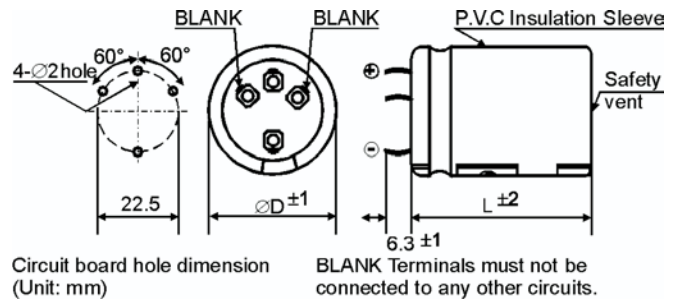
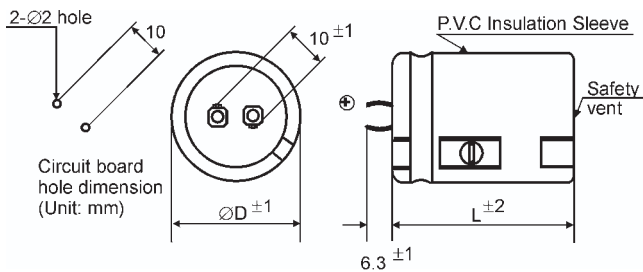


► Spezifikationen / Specifications

| Items | Characteristics |
|---|---|
| Temperaturbereich / Temperature range | -40°C ~ + 105°C |
| Nennspannung / Rated voltage | 16V - 500V |
| Spitzenspannung / Surge voltage | Max. 30 sec alle/per 6 Minuten/Minutes |
| Leckstrom bei 20°C Leakage current at 20°C | 0,01CV[μA] oder 3mA. Es gilt der kleinere Wert. 0.01CV[μA] or 3mA, which is smaller. |
| Kapazitätstoleranz / Capacitance tolerance | +/- 20% |
| Brauchbarkeitsdauer / Useful life | 6000h bei / at 105°C |
| Ausfallrate / Field failure rate | 0,5 FIT = 0,5 x 10 ⁻⁹ Ausfälle/Std. / Failures/hour |
| Ausfallsatz Failure rate | Weniger als 0,1% innerhalb der Brauchbarkeitsdauer Less than 0.1% within the useful life |



► Bauformen / Outline Drawing



Form / Shape: R (Standard)
C (mit kurzen Krallen / with short pin 4 ± 1mm)

Form / Shape: S (D ≥ 35mm)
X (mit kurzen Krallen / with short pin 4 ± 1mm)

► Wechselstrommultiplikator / Ripple current multiplier

| Frequency [Hz] | 50/60 | 120 | 300 | 1k | ≥ 10k | |
|----------------|-------------|-----|-----|-----|-------|-----|
| multiplier | 16V - 100V | 0,8 | 1,0 | 1,1 | 1,2 | 1,2 |
| | 160V - 500V | 0,8 | 1,0 | 1,1 | 1,3 | 1,4 |

| Forced cooling [m/sec] | v < 1,0 | v ≥ 1,0 |
|------------------------|---------|---------|
| multiplier | 1,0 | 1,1 |

► Bestellbezeichnung / Product code

Example: HU3 400V 470μF ±20% Bauform / Shape „R“

| | | | | | | |
|----------------|--------------------|------------------|-----------------------|----------------------|--------------------|------------------|
| HU3 | 2G | 471 | M | R | A | () |
| Type of series | Rated voltage code | Capacitance code | Capacitance tolerance | Terminal symbol code | Case code diameter | Case code length |

Rated voltage code

| Code | Voltage | Code | Voltage | Code | Voltage |
|------|---------|------|---------|------|---------|
| 1C | 16 | 2A | 100 | 2G | 400 |
| 1E | 25 | 2C | 160 | 420V | 420 |
| 1V | 35 | 2P | 180 | 2W | 450 |
| 1H | 50 | 2D | 200 | 2H | 500 |
| 1J | 63 | 2E | 250 | | |
| 1K | 80 | 2V | 350 | | |

Capacitance code

The first two digits are significant. The last digit indicates the number of following zeros in μF.

Capacitance tolerance

M : ± 20%
Q : -10% ~ +30%

Terminal symbol code

R: 2-pin terminal
S: 4-pin terminal
C: 2-pin short terminal
X: 4-pin short terminal

Case code diameter

| Code | ∅D |
|------|----|
| W | 20 |
| X | 22 |
| Y | 25 |
| Z | 30 |
| A | 35 |
| B | 40 |

Case code length

| Code | L | Code | L |
|------|----|------|-----|
| S1 | 20 | S10 | 65 |
| S2 | 25 | S11 | 70 |
| S3 | 30 | S12 | 75 |
| S4 | 35 | S13 | 80 |
| S5 | 40 | S14 | 85 |
| S6 | 45 | S15 | 90 |
| S7 | 50 | S16 | 95 |
| S8 | 55 | S17 | 100 |
| S9 | 60 | | |

| Nennspannung Rated Voltage Code (Spitzenspannung) (Surge Voltage) [V DC] | Kapazität Capacitance [µF] | Max. Verlustfaktor Dissipation factor | Max. Wechselstrom Ripple Current bei / at 105°C/120Hz [A RMS] | ESR (typ) bei / at 20°C/100Hz [mΩ] | ESL (typ) [nH] | DxL [mm] | Bestellbezeichnung Product code |
|---|----------------------------------|--|--|---|-------------------|---------------|------------------------------------|
| | | | | | | | |
| 16 1C (20) | 4 700 | 0,50 | 1,63 | 95 | 10 | 22x25 | HU31C472MRX |
| | 6 800 | 0,50 | 2,22 | 65 | 13 | 22x35 | HU31C682MRX |
| | 6 800 | 0,50 | 2,12 | 65 | 13 | 25x30 | HU31C682MRY |
| | 10 000 | 0,50 | 2,98 | 45 | 13 | 22x45 | HU31C103MRX |
| | 10 000 | 0,50 | 2,80 | 45 | 13 | 25x35 | HU31C103MRY |
| | 10 000 | 0,50 | 2,66 | 45 | 13 | 30x25 | HU31C103MRZ |
| | 15 000 | 0,50 | 3,68 | 30 | 15 | 25x45 | HU31C153MRY |
| | 15 000 | 0,50 | 3,62 | 30 | 15 | 30x35 | HU31C153MRZ |
| | 15 000 | 0,50 | 3,62 | 30 | 15 | 35x30 | HU31C153MRA |
| | 22 000 | 0,50 | 4,82 | 20 | 15 | 30x45 | HU31C223MRZ |
| | 22 000 | 0,50 | 4,63 | 20 | 15 | 35x35 | HU31C223MRA |
| | 33 000 | 0,50 | 6,38 | 15 | 20 | 35x50 | HU31C333MRA |
| 25 1E (32) | 3 300 | 0,40 | 1,53 | 130 | 10 | 22x25 | HU31E332MRX |
| | 4 700 | 0,40 | 1,94 | 90 | 13 | 22x30 | HU31E472MRX |
| | 4 700 | 0,40 | 1,85 | 90 | 13 | 25x25 | HU31E472MRY |
| | 6 800 | 0,40 | 2,49 | 65 | 13 | 22x35 | HU31E682MRX |
| | 6 800 | 0,40 | 2,45 | 65 | 13 | 25x30 | HU31E682MRY |
| | 6 800 | 0,40 | 2,45 | 65 | 13 | 30x25 | HU31E682MRZ |
| | 10 000 | 0,40 | 3,33 | 45 | 15 | 22x45 | HU31E103MRX |
| | 10 000 | 0,40 | 3,15 | 45 | 15 | 25x35 | HU31E103MRY |
| | 10 000 | 0,40 | 3,15 | 45 | 15 | 30x30 | HU31E103MRZ |
| | 10 000 | 0,40 | 3,15 | 45 | 15 | 35x25 | HU31E103MRA |
| | 15 000 | 0,40 | 4,12 | 30 | 15 | 25x45 | HU31E153MRY |
| | 15 000 | 0,40 | 4,05 | 30 | 15 | 30x35 | HU31E153MRZ |
| | 15 000 | 0,40 | 4,05 | 30 | 15 | 35x30 | HU31E153MRA |
| | 22 000 | 0,40 | 5,38 | 20 | 20 | 30x45 | HU31E223MRZ |
| | 22 000 | 0,40 | 5,38 | 20 | 20 | 35x40 | HU31E223MRA |
| 33 000 | 0,40 | 7,13 | 15 | 25 | 35x50 | HU31E333MRA | |
| 35 1V (44) | 2 200 | 0,35 | 1,33 | 160 | 13 | 22x25 | HU31V222MRX |
| | 3 300 | 0,35 | 1,74 | 105 | 15 | 22x30 | HU31V332MRX |
| | 3 300 | 0,35 | 1,66 | 105 | 15 | 25x25 | HU31V332MRY |
| | 4 700 | 0,35 | 2,21 | 75 | 15 | 22x35 | HU31V472MRX |
| | 4 700 | 0,35 | 2,18 | 75 | 15 | 25x30 | HU31V472MRY |
| | 4 700 | 0,35 | 2,18 | 75 | 15 | 30x25 | HU31V472MRZ |
| | 5 600 | 0,35 | 2,30 | 65 | 15 | 25x30 | HU31V562MRYS3 |
| | 6 800 | 0,35 | 3,05 | 55 | 20 | 22x50 | HU31V682MRX |
| | 6 800 | 0,35 | 2,76 | 55 | 20 | 25x40 | HU31V682MRY |
| | 6 800 | 0,35 | 2,76 | 55 | 20 | 30x30 | HU31V682MRZ |
| | 6 800 | 0,35 | 2,76 | 55 | 20 | 35x25 | HU31V682MRA |
| | 8 200 | 0,35 | 3,03 | 45 | 20 | 35x25 | HU31V822MRAS2 |
| | 10 000 | 0,35 | 3,76 | 35 | 25 | 25x50 | HU31V103MRY |
| | 10 000 | 0,35 | 3,53 | 35 | 25 | 30x35 | HU31V103MRZ |
| | 10 000 | 0,35 | 3,53 | 35 | 25 | 35x30 | HU31V103MRA |
| | 15 000 | 0,35 | 4,93 | 25 | 30 | 30x50 | HU31V153MRZ |
| | 15 000 | 0,35 | 4,76 | 25 | 30 | 35x40 | HU31V153MRA |
| 22 000 | 0,35 | 6,25 | 20 | 35 | 35x50 | HU31V223MRAS7 | |
| 50 1H (63) | 1 500 | 0,30 | 1,19 | 215 | 13 | 22x25 | HU31H152MRX |
| | 2 200 | 0,30 | 1,53 | 145 | 15 | 22x30 | HU31H222MRX |
| | 2 200 | 0,30 | 1,46 | 145 | 15 | 25x25 | HU31H222MRY |
| | 3 300 | 0,30 | 2,00 | 100 | 15 | 22x35 | HU31H332MRX |
| | 3 300 | 0,30 | 1,96 | 100 | 15 | 25x30 | HU31H332MRY |
| | 3 300 | 0,30 | 1,97 | 100 | 15 | 30x25 | HU31H332MRZ |
| | 4 700 | 0,30 | 2,64 | 70 | 20 | 22x45 | HU31H472MRX |
| | 4 700 | 0,30 | 2,46 | 70 | 20 | 25x35 | HU31H472MRY |

| Nennspannung Rated Voltage Code (Spitzenspannung) (Surge Voltage) [V DC] | Kapazität Capacitance [µF] | Max. Verlustfaktor Dissipation factor | Max. Wechselstrom Ripple Current bei / at 105°C/120Hz [A RMS] | ESR (typ) bei / at 20°C/100Hz [mΩ] | ESL (typ) [nH] | DxL [mm] | Bestellbezeichnung Product code |
|---|----------------------------------|--|--|---|-------------------|-------------|------------------------------------|
| | | | | | | | |
| 50 1H (63) | 4 700 | 0,30 | 2,49 | 70 | 20 | 30x30 | HU31H472MRZ |
| | 4 700 | 0,30 | 2,49 | 70 | 20 | 35x25 | HU31H472MRA |
| | 6 800 | 0,30 | 3,34 | 50 | 25 | 25x50 | HU31H682MRZ |
| | 6 800 | 0,30 | 3,15 | 50 | 25 | 30x35 | HU31H682MRZ |
| | 6 800 | 0,30 | 3,15 | 50 | 25 | 35x30 | HU31H682MRA |
| | 10 000 | 0,35 | 4,20 | 35 | 30 | 30x45 | HU31H103MRZ |
| | 10 000 | 0,35 | 4,20 | 35 | 30 | 35x40 | HU31H103MRA |
| | 15 000 | 0,35 | 5,58 | 25 | 33 | 35x50 | HU31H153MRA |
| 63 1J (79) | 1 000 | 0,25 | 1,07 | 265 | 15 | 22x25 | HU31J102MRX |
| | 1 500 | 0,25 | 1,39 | 180 | 15 | 22x30 | HU31J152MRX |
| | 1 500 | 0,25 | 1,32 | 180 | 15 | 25x25 | HU31J152MRZ |
| | 2 200 | 0,25 | 1,79 | 120 | 20 | 22x35 | HU31J222MRX |
| | 2 200 | 0,25 | 1,74 | 120 | 20 | 25x30 | HU31J222MRZ |
| | 2 200 | 0,25 | 1,76 | 120 | 20 | 30x25 | HU31J222MRZ |
| | 3 300 | 0,25 | 2,42 | 80 | 25 | 22x45 | HU31J332MRX |
| | 3 300 | 0,25 | 2,42 | 80 | 25 | 25x40 | HU31J332MRZ |
| | 3 300 | 0,25 | 2,28 | 80 | 25 | 30x30 | HU31J332MRZ |
| | 3 300 | 0,25 | 2,28 | 80 | 25 | 35x25 | HU31J332MRA |
| | 4 700 | 0,25 | 3,05 | 60 | 30 | 25x50 | HU31J472MRZ |
| | 4 700 | 0,25 | 2,86 | 60 | 30 | 30x35 | HU31J472MRZ |
| | 4 700 | 0,25 | 2,86 | 60 | 30 | 35x30 | HU31J472MRA |
| | 5 600 | 0,25 | 3,28 | 50 | 33 | 35x35 | HU31J562MRAS4 |
| | 6 800 | 0,25 | 3,78 | 40 | 33 | 30x45 | HU31J682MRZ |
| 6 800 | 0,25 | 3,78 | 40 | 33 | 35x40 | HU31J682MRA | |
| | 10 000 | 0,35 | 4,98 | 30 | 35 | 35x50 | HU31J103MRA |
| 80 1K (100) | 1 000 | 0,20 | 1,26 | 230 | 15 | 22x30 | HU31K102MRX |
| | 1 000 | 0,20 | 1,21 | 230 | 15 | 25x25 | HU31K102MRZ |
| | 1 500 | 0,20 | 1,65 | 155 | 20 | 22x35 | HU31K152MRX |
| | 1 500 | 0,20 | 1,63 | 155 | 20 | 25x30 | HU31K152MRZ |
| | 1 500 | 0,20 | 1,63 | 155 | 20 | 30x25 | HU31K152MRZ |
| | 2 200 | 0,20 | 2,29 | 105 | 25 | 22x50 | HU31K222MRX |
| | 2 200 | 0,20 | 2,11 | 105 | 25 | 25x40 | HU31K222MRZ |
| | 2 200 | 0,20 | 2,08 | 105 | 25 | 30x30 | HU31K222MRZ |
| | 2 200 | 0,20 | 2,08 | 105 | 25 | 35x25 | HU31K222MRA |
| | 3 300 | 0,20 | 2,85 | 70 | 30 | 25x50 | HU31K332MRZ |
| | 3 300 | 0,20 | 2,74 | 70 | 30 | 30x40 | HU31K332MRZ |
| | 3 300 | 0,20 | 2,68 | 70 | 30 | 35x30 | HU31K332MRA |
| | 4 700 | 0,25 | 3,65 | 50 | 33 | 30x50 | HU31K472MRZ |
| | 4 700 | 0,25 | 3,53 | 50 | 33 | 35x40 | HU31K472MRA |
| | 6 800 | 0,25 | 4,60 | 35 | 35 | 35x50 | HU31K682MRA |
| 100 2A (125) | 560 | 0,20 | 0,89 | 325 | 20 | 22x25 | HU32A561MRXS2 |
| | 1 000 | 0,20 | 1,26 | 180 | 20 | 22x30 | HU32A102MRX |
| | 1 000 | 0,20 | 1,21 | 180 | 20 | 25x25 | HU32A102MRZ |
| | 1 500 | 0,20 | 1,73 | 130 | 25 | 22x40 | HU32A152MRX |
| | 1 500 | 0,20 | 1,73 | 130 | 25 | 25x35 | HU32A152MRZ |
| | 1 500 | 0,20 | 1,63 | 130 | 25 | 30x25 | HU32A152MRZ |
| | 2 200 | 0,20 | 2,23 | 90 | 30 | 25x45 | HU32A222MRZ |
| | 2 200 | 0,20 | 2,19 | 90 | 30 | 30x35 | HU32A222MRZ |
| | 3 300 | 0,20 | 2,95 | 60 | 33 | 30x45 | HU32A332MRZ |
| | 3 300 | 0,20 | 2,83 | 60 | 33 | 35x35 | HU32A332MRA |
| | 4 700 | 0,25 | 3,70 | 45 | 35 | 35x45 | HU32A472MRA |

| Nennspannung Rated Voltage Code (Spitzenspannung) (Surge Voltage) [V DC] | Kapazität Capacitance [µF] | Max. Verlustfaktor Dissipation factor | Max. Wechselstrom Ripple Current bei / at 105°C/120Hz [A RMS] | ESR (typ) bei / at 20°C/100Hz [mΩ] | ESL (typ) [nH] | DxL [mm] | Bestellbezeichnung Product code |
|---|----------------------------------|--|--|---|-------------------|-------------|------------------------------------|
| | | | | | | | |
| 160 2C (200) | 330 | 0,15 | 1,08 | 430 | 6 | 22x25 | HU32C331MRX |
| | 390 | 0,15 | 1,21 | 365 | 6 | 22x30 | HU32C391MRX |
| | 390 | 0,15 | 1,20 | 365 | 6 | 25x25 | HU32C391MRY |
| | 470 | 0,15 | 1,33 | 305 | 6 | 22x30 | HU32C471MRX |
| | 470 | 0,15 | 1,31 | 305 | 6 | 25x25 | HU32C471MRY |
| | 560 | 0,15 | 1,54 | 255 | 7 | 22x35 | HU32C561MRX |
| | 560 | 0,15 | 1,54 | 255 | 7 | 25x30 | HU32C561MRY |
| | 560 | 0,15 | 1,54 | 255 | 7 | 30x25 | HU32C561MRZ |
| | 680 | 0,15 | 1,78 | 210 | 7 | 22x40 | HU32C681MRX |
| | 680 | 0,15 | 1,77 | 210 | 7 | 25x35 | HU32C681MRY |
| | 680 | 0,15 | 1,69 | 210 | 7 | 30x25 | HU32C681MRZ |
| | 820 | 0,15 | 2,05 | 175 | 8 | 22x45 | HU32C821MRX |
| | 820 | 0,15 | 2,05 | 175 | 8 | 25x40 | HU32C821MRY |
| | 820 | 0,15 | 1,97 | 175 | 8 | 30x30 | HU32C821MRZ |
| | 820 | 0,15 | 1,97 | 175 | 8 | 35x25 | HU32C821MRA |
| | 1 000 | 0,15 | 2,37 | 145 | 8 | 25x45 | HU32C102MRY |
| | 1 000 | 0,15 | 2,30 | 145 | 8 | 30x35 | HU32C102MRZ |
| | 1 000 | 0,15 | 2,18 | 145 | 8 | 35x25 | HU32C102MRA |
| | 1 200 | 0,15 | 2,71 | 120 | 9 | 25x50 | HU32C122MRY |
| | 1 200 | 0,15 | 2,52 | 120 | 9 | 30x35 | HU32C122MRZ |
| | 1 200 | 0,15 | 2,52 | 120 | 9 | 35x30 | HU32C122MRA |
| | 1 500 | 0,15 | 3,08 | 95 | 10 | 30x45 | HU32C152MRZ |
| | 1 500 | 0,15 | 2,99 | 95 | 10 | 35x35 | HU32C152MRA |
| 1 800 | 0,15 | 3,40 | 80 | 11 | 35x40 | HU32C182MRA | |
| 1 800 | 0,15 | 3,44 | 80 | 11 | 40x35 | HU32C182MSB | |
| 270 | 0,15 | 0,95 | 460 | 6 | 22x25 | HU32P271MRX | |
| 180 2P (225) | 330 | 0,15 | 1,11 | 375 | 7 | 22x30 | HU32P331MRX |
| | 330 | 0,15 | 1,10 | 375 | 7 | 25x25 | HU32P331MRY |
| | 390 | 0,15 | 1,21 | 320 | 7 | 22x30 | HU32P391MRX |
| | 390 | 0,15 | 1,20 | 320 | 7 | 25x25 | HU32P391MRY |
| | 470 | 0,15 | 1,41 | 265 | 9 | 22x35 | HU32P471MRX |
| | 470 | 0,15 | 1,41 | 265 | 9 | 25x30 | HU32P471MRY |
| | 470 | 0,15 | 1,41 | 265 | 9 | 30x25 | HU32P471MRZ |
| | 560 | 0,15 | 1,62 | 225 | 9 | 22x40 | HU32P561MRX |
| | 560 | 0,15 | 1,54 | 225 | 9 | 25x30 | HU32P561MRY |
| | 560 | 0,15 | 1,54 | 225 | 9 | 30x25 | HU32P561MRZ |
| | 680 | 0,15 | 1,87 | 185 | 11 | 22x45 | HU32P681MRX |
| | 680 | 0,15 | 1,79 | 185 | 11 | 25x35 | HU32P681MRY |
| | 680 | 0,15 | 1,79 | 185 | 11 | 30x30 | HU32P681MRZ |
| | 680 | 0,15 | 1,79 | 185 | 11 | 35x25 | HU32P681MRA |
| | 820 | 0,15 | 2,13 | 155 | 11 | 22x50 | HU32P821MRX |
| | 820 | 0,15 | 2,06 | 155 | 11 | 25x40 | HU32P821MRY |
| | 820 | 0,15 | 1,97 | 155 | 11 | 30x30 | HU32P821MRZ |
| | 820 | 0,15 | 1,97 | 155 | 11 | 35x25 | HU32P821MRA |
| | 1 000 | 0,15 | 2,37 | 125 | 13 | 25x45 | HU32P102MRY |
| | 1 000 | 0,15 | 2,30 | 125 | 13 | 30x35 | HU32P102MRZ |
| | 1 000 | 0,15 | 2,30 | 125 | 13 | 35x30 | HU32P102MRA |
| | 1 200 | 0,15 | 2,63 | 105 | 14 | 30x40 | HU32P122MRZ |
| | 1 200 | 0,15 | 2,52 | 105 | 14 | 35x30 | HU32P122MRA |
| 1 500 | 0,15 | 3,20 | 85 | 14 | 30x50 | HU32P152MRZ | |
| 1 500 | 0,15 | 2,99 | 85 | 14 | 35x35 | HU32P152MRA | |
| 1 800 | 0,15 | 3,40 | 70 | 15 | 35x40 | HU32P182MRA | |
| 1 800 | 0,15 | 3,44 | 70 | 15 | 40x35 | HU32P182MSB | |

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|---|----------------------------------|--|--|---|-------------------|---------------|------------------------------------|
| | | | | | | | |
| 200 2D (250) | 220 | 0,15 | 1,01 | 485 | 5 | 22x25 | HU32D221MRX |
| | 270 | 0,15 | 1,13 | 395 | 6 | 22x25 | HU32D271MRX |
| | 330 | 0,15 | 1,33 | 325 | 7 | 22x30 | HU32D331MRX |
| | 330 | 0,15 | 1,32 | 325 | 7 | 25x25 | HU32D331MRY |
| | 390 | 0,15 | 1,53 | 275 | 7 | 22x35 | HU32D391MRX |
| | 390 | 0,15 | 1,44 | 275 | 7 | 25x25 | HU32D391MRY |
| | 470 | 0,15 | 1,78 | 230 | 9 | 22x40 | HU32D471MRX |
| | 470 | 0,15 | 1,67 | 230 | 9 | 25x30 | HU32D471MRY |
| | 470 | 0,15 | 1,69 | 230 | 9 | 30x25 | HU32D471MRZ |
| | 560 | 0,15 | 2,04 | 190 | 9 | 22x45 | HU32D561MRX |
| | 560 | 0,15 | 1,92 | 190 | 9 | 25x35 | HU32D561MRY |
| | 560 | 0,15 | 1,96 | 190 | 9 | 30x30 | HU32D561MRZ |
| | 680 | 0,15 | 2,24 | 160 | 11 | 22x45 | HU32D681MRX |
| | 680 | 0,15 | 2,24 | 160 | 11 | 25x40 | HU32D681MRY |
| | 680 | 0,15 | 2,16 | 160 | 11 | 30x30 | HU32D681MRZ |
| | 680 | 0,15 | 2,16 | 160 | 11 | 35x25 | HU32D681MRA |
| | 820 | 0,15 | 2,57 | 130 | 11 | 25x45 | HU32D821MRY |
| | 820 | 0,15 | 2,50 | 130 | 11 | 30x35 | HU32D821MRZ |
| | 820 | 0,15 | 2,50 | 130 | 11 | 35x30 | HU32D821MRA |
| | 1 000 | 0,15 | 2,97 | 110 | 13 | 25x50 | HU32D102MRY |
| | 1 000 | 0,15 | 2,89 | 110 | 13 | 30x40 | HU32D102MRZ |
| | 1 000 | 0,15 | 2,76 | 110 | 13 | 35x30 | HU32D102MRA |
| | 1 200 | 0,15 | 3,30 | 90 | 14 | 30x45 | HU32D122MRZ |
| 1 200 | 0,15 | 3,21 | 90 | 14 | 35x35 | HU32D122MRA | |
| 1 500 | 0,15 | 3,72 | 75 | 14 | 35x45 | HU32D152MRA | |
| 1 500 | 0,15 | 3,77 | 75 | 14 | 40x35 | HU32D152MSB | |
| 1 800 | 0,15 | 4,41 | 60 | 15 | 35x50 | HU32D182MRA | |
| 1 800 | 0,15 | 4,28 | 60 | 15 | 40x40 | HU32D182MSB | |
| 2 200 | 0,15 | 4,07 | 50 | 15 | 35x50 | HU32D222MRAS7 | |
| 250 2E (300) | 220 | 0,15 | 1,10 | 445 | 5 | 22x30 | HU32E221MRX |
| | 220 | 0,15 | 1,08 | 445 | 5 | 25x25 | HU32E221MRY |
| | 270 | 0,15 | 1,28 | 360 | 6 | 22x35 | HU32E271MRX |
| | 270 | 0,15 | 1,19 | 360 | 6 | 25x25 | HU32E271MRY |
| | 330 | 0,15 | 1,41 | 295 | 7 | 22x35 | HU32E331MRX |
| | 330 | 0,15 | 1,40 | 295 | 7 | 25x30 | HU32E331MRY |
| | 330 | 0,15 | 1,41 | 295 | 7 | 30x25 | HU32E331MRZ |
| | 390 | 0,15 | 1,63 | 250 | 8 | 22x40 | HU32E391MRX |
| | 390 | 0,15 | 1,61 | 250 | 8 | 25x35 | HU32E391MRY |
| | 390 | 0,15 | 1,53 | 250 | 8 | 30x25 | HU32E391MRZ |
| | 470 | 0,15 | 1,94 | 210 | 8 | 22x50 | HU32E471MRX |
| | 470 | 0,15 | 1,86 | 210 | 8 | 25x40 | HU32E471MRY |
| | 470 | 0,15 | 1,79 | 210 | 8 | 30x30 | HU32E471MRZ |
| | 470 | 0,15 | 1,78 | 210 | 8 | 35x25 | HU32E471MRA |
| | 560 | 0,15 | 2,12 | 175 | 9 | 25x45 | HU32E561MRY |
| | 560 | 0,15 | 2,06 | 175 | 9 | 30x35 | HU32E561MRZ |
| | 560 | 0,15 | 1,96 | 175 | 9 | 35x25 | HU32E561MRA |
| | 680 | 0,15 | 2,44 | 145 | 9 | 25x50 | HU32E681MRY |
| | 680 | 0,15 | 2,27 | 145 | 9 | 30x35 | HU32E681MRZ |
| | 680 | 0,15 | 2,27 | 145 | 9 | 35x30 | HU32E681MRA |
| | 820 | 0,15 | 2,73 | 120 | 10 | 30x45 | HU32E821MRZ |
| | 820 | 0,15 | 2,65 | 120 | 10 | 35x35 | HU32E821MRA |
| | 1 000 | 0,15 | 3,04 | 100 | 11 | 35x40 | HU32E102MRA |
| | 1 000 | 0,15 | 3,08 | 100 | 11 | 40x35 | HU32E102MSB |
| | 1 200 | 0,15 | 3,45 | 85 | 11 | 35x45 | HU32E122MRA |
| | 1 200 | 0,15 | 3,49 | 85 | 11 | 40x40 | HU32E122MSB |
| | 1 500 | 0,15 | 4,03 | 65 | 12 | 35x50 | HU32E152MRA |
| 1 800 | 0,15 | 4,62 | 55 | 13 | 40x50 | HU32E182MSB | |
| 2 200 | 0,15 | 4,91 | 45 | 15 | 40x60 | HU32E222MSBS9 | |

| Nennspannung Rated Voltage Code (Spitzenspannung) (Surge Voltage) [V DC] | Kapazität Capacitance | Max. Verlustfaktor Dissipation factor | Max. Wechselstrom Ripple Current bei / at 105°C/120Hz | ESR (typ) bei / at 20°C/100Hz | ESL (typ) | DxL | Bestellbezeichnung Product code |
|---|--------------------------|--|---|-------------------------------------|-----------|-------------|------------------------------------|
| | [µF] | | [A RMS] | [mΩ] | [nH] | [mm] | |
| 350 2V (400) | 82 | 0,15 | 0,52 | 1510 | 3 | 22x25 | HU32V820MRX |
| | 100 | 0,15 | 0,62 | 1240 | 3 | 22x30 | HU32V101MRX |
| | 100 | 0,15 | 0,60 | 1240 | 3 | 25x25 | HU32V101MRY |
| | 120 | 0,15 | 0,67 | 1035 | 3 | 22x30 | HU32V121MRX |
| | 120 | 0,15 | 0,66 | 1035 | 3 | 25x25 | HU32V121MRY |
| | 150 | 0,15 | 0,79 | 830 | 4 | 22x35 | HU32V151MRX |
| | 150 | 0,15 | 0,79 | 830 | 4 | 25x30 | HU32V151MRY |
| | 150 | 0,15 | 0,79 | 830 | 4 | 30x25 | HU32V151MRZ |
| | 180 | 0,15 | 0,91 | 690 | 4 | 22x40 | HU32V181MRX |
| | 180 | 0,15 | 0,91 | 690 | 4 | 25x35 | HU32V181MRY |
| | 180 | 0,15 | 0,92 | 690 | 4 | 30x30 | HU32V181MRZ |
| | 220 | 0,15 | 1,11 | 565 | 5 | 22x50 | HU32V221MRX |
| | 220 | 0,15 | 1,06 | 565 | 5 | 25x40 | HU32V221MRY |
| | 220 | 0,15 | 1,02 | 565 | 5 | 30x30 | HU32V221MRZ |
| | 220 | 0,15 | 1,02 | 565 | 5 | 35x25 | HU32V221MRA |
| | 270 | 0,15 | 1,23 | 460 | 5 | 25x45 | HU32V271MRY |
| | 270 | 0,15 | 1,20 | 460 | 5 | 30x35 | HU32V271MRZ |
| | 270 | 0,15 | 1,20 | 460 | 5 | 35x30 | HU32V271MRA |
| | 330 | 0,15 | 1,42 | 375 | 6 | 25x50 | HU32V331MRY |
| | 330 | 0,15 | 1,39 | 375 | 6 | 30x40 | HU32V331MRZ |
| | 330 | 0,15 | 1,32 | 375 | 6 | 35x30 | HU32V331MRA |
| | 390 | 0,15 | 1,57 | 320 | 6 | 30x45 | HU32V391MRZ |
| | 390 | 0,15 | 1,52 | 320 | 6 | 35x35 | HU32V391MRA |
| | 470 | 0,15 | 1,74 | 265 | 7 | 35x40 | HU32V471MRA |
| | 470 | 0,15 | 1,76 | 265 | 7 | 40x35 | HU32V471MSB |
| | 560 | 0,15 | 1,96 | 225 | 7 | 30x50 | HU32V561MRZS7 |
| 560 | 0,15 | 1,97 | 225 | 7 | 35x45 | HU32V561MRA | |
| 560 | 0,15 | 1,98 | 225 | 7 | 40x40 | HU32V561MSB | |
| 400 2G (450) | 68 | 0,15 | 0,57 | 1300 | 3 | 22x25 | HU32G680MRX |
| | 82 | 0,15 | 0,66 | 1080 | 3 | 22x30 | HU32G820MRX |
| | 82 | 0,15 | 0,66 | 1080 | 3 | 25x25 | HU32G820MRY |
| | 100 | 0,15 | 0,74 | 890 | 3 | 22x30 | HU32G101MRX |
| | 100 | 0,15 | 0,73 | 890 | 3 | 25x25 | HU32G101MRY |
| | 120 | 0,15 | 0,86 | 740 | 3 | 22x35 | HU32G121MRX |
| | 120 | 0,15 | 0,85 | 740 | 3 | 25x30 | HU32G121MRY |
| | 120 | 0,15 | 0,86 | 740 | 3 | 30x25 | HU32G121MRZ |
| | 150 | 0,15 | 1,00 | 590 | 4 | 22x40 | HU32G151MRX |
| | 150 | 0,15 | 1,00 | 590 | 4 | 25x35 | HU32G151MRY |
| | 150 | 0,15 | 1,01 | 590 | 4 | 30x30 | HU32G151MRZ |
| | 180 | 0,15 | 1,14 | 490 | 4 | 22x45 | HU32G181MRX |
| | 180 | 0,15 | 1,14 | 490 | 4 | 25x40 | HU32G181MRY |
| | 180 | 0,15 | 1,11 | 490 | 4 | 30x30 | HU32G181MRZ |
| | 180 | 0,15 | 1,11 | 490 | 4 | 35x25 | HU32G181MRA |
| | 220 | 0,15 | 1,33 | 400 | 5 | 25x45 | HU32G221MRY |
| | 220 | 0,15 | 1,30 | 400 | 5 | 30x35 | HU32G221MRZ |
| | 220 | 0,15 | 1,30 | 400 | 5 | 35x30 | HU32G221MRA |
| | 270 | 0,15 | 1,54 | 330 | 5 | 25x50 | HU32G271MRY |
| | 270 | 0,15 | 1,51 | 330 | 5 | 30x40 | HU32G271MRZ |
| | 270 | 0,15 | 1,44 | 330 | 5 | 35x30 | HU32G271MRA |
| | 330 | 0,15 | 1,73 | 270 | 6 | 30x45 | HU32G331MRZ |
| | 330 | 0,15 | 1,67 | 270 | 6 | 35x35 | HU32G331MRA |
| | 390 | 0,15 | 1,96 | 230 | 6 | 30x50 | HU32G391MRZS7 |
| | 390 | 0,15 | 1,90 | 230 | 6 | 35x40 | HU32G391MRA |
| | 390 | 0,15 | 1,91 | 230 | 6 | 40x35 | HU32G391MSB |

| Nennspannung Rated Voltage Code (Spitzenspannung) (Surge Voltage) [V DC] | Kapazität Capacitance [µF] | Max. Verlustfaktor Dissipation factor | Max. Wechselstrom Ripple Current bei / at 105°C/120Hz [A RMS] | ESR (typ) bei / at 20°C/100Hz [mΩ] | ESL (typ) [nH] | DxL [mm] | Bestellbezeichnung Product code |
|---|----------------------------------|--|--|---|-------------------|---------------|------------------------------------|
| | | | | | | | |
| 400 2G (450) | 470 | 0,15 | 2,17 | 190 | 7 | 35x45 | HU32G471MRA |
| | 470 | 0,15 | 2,18 | 190 | 7 | 40x40 | HU32G471MSB |
| | 560 | 0,15 | 2,45 | 160 | 8 | 35x50 | HU32G561MRA |
| | 680 | 0,15 | 2,90 | 130 | 11 | 35x60 | HU32G681MRAS9 |
| | 820 | 0,15 | 3,18 | 110 | 11 | 35x60 | HU32G821MRAS9 |
| | 820 | 0,15 | 3,27 | 110 | 11 | 40x60 | HU32G821MSBS9 |
| | 1 000 | 0,15 | 3,52 | 90 | 12 | 40x75 | HU32G102MSBS12 |
| | 1 200 | 0,15 | 3,61 | 75 | 12 | 40x85 | HU32G122MSBS14 |
| | 1 500 | 0,15 | 4,32 | 60 | 15 | 40x100 | HU32G152MSBS17 |
| 420 420V (470) | 47 | 0,15 | 0,42 | 1880 | 3 | 22x25 | HU3420V470MRX |
| | 68 | 0,15 | 0,55 | 1300 | 3 | 22x30 | HU3420V680MRX |
| | 82 | 0,15 | 0,59 | 1080 | 3 | 22x30 | HU3420V820MRX |
| | 82 | 0,15 | 0,59 | 1080 | 3 | 25x25 | HU3420V820MRY |
| | 100 | 0,15 | 0,69 | 890 | 3 | 22x35 | HU3420V101MRX |
| | 100 | 0,15 | 0,69 | 890 | 3 | 25x30 | HU3420V101MRY |
| | 120 | 0,15 | 0,80 | 740 | 4 | 22x40 | HU3420V121MRX |
| | 120 | 0,15 | 0,77 | 740 | 4 | 25x30 | HU3420V121MRY |
| | 120 | 0,15 | 0,77 | 740 | 4 | 30x25 | HU3420V121MRZ |
| | 150 | 0,15 | 0,95 | 590 | 5 | 22x45 | HU3420V151MRX |
| | 150 | 0,15 | 0,90 | 590 | 5 | 25x35 | HU3420V151MRY |
| | 150 | 0,15 | 0,91 | 590 | 5 | 30x30 | HU3420V151MRZ |
| | 180 | 0,15 | 1,03 | 490 | 5 | 25x40 | HU3420V181MRY |
| | 180 | 0,15 | 1,00 | 490 | 5 | 30x30 | HU3420V181MRZ |
| | 180 | 0,15 | 0,99 | 490 | 5 | 35x25 | HU3420V181MRA |
| | 220 | 0,15 | 1,24 | 400 | 5 | 25x50 | HU3420V221MRY |
| | 220 | 0,15 | 1,16 | 400 | 5 | 30x35 | HU3420V221MRZ |
| | 220 | 0,15 | 1,16 | 400 | 5 | 35x30 | HU3420V221MRA |
| | 270 | 0,15 | 1,34 | 330 | 7 | 30x40 | HU3420V271MRZ |
| | 270 | 0,15 | 1,35 | 330 | 7 | 35x35 | HU3420V271MRA |
| 330 | 0,15 | 1,64 | 270 | 10 | 30x50 | HU3420V331MRZ | |
| 330 | 0,15 | 1,55 | 270 | 10 | 35x40 | HU3420V331MRA | |
| 390 | 0,15 | 1,77 | 230 | 10 | 35x45 | HU3420V391MRA | |
| 470 | 0,15 | 2,04 | 140 | 10 | 35x50 | HU3420V471MRA | |
| 450 2W (500) | 47 | 0,15 | 0,46 | 1880 | 3 | 22x25 | HU32W470MRX |
| | 68 | 0,15 | 0,60 | 1300 | 3 | 22x30 | HU32W680MRX |
| | 68 | 0,15 | 0,59 | 1300 | 3 | 25x25 | HU32W680MRY |
| | 82 | 0,15 | 0,70 | 1080 | 3 | 22x35 | HU32W820MRX |
| | 82 | 0,15 | 0,70 | 1080 | 3 | 25x30 | HU32W820MRY |
| | 100 | 0,15 | 0,81 | 890 | 3 | 22x40 | HU32W101MRX |
| | 100 | 0,15 | 0,81 | 890 | 3 | 25x35 | HU32W101MRY |
| | 100 | 0,15 | 0,78 | 890 | 3 | 30x25 | HU32W101MRZ |
| | 120 | 0,15 | 0,94 | 740 | 4 | 22x45 | HU32W121MRX |
| | 120 | 0,15 | 0,88 | 740 | 4 | 25x35 | HU32W121MRY |
| | 120 | 0,15 | 0,90 | 740 | 4 | 30x30 | HU32W121MRZ |
| | 120 | 0,15 | 0,90 | 740 | 4 | 35x25 | HU32W121MRA |
| | 150 | 0,15 | 1,10 | 590 | 5 | 25x45 | HU32W151MRY |
| | 150 | 0,15 | 1,06 | 590 | 5 | 30x35 | HU32W151MRZ |
| | 150 | 0,15 | 1,06 | 590 | 5 | 35x30 | HU32W151MRA |
| | 180 | 0,15 | 1,25 | 490 | 5 | 25x50 | HU32W181MRY |
| | 180 | 0,15 | 1,17 | 490 | 5 | 30x35 | HU32W181MRZ |
| | 180 | 0,15 | 1,17 | 490 | 5 | 35x30 | HU32W181MRA |
| | 220 | 0,15 | 1,34 | 400 | 5 | 30x40 | HU32W221MRZ |
| | 220 | 0,15 | 1,36 | 400 | 5 | 35x35 | HU32W221MRA |
| 270 | 0,15 | 1,63 | 330 | 10 | 30x50 | HU32W271MRZ | |

| Nennspannung Rated Voltage Code (Spitzenspannung) (Surge Voltage) [V DC] | Kapazität Capacitance [µF] | Max. Verlustfaktor Dissipation factor | Max. Wechselstrom Ripple Current bei / at 105°C/120Hz [A RMS] | ESR (typ) bei / at 20°C/100Hz [mΩ] | ESL (typ) [nH] | DxL [mm] | Bestellbezeichnung Product code |
|---|----------------------------------|--|--|---|-------------------|----------------|------------------------------------|
| 450 2W (500) | 270 | 0,15 | 1,51 | 330 | 10 | 35x35 | HU32W271MRAS4 |
| | 270 | 0,15 | 1,57 | 330 | 10 | 35x40 | HU32W271MRA |
| | 330 | 0,15 | 1,80 | 270 | 10 | 35x45 | HU32W331MRA |
| | 390 | 0,15 | 2,05 | 230 | 12 | 35x50 | HU32W391MRA |
| | 470 | 0,15 | 2,24 | 140 | 14 | 35x50 | HU32W471MRA |
| | 470 | 0,15 | 2,33 | 140 | 14 | 35x55 | HU32W471MRAS8 |
| | 560 | 0,15 | 2,70 | 160 | 16 | 40x60 | HU32W561MSBS9 |
| | 680 | 0,15 | 2,89 | 130 | 12 | 35x60 | HU32W681MSA |
| | 680 | 0,15 | 3,01 | 130 | 12 | 35x75 | HU32W681MSAS12 |
| | 680 | 0,15 | 3,06 | 130 | 12 | 40x60 | HU32W681MSBS9 |
| | 820 | 0,15 | 2,84 | 110 | 16 | 40x75 | HU32W821MSB |
| | 820 | 0,15 | 3,43 | 110 | 16 | 40x90 | HU32W821MSBS15 |
| 500 2H (550) | 39 | 0,20 | 0,38 | 2440 | 8 | 22x30 | HU32H390MRX |
| | 47 | 0,20 | 0,45 | 2030 | 8 | 22x35 | HU32H470MRX |
| | 56 | 0,20 | 0,52 | 1700 | 8 | 22x40 | HU32H560MRX |
| | 68 | 0,20 | 0,59 | 1400 | 10 | 22x45 | HU32H680MRX |
| | 68 | 0,20 | 0,54 | 1400 | 10 | 30x25 | HU32H680MRZS2 |
| | 82 | 0,20 | 0,68 | 1165 | 10 | 22x50 | HU32H820MRX |
| | 82 | 0,20 | 0,64 | 1165 | 10 | 25x40 | HU32H820MRYS5 |
| | 82 | 0,20 | 0,63 | 1165 | 10 | 30x30 | HU32H820MRZS3 |
| | 100 | 0,20 | 0,74 | 960 | 12 | 25x45 | HU32H101MRY |
| | 100 | 0,20 | 0,73 | 960 | 12 | 30x35 | HU32H101MRZS4 |
| | 120 | 0,20 | 0,85 | 800 | 13 | 25x50 | HU32H121MRY |
| | 120 | 0,20 | 0,79 | 800 | 13 | 30x35 | HU32H121MRZS4 |
| | 120 | 0,20 | 0,79 | 800 | 13 | 35x30 | HU32H121MRA |
| | 150 | 0,20 | 0,94 | 640 | 14 | 30x40 | HU32H151MRZ |
| | 150 | 0,20 | 0,97 | 640 | 14 | 30x45 | HU32H151MRZS6 |
| | 150 | 0,20 | 0,94 | 640 | 14 | 35x35 | HU32H151MRA |
| | 180 | 0,20 | 1,11 | 535 | 15 | 30x50 | HU32H181MRZ |
| | 180 | 0,20 | 1,07 | 535 | 15 | 35x40 | HU32H181MRA |
| | 220 | 0,20 | 1,23 | 434 | 15 | 35x45 | HU32H221MRA |
| | 270 | 0,20 | 1,42 | 360 | 21 | 35x50 | HU32H271MRA |
| | 330 | 0,20 | 1,68 | 290 | 27 | 35x60 | HU32H331MRAS9 |
| | 390 | 0,20 | 1,90 | 245 | 27 | 35x75 | HU32H391MSAS12 |
| 470 | 0,20 | 2,17 | 210 | 34 | 35x85 | HU32H471MSAS14 | |
| 470 | 0,20 | 2,09 | 210 | 34 | 40x60 | HU32H471MSBS9 | |
| 470 | 0,20 | 2,17 | 210 | 34 | 40x75 | HU32H471MSBS12 | |

► **Brauchbarkeitsdauer - Tabelle / Life time table**

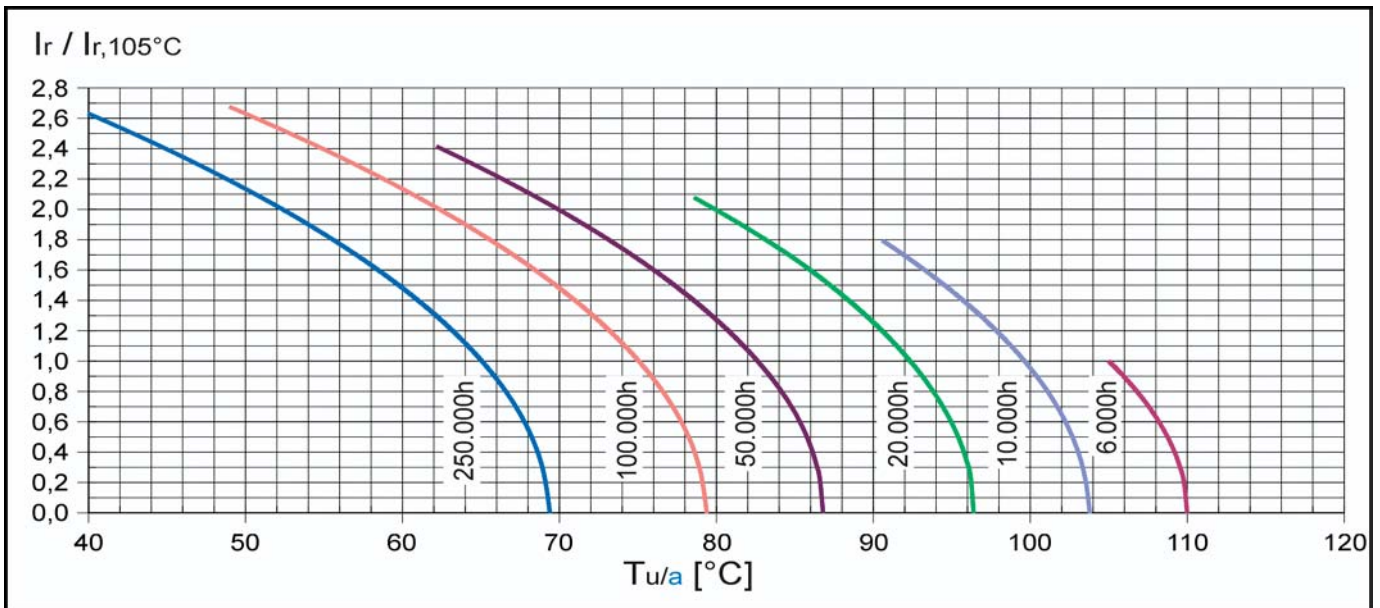
| HU3 | Brauchbarkeitsdauer als Funktion von Umgebungstemperatur und Wechselstrombelastung Useful life as function of ambient temperature and ripple current | | | | | | | | | | | | | | |
|--------------|---|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Ir bei/at 105°C | x 1,0 | x 1,2 | x 1,4 | x 1,6 | x 1,8 | x 2,0 | x 2,1 | x 2,2 | x 2,3 | x 2,4 | x 2,5 | x 2,6 | x 2,7 | x 2,8 |
| Tu/a = 40°C | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 216 | 175 |
| Tu/a = 45°C | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 248 | 205 | 168 | 137 | |
| Tu/a = 50°C | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 224 | 188 | 157 | 130 | 106 | | | |
| Tu/a = 55°C | 250 | 250 | 250 | 250 | 250 | 196 | 167 | 142 | 119 | 99 | 82 | | | | |
| Tu/a = 60°C | 250 | 250 | 250 | 217 | 167 | 124 | 106 | 90 | 75 | 63 | | | | | |
| Tu/a = 65°C | 250 | 212 | 173 | 137 | 105 | 78 | 67 | 57 | 48 | | | | | | |
| Tu/a = 70°C | 159 | 134 | 110 | 87 | 67 | 50 | 42 | | | | | | | | |
| Tu/a = 75°C | 101 | 85 | 69 | 55 | 42 | 31 | 27 | | | | | | | | |
| Tu/a = 80°C | 64 | 54 | 44 | 35 | 27 | 20 | | | | | | | | | |
| Tu/a = 85°C | 40 | 34 | 28 | 22 | 17 | 13 | | | | | | | | | |
| Tu/a = 90°C | 25 | 21 | 18 | 14 | 11 | | | | | | | | | | |
| Tu/a = 95°C | 16 | 14 | 11 | 9 | | | | | | | | | | | |
| Tu/a = 100°C | 10 | 9 | | | | | | | | | | | | | |
| Tu/a = 105°C | 6 | kStd. / khrs | | | | | | | | | | | | | |

Maximalwert begrenzt auf 250 000 Stunden.
Max. value limited to 250 000 hours.

► **Brauchbarkeitsdauer – Diagramm / Life time graph**

Brauchbarkeitsdauer in Abhängigkeit von Umgebungstemperatur T_u und Wechselstrombelastung I_r im Verhältnis zur max. Wechselstrombelastung bei oberer Kategorietemperatur $I_{r,105°C,120Hz}$

Useful life depending on ambient temperature T_a and ripple current operating conditions I_r versus rated ripple current at the upper category temperature $I_{r,105°C,120Hz}$



► **Anforderungen Brauchbarkeitsdauer / Life time tests and requirements**

| Brauchbarkeitsdauerartyp Life time test | Referenz Reference | Testbedingung Test procedure | Kriterien der Brauchbarkeitsdauer Life time criteria |
|--|---|--|--|
| Endurance test | JIS-C-5104-4 JIS-C-5102 IEC 60384-4 | Ta = 105°C; Un, Ir applied 4000 hours | $\Delta C/C < 15\%$ $Tan\delta < 175\%$ $I_L \leq spec. value$ |
| Useful life | JIS-C-5104-4 IEC 60384-4 | Ta = 105°C; Un, Ir applied 6000 hours | $\Delta C/C < 20\%$ $Tan\delta < 200\%$ $I_L \leq spec. value$ |