

KMQ Series

- Downsized from current standard KMG series
- Solvent resistant type except 160 to 450V_{dc}
(see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant



SPECIFICATIONS

| Items | Characteristics | | | | | | | | | | | | | |
|--|---|--------------------------------------|------|------|------|------|------|--------------------------------------|-------------|-------------|-------------|------|----------------------------|---|
| Category | -55 to +105°C(6.3 to 100V _{dc}) -40 to +105°C(160 to 400V _{dc}) -25 to +105°C(450V _{dc}) | | | | | | | | | | | | | |
| Temperature Range | | | | | | | | | | | | | | |
| Rated Voltage Range | 6.3 to 450V _{dc} | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) | | | | | | | | | | | | | |
| Leakage Current | 6.3 to 100V _{dc} | | | | | | | | | | | | 160 to 450V _{dc} | |
| | I=0.03CV or 4μA, whichever is greater. | | | | | | | | | | | | CV≤1,000 I=0.1CV+40 max. | |
| | | | | | | | | | | | | | CV>1,000 I=0.04CV+100 max. | |
| Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C after 1 minute) | | | | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated voltage (V _{dc}) | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | 100V | 160 to 250V | 350 to 400V | 450V | | |
| | tan δ (Max.) | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.20 | 0.24 | 0.24 | | |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (V _{dc}) | 6.3V | 10V | 16V | 25V | 35V | 50V | 63 to 100V | 160 to 200V | 250V | 350V | 400V | 450V | |
| | Z(-25°C)/Z(+20°C) | ≤φ8 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 6 |
| | | ≥φ10 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 6 |
| | Z(-40°C)/Z(+20°C) | ≤φ8 | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 8 | 10 | 8 | 8 | — |
| ≥φ10 | | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 4 | 4 | 6 | 6 | — | |
| (at 120Hz) | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 1,000 hours (2,000 hours for φ 10 and more) at 105°C. | | | | | | | | | | | | | |
| | Capacitance change | ≤ ±20% of the initial value | | | | | | | | | | | | |
| | D.F. (tan δ) | ≤200% of the initial specified value | | | | | | | | | | | | |
| | Leakage current | ≤The initial specified value | | | | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. | | | | | | | | | | | | | |
| | Rated voltage | 6.3 to 100V _{dc} | | | | | | 160 to 450V _{dc} | | | | | | |
| | Capacitance change | ≤ ±20% of the initial value | | | | | | ≤ ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | ≤200% of the initial specified value | | | | | | ≤200% of the initial specified value | | | | | | |
| | Leakage current | ≤The initial specified value | | | | | | ≤500% of the initial specified value | | | | | | |

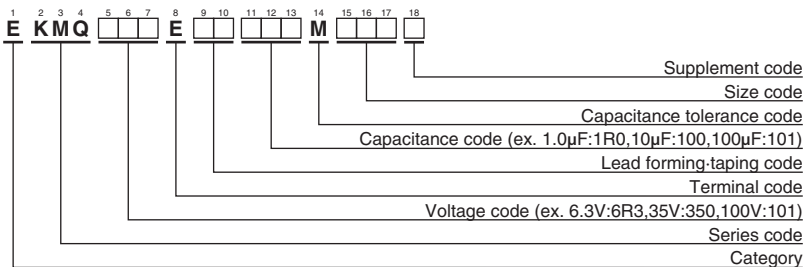
DIMENSIONS [mm]

- Terminal Code : E



| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φD' | φD+0.5max. | | | | | | |
| L' | L+1.5max. | | | | | | |

PART NUMBERING SYSTEM



Please refer to "Product code guide (radial lead type)"

◆ STANDARD RATINGS

□ is not solvent resistant.

| WV (V _{dc}) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mA rms/105°C, 120Hz) | Part No. | WV (V _{dc}) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mA rms/105°C, 120Hz) | Part No. |
|-----------------------|-----------|--------------------|-------|--|-------------------|-----------------------|-----------|--------------------|----------|--|-------------------|
| 6.3 | 1,000 | 8 × 11.5 | 0.28 | 390 | EKMQR3E□□102MHB5D | 63 | 33 | 6.3 × 11 | 0.10 | 100 | EKMQR3E□□330MF11D |
| | 2,200 | 10 × 16 | 0.30 | 635 | EKMQR3E□□222MJ16S | | 47 | 6.3 × 11 | 0.10 | 120 | EKMQR3E□□470MF11D |
| | 3,300 | 10 × 20 | 0.32 | 840 | EKMQR3E□□332MJ20S | | 68 | 8 × 11.5 | 0.10 | 155 | EKMQR3E□□680MHB5D |
| | 4,700 | 12.5 × 20 | 0.34 | 1,090 | EKMQR3E□□472MK20S | | 100 | 8 × 11.5 | 0.10 | 200 | EKMQR3E□□101MHB5D |
| | 6,800 | 12.5 × 25 | 0.38 | 1,350 | EKMQR3E□□682MK25S | | 220 | 10 × 16 | 0.10 | 335 | EKMQR3E□□221MJ16S |
| | 10,000 | 16 × 25 | 0.46 | 1,650 | EKMQR3E□□103ML25S | | 330 | 10 × 20 | 0.10 | 510 | EKMQR3E□□331MJ20S |
| | 15,000 | 16 × 31.5 | 0.56 | 1,820 | EKMQR3E□□153MLN3S | | 470 | 12.5 × 20 | 0.10 | 640 | EKMQR3E□□471MK20S |
| | 22,000 | 18 × 35.5 | 0.70 | 2,280 | EKMQR3E□□223MMP1S | | 1,000 | 16 × 25 | 0.10 | 930 | EKMQR3E□□102ML25S |
| 10 | 220 | 5 × 11 | 0.24 | 155 | EKMQR3E□□221ME11D | 2,200 | 18 × 35.5 | 0.12 | 1,650 | EKMQR3E□□222MMP1S | |
| | 330 | 6.3 × 11 | 0.24 | 210 | EKMQR3E□□331MF11D | 100 | 1.0 | 5 × 11 | 0.08 | 15 | EKMQR3E□□1R0ME11D |
| | 470 | 6.3 × 11 | 0.24 | 250 | EKMQR3E□□471MF11D | | 2.2 | 5 × 11 | 0.08 | 21 | EKMQR3E□□2R2ME11D |
| | 1,000 | 10 × 12.5 | 0.24 | 460 | EKMQR3E□□102MJC5S | | 3.3 | 5 × 11 | 0.08 | 29 | EKMQR3E□□3R3ME11D |
| | 2,200 | 10 × 16 | 0.26 | 705 | EKMQR3E□□222MJ16S | | 4.7 | 5 × 11 | 0.08 | 32 | EKMQR3E□□4R7ME11D |
| | 3,300 | 12.5 × 20 | 0.28 | 1,000 | EKMQR3E□□332MK20S | | 10 | 5 × 11 | 0.08 | 50 | EKMQR3E□□100ME11D |
| | 4,700 | 12.5 × 25 | 0.30 | 1,260 | EKMQR3E□□472MK25S | | 22 | 6.3 × 11 | 0.08 | 93 | EKMQR3E□□220MF11D |
| | 6,800 | 16 × 25 | 0.34 | 1,570 | EKMQR3E□□682ML25S | | 33 | 8 × 11.5 | 0.08 | 130 | EKMQR3E□□330MHB5D |
| | 10,000 | 16 × 31.5 | 0.42 | 1,820 | EKMQR3E□□103MLN3S | | 47 | 8 × 11.5 | 0.08 | 140 | EKMQR3E□□470MHB5D |
| | 15,000 | 16 × 35.5 | 0.52 | 2,050 | EKMQR3E□□153MLP1S | | 68 | 10 × 12.5 | 0.08 | 190 | EKMQR3E□□680MJC5S |
| 22,000 | 18 × 40 | 0.66 | 2,420 | EKMQR3E□□223MM40S | 100 | | 10 × 16 | 0.08 | 240 | EKMQR3E□□101MJ16S | |
| 16 | 220 | 6.3 × 11 | 0.20 | 190 | EKMQR3E□□221MF11D | 220 | 12.5 × 20 | 0.08 | 390 | EKMQR3E□□221MK20S | |
| | 330 | 6.3 × 11 | 0.20 | 225 | EKMQR3E□□331MF11D | 330 | 12.5 × 25 | 0.08 | 540 | EKMQR3E□□331MK25S | |
| | 470 | 8 × 11.5 | 0.20 | 315 | EKMQR3E□□471MHB5D | 470 | 16 × 25 | 0.08 | 715 | EKMQR3E□□471ML25S | |
| | 1,000 | 10 × 12.5 | 0.20 | 500 | EKMQR3E□□102MJC5S | 1,000 | 18 × 35.5 | 0.08 | 960 | EKMQR3E□□102MMP1S | |
| | 2,200 | 10 × 20 | 0.22 | 710 | EKMQR3E□□222MJ20S | 160 | 10 | 8 × 11.5 | 0.20 | 41 | EKMQR3E□□100MHB5D |
| | 3,300 | 12.5 × 25 | 0.24 | 1,170 | EKMQR3E□□332MK25S | | 22 | 10 × 12.5 | 0.20 | 92 | EKMQR3E□□220MJC5S |
| | 4,700 | 16 × 25 | 0.26 | 1,500 | EKMQR3E□□472ML25S | | 33 | 10 × 16 | 0.20 | 125 | EKMQR3E□□330MJ16S |
| | 6,800 | 16 × 25 | 0.30 | 1,600 | EKMQR3E□□682ML25S | | 47 | 10 × 20 | 0.20 | 150 | EKMQR3E□□470MJ20S |
| | 10,000 | 16 × 35.5 | 0.38 | 1,930 | EKMQR3E□□103MLP1S | | 68 | 12.5 × 20 | 0.20 | 250 | EKMQR3E□□680MK20S |
| | 15,000 | 18 × 40 | 0.48 | 2,210 | EKMQR3E□□153MM40S | | 100 | 12.5 × 25 | 0.20 | 310 | EKMQR3E□□101MK25S |
| 25 | 100 | 5 × 11 | 0.16 | 125 | EKMQR3E□□101ME11D | | 220 | 16 × 31.5 | 0.20 | 540 | EKMQR3E□□221MLN3S |
| | 220 | 6.3 × 11 | 0.16 | 200 | EKMQR3E□□221MF11D | | 330 | 18 × 35.5 | 0.20 | 705 | EKMQR3E□□331MMP1S |
| | 330 | 8 × 11.5 | 0.16 | 310 | EKMQR3E□□331MHB5D | | 470 | 18 × 40 | 0.20 | 855 | EKMQR3E□□471MM40S |
| | 470 | 10 × 12.5 | 0.16 | 380 | EKMQR3E□□471MJC5S | | 200 | 1.0 | 6.3 × 11 | 0.20 | 16 |
| | 1,000 | 10 × 16 | 0.16 | 610 | EKMQR3E□□102MJ16S | 2.2 | | 6.3 × 11 | 0.20 | 25 | EKMQR3E□□2R2MF11D |
| | 2,200 | 12.5 × 25 | 0.18 | 1,090 | EKMQR3E□□222MK25S | 3.3 | | 6.3 × 11 | 0.20 | 30 | EKMQR3E□□3R3MF11D |
| | 3,300 | 16 × 25 | 0.20 | 1,400 | EKMQR3E□□332ML25S | 4.7 | | 6.3 × 11 | 0.20 | 35 | EKMQR3E□□4R7MF11D |
| | 4,700 | 16 × 25 | 0.22 | 1,570 | EKMQR3E□□472ML25S | 10 | | 8 × 11.5 | 0.20 | 57 | EKMQR3E□□100MHB5D |
| | 6,800 | 16 × 35.5 | 0.26 | 1,850 | EKMQR3E□□682MLP1S | 22 | | 10 × 16 | 0.20 | 105 | EKMQR3E□□220MJ16S |
| | 10,000 | 18 × 40 | 0.34 | 2,000 | EKMQR3E□□103MM40S | 33 | | 10 × 20 | 0.20 | 140 | EKMQR3E□□330MJ20S |
| 35 | 47 | 5 × 11 | 0.14 | 93 | EKMQR3E□□470ME11D | 47 | | 12.5 × 20 | 0.20 | 195 | EKMQR3E□□470MK20S |
| | 68 | 6.3 × 11 | 0.14 | 110 | EKMQR3E□□680MF11D | 68 | | 12.5 × 25 | 0.20 | 250 | EKMQR3E□□680MK25S |
| | 100 | 6.3 × 11 | 0.14 | 150 | EKMQR3E□□101MF11D | 100 | | 16 × 25 | 0.20 | 335 | EKMQR3E□□101ML25S |
| | 220 | 8 × 11.5 | 0.14 | 270 | EKMQR3E□□221MHB5D | 220 | 16 × 35.5 | 0.20 | 500 | EKMQR3E□□221MLP1S | |
| | 330 | 10 × 12.5 | 0.14 | 350 | EKMQR3E□□331MJC5S | 330 | 18 × 40 | 0.20 | 675 | EKMQR3E□□331MM40S | |
| | 470 | 10 × 16 | 0.14 | 460 | EKMQR3E□□471MJ16S | 250 | 3.3 | 6.3 × 11 | 0.20 | 28 | EKMQR3E□□3R3MF11D |
| | 1,000 | 12.5 × 20 | 0.14 | 810 | EKMQR3E□□102MK20S | | 4.7 | 6.3 × 11 | 0.20 | 35 | EKMQR3E□□4R7MF11D |
| | 2,200 | 16 × 25 | 0.16 | 1,260 | EKMQR3E□□222ML25S | | 10 | 10 × 12.5 | 0.20 | 71 | EKMQR3E□□100MJC5S |
| | 3,300 | 16 × 31.5 | 0.18 | 1,500 | EKMQR3E□□332MLN3S | | 22 | 10 × 20 | 0.20 | 105 | EKMQR3E□□220MJ20S |
| | 4,700 | 16 × 35.5 | 0.20 | 1,780 | EKMQR3E□□472MLP1S | | 33 | 10 × 20 | 0.20 | 140 | EKMQR3E□□330MJ20S |
| 6,800 | 18 × 40 | 0.24 | 2,000 | EKMQR3E□□682MM40S | 47 | | 12.5 × 20 | 0.20 | 190 | EKMQR3E□□470MK20S | |
| 50 | 1.0 | 5 × 11 | 0.12 | 13 | EKMQR3E□□1R0ME11D | | 68 | 16 × 25 | 0.20 | 270 | EKMQR3E□□680ML25S |
| | 2.2 | 5 × 11 | 0.12 | 20 | EKMQR3E□□2R2ME11D | | 100 | 16 × 25 | 0.20 | 310 | EKMQR3E□□101ML25S |
| | 3.3 | 5 × 11 | 0.12 | 25 | EKMQR3E□□3R3ME11D | | 220 | 18 × 35.5 | 0.20 | 485 | EKMQR3E□□221MMP1S |
| | 4.7 | 5 × 11 | 0.12 | 30 | EKMQR3E□□4R7ME11D | | 350 | 2.2 | 6.3 × 11 | 0.24 | 21 |
| | 10 | 5 × 11 | 0.12 | 46 | EKMQR3E□□100ME11D | 3.3 | | 8 × 11.5 | 0.24 | 30 | EKMQR3E□□3R3MHB5D |
| | 22 | 5 × 11 | 0.12 | 68 | EKMQR3E□□220ME11D | 4.7 | | 8 × 11.5 | 0.24 | 39 | EKMQR3E□□4R7MHB5D |
| | 33 | 5 × 11 | 0.12 | 90 | EKMQR3E□□330ME11D | 10 | | 10 × 12.5 | 0.24 | 64 | EKMQR3E□□100MJC5S |
| | 47 | 6.3 × 11 | 0.12 | 115 | EKMQR3E□□470MF11D | 22 | | 12.5 × 20 | 0.24 | 130 | EKMQR3E□□220MK20S |
| | 68 | 6.3 × 11 | 0.12 | 150 | EKMQR3E□□680MF11D | 33 | | 12.5 × 25 | 0.24 | 170 | EKMQR3E□□330MK25S |
| | 100 | 8 × 11.5 | 0.12 | 190 | EKMQR3E□□101MHB5D | 47 | | 16 × 25 | 0.24 | 230 | EKMQR3E□□470ML25S |
| 220 | 10 × 12.5 | 0.12 | 300 | EKMQR3E□□221MJC5S | 68 | 16 × 25 | | 0.24 | 285 | EKMQR3E□□680ML25S | |
| 330 | 10 × 16 | 0.12 | 410 | EKMQR3E□□331MJ16S | 100 | 18 × 31.5 | | 0.24 | 375 | EKMQR3E□□101MMN3S | |
| 470 | 10 × 20 | 0.12 | 540 | EKMQR3E□□471MJ20S | 400 | 1.0 | | 6.3 × 11 | 0.24 | 15 | EKMQR3E□□1R0MF11D |
| 1,000 | 12.5 × 25 | 0.12 | 950 | EKMQR3E□□102MK25S | | 2.2 | 8 × 11.5 | 0.24 | 27 | EKMQR3E□□2R2MHB5D | |
| 2,200 | 16 × 31.5 | 0.14 | 1,410 | EKMQR3E□□222MLN3S | | 3.3 | 8 × 11.5 | 0.24 | 34 | EKMQR3E□□3R3MHB5D | |
| 3,300 | 18 × 35.5 | 0.16 | 1,770 | EKMQR3E□□332MMP1S | | 4.7 | 10 × 12.5 | 0.24 | 42 | EKMQR3E□□4R7MJC5S | |
| 63 | 22 | 5 × 11 | 0.10 | 71 | EKMQR3E□□220ME11D | 10 | 10 × 16 | 0.24 | 64 | EKMQR3E□□100MJ16S | |

□ □ : Enter the appropriate lead forming or taping code.

◆STANDARD RATINGS

is not solvent resistant.

| WV (V _{dc}) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part No. | WV (V _{dc}) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part No. |
|-----------------------|----------|--------------------|-------|--|--------------------|-----------------------|-----------|--------------------|-------|--|--------------------|
| 400 | 22 | 12.5 × 25 | 0.24 | 145 | EKMQ401E□□220MK25S | 450 | 4.7 | 10 × 12.5 | 0.24 | 32 | EKMQ451E□□4R7MJC5S |
| | 33 | 16 × 25 | 0.24 | 195 | EKMQ401E□□330ML25S | | 10 | 10 × 20 | 0.24 | 56 | EKMQ451E□□100MJ20S |
| | 47 | 16 × 25 | 0.24 | 200 | EKMQ401E□□470ML25S | | 22 | 12.5 × 25 | 0.24 | 100 | EKMQ451E□□220MK25S |
| | 68 | 16 × 31.5 | 0.24 | 240 | EKMQ401E□□680MLN3S | | 33 | 16 × 25 | 0.24 | 125 | EKMQ451E□□330ML25S |
| | 100 | 18 × 35.5 | 0.24 | 310 | EKMQ401E□□101MMP1S | | 47 | 16 × 31.5 | 0.24 | 155 | EKMQ451E□□470MLN3S |
| 450 | 2.2 | 8 × 11.5 | 0.24 | 20 | EKMQ451E□□2R2MHB5D | 68 | 18 × 35.5 | 0.24 | 185 | EKMQ451E□□680MMP1S | |
| | 3.3 | 10 × 12.5 | 0.24 | 28 | EKMQ451E□□3R3MJC5S | 100 | 18 × 40 | 0.24 | 200 | EKMQ451E□□101MM40S | |

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

● Frequency Multipliers

| Capacitance(μF) | Frequency(Hz) | 50 | 120 | 300 | 1k | 10k | 100k |
|-----------------|---------------|------|------|------|------|------|------|
| 1.0 to 4.7 | | 0.65 | 1.00 | 1.35 | 1.75 | 2.30 | 2.50 |
| 10 to 68 | | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 1.80 |
| 100 to 1,000 | | 0.80 | 1.00 | 1.15 | 1.30 | 1.40 | 1.50 |
| 2,200 to | | 0.85 | 1.00 | 1.03 | 1.05 | 1.08 | 1.08 |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.