



Aluminum Capacitors Radial Style



FEATURES

- Polarized aluminum electrolytic capacitors, non-solid electrolyte
- Radial leads, cylindrical aluminum case
- High CV-product per unit volume
- Temperature range up to 105 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

APPLICATIONS

- General purpose, industrial and audio-video
- Coupling, decoupling, timing, smoothing, filtering, buffering in SMPS
- Portable and mobile equipment

| QUICK REFERENCE DATA | | | |
|--|------|-------------------------|-----------------------------|
| DESCRIPTION | UNIT | VALUE | |
| Nominal case size (Ø D x L) | mm | 5 x 11 to 8 x 11.5 | 10 x 12.5 to 18 x 40 |
| Rated capacitance range C _R | µF | 2.2 to 22 000 | |
| Capacitance tolerance | % | ± 20 | |
| Rated voltage range | V | 6.3 to 100 | 160 to 350 400 to 450 |
| Category temperature range | °C | -55 to +105 | -40 to +105 -25 to +105 |
| Load life | h | 1000 | 2000 |
| Based on sectional specification | | IEC 60384-4 / EN 130300 | |
| Climatic category IEC 60068 | | 55 / 105 / 56 | 40 / 105 / 56 25 / 105 / 56 |

| SELECTION CHART FOR C _R , U _R , AND RELEVANT NOMINAL CASE SIZES (Ø D x L in mm) | | | | | | | | |
|---|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| C _R (µF) | RATED VOLTAGE (V) (> 100 V see next page) | | | | | | | |
| | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
| 2.2 | → | → | → | → | → | → | 5 x 11 | 5 x 11 |
| 3.3 | → | → | → | → | → | → | 5 x 11 | 5 x 11 |
| 4.7 | → | → | → | → | → | → | 5 x 11 | 5 x 11 |
| 6.8 | → | → | → | → | → | → | 5 x 11 | 5 x 11 |
| 10 | → | → | → | → | → | → | 5 x 11 | 5 x 11 |
| 15 | → | → | → | → | → | → | 5 x 11 | 6.3 x 11 |
| 22 | → | → | → | → | → | → | 5 x 11 | 6.3 x 11 |
| 33 | → | → | → | → | → | 5 x 11 | 6.3 x 11 | 8 x 11.5 |
| 47 | → | → | → | → | 5 x 11 | → | 6.3 x 11 | 10 x 12.5 |
| 68 | → | → | → | 5 x 11 | 6.3 x 11 | → | 8 x 11.5 | 10 x 16 |
| 100 | → | → | 5 x 11 | → | 6.3 x 11 | → | 8 x 11.5 | 10 x 20 |
| 150 | → | 5 x 11 | → | 6.3 x 11 | 8 x 11.5 | → | 10 x 12.5 | 12.5 x 20 |
| 220 | → | 5 x 11 | 6.3 x 11 | → | 8 x 11.5 | 10 x 12.5 | 10 x 16 | 12.5 x 25 |
| 330 | → | 6.3 x 11 | → | 8 x 11.5 | 10 x 12.5 | 10 x 16 | 10 x 20 | 16 x 25 |
| 470 | → | 6.3 x 11 | 8 x 11.5 | 10 x 12.5 | 10 x 16 | 10 x 20 | 12.5 x 20 | 16 x 25 |
| 680 | 8 x 11.5 | → | 10 x 12.5 | 10 x 16 | 12.5 x 16 | 12.5 x 20 | 12.5 x 25 | 16 x 31.5 |
| 1000 | 8 x 11.5 | 10 x 12.5 | 10 x 16 | 10 x 20 | 12.5 x 20 | 12.5 x 25 | 16 x 25 | 18 x 40 |
| 1500 | → | 10 x 16 | 12.5 x 16 | 12.5 x 20 | 16 x 20 | 16 x 25 | 16 x 35.5 | - |
| 2200 | → | 10 x 20 | 12.5 x 20 | 12.5 x 25 | 16 x 25 | 16 x 31.5 | 16 x 35.5 | - |
| 3300 | 12.5 x 16 | 12.5 x 20 | 12.5 x 25 | 16 x 25 | 16 x 35.5 | 16 x 35.5 | 18 x 40 | - |
| 4700 | 12.5 x 20 | 12.5 x 25 | 16 x 25 | 16 x 31.5 | 16 x 35.5 | - | - | - |
| 6800 | 12.5 x 25 | 16 x 25 | 16 x 31.5 | 18 x 35.5 | - | - | - | - |
| 10 000 | 16 x 25 | 16 x 35.5 | 18 x 35.5 | - | - | - | - | - |
| 15 000 | 16 x 35.5 | 18 x 35.5 | - | - | - | - | - | - |
| 22 000 | 18 x 40 | - | - | - | - | - | - | - |

| SELECTION CHART FOR C_R , U_R AND RELEVANT NOMINAL CASE SIZES ($\varnothing D \times L$ in mm) | | | | | | |
|---|-------------------|-----------|-----------|-----------|-----------|-----------|
| C_R (μF) | RATED VOLTAGE (V) | | | | | |
| | 160 | 200 | 250 | 350 | 400 | 450 |
| 2.2 | → | → | 6.3 x 11 | → | 8 x 11.5 | 10 x 12.5 |
| 3.3 | → | 6.3 x 11 | → | 8 x 11.5 | 10 x 12.5 | 10 x 16 |
| 4.7 | 6.3 x 11 | → | 8 x 11.5 | → | 10 x 12.5 | 10 x 16 |
| 6.8 | 8 x 11.5 | → | 10 x 12.5 | → | 10 x 16 | 10 x 20 |
| 10 | → | → | 10 x 12.5 | 10 x 16 | 10 x 20 | 12.5 x 20 |
| 15 | → | → | 10 x 16 | 10 x 20 | 12.5 x 20 | 12.5 x 25 |
| 22 | → | 10 x 16 | 10 x 20 | 12.5 x 20 | 12.5 x 25 | 16 x 25 |
| 33 | → | 10 x 20 | 12.5 x 20 | 12.5 x 25 | 16 x 25 | 16 x 31.5 |
| 47 | → | 12.5 x 20 | 12.5 x 25 | 16 x 25 | 16 x 31.5 | 16 x 35.5 |
| 68 | 12.5 x 25 | 16 x 20 | 16 x 25 | 16 x 31.5 | 18 x 35.5 | 18 x 40 |
| 100 | 12.5 x 25 | 16 x 25 | 16 x 31.5 | 18 x 35.5 | 18 x 40 | - |
| 150 | 16 x 25 | 16 x 35.5 | 18 x 35.5 | 18 x 40 | - | - |
| 220 | 16 x 31.5 | 18 x 35.5 | 18 x 40 | - | - | - |
| 330 | 18 x 35.5 | 18 x 40 | - | - | - | - |
| 470 | 18 x 40 | - | - | - | - | - |

| RADIAL STYLE: DIMENSIONS in millimeters | | | | | | | | | | |
|---|-----|-----|-----|-----|------|-----|-----|------|------|--|
| | | | | | | | | | | |
| $\varnothing D$ | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 | 25 | |
| S | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 | 12.5 | |
| $\varnothing d$ | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 | 1.0 | |
| β | 1.5 | | | 2.0 | | | | | | |
| α | 0.5 | | | | | | 1.0 | | | |

| DIMENSIONS in millimeters AND AVAILABLE FORMS | |
|---|---|
| <p>$\varnothing D \leq 18$ long leads MALREKB00...</p> | <p>$\varnothing D \leq 18$ shortened leads MALREKB05... (S = 2 mm/2.5 mm/3.5 mm/5 mm/7.5 mm)</p> |

GENERAL NOTE

- For Minimum Package Quantity (MPQ) and Minimum Order Quantity (MOQ) please refer to our price list or contact customer service
- For other packaging forms please refer to Vishay Roederstein General Information



| ELECTRICAL DATA | |
|-----------------|---|
| SYMBOL | DESCRIPTION |
| U_R | Rated voltage |
| C_R | Rated capacitance at 120 Hz |
| $\tan \delta$ | Max. dissipation factor at 120 Hz |
| R_{ESR} | Calculated equivalent series resistance at 120 Hz |
| I_R | Rated ripple current (RMS) at 120 Hz and upper category temperature |

Note

- Unless otherwise specified, all electrical values apply at $T_a = 20\text{ }^\circ\text{C}$, $P = 80\text{ kPa}$ to 120 kPa , $RH = 45\%$ to 75%

ORDERING EXAMPLEEKB 3300 μF / 25 V, $\pm 20\%$, size: 16 mm x 25 mm

Leads: long

Ordering code: MALREKB00JG433E00K

Leads: short

Ordering code: MALREKB05...

| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | |
|--|--------------------------------------|-----------------------------|-------------------------|-------------------------------------|--|---------------|-----------------------------------|
| U_R (V) | C_R 120 Hz (μF) | DIMENSIONS D x L (mm) | $\tan \delta$ 120 Hz | R_{ESR} 120 Hz (Ω) | I_R 120 Hz / 105 $^\circ\text{C}$ (mA) | WEIGHT (g) | CATALOG NUMBER (Long Leads) |
| 6.3 | 680 | 8 x 11.5 | 0.28 | 0.55 | 348 | 1.10 | MALREKB00PB368B00K |
| | 1000 | 8 x 11.5 | 0.28 | 0.37 | 422 | 1.10 | MALREKB00PB410B00K |
| | 3300 | 12.5 x 16 | 0.34 | 0.14 | 983 | 3.00 | MALREKB00FD433B00K |
| | 4700 | 12.5 x 20 | 0.36 | 0.10 | 1219 | 4.00 | MALREKB00FE447B00K |
| | 6800 | 12.5 x 25 | 0.40 | 0.08 | 1480 | 5.00 | MALREKB00FG468B00K |
| | 10 000 | 16 x 25 | 0.46 | 0.06 | 1807 | 8.50 | MALREKB00JG510B00K |
| | 15 000 | 16 x 35.5 | 0.56 | 0.05 | 2233 | 11.0 | MALREKB00JL515B00K |
| | 22 000 | 18 x 40 | 0.70 | 0.04 | 2652 | 14.6 | MALREKB00KK522B00K |
| 10 | 150 | 5 x 11 | 0.24 | 2.12 | 134 | 0.45 | MALREKB00AA315C00K |
| | 220 | 5 x 11 | 0.24 | 1.45 | 162 | 0.45 | MALREKB00AA322C00K |
| | 330 | 6.3 x 11 | 0.24 | 0.96 | 228 | 0.46 | MALREKB00BA333C00K |
| | 470 | 6.3 x 11 | 0.24 | 0.68 | 272 | 0.46 | MALREKB00BA347C00K |
| | 1000 | 10 x 12.5 | 0.24 | 0.32 | 544 | 2.05 | MALREKB00DC410C00K |
| | 1500 | 10 x 16 | 0.26 | 0.23 | 680 | 2.20 | MALREKB00DD415C00K |
| | 2200 | 10 x 20 | 0.28 | 0.17 | 844 | 3.10 | MALREKB00DE422C00K |
| | 3300 | 12.5 x 20 | 0.30 | 0.12 | 1148 | 4.00 | MALREKB00FE433C00K |
| | 4700 | 12.5 x 25 | 0.32 | 0.09 | 1421 | 5.00 | MALREKB00FG447C00K |
| | 6800 | 16 x 25 | 0.36 | 0.07 | 1737 | 8.50 | MALREKB00JG468C00K |
| | 10 000 | 16 x 35.5 | 0.42 | 0.06 | 2172 | 11.0 | MALREKB00JL510C00K |
| | 15 000 | 18 x 35.5 | 0.52 | 0.05 | 2482 | 14.0 | MALREKB00KL515C00K |
| 16 | 100 | 5 x 11 | 0.20 | 2.65 | 119 | 0.45 | MALREKB00AA310D00K |
| | 220 | 6.3 x 11 | 0.20 | 1.21 | 203 | 0.46 | MALREKB00BA322D00K |
| | 470 | 8 x 11.5 | 0.20 | 0.56 | 349 | 1.10 | MALREKB00PB347D00K |
| | 680 | 10 x 12.5 | 0.20 | 0.39 | 488 | 2.05 | MALREKB00DC368D00K |
| | 1000 | 10 x 16 | 0.20 | 0.27 | 648 | 2.20 | MALREKB00DD410D00K |
| | 1500 | 12.5 x 16 | 0.22 | 0.19 | 862 | 3.00 | MALREKB00FD415D00K |
| | 2200 | 12.5 x 20 | 0.24 | 0.14 | 1055 | 4.00 | MALREKB00FE422D00K |
| | 3300 | 12.5 x 25 | 0.26 | 0.10 | 1323 | 5.00 | MALREKB00FG433D00K |
| | 4700 | 16 x 25 | 0.28 | 0.08 | 1657 | 8.50 | MALREKB00JG447D00K |
| | 6800 | 16 x 31.5 | 0.32 | 0.06 | 1982 | 10.0 | MALREKB00JS468D00K |
| | | 10 000 | 18 x 35.5 | 0.38 | 0.05 | 2409 | 14.0 |



| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | |
|--|-------------------------------|-----------------------------|-------------------------|-------------------------------------|----------------------------------|--------------------|-----------------------------------|
| U_R (V) | C_R 120 Hz (μ F) | DIMENSIONS D x L (mm) | $\tan \delta$ 120 Hz | R_{ESR} 120 Hz (Ω) | I_R 120 Hz / 105 °C (mA) | WEIGHT (g) | CATALOG NUMBER (Long Leads) |
| 25 | 68 | 5 x 11 | 0.16 | 3.12 | 108 | 0.45 | MALREKB00AA268E00K |
| | 150 | 6.3 x 11 | 0.16 | 1.41 | 185 | 0.46 | MALREKB00BA315E00K |
| | 330 | 8 x 11.5 | 0.16 | 0.64 | 324 | 1.10 | MALREKB00PB333E00K |
| | 470 | 10 x 12.5 | 0.16 | 0.45 | 449 | 2.05 | MALREKB00DC347E00K |
| | 680 | 10 x 16 | 0.16 | 0.31 | 591 | 2.20 | MALREKB00DD368E00K |
| | 1000 | 10 x 20 | 0.16 | 0.21 | 782 | 3.10 | MALREKB00DE410E00K |
| | 1500 | 12.5 x 20 | 0.18 | 0.16 | 1017 | 4.00 | MALREKB00FE415E00K |
| | 2200 | 12.5 x 25 | 0.20 | 0.12 | 1235 | 5.00 | MALREKB00FG422E00K |
| | 3300 | 16 x 25 | 0.22 | 0.09 | 1562 | 8.50 | MALREKB00JG433E00K |
| | 4700 | 16 x 31.5 | 0.24 | 0.07 | 1916 | 10.0 | MALREKB00JS447E00K |
| | 6800 | 18 x 35.5 | 0.28 | 0.05 | 2335 | 14.0 | MALREKB00KL468E00K |
| 35 | 47 | 5 x 11 | 0.14 | 3.95 | 96 | 0.45 | MALREKB00AA247F00K |
| | 68 | 6.3 x 11 | 0.14 | 2.73 | 132 | 0.46 | MALREKB00BA268F00K |
| | 100 | 6.3 x 11 | 0.14 | 1.86 | 160 | 0.46 | MALREKB00BA310F00K |
| | 150 | 8 x 11.5 | 0.14 | 1.24 | 231 | 1.10 | MALREKB00PB315F00K |
| | 220 | 8 x 11.5 | 0.14 | 0.84 | 280 | 1.10 | MALREKB00PB322F00K |
| | 330 | 10 x 12.5 | 0.14 | 0.56 | 399 | 2.05 | MALREKB00DC333F00K |
| | 470 | 10 x 16 | 0.14 | 0.40 | 521 | 2.20 | MALREKB00DD347F00K |
| | 680 | 12.5 x 16 | 0.14 | 0.27 | 740 | 3.00 | MALREKB00FD368F00K |
| | 1000 | 12.5 x 20 | 0.14 | 0.19 | 974 | 4.00 | MALREKB00FE410F00K |
| | 1500 | 16 x 20 | 0.16 | 0.14 | 1188 | 6.00 | MALREKB00JE415F00K |
| | 2200 | 16 x 25 | 0.18 | 0.11 | 1426 | 8.50 | MALREKB00JG422F00K |
| | 3300 | 16 x 35.5 | 0.20 | 0.08 | 1857 | 11.0 | MALREKB00JL433F00K |
| | 4700 | 16 x 35.5 | 0.22 | 0.06 | 2224 | 14.0 | MALREKB00JL447F00K |
| 50 | 33 | 5 x 11 | 0.12 | 4.82 | 92 | 0.45 | MALREKB00AA233H00K |
| | 220 | 10 x 12.5 | 0.12 | 0.72 | 376 | 2.05 | MALREKB00DC322H00K |
| | 330 | 10 x 16 | 0.12 | 0.48 | 504 | 2.20 | MALREKB00DD333H00K |
| | 470 | 10 x 20 | 0.12 | 0.34 | 657 | 3.10 | MALREKB00DE347H00K |
| | 680 | 12.5 x 20 | 0.12 | 0.23 | 927 | 4.00 | MALREKB00FE368H00K |
| | 1000 | 12.5 x 25 | 0.12 | 0.16 | 1226 | 5.00 | MALREKB00FG410H00K |
| | 1500 | 16 x 25 | 0.14 | 0.12 | 1442 | 8.50 | MALREKB00JG415H00K |
| | 2200 | 16 x 31.5 | 0.16 | 0.10 | 1442 | 10.0 | MALREKB00JS422H00K |
| | 3300 | 16 x 35.5 | 0.18 | 0.07 | 1794 | 11.0 | MALREKB00JL433H00K |
| 63 | 2.2 | 5 x 11 | 0.10 | 60.29 | 26 | 0.45 | MALREKB00AA122J00K |
| | 3.3 | 5 x 11 | 0.10 | 40.19 | 32 | 0.45 | MALREKB00AA133J00K |
| | 4.7 | 5 x 11 | 0.10 | 28.22 | 38 | 0.45 | MALREKB00AA147J00K |
| | 6.8 | 5 x 11 | 0.10 | 19.50 | 46 | 0.45 | MALREKB00AA168J00K |
| | 10 | 5 x 11 | 0.10 | 13.26 | 56 | 0.45 | MALREKB00AA210J00K |
| | 15 | 5 x 11 | 0.10 | 8.84 | 68 | 0.45 | MALREKB00AA215J00K |
| | 22 | 5 x 11 | 0.10 | 6.03 | 83 | 0.45 | MALREKB00AA222J00K |
| | 33 | 6.3 x 11 | 0.10 | 4.02 | 116 | 0.46 | MALREKB00BA233J00K |
| | 47 | 6.3 x 11 | 0.10 | 2.82 | 139 | 0.46 | MALREKB00BA247J00K |
| | 68 | 8 x 11.5 | 0.10 | 1.95 | 197 | 1.10 | MALREKB00PB268J00K |
| | 100 | 8 x 11.5 | 0.10 | 1.33 | 239 | 1.10 | MALREKB00PB310J00K |
| | 150 | 10 x 12.5 | 0.10 | 0.88 | 340 | 2.05 | MALREKB00DC315J00K |
| | 220 | 10 x 16 | 0.10 | 0.60 | 451 | 2.20 | MALREKB00DD322J00K |
| | 330 | 10 x 20 | 0.10 | 0.40 | 603 | 3.10 | MALREKB00DE333J00K |
| | 470 | 12.5 x 20 | 0.10 | 0.28 | 844 | 4.00 | MALREKB00FE347J00K |
| | 680 | 12.5 x 25 | 0.10 | 0.20 | 1107 | 5.00 | MALREKB00FG368J00K |
| | 1000 | 16 x 25 | 0.10 | 0.13 | 1490 | 8.50 | MALREKB00JG410J00K |
| | 1500 | 16 x 35.5 | 0.12 | 0.11 | 1770 | 11.0 | MALREKB00JL415J00K |
| | 2200 | 16 x 35.5 | 0.14 | 0.08 | 1770 | 11.0 | MALREKB00JL422J00K |
| 3300 | 18 x 40 | 0.16 | 0.06 | 2689 | 14.6 | MALREKB00KK433J00K | |



| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | |
|--|-------------------------------|-----------------------------|-------------------------|-------------------------------------|----------------------------------|--------------------|-----------------------------------|
| U_R (V) | C_R 120 Hz (μ F) | DIMENSIONS D x L (mm) | $\tan \delta$ 120 Hz | R_{ESR} 120 Hz (Ω) | I_R 120 Hz / 105 °C (mA) | WEIGHT (g) | CATALOG NUMBER (Long Leads) |
| 100 | 2.2 | 5 x 11 | 0.08 | 48.23 | 26 | 0.45 | MALREKB00AA122L00K |
| | 3.3 | 5 x 11 | 0.08 | 32.15 | 32 | 0.45 | MALREKB00AA133L00K |
| | 4.7 | 5 x 11 | 0.08 | 22.58 | 38 | 0.45 | MALREKB00AA147L00K |
| | 6.8 | 5 x 11 | 0.08 | 15.60 | 46 | 0.45 | MALREKB00AA168L00K |
| | 10 | 5 x 11 | 0.08 | 10.61 | 56 | 0.45 | MALREKB00AA210L00K |
| | 15 | 6.3 x 11 | 0.08 | 7.07 | 78 | 0.46 | MALREKB00BA215L00K |
| | 22 | 6.3 x 11 | 0.08 | 4.82 | 95 | 0.46 | MALREKB00BA222L00K |
| | 33 | 8 x 11.5 | 0.08 | 3.22 | 137 | 1.10 | MALREKB00PB233L00K |
| | 47 | 10 x 12.5 | 0.08 | 2.26 | 190 | 2.05 | MALREKB00DC247L00K |
| | 68 | 10 x 16 | 0.08 | 1.56 | 251 | 2.20 | MALREKB00DD268L00K |
| | 100 | 10 x 20 | 0.08 | 1.06 | 332 | 3.10 | MALREKB00DE310L00K |
| | 150 | 12.5 x 20 | 0.08 | 0.71 | 477 | 4.00 | MALREKB00FE315L00K |
| | 220 | 12.5 x 25 | 0.08 | 0.48 | 630 | 5.00 | MALREKB00FG322L00K |
| | 330 | 16 x 25 | 0.08 | 0.32 | 856 | 8.50 | MALREKB00JG333L00K |
| | 470 | 16 x 25 | 0.08 | 0.23 | 1021 | 8.50 | MALREKB00JG347L00K |
| 680 | 16 x 31.5 | 0.08 | 0.16 | 1344 | 10.0 | MALREKB00JS368L00K | |
| 1000 | 18 x 40 | 0.08 | 0.11 | 1925 | 14.6 | MALREKB00KK410L00K | |
| 160 | 4.7 | 6.3 x 11 | 0.15 | 42.33 | 34 | 0.46 | MALREKB00BA147M00K |
| | 6.8 | 8 x 11.5 | 0.15 | 29.26 | 49 | 1.10 | MALREKB00PB168M00K |
| | 68 | 12.5 x 25 | 0.15 | 2.93 | 273 | 5.00 | MALREKB00FG268M00K |
| | 100 | 12.5 x 25 | 0.15 | 1.99 | 331 | 5.00 | MALREKB00FG310M00K |
| | 150 | 16 x 25 | 0.15 | 1.33 | 450 | 8.50 | MALREKB00JG315M00K |
| | 220 | 16 x 31.5 | 0.15 | 0.90 | 596 | 10.0 | MALREKB00JS322M00K |
| | 330 | 18 x 35.5 | 0.15 | 0.60 | 822 | 14.0 | MALREKB00KL333M00K |
| | 470 | 18 x 40 | 0.15 | 0.42 | 1015 | 14.6 | MALREKB00KK347M00K |
| 200 | 3.3 | 6.3 x 11 | 0.15 | 60.29 | 29 | 0.46 | MALREKB00BA133S00K |
| | 22 | 10 x 16 | 0.15 | 9.04 | 111 | 2.20 | MALREKB00DD222S00K |
| | 33 | 10 x 20 | 0.15 | 6.03 | 149 | 3.10 | MALREKB00DE233S00K |
| | 47 | 12.5 x 20 | 0.15 | 4.23 | 208 | 4.00 | MALREKB00FE247S00K |
| | 68 | 16 x 20 | 0.15 | 2.93 | 279 | 6.00 | MALREKB00JE268S00K |
| | 100 | 16 x 25 | 0.15 | 1.99 | 368 | 8.50 | MALREKB00JG310S00K |
| | 150 | 16 x 35.5 | 0.15 | 1.33 | 517 | 11.0 | MALREKB00JL315S00K |
| | 220 | 18 x 35.5 | 0.15 | 0.90 | 671 | 14.0 | MALREKB00KL322S00K |
| | 330 | 18 x 40 | 0.15 | 0.60 | 850 | 14.6 | MALREKB00KK333S00K |
| 250 | 2.2 | 6.3 x 11 | 0.15 | 90.43 | 23 | 0.46 | MALREKB00BA122N00K |
| | 4.7 | 8 x 11.5 | 0.15 | 42.33 | 40 | 1.10 | MALREKB00PB147N00K |
| | 6.8 | 10 x 12.5 | 0.15 | 29.26 | 56 | 2.05 | MALREKB00DC168N00K |
| | 10 | 10 x 12.5 | 0.15 | 19.89 | 68 | 2.05 | MALREKB00DC210N00K |
| | 15 | 10 x 16 | 0.15 | 13.26 | 92 | 2.20 | MALREKB00DD215N00K |
| | 22 | 10 x 20 | 0.15 | 9.04 | 121 | 3.10 | MALREKB00DE222N00K |
| | 33 | 12.5 x 20 | 0.15 | 6.03 | 175 | 4.00 | MALREKB00FE233N00K |
| | 47 | 12.5 x 25 | 0.15 | 4.23 | 227 | 5.00 | MALREKB00FG247N00K |
| | 68 | 16 x 25 | 0.15 | 2.93 | 303 | 8.50 | MALREKB00JG268N00K |
| | 100 | 16 x 31.5 | 0.15 | 1.99 | 402 | 10.0 | MALREKB00JS310N00K |
| | 150 | 18 x 35.5 | 0.15 | 1.33 | 554 | 14.0 | MALREKB00KL315N00K |
| | 220 | 18 x 40 | 0.15 | 0.90 | 694 | 14.6 | MALREKB00KK322N00K |



| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | |
|--|-------------------------------|-----------------------------|-------------------------|-------------------------------------|----------------------------------|--------------------|-----------------------------------|
| U_R (V) | C_R 120 Hz (μ F) | DIMENSIONS D x L (mm) | $\tan \delta$ 120 Hz | R_{ESR} 120 Hz (Ω) | I_R 120 Hz / 105 °C (mA) | WEIGHT (g) | CATALOG NUMBER (Long Leads) |
| 350 | 3.3 | 8 x 11.5 | 0.20 | 80.38 | 34 | 1.10 | MALREKB00PB133O00K |
| | 10 | 10 x 16 | 0.20 | 26.53 | 75 | 2.20 | MALREKB00DD210O00K |
| | 15 | 10 x 20 | 0.20 | 17.68 | 100 | 3.10 | MALREKB00DE215O00K |
| | 22 | 12.5 x 20 | 0.20 | 12.06 | 143 | 4.00 | MALREKB00FE222O00K |
| | 33 | 12.5 x 25 | 0.20 | 8.04 | 190 | 5.00 | MALREKB00FG233O00K |
| | 47 | 16 x 25 | 0.20 | 5.64 | 252 | 8.50 | MALREKB00JG247O00K |
| | 68 | 16 x 31.5 | 0.20 | 3.90 | 332 | 10.0 | MALREKB00JS268O00K |
| | 100 | 18 x 35.5 | 0.20 | 2.65 | 407 | 14.0 | MALREKB00KL310O00K |
| | 150 | 18 x 40 | 0.20 | 1.77 | 523 | 14.6 | MALREKB00KK315O00K |
| 400 | 2.2 | 8 x 11.5 | 0.20 | 120.6 | 28 | 1.10 | MALREKB00PB122X00K |
| | 3.3 | 10 x 12.5 | 0.20 | 80.38 | 39 | 2.05 | MALREKB00DC133X00K |
| | 4.7 | 10 x 12.5 | 0.20 | 56.44 | 47 | 2.05 | MALREKB00DC147X00K |
| | 6.8 | 10 x 16 | 0.20 | 39.01 | 62 | 2.20 | MALREKB00DD168X00K |
| | 10 | 10 x 20 | 0.20 | 26.53 | 82 | 3.10 | MALREKB00DE210X00K |
| | 15 | 12.5 x 20 | 0.20 | 17.68 | 118 | 4.00 | MALREKB00FE215X00K |
| | 22 | 12.5 x 25 | 0.20 | 12.06 | 155 | 5.00 | MALREKB00FG222X00K |
| | 33 | 16 x 25 | 0.20 | 8.04 | 211 | 8.50 | MALREKB00JG233X00K |
| | 47 | 16 x 31.5 | 0.20 | 5.64 | 276 | 10.0 | MALREKB00JS247X00K |
| | 68 | 18 x 35.5 | 0.20 | 3.90 | 373 | 14.0 | MALREKB00KL268X00K |
| 100 | 18 x 40 | 0.20 | 2.65 | 427 | 14.6 | MALREKB00KK310X00K | |
| 450 | 2.2 | 10 x 12.5 | 0.20 | 120.6 | 27 | 2.05 | MALREKB00DC122P00K |
| | 3.3 | 10 x 16 | 0.20 | 80.38 | 36 | 2.20 | MALREKB00DD133P00K |
| | 4.7 | 10 x 16 | 0.20 | 56.44 | 43 | 2.20 | MALREKB00DD147P00K |
| | 6.8 | 10 x 20 | 0.20 | 39.01 | 56 | 3.10 | MALREKB00DE168P00K |
| | 10 | 12.5 x 20 | 0.20 | 26.53 | 80 | 4.00 | MALREKB00FE210P00K |
| | 15 | 12.5 x 25 | 0.20 | 17.68 | 107 | 5.00 | MALREKB00FG215P00K |
| | 22 | 16 x 25 | 0.20 | 12.06 | 144 | 8.50 | MALREKB00JG222P00K |
| | 33 | 16 x 31.5 | 0.20 | 8.04 | 193 | 10.0 | MALREKB00JS233P00K |
| | 47 | 16 x 35.5 | 0.20 | 5.64 | 242 | 11.0 | MALREKB00JL247P00K |
| | 68 | 18 x 40 | 0.20 | 3.90 | 352 | 14.6 | MALREKB00KK268P00K |

| LOW TEMPERATURE BEHAVIOR | | | | | | | | | | |
|------------------------------------|----------------------|----|----|----|----|----------|-----|-----------|-----|-----|
| IMPEDANCE RATIO $Z(T_2)/Z(T_1)$ | RATED VOLTAGE (V) | | | | | | | | | |
| | 6.3 | 10 | 16 | 25 | 35 | 50 ~ 100 | 160 | 200 ~ 350 | 400 | 450 |
| -25 °C / +20 °C | 5 | 4 | 3 | 2 | 2 | 2 | 3 | 4 | 6 | 10 |
| -40 °C / +20 °C | 10 | 8 | 6 | 4 | 3 | 3 | 4 | 8 | - | - |

| ADDITIONAL ELECTRICAL DATA | | |
|---|---|---|
| PARAMETER | CONDITIONS | VALUE |
| Current | | |
| Leakage current (test conditions: U_R , 20 °C) | After 1 min at U_R | $I_{L1} \leq 0.03 \times C_R \times U_R$ or 4 μ A for $U_R \leq 100$ V (whichever is greater) |
| | After 2 min at U_R | $I_{L2} \leq 0.01 \times C_R \times U_R$ or 3 μ A for $U_R \leq 100$ V (whichever is greater) |
| | After 5 min at U_R | $I_{L5} \leq 0.02 \times C_R \times U_R$ + 15 μ A for $U_R > 100$ V (whichever is greater) |
| Resistance | | |
| Equivalent series resistance (ESR) | Calculated from $\tan \delta_{max}$ and C_R | $ESR = \tan \delta / 2 \pi f C_R$ |



| MULTIPLIER OF RIPPLE CURRENT (I_R) AS A FUNCTION OF FREQUENCY | | | |
|---|---------------------------------------|---|-----------------------------|
| FREQUENCY (Hz) | I_R MULTIPLIER FOR $U_R \leq 100$ V | | |
| | $C_R \leq 47 \mu\text{F}$ | $C_R = 68 \mu\text{F}$ to $680 \mu\text{F}$ | $C_R \geq 1000 \mu\text{F}$ |
| 50 | 0.75 | 0.80 | 0.85 |
| 120 | 1.00 | 1.00 | 1.00 |
| 300 | 1.35 | 1.25 | 1.10 |
| 1000 | 1.55 | 1.35 | 1.15 |
| $\geq 10\ 000$ | 2.00 | 1.50 | 1.15 |

| MULTIPLIER OF RIPPLE CURRENT (I_R) AS A FUNCTION OF FREQUENCY | | |
|---|--|----------------------------|
| FREQUENCY (Hz) | I_R MULTIPLIER FOR U_R 160 V to ≤ 450 V | |
| | $C_R = 47 \mu\text{F}$ to $220 \mu\text{F}$ | $C_R \geq 330 \mu\text{F}$ |
| 50 | 0.80 | 0.90 |
| 120 | 1.00 | 1.00 |
| 300 | 1.25 | 1.10 |
| 1000 | 1.40 | 1.13 |
| $\geq 10\ 000$ | 1.60 | 1.15 |

| TEST PROCEDURES AND REQUIREMENTS | | |
|----------------------------------|---|--|
| TEST | PROCEDURE (quick reference) | REQUIREMENTS |
| Load life | $T_{\text{amb}} = 105\ ^\circ\text{C}$ U_R and I_R applied After 1000 h $\varnothing 5$ mm, $\varnothing 6.3$ mm, $\varnothing 8$ mm After 2000 h $\geq \varnothing 10$ mm | $\Delta C/C: \pm 25\ \%$ of initial value $I_L \leq \text{spec. limit}$ $\tan \delta \leq 2 \times \text{spec. limit}$ |
| Shelf life | $T_{\text{amb}} = 105\ ^\circ\text{C}$ No voltage applied After 1000 h After test: U_R to be applied for 30 min 24 h to 48 h before measurement | $\Delta C/C: \pm 20\ \%$ of initial value $I_L \leq \text{spec. limit}$ $\tan \delta \leq 2 \times \text{spec. limit}$ |

Statements about product lifetime are based on calculations and internal testing. They should only be interpreted as estimations. Also due to external factors, the lifetime in the field application may deviate from the calculated lifetime. In general, nothing stated herein shall be construed as a guarantee of durability.



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