multilayer chip ferrite inductors.

2 Product Identification

HDFI	1608	C	4R7	K	T	-	LF
①	②	③	④	⑤	⑥		⑦

① Product Symbol

② Dimensions（3）

③ Material Code（A;Q;C;D;E;R)

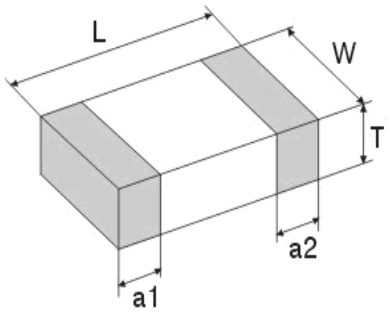
④ Inductance Value (47N:0.047μH;R47:0.47μH;4R7:4.7μH;470:47μH;471:470μH)

⑤ Inductance Tolerance (J:±5%;K:±10%; M:±20%; N:±30%)

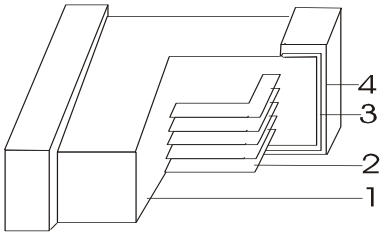
⑥ Packaging Style (B:; Bulk; T: Tape & Reel)

⑦ Lead Free

3 Appearance, Dimensions and Material



Type	Dimensions (mm) [inch]			
	L	W	T	a1, a2
1005	1.00±0.15 [0.04±0.006]	0.50±0.15 [0.02±0.006]	0.50±0.15 [0.02±0.006]	0.25±0.10 [0.01±0.004]
1608	1.60±0.15 [0.063±0.006]	0.80±0.15 [0.031±0.006]	0.80±0.15 [0.031±0.006]	0.30±0.20 [0.012±0.008]
2012	2.00±0.20 [0.079±0.008]	1.25±0.20 [0.049±0.008]	0.85±0.20 [0.033±0.008] 1.25±0.20 [0.049±0.008]	0.50±0.30 [0.02±0.012]
3216	3.20±0.20 [0.126±0.008]	1.60±0.20 [0.063±0.008]	1.10±0.30 [0.043±0.012]	0.50±0.30 [0.02±0.012]



	Composition	Material	Supplier
1	Base Material	Ferrite (Ni-Cu-Zn series)	Japan
2	Internal Conductor	Ag	Japan
3	Terminal Electrode	Ag	Japan
4	Terminal Electrode	Ni-Sn	USA

4 Testing Conditions

Temperature : Ordinary Temperature (5 to 35℃)
Humidity : Ordinary Humidity (25 to 85% RH)

<In case of doubt>
Temperature : 20±2℃
Humidity : 60 to 75% RH
Atmospheric Pressure : 86 to 106 kPa

5 Rating

Operating Temperature Range : -55 to +125℃

Storage Temperature Range : -55 to +125℃

HDFI1005

Part No.	Inductance (μH)	Q min	Test Freq. (MHz)	SRF (MHz) min	RDC (Ω) max	IR (mA) max
HDFI1005A47N□○	0.047±5% or ±10%	10	50	220	0.45	25
HDFI1005A56N□○	0.056±5% or ±10%	10	50	220	0.45	25
HDFI1005A68N□○	0.068±5% or ±10%	10	50	210	0.45	25
HDFI1005A82N□○	0.082±5% or ±10%	10	50	200	0.45	25
HDFI1005AR10□○	0.10±5% or ±10%	15	25	200	0.70	25
HDFI1005AR12□○	0.12±5% or ±10%	15	25	165	0.70	25
HDFI1005AR15□○	0.15±5% or ±10%	15	25	140	0.90	25
HDFI1005AR18□○	0.18±5% or ±10%	15	25	120	1.10	25
HDFI1005AR22□○	0.22±5% or ±10%	15	25	110	1.20	25
HDFI1005AR27□○	0.27±5% or ±10%	15	25	95	1.20	25
HDFI1005AR33□○	0.33±5% or ±10%	15	25	85	1.25	18
HDFI1005AR39□○	0.39±5% or ±10%	15	25	70	1.5	18
HDFI1005AR47□○	0.47±5% or ±10%	15	25	68	2.0	18
HDFI1005AR56□○	0.56±5% or ±10%	15	25	55	2.35	18
HDFI100 5AR68□○	0.68±5% or ±10%	15	25	50	2.55	18
HDFI1005AR82□○	0.82±5% or ±10%	15	25	45	3.15	18
HDFI1005C1R0□○	1.0±5% or ±10%	20	10	40	0.9	15
HDFI1005C1R2□○	1.2±5% or ±10%	20	10	35	1.2	15
HDFI1005C1R5□○	1.5±5% or ±10%	20	10	30	1.2	15
HDFI1005C1R8□○	1.8±5% or ±10%	20	10	30	1.45	15
HDFI1005C2R2□○	2.2±5% or ±10%	20	10	28	1.75	10
HDFI1005C2R7□○	2.7±5% or ±10%	20	10	22	2.0	10
HDFI1005C3R3□○	3.3±5% or ±10%	20	10	20	2.35	10
HDFI1005C3R9□○	3.9±5% or ±10%	20	10	18	2.55	10
HDFI1005C4R7□○	4.7±5% or ±10%	20	10	15	3.15	10
HDFI1005D5R6□○	5.6±5% or ±10%	20	4	13	2.35	3
HDFI1005D6R8□○	6.8±5% or ±10%	20	4	11	2.55	3
HDFI1005D8R2□○	8.2±5% or ±10%	20	4	10	3.15	3
HDFI1005D100□○	10.0±5% or ±10%	20	2	9	3.45	2

HDFI1608

Part No.	Inductance (μH)	Q min	Test Freq. (MHz)	SRF (MHz) min	RDC (Ω) max	IR (mA) max
HDFI1608A47N□○	0.047±5% or ±10%	15	50	600	0.20	50
HDFI1608A56N□○	0.056±5% or ±10%	15	50	550	0.30	50
HDFI1608A68N□○	0.068±5% or ±10%	15	50	500	0.30	50
HDFI1608A82N□○	0.082±5% or ±10%	15	50	450	0.30	50
HDFI1608AR10□○	0.10±5% or ±10%	15	25	400	0.50	50
HDFI1608AR12□○	0.12±5% or ±10%	15	25	350	0.50	50
HDFI1608AR15□○	0.15±5% or ±10%	15	25	300	0.60	50
HDFI1608AR18□○	0.18±5% or ±10%	15	25	280	0.60	50
HDFI1608AR22□○	0.22±5% or ±10%	15	25	260	0.80	50
HDFI1608AR27□○	0.27±5% or ±10%	15	25	255	0.80	50
HDFI1608AR33□○	0.33±5% or ±10%	15	25	250	0.85	35
HDFI1608AR39□○	0.39±5% or ±10%	15	25	245	1.00	35
HDFI1608AR47□○	0.47±5% or ±10%	15	25	240	1.35	35
HDFI1608AR56□○	0.56±5% or ±10%	15	25	205	1.55	35
HDFI1608AR68□○	0.68±5% or ±10%	15	25	180	1.70	35
HDFI1608AR82□○	0.82±5% or ±10%	15	25	165	2.10	35
HDFI1608C1R0□○	1.0±5% or ±10%	35	10	125	0.60	25
HDFI1608C1R2□○	1.2±5% or ±10%	35	10	110	0.80	25
HDFI1608C1R5□○	1.5±5% or ±10%	35	10	105	0.80	25
HDFI1608C1R8□○	1.8±5% or ±10%	35	10	95	0.95	25
HDFI1608C2R2□○	2.2±5% or ±10%	35	10	90	1.15	15
HDFI1608C2R7□○	2.7±5% or ±10%	35	10	80	1.35	15
HDFI1608C3R3□○	3.3±5% or ±10%	35	10	70	1.55	15
HDFI1608C3R9□○	3.9±5% or ±10%	35	10	60	1.70	15
HDFI1608C4R7□○	4.7±5% or ±10%	35	10	50	2.10	15
HDFI1 608D5R6□○	5.6±5% or ±10%	35	4	45	1.55	5
HDFI1608D6R8□○	6.8±5% or ±10%	35	4	40	1.70	5
HDFI1608D8R2□○	8.2±5% or ±10%	35	4	35	2.10	4
HDFI1608D100□○	10.0±5% or ±10%	35	2	33	2.55	3
HDFI1608D120□○	12.0±5% or ±10%	35	2	22	2.75	3
HDFI1608E150□○	15.0±5% or ±10%	20	1	20	1.70	1
HDFI1608E180□○	18.0±5% or ±10%	20	1	18	1.85	1
HDFI1608E220□○	22.0±5% or ±10%	20	1	15	2.10	1
HDFI1608E270□○	27.0±5% or ±10%	20	1	12	2.75	1
HDFI1608E330□○	33.0±5% or ±10%	20	1	10	2.95	1

HDFI2012

Part No.	Inductance (μH)	Q min	Test Freq. (MHz)	SRF (MHz) min	RDC (Ω) max	IR (mA) max
HDFI2012A47N□○	0.047±5% or ±10%	15	50	350	0.20	300
HDFI2012A56N□○	0.056±5% or ±10%	15	50	350	0.20	300
HDFI2012A68N□○	0.068±5% or ±10%	15	50	280	0.20	300
HDFI2012A82N□○	0.082±5% or ±10%	15	50	255	0.20	300
HDFI2012AR10□○	0.10±5% or ±10%	20	25	235	0.30	250
HDFI2012AR12□○	0.12±5% or ±10%	20	25	220	0.30	250
HDFI2012AR15□○	0.15±5% or ±10%	20	25	200	0.40	250
HDFI2012AR18□○	0.18±5% or ±10%	20	25	185	0.40	250
HDFI2012AR22□○	0.22±5% or ±10%	20	25	170	0.50	250
HDFI2012AR27□○	0.27±5% or ±10%	20	25	150	0.50	250
HDFI2012AR33□○	0.33±5% or ±10%	20	25	145	0.55	250
HDFI2012AR39□○	0.39±5% or ±10%	25	25	135	0.65	200
HDFI2012AR47□○	0.47±5% or ±10%	25	25	125	0.65	200
HDFI2012AR56□○	0.56±5% or ±10%	25	25	115	0.75	150
HDFI2012AR68□○	0.68±5% or ±10%	25	25	105	0.80	150
HDFI2012AR82□○	0.82±5% or ±10%	25	25	100	1.00	150
HDFI2012C1R0□○	1.0±5% or ±10%	45	10	75	0.40	50
HDFI2012C1R2□○	1.2±5% or ±10%	45	10	65	0.50	50
HDFI2012C1R5□○	1.5±5% or ±10%	45	10	60	0.50	50
HD FI2012C1R8□○	1.8±5% or ±10%	45	10	55	0.60	50
HDFI2012C2R2□○	2.2±5% or ±10%	45	10	50	0.65	30
HDFI2012C2R7□○	2.7±5% or ±10%	45	10	45	0.75	30
HDFI2012C3R3□○	3.3±5% or ±10%	45	10	41	0.80	30
HDFI2012C3R9□○	3.9±5% or ±10%	50	10	38	0.90	30
HDFI2012C4R7□○	4.7±5% or ±10%	50	10	35	1.00	30
HDFI2012D5R6□○	5.6±5% or ±10%	50	4	32	0.90	15
HDFI2012D6R8□○	6.8±5% or ±10%	50	4	29	1.00	15
HDFI2012D8R2□○	8.2±5% or ±10%	50	4	26	1.10	15
HDFI2012D100□○	10.0±5% or ±10%	50	2	24	1.15	15
HDFI2012D120□○	12.0±5% or ±10%	50	2	22	1.25	15
HDFI2012E150□○	15.0±5% or ±10%	30	1	19	0.80	5
HDFI2012E180□○	18.0±5% or ±10%	30	1	18	0.90	5
HDFI2012E220□○	22.0±5% or ±10%	30	1	16	1.10	5
HDFI2012E270□○	27.0±5% or ±10%	25	1	14	1.15	5
HDFI2012E330□○	33.0±5% or ±10%	25	1	13	1.25	5
HDFI2012E3 90□○	39.0±5% or ±10%	25	1	13	1.50	4
HDFI2012E470□○	47.0±5% or ±10%	25	1	12	1.80	4
HDFI2012E560□○	56.0±5% or ±10%	25	1	11	2.20	4
HDFI2012E680□○	68.0±5% or ±10%	25	1	10	2.20	2
HDSFI2012E820□○	82.0±5% or ±10%	25	1	9	2.50	2
HDFI2012E101□○	100±5% or ±10%	25	1	8	2.50	2

HDFI3216

Part No.	Inductance (μH)	Q min	Test Freq. (MHz)	SRF(MHz) min	RDC (Ω) Max	IR (mA) max
HDFI3216A47N□○	0.047±5% or ±10%	30	50	400	0.15	300
HDFI3216A56N□○	0.056±5% or ±10%	30	50	380	0.15	300
HDFI3216A68N□○	0.068±5% or ±10%	30	50	330	0.25	300
HDFI3216A82N□○	0.082±5% or ±10%	30	50	310	0.25	300
HDFI3216AR10□○	0.10±5% or ±10%	30	25	280	0.25	250
HDFI3216AR12□○	0.12±5% or ±10%	30	25	260	0.25	250
HDFI3216AR15□○	0.15±5% or ±10%	30	25	240	0.25	250
HDFI3216AR18□○	0.18±5% or ±10%	30	25	220	0.30	250
HDFI3216AR22□○	0.22±5% or ±10%	30	25	200	0.35	250
HDFI3216AR27□○	0.27±5% or ±10%	30	25	180	0.40	250
HDFI3216AR33□○	0.33±5% or ±10%	35	25	170	0.40	250
HDFI3216AR39□○	0.39±5% or ±10%	35	25	160	0.45	200
HDFI3216AR47□○	0.47±5% or ±10%	35	25	140	0.50	200
HDFI3216AR56□○	0.56±5% or ±10%	35	25	130	0.55	150
HDFI3216AR68□○	0.68±5% or ±10%	35	25	120	0.65	150
HDFI3216AR82□○	0.82±5% or ±10%	35	25	110	0.75	150
HDFI3216C1R0□○	1.0±5% or ±10%	50	10	90	0.40	100
HDFI3216C1R2□○	1.2±5% or ±10%	50	10	80	0.40	100
HDFI3216C1R5□○	1.5±5% or ±10%	50	10	70	0.45	50
HDFI3216C1R8□○	1.8±5% or ±10%	50	10	66	0.50	50
HDFI3216C2R2□○	2.2±5% or ±10%	50	10	58	0.55	50
HDFI3216C2R7□○	2.7±5% or ±10%	50	10	53	0.55	50
HDFI3216C3R3□○	3.3±5% or ±10%	50	10	49	0.60	50
HDF I3216C3R9□○	3.9±5% or ±10%	50	10	48	0.70	50
HDFI3216C4R7□○	4.7±5% or ±10%	50	10	41	0.70	50
HDFI3216D5R6□○	5.6±5% or ±10%	55	4	38	0.75	25
HDFI3216D6R8□○	6.8±5% or ±10%	55	4	34	0.75	25
HDFI3216D8R2□○	8.2±5% or ±10%	55	4	31	0.80	25
HDFI3216D100□○	10.0±5% or ±10%	55	2	28	0.80	25
HDFI3216D120□○	12.0±5% or ±10%	55	2	26	0.90	15
HDFI3216E150□○	15.0±5% or ±10%	40	1	23	0.80	5
HDFI3216E180□○	18.0±5% or ±10%	40	1	21	0.80	5
HDFI3216E220□○	22.0±5% or ±10%	40	1	19	0.90	5
HDFI3216E270□○	27.0±5% or ±10%	40	1	17	0.90	5
HDFI3216E330□○	33.0±5% or ±10%	40	1	16	1.05	5
HDFI3216E390□○	39.0±5% or ±10%	40	1	12.5	2.00	5
HDFI3216E470□○	47.0±5% or ±10%	40	1	11.5	2.00	5
HDFI3216E560□○	56.0±5% or ±10%	40	1	10.5	2.50	4
HDFI3216E680□○	68.0±5% or ±10%	40	1	10.5	2.50	4
HDFI321 6E820□○	82.0±5% or ±10%	40	1	10.0	3.00	4
HDFI3216E101□○	100±5% or ±10%	30	1	9.0	3.00	4
HDFI3216E121□○	120±5% or ±10%	30	1	7.0	3.50	2
HDFI3216E151□○	150±5% or ±10%	30	1	6.5	3.80	2
HDFI3216E181□○	180±5% or ±10%	30	1	6.0	4.00	2
HDFI3216E221□○	220±5% or ±10%	30	1	5.5	4.00	2

□:Please specify the inductance tolerance(±20%)or k(±10%).M:for general purpose

○:Means packaging style

6 Electrical Performance

6.1 Inductance; Q factor shall meet item 5 when measured on the condition of Table 1.

Table 1

Measuring Equipment	Impedance analyzer HP4291 or equivalent
Measuring Frequency	(see item 5)
Measuring signal level	50mV

6.2 DC Resistance

D.C Resistance shall meet item 5 when measured on the condition of Table 2.

Table 2

Measuring Equipment	LCR Meter HP4263A or equivalent

6.3 Self Resonant Frequency (S.R.F)

S.R.F. shall meet item 5 when measured on the condition of Table 3.

Table 3

Measuring Equipment	Impedance analyzer HP4291 or equivalent

6.4 Rated current

Inductance change shall be within ±5% when the allowable current (which is mentioned in item 5) is applied.

Table 4

Measuring Equipment	Impedance analyzer HP4291 or equivalent DC power HP6632 and Adapter HP16200

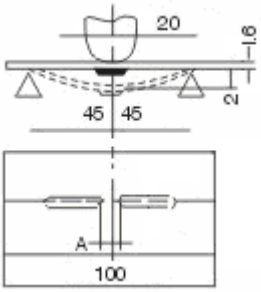
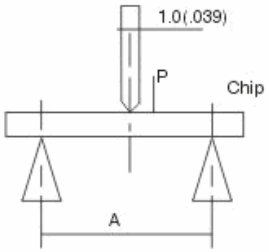
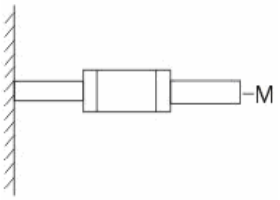
6.5 Variance after Soldering

Inductance change shall be within ±10% and Q factor change shall be within ±30% when the inductor is dipped into solder for 5 seconds which is 235 ℃.

Table 5

Measuring Equipment	Impedance analyzer HP4291 or equivalent Solder furnace

7 Reliable Performance

<table>
<tr><th>NO.</th><th>Item</th><th>Specifications</th><th>Test Methods</th></tr>
<tr><td>1</td><td>Solder-Ability</td><td>More than 90% of termination should be covered with new solder.</td><td>Solder : Sn
Temperature : 255℃+5℃/-0℃
Flux : rosin
Duration : 3.5±0.5s</td></tr>
<tr><td>2</td><td>Leaching Resistance</td><td>More than 75% of termination Should be covered with new solder.</td><td>Solder : Sn
Temperature : 270℃+2℃/-0℃
Flux : rosin
Duration : 10±0.5s</td></tr>
<tr><td>3</td><td>Bending Strength</td><td>No mechanical damage should be noticed</td><td>When the board curve to 2mm(0.079 inches)
<table><tr><th>Size</th><th>A(mm)</th></tr><tr><td>1005</td><td>0.5</td></tr><tr><td>1608</td><td>0.7</td></tr><tr><td>2012</td><td>1.0</td></tr><tr><td>3216</td><td>1.0</td></tr></table> 
</td></tr>
<tr><td>4</td><td>Body Strength</td><td>No mechanical damage should be noticed</td><td>Applied specified pull strength in axial direction
<table><tr><th>Size</th><th>A/mm</th><th>P/N</th></tr><tr><td>1005</td><td>0.7</td><td>4.9</td></tr><tr><td>1608</td><td>1.0</td><td>4.9</td></tr><tr><td>2012</td><td>1.4</td><td>9.8</td></tr><tr><td>3216</td><td>1.4</td><td>9.8</td></tr></table> 
</td></tr>
<tr><td>5</td><td>Terminal Strength</td><td>The terminal and body should be no damage</td><td>Applied specified pull strength in axial
<table><tr><th>Size</th><th>Pull Strength</th><th>Time (s)</th></tr><tr><td>1005</td><td>3 N</td><td>5±1</td></tr><tr><td>1608</td><td>5 N</td><td>5±1</td></tr><tr><td>2012</td><td>10 N</td><td>5±1</td></tr><tr><td>3216</td><td>10 N</td><td>5±1</td></tr></table> 
</td></tr>
</table>

NO.	Item	Specifications	Test Methods
6	Drop	1.No mechanical damage shall be noticed 2. Inductance shall be within : 0.001μH ~ 10μH: ±10% 10μH ~ 220μH: ±20% 3. Q factor shall be within Q : ±30%	Drop 10 times on a concrete floor from a height of 1m.
7	Vibration		Frequency ：10 to 55Hz Amplitude ：1.52mm Direction and time ： X, Y and Z directions for 2 hours each.
8	Humidity resistance		a. Test condition Temp. ：60±2℃ Humidity：90%~95% Test time ：1000 h b. Measurement method ： The component should be stabilized at normal condition for 24 hours before test.
9	High temperature resistance		a. Test condition Applied rated current Temp. ：125±2℃ Test time ：1000 h b. Measurement method ： The component should be stabilized at normal condition for 24 hours before test.
10	Low temperature resistance		a. Test condition Temp. ：-55±2℃ Test time ：1000 h b. Measurement method ： The component should be stabilized at normal condition for 24 hours before test.
11	Thermal shock		a. Test condition 1) Temp. ：-55℃, time ：30±3min 2) Temp. ：+125℃, time ：30±3min 100 cycles b. Measurement method ： The component should be stabilized at normal condition for 24 hours before test.

8 Recommended Soldering Conditions

Product can be applied to flow and reflow soldering.

(1) Flux, Solder

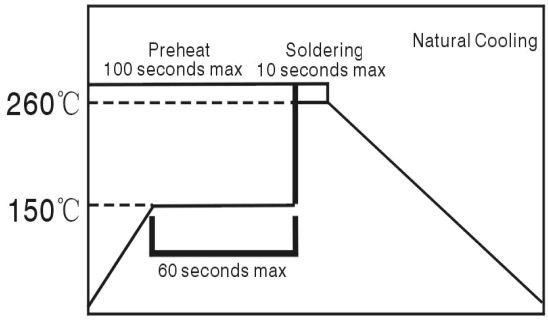
① Use rosin-based flux. Don't use highly acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).

② Use Sn solder.

(2) Flow soldering conditions

① Pre-heating should be in such a way that the temperature difference between solder and product surface is limited to 150℃ max. Cooling into solvent after soldering also should be in such a way that temperature difference is limited to 100℃ max. Unwrought pre-heating may cause cracks on the product, resulting in the deterioration of products quality.

② Standard soldering profile.



Pre-heating	150℃,1 minute min
Peak	260℃,10 seconds max

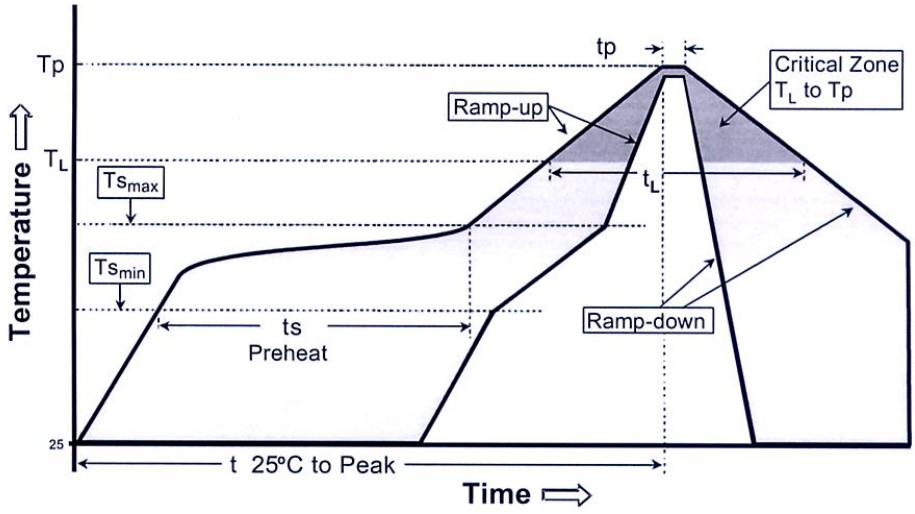
(3) Reflow soldering conditions

Profile Feature	**Lead-Free Assembly**
Average Ramp-Up Rate (Tsmax to Tp)	3℃ C/second max.
Preheat – Temperature Min (Tsmin) – Temperature Max (Tsmax) – Time (tsmin to tsmax) min to tsmax)	150 ℃ 200 ℃ 60-180 seconds

Profile Feature	Lead-Free Assembly
Time maintained above: – Temperature (TL) – Time (tL)	217 ℃ 60-150 seconds
Peak/Classification Temperature (Tp) Peak/Classification Time (Tp)	260 ℃ 3-4 seconds
Time within 5 ℃ of actual Peak Temperature (tp)	20-40 seconds
Ramp-Down Rate	6 ℃/second max.
Time 25 ℃ to Peak Temperature	8 minutes max.

Note 1: All temperatures refer to topside of the package, measured on the package body surface.

Standard soldering profile



(4) Reworking with soldering iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating	150℃, 1 minute
Tip temperature	350℃ max
Soldering iron output	80w max
End of soldering iron	Φ 1mm max
Soldering time	3 seconds max

9 Cleaning Conditions

Products shall be cleaned on the following conditions.

(1) Cleaning temperature shall be limited to 60℃ max.(40℃ max for fluoride and alcohol type cleaner.)

(2) Ultrasonic cleaning shall comply with the following conditions with avoiding the resonance phenomenon at the mounted products and P.C.B.

Power : 20W/t max

Frequency: 40 kHz

Time : 5 minutes max

(3) Cleaner

a) Alternative cleaner

Isopropyl alcohol (IPA) HCFC-225

b) Aqueous agent

Surface Active Agent Type (CLEANTHROUGH 750H)

Hydrocarbon Type (TECHNOCLEANER 335)

Higher Alcohol Type (PINE ALPHA ST-100S)

Alkali Saponification Type (*AQUACLEANER 240)

(4) Thee shall be no residual flux and residual cleaner after cleaning. In the case of using aqueous agent, products shall be dried completely after rinse with de-ionized water in order to remove the cleaner.

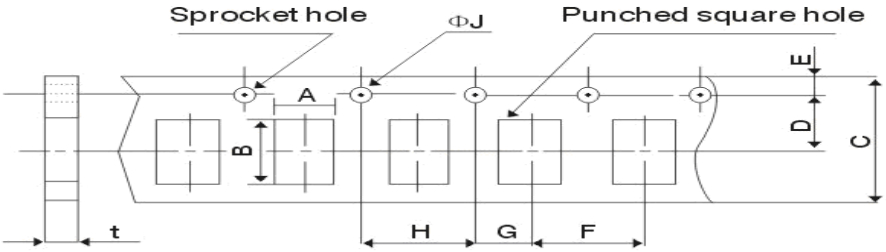
(5) Other cleaning

Please contact us.

10 Packaging

(1) Dimensions of Tape:

Paper / Embossed carrier tape:

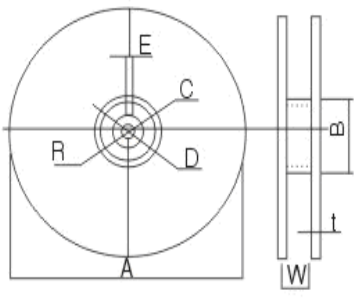


Unit: mm

Type	3216		2012		1608	1005	0603
T*	1.1±0.3		0.85±0.2	1.25±0.2	0.8±0.15	0.5±0.15	0.3±0.05
	Paper carrier tape	Embossed carrier tape	Paper carrier tape	Embossed carrier tape	Paper carrier tape	Paper carrier tape	Paper carrier tape
A	2.0±0.2	2.0±0.2	1.5±0.15	1.5±0.15	1.05±0.15	0.65±0.10	0.4±0.05
B	3.6±0.2	3.6±0.2	2.5±0.2	2.5±0.2	1.9±0.15	1.15±0.10	0.7±0.05
C	8.0±0.3	8.0±0.3	8.0±0.3	8.0±0.3	8.0±0.3	8.0±0.3	8.0±0.3
D	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05
E	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
F	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	2.0±0.05	2.0±0.05
G	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05
H	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1
ΦJ	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0
t(max)	1.1±0.05	2.0±0.05	1.1±0.05	1.0±0.05	1.0±0.05	0.8±0.05	0.55±0.05

T*：Product thickness

(2) Dimensions of Reel



Reel material: PS (Polystyrene)

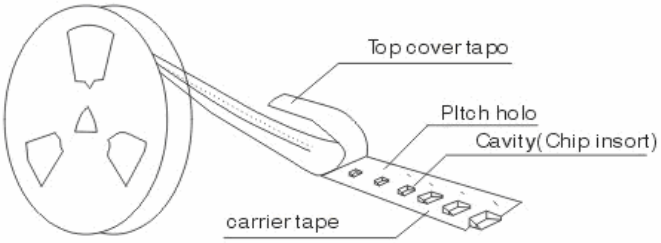
Unit: mm

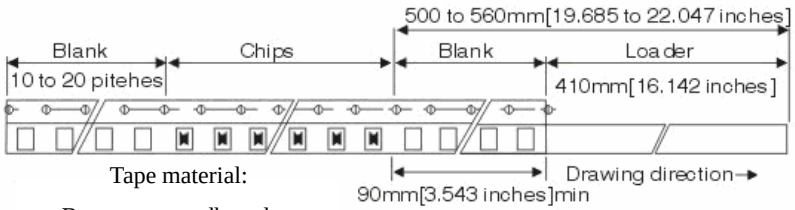
A	178±2
B	60±2
C	13.0±0.5
D	21.0±0.8
E	2.0±0.5
W	10.0±1.15
t	1.2±0.2
R	1.0±0.25

(3) Pulling strength of tapes

Carrier tape	10N or more (1kgf or more)
Cover tape	5N or more (0.5kgf or more)

(4) Taping figure and drawing direction





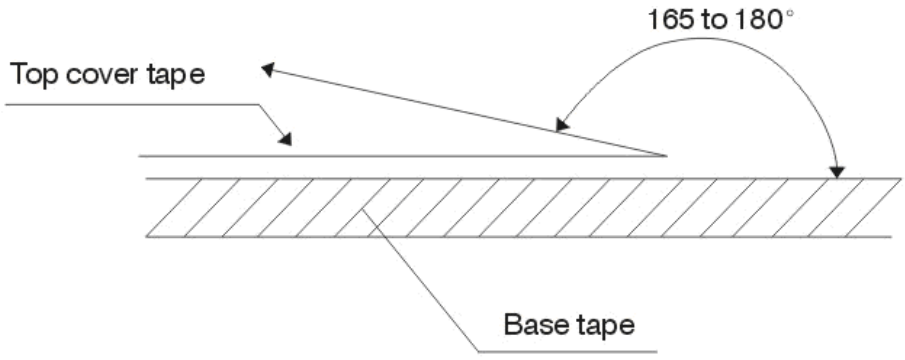
Tape material:

Base tape: cardboard

Cover tape: polyethylene

(5) Peeling strength of cover tape

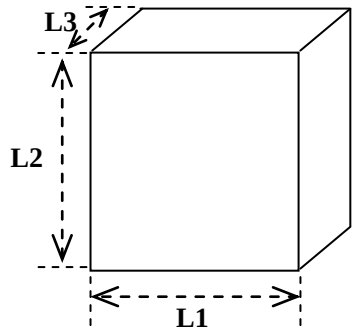
Cover tape	0.3~0.7N (30gf~70gf)



Test condition:

1) peel angle: 160 °~180 °vs. carrier tape.
2) peel speed: 300 mm/min ±10%.

(6) Box and case dimensions



Type	L1	L2	L3
Box	180±2	180±2	75±1
Box	180±2	180±2	120±2
Case	400±2	400±2	200±2

A 6 reels in a box.

B 10 boxes in a case.

(7) Packaging quantities

Type	Thickness(mm)	Bulk	Tape and reel
3216	1.10±0.30	----	3000pcs
2012	1.25±0.20	----	3000pcs
	0.85±0.20	----	4000pcs
1608	0.8±0.15	----	4000pcs
1005	0.5±0.15	----	10000pcs
0603	0.3±0.05	----	15000pcs

11 Storage

(1) Storage period

Products which inspected in HONGDA over 6 months ago should be examined and used, which can be confirmed with inspection No. marked on the container. Solder ability should be checked if this period is exceeded.

(2) Storage conditions

① Products should be storage in the warehouse on the following conditions

Temperature: ≦40℃

Humidity : ≦70% relative humidity

No rapid change on temperature and humidity

② Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solder ability.

③ Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.

④ Products should be storage in the warehouse without heat shock, vibration, and direct sunlight and so on.

⑤ Products should be storage under the airtight packaged condition.

12 Usage of Nonflammable Material

For these materials listed below, we don't use in process.

Cd, Hg, As and its compound, PCB, etc.

PBBS, PBBOs, PBDO, PBDE, PBB.

13 Usage of ODS

For ODS listed below, we don't use in process.

ODS: CCL_4, HCFC, etc. ODS。

14 Flammability Class

UL 94V-1

15 Note

① This product specification guarantees the quality of our product as a single unit. Please make sure that your product is evaluated and confirmed against your specifications when our product is mounted to your product.

② We cannot warrant against failure caused by any use of our product that deviates from the intended use as described in this product specification.

③ Please return our copy of this product specification in two month after issued date with your signature of receipt. If the copy is not returned by the date, this product specification will be deemed to have been received.