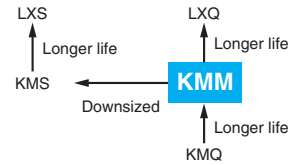


# KMM Series

- Longer life from KMQ series
- Endurance with ripple current : 2,000 to 3,000 hours at 105°C
- Non solvent resistant type
- RoHS2 Compliant



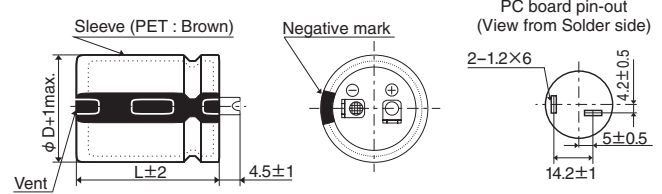
## SPECIFICATIONS

| Items  | Characteristics   |                                       |            |
|--|---|---------------------------------------|------------|
| Category   |   |                                       |            |
| Temperature Range                                      | -25 to +105°C   |                                       |            |
| Rated Voltage Range                                    | 160 to 450V <sub>dc</sub>   |                                       |            |
| Capacitance Tolerance                                  | ±20% (M) (at 20°C, 120Hz)   |                                       |            |
| Leakage Current  | I ≤ 3/√CV<br>Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes)  |                                       |            |
| Dissipation Factor (tan δ)                             | Rated voltage (V <sub>dc</sub> )  | 160 to 400V                           | 420 & 450V |
|  | tan δ (Max.)  | 0.15                                  | 0.20       |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (V <sub>dc</sub> )  | 160 to 400V                           | 420 & 450V |
|  | Z(-25°C)/Z(+20°C)   | 4                                     | 8          |
| 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 3,000 hours 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. |                                       |            |
|  | Capacitance change  | ≤ ±15% of the initial value           |            |
|  | D.F. (tan δ)  | ≤ 150% of the initial specified value |            |
|  | Leakage current   | ≤ The initial specified value         |            |

## DIMENSIONS [mm]

● Terminal Code : VS (φ22 to φ35) : Standard

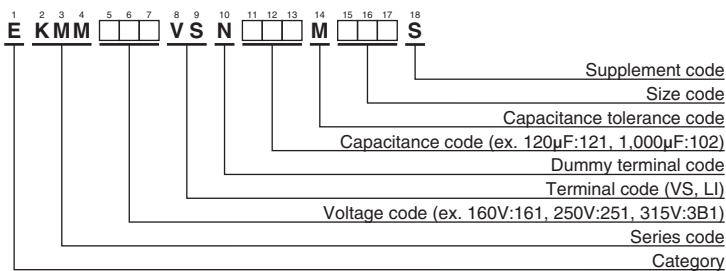
● Terminal Code : LI (φ35)



\* φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

## PART NUMBERING SYSTEM



Please refer to "Product code guide (snap-in type)"

KMM Series

◆ STANDARD RATINGS

| WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Case size<br>φD×L(mm) | tan δ | Rated ripple<br>current<br>(Arms/<br>105°C, 120Hz) | Part No.           | WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Case size<br>φD×L(mm) | tan δ              | Rated ripple<br>current<br>(Arms/<br>105°C, 120Hz) | Part No.           |                    |
|--------------------------|-------------|-----------------------|-------|--|--------------------|--------------------------|-------------|-----------------------|--------------------|--|--------------------|--------------------|
|                          |             |                       |       |  |                    |                          |             |                       |                    |  |                    |                    |
| 160                      | 220         | 22 × 20               | 0.15  | 0.81   | EKMM161VSN221MP20S | 180                      | 1,200       | 25.4 × 50             | 0.15               | 2.55   | EKMM181VSN122MQ50S |                    |
|                          | 270         | 25.4 × 20             | 0.15  | 0.98   | EKMM161VSN271MQ20S |                          | 1,200       | 30 × 40               | 0.15               | 2.55   | EKMM181VSN122MR40S |                    |
|                          | 330         | 22 × 25               | 0.15  | 1.20   | EKMM161VSN331MP25S |                          | 1,200       | 35 × 30               | 0.15               | 2.55   | EKMM181VSN122MA30S |                    |
|                          | 330         | 25.4 × 20             | 0.15  | 1.02   | EKMM161VSN331MQ20S |                          | 1,500       | 30 × 45               | 0.15               | 2.90   | EKMM181VSN152MR45S |                    |
|                          | 390         | 22 × 25               | 0.15  | 1.30   | EKMM161VSN391MP25S |                          | 1,500       | 35 × 35               | 0.15               | 2.90   | EKMM181VSN152MA35S |                    |
|                          | 390         | 25.4 × 25             | 0.15  | 1.26   | EKMM161VSN391MQ25S |                          | 1,800       | 30 × 60               | 0.15               | 3.49   | EKMM181VSN182MR60S |                    |
|                          | 390         | 30 × 20               | 0.15  | 1.25   | EKMM161VSN391MR20S |                          | 1,800       | 35 × 40               | 0.15               | 3.30   | EKMM181VSN182MA40S |                    |
|                          | 470         | 22 × 30               | 0.15  | 1.55   | EKMM161VSN471MP30S |                          | 2,200       | 35 × 50               | 0.15               | 3.65   | EKMM181VSN222MA50S |                    |
|                          | 470         | 25.4 × 25             | 0.15  | 1.55   | EKMM161VSN471MQ25S |                          | 2,700       | 35 × 60               | 0.15               | 4.19   | EKMM181VSN272MA60S |                    |
|                          | 470         | 30 × 20               | 0.15  | 1.30   | EKMM161VSN471MR20S |                          | 200         | 150                   | 22 × 20            | 0.15   | 0.73               | EKMM201VSN151MP20S |
|                          | 560         | 22 × 35               | 0.15  | 1.67   | EKMM161VSN561MP35S |                          |             | 180                   | 22 × 20            | 0.15   | 0.80               | EKMM201VSN181MP20S |
|                          | 560         | 25.4 × 30             | 0.15  | 1.67   | EKMM161VSN561MQ30S |                          |             | 220                   | 25.4 × 20          | 0.15   | 0.85               | EKMM201VSN221MQ20S |
|                          | 560         | 30 × 25               | 0.15  | 1.67   | EKMM161VSN561MR25S |                          |             | 270                   | 22 × 25            | 0.15   | 1.10               | EKMM201VSN271MP25S |
|                          | 560         | 35 × 20               | 0.15  | 1.46   | EKMM161VSN561MA20S |                          |             | 270                   | 30 × 20            | 0.15   | 1.05               | EKMM201VSN271MR20S |
|                          | 680         | 22 × 40               | 0.15  | 1.82   | EKMM161VSN681MP40S |                          |             | 330                   | 22 × 30            | 0.15   | 1.25               | EKMM201VSN331MP30S |
|                          | 680         | 25.4 × 30             | 0.15  | 1.82   | EKMM161VSN681MQ30S | 330                      |             | 25.4 × 25             | 0.15               | 1.25   | EKMM201VSN331MQ25S |                    |
|                          | 680         | 30 × 25               | 0.15  | 1.82   | EKMM161VSN681MR25S | 330                      |             | 30 × 20               | 0.15               | 1.10   | EKMM201VSN331MR20S |                    |
|                          | 680         | 35 × 20               | 0.15  | 1.51   | EKMM161VSN681MA20S | 390                      |             | 22 × 30               | 0.15               | 1.35   | EKMM201VSN391MP30S |                    |
|                          | 820         | 22 × 45               | 0.15  | 2.04   | EKMM161VSN821MP45S | 390                      |             | 25.4 × 25             | 0.15               | 1.35   | EKMM201VSN391MQ25S |                    |
|                          | 820         | 25.4 × 35             | 0.15  | 2.04   | EKMM161VSN821MQ35S | 390                      |             | 35 × 20               | 0.15               | 1.30   | EKMM201VSN391MA20S |                    |
|                          | 820         | 30 × 30               | 0.15  | 2.04   | EKMM161VSN821MR30S | 470                      |             | 22 × 35               | 0.15               | 1.50   | EKMM201VSN471MP35S |                    |
|                          | 820         | 35 × 25               | 0.15  | 2.04   | EKMM161VSN821MA25S | 470                      |             | 25.4 × 30             | 0.15               | 1.50   | EKMM201VSN471MQ30S |                    |
|                          | 1,000       | 22 × 50               | 0.15  | 2.25   | EKMM161VSN102MP50S | 470                      |             | 30 × 25               | 0.15               | 1.50   | EKMM201VSN471MR25S |                    |
|                          | 1,000       | 25.4 × 40             | 0.15  | 2.25   | EKMM161VSN102MQ40S | 470                      |             | 35 × 20               | 0.15               | 1.41   | EKMM201VSN471MA20S |                    |
|                          | 1,000       | 30 × 30               | 0.15  | 2.25   | EKMM161VSN102MR30S | 560                      |             | 22 × 40               | 0.15               | 1.67   | EKMM201VSN561MP40S |                    |
|                          | 1,000       | 35 × 25               | 0.15  | 2.25   | EKMM161VSN102MA25S | 560                      |             | 25.4 × 30             | 0.15               | 1.67   | EKMM201VSN561MQ30S |                    |
|                          | 1,200       | 25.4 × 45             | 0.15  | 2.49   | EKMM161VSN122MQ45S | 560                      |             | 30 × 25               | 0.15               | 1.67   | EKMM201VSN561MR25S |                    |
|                          | 1,200       | 30 × 35               | 0.15  | 2.49   | EKMM161VSN122MR35S | 680                      | 22 × 45     | 0.15                  | 1.78               | EKMM201VSN681MP45S                                 |                    |                    |
|                          | 1,200       | 35 × 30               | 0.15  | 2.49   | EKMM161VSN122MA30S | 680                      | 25.4 × 35   | 0.15                  | 1.78               | EKMM201VSN681MQ35S                                 |                    |                    |
|                          | 1,500       | 25.4 × 60             | 0.15  | 2.97   | EKMM161VSN152MQ60S | 680                      | 30 × 30     | 0.15                  | 1.78               | EKMM201VSN681MR30S                                 |                    |                    |
|                          | 1,500       | 30 × 40               | 0.15  | 2.84   | EKMM161VSN152MR40S | 680                      | 35 × 25     | 0.15                  | 1.78               | EKMM201VSN681MA25S                                 |                    |                    |
|                          | 1,500       | 35 × 30               | 0.15  | 2.84   | EKMM161VSN152MA30S | 820                      | 25.4 × 45   | 0.15                  | 2.04               | EKMM201VSN821MQ45S                                 |                    |                    |
|                          | 1,800       | 30 × 45               | 0.15  | 3.32   | EKMM161VSN182MR45S | 820                      | 30 × 30     | 0.15                  | 2.04               | EKMM201VSN821MR30S                                 |                    |                    |
| 1,800                    | 35 × 35     | 0.15                  | 3.00  | EKMM161VSN182MA35S                                 | 820                | 35 × 25                  | 0.15        | 2.04                  | EKMM201VSN821MA25S |  |                    |                    |
| 2,200                    | 30 × 60     | 0.15                  | 3.86  | EKMM161VSN222MR60S                                 | 1,000              | 25.4 × 50                | 0.15        | 2.30                  | EKMM201VSN102MQ50S |  |                    |                    |
| 2,200                    | 35 × 45     | 0.15                  | 3.50  | EKMM161VSN222MA45S                                 | 1,000              | 30 × 35                  | 0.15        | 2.30                  | EKMM201VSN102MR35S |  |                    |                    |
| 2,700                    | 35 × 50     | 0.15                  | 4.00  | EKMM161VSN272MA50S                                 | 1,000              | 35 × 30                  | 0.15        | 2.30                  | EKMM201VSN102MA30S |  |                    |                    |
| 3,300                    | 35 × 60     | 0.15                  | 4.63  | EKMM161VSN332MA60S                                 | 1,200              | 25.4 × 60                | 0.15        | 2.66                  | EKMM201VSN122MQ60S |  |                    |                    |
| 180                      | 180         | 22 × 20               | 0.15  | 0.80   | EKMM181VSN181MP20S | 1,200                    | 30 × 40     | 0.15                  | 2.65               | EKMM201VSN122MR40S                                 |                    |                    |
|                          | 220         | 25.4 × 20             | 0.15  | 0.90   | EKMM181VSN221MQ20S | 1,200                    | 35 × 35     | 0.15                  | 2.65               | EKMM201VSN122MA35S                                 |                    |                    |
|                          | 270         | 22 × 25               | 0.15  | 1.00   | EKMM181VSN271MP25S | 1,500                    | 30 × 50     | 0.15                  | 3.08               | EKMM201VSN152MR50S                                 |                    |                    |
|                          | 270         | 25.4 × 20             | 0.15  | 0.95   | EKMM181VSN271MQ20S | 1,500                    | 35 × 40     | 0.15                  | 3.08               | EKMM201VSN152MA40S                                 |                    |                    |
|                          | 330         | 22 × 25               | 0.15  | 1.20   | EKMM181VSN331MP25S | 1,800                    | 30 × 60     | 0.15                  | 3.49               | EKMM201VSN182MR60S                                 |                    |                    |
|                          | 330         | 25.4 × 25             | 0.15  | 1.16   | EKMM181VSN331MQ25S | 1,800                    | 35 × 45     | 0.15                  | 3.48               | EKMM201VSN182MA45S                                 |                    |                    |
|                          | 330         | 30 × 20               | 0.15  | 1.15   | EKMM181VSN331MR20S | 2,200                    | 35 × 50     | 0.15                  | 3.78               | EKMM201VSN222MA50S                                 |                    |                    |
|                          | 390         | 22 × 30               | 0.15  | 1.35   | EKMM181VSN391MP30S | 220                      | 150         | 22 × 20               | 0.15               | 0.67   | EKMM221VSN151MP20S |                    |
|                          | 390         | 25.4 × 25             | 0.15  | 1.35   | EKMM181VSN391MQ25S |                          | 180         | 25.4 × 20             | 0.15               | 0.76   | EKMM221VSN181MQ20S |                    |
|                          | 390         | 30 × 20               | 0.15  | 1.20   | EKMM181VSN391MR20S |                          | 220         | 22 × 25               | 0.15               | 1.00   | EKMM221VSN221MP25S |                    |
|                          | 470         | 22 × 35               | 0.15  | 1.50   | EKMM181VSN471MP35S |                          | 220         | 25.4 × 20             | 0.15               | 0.84   | EKMM221VSN221MQ20S |                    |
|                          | 470         | 25.4 × 30             | 0.15  | 1.50   | EKMM181VSN471MQ30S |                          | 270         | 22 × 30               | 0.15               | 1.15   | EKMM221VSN271MP30S |                    |
|                          | 470         | 30 × 25               | 0.15  | 1.50   | EKMM181VSN471MR25S |                          | 270         | 25.4 × 25             | 0.15               | 1.08   | EKMM221VSN271MQ25S |                    |
|                          | 470         | 35 × 20               | 0.15  | 1.36   | EKMM181VSN471MA20S |                          | 270         | 30 × 20               | 0.15               | 0.98   | EKMM221VSN271MR20S |                    |
|                          | 560         | 22 × 40               | 0.15  | 1.67   | EKMM181VSN561MP40S |                          | 330         | 22 × 35               | 0.15               | 1.25   | EKMM221VSN331MP35S |                    |
|                          | 560         | 25.4 × 30             | 0.15  | 1.67   | EKMM181VSN561MQ30S |                          | 330         | 25.4 × 25             | 0.15               | 1.25   | EKMM221VSN331MQ25S |                    |
|                          | 560         | 30 × 25               | 0.15  | 1.67   | EKMM181VSN561MR25S |                          | 330         | 35 × 20               | 0.15               | 1.13   | EKMM221VSN331MA20S |                    |
|                          | 560         | 35 × 20               | 0.15  | 1.43   | EKMM181VSN561MA20S |                          | 390         | 22 × 35               | 0.15               | 1.40   | EKMM221VSN391MP35S |                    |
|                          | 680         | 22 × 45               | 0.15  | 1.78   | EKMM181VSN681MP45S |                          | 390         | 25.4 × 30             | 0.15               | 1.40   | EKMM221VSN391MQ30S |                    |
|                          | 680         | 25.4 × 35             | 0.15  | 1.78   | EKMM181VSN681MQ35S |                          | 390         | 30 × 25               | 0.15               | 1.36   | EKMM221VSN391MR25S |                    |
|                          | 680         | 30 × 30               | 0.15  | 1.78   | EKMM181VSN681MR30S |                          | 390         | 35 × 20               | 0.15               | 1.23   | EKMM221VSN391MA20S |                    |
|                          | 680         | 35 × 25               | 0.15  | 1.83   | EKMM181VSN681MA25S |                          | 470         | 22 × 40               | 0.15               | 1.51   | EKMM221VSN471MP40S |                    |
|                          | 820         | 22 × 50               | 0.15  | 2.04   | EKMM181VSN821MP50S |                          | 470         | 25.4 × 35             | 0.15               | 1.54   | EKMM221VSN471MQ35S |                    |
|                          | 820         | 25.4 × 40             | 0.15  | 2.04   | EKMM181VSN821MQ40S |                          | 470         | 30 × 25               | 0.15               | 1.50   | EKMM221VSN471MR25S |                    |
|                          | 820         | 30 × 30               | 0.15  | 2.04   | EKMM181VSN821MR30S |                          | 560         | 22 × 45               | 0.15               | 1.70   | EKMM221VSN561MP45S |                    |
|                          | 820         | 35 × 25               | 0.15  | 2.04   | EKMM181VSN821MA25S | 560                      | 25.4 × 40   | 0.15                  | 1.72               | EKMM221VSN561MQ40S                                 |                    |                    |
|                          | 1,000       | 25.4 × 45             | 0.15  | 2.30   | EKMM181VSN102MQ45S | 560                      | 30 × 30     | 0.15                  | 1.70               | EKMM221VSN561MR30S                                 |                    |                    |
|                          | 1,000       | 30 × 35               | 0.15  | 2.30   | EKMM181VSN102MR35S | 560                      | 35 × 25     | 0.15                  | 1.71               | EKMM221VSN561MA25S                                 |                    |                    |
|                          | 1,000       | 35 × 30               | 0.15  | 2.30   | EKMM181VSN102MA30S | 680                      | 25.4 × 45   | 0.15                  | 1.94               | EKMM221VSN681MQ45S                                 |                    |                    |

◆ STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF)  | Case size φD×L(mm) | tan δ | Rated ripple current (Arms/105°C, 120Hz) | Part No.           | WV (V <sub>dc</sub> ) | Cap (μF)  | Case size φD×L(mm) | tan δ | Rated ripple current (Arms/105°C, 120Hz) | Part No.           |
|-----------------------|-----------|--------------------|-------|--|--------------------|-----------------------|-----------|--------------------|-------|--|--------------------|
| 220                   | 680       | 30 × 35            | 0.15  | 1.93                                     | EKMM221VSN681MR35S | 315                   | 220       | 25.4 × 30          | 0.15  | 1.04                                     | EKMM3B1VSN221MQ30S |
|                       | 680       | 35 × 25            | 0.15  | 1.89                                     | EKMM221VSN681MA25S |                       | 220       | 30 × 25            | 0.15  | 1.04                                     | EKMM3B1VSN221MR25S |
|                       | 820       | 25.4 × 50          | 0.15  | 2.18                                     | EKMM221VSN821MQ50S |                       | 220       | 35 × 20            | 0.15  | 0.90                                     | EKMM3B1VSN221MA20S |
|                       | 820       | 30 × 40            | 0.15  | 2.19                                     | EKMM221VSN821MR40S |                       | 270       | 22 × 45            | 0.15  | 1.16                                     | EKMM3B1VSN271MP45S |
|                       | 820       | 35 × 30            | 0.15  | 2.16                                     | EKMM221VSN821MA30S |                       | 270       | 25.4 × 35          | 0.15  | 1.16                                     | EKMM3B1VSN271MQ35S |
|                       | 1,000     | 25.4 × 60          | 0.15  | 2.54                                     | EKMM221VSN102MQ60S |                       | 270       | 30 × 25            | 0.15  | 1.16                                     | EKMM3B1VSN271MR25S |
|                       | 1,000     | 30 × 45            | 0.15  | 2.50                                     | EKMM221VSN102MR45S |                       | 270       | 35 × 25            | 0.15  | 1.15                                     | EKMM3B1VSN271MA25S |
|                       | 1,000     | 35 × 35            | 0.15  | 2.44                                     | EKMM221VSN102MA35S |                       | 330       | 22 × 50            | 0.15  | 1.33                                     | EKMM3B1VSN331MP50S |
|                       | 1,200     | 30 × 50            | 0.15  | 2.81                                     | EKMM221VSN122MR50S |                       | 330       | 25.4 × 40          | 0.15  | 1.33                                     | EKMM3B1VSN331MQ40S |
|                       | 1,200     | 35 × 40            | 0.15  | 2.79                                     | EKMM221VSN122MA40S |                       | 330       | 30 × 30            | 0.15  | 1.33                                     | EKMM3B1VSN331MR30S |
|                       | 1,500     | 30 × 60            | 0.15  | 3.30                                     | EKMM221VSN152MR60S |                       | 330       | 35 × 25            | 0.15  | 1.33                                     | EKMM3B1VSN331MA25S |
|                       | 1,500     | 35 × 45            | 0.15  | 3.22                                     | EKMM221VSN152MA45S |                       | 390       | 25.4 × 45          | 0.15  | 1.47                                     | EKMM3B1VSN391MQ45S |
|                       | 1,800     | 35 × 50            | 0.15  | 3.63                                     | EKMM221VSN182MA50S |                       | 390       | 30 × 35            | 0.15  | 1.47                                     | EKMM3B1VSN391MR35S |
|                       | 2,200     | 35 × 60            | 0.15  | 4.23                                     | EKMM221VSN222MA60S |                       | 390       | 35 × 30            | 0.15  | 1.47                                     | EKMM3B1VSN391MA30S |
| 250                   | 120       | 22 × 20            | 0.15  | 0.60                                     | EKMM251VSN121MP20S | 470                   | 25.4 × 50 | 0.15               | 1.70  | EKMM3B1VSN471MQ50S                       |                    |
|                       | 150       | 25.4 × 20          | 0.15  | 0.74                                     | EKMM251VSN151MQ20S | 470                   | 30 × 40   | 0.15               | 1.70  | EKMM3B1VSN471MR40S                       |                    |
|                       | 180       | 22 × 25            | 0.15  | 0.78                                     | EKMM251VSN181MP25S | 470                   | 35 × 30   | 0.15               | 1.70  | EKMM3B1VSN471MA30S                       |                    |
|                       | 180       | 25.4 × 20          | 0.15  | 0.75                                     | EKMM251VSN181MQ20S | 560                   | 30 × 45   | 0.15               | 2.05  | EKMM3B1VSN561MR45S                       |                    |
|                       | 220       | 22 × 25            | 0.15  | 1.00                                     | EKMM251VSN221MP25S | 560                   | 35 × 35   | 0.15               | 2.05  | EKMM3B1VSN561MA35S                       |                    |
|                       | 220       | 25.4 × 25          | 0.15  | 0.95                                     | EKMM251VSN221MQ25S | 680                   | 30 × 50   | 0.15               | 2.17  | EKMM3B1VSN681MR50S                       |                    |
|                       | 220       | 30 × 20            | 0.15  | 0.95                                     | EKMM251VSN221MR20S | 680                   | 35 × 40   | 0.15               | 2.17  | EKMM3B1VSN681MA40S                       |                    |
|                       | 270       | 22 × 30            | 0.15  | 1.18                                     | EKMM251VSN271MP30S | 820                   | 35 × 45   | 0.15               | 2.20  | EKMM3B1VSN821MA45S                       |                    |
|                       | 270       | 25.4 × 25          | 0.15  | 1.18                                     | EKMM251VSN271MQ25S | 1,000                 | 35 × 60   | 0.15               | 2.55  | EKMM3B1VSN102MA60S                       |                    |
|                       | 270       | 30 × 20            | 0.15  | 1.00                                     | EKMM251VSN271MR20S | 350                   | 56        | 22 × 20            | 0.15  | 0.41                                     | EKMM351VSN560MP20S |
|                       | 330       | 22 × 35            | 0.15  | 1.30                                     | EKMM251VSN331MP35S |                       | 68        | 25.4 × 20          | 0.15  | 0.46                                     | EKMM351VSN680MQ20S |
|                       | 330       | 25.4 × 30          | 0.15  | 1.30                                     | EKMM251VSN331MQ30S |                       | 82        | 22 × 25            | 0.15  | 0.55                                     | EKMM351VSN820MP25S |
|                       | 330       | 30 × 25            | 0.15  | 1.30                                     | EKMM251VSN331MR25S |                       | 82        | 25.4 × 20          | 0.15  | 0.51                                     | EKMM351VSN820MQ20S |
|                       | 330       | 35 × 20            | 0.15  | 1.16                                     | EKMM251VSN331MA20S |                       | 100       | 22 × 25            | 0.15  | 0.69                                     | EKMM351VSN101MP25S |
|                       | 390       | 22 × 40            | 0.15  | 1.49                                     | EKMM251VSN391MP40S |                       | 100       | 30 × 20            | 0.15  | 0.60                                     | EKMM351VSN101MR20S |
|                       | 390       | 25.4 × 35          | 0.15  | 1.49                                     | EKMM251VSN391MQ35S |                       | 120       | 22 × 30            | 0.15  | 0.75                                     | EKMM351VSN121MP30S |
|                       | 390       | 30 × 25            | 0.15  | 1.49                                     | EKMM251VSN391MR25S |                       | 120       | 25.4 × 25          | 0.15  | 0.75                                     | EKMM351VSN121MQ25S |
|                       | 470       | 22 × 45            | 0.15  | 1.65                                     | EKMM251VSN471MP45S |                       | 120       | 30 × 20            | 0.15  | 0.65                                     | EKMM351VSN121MR20S |
|                       | 470       | 25.4 × 35          | 0.15  | 1.65                                     | EKMM251VSN471MQ35S |                       | 150       | 22 × 35            | 0.15  | 0.82                                     | EKMM351VSN151MP35S |
|                       | 470       | 30 × 30            | 0.15  | 1.65                                     | EKMM251VSN471MR30S |                       | 150       | 25.4 × 30          | 0.15  | 0.83                                     | EKMM351VSN151MQ30S |
|                       | 470       | 35 × 25            | 0.15  | 1.65                                     | EKMM251VSN471MA25S |                       | 150       | 30 × 25            | 0.15  | 0.82                                     | EKMM351VSN151MR25S |
|                       | 560       | 22 × 50            | 0.15  | 1.67                                     | EKMM251VSN561MP50S |                       | 150       | 35 × 20            | 0.15  | 0.76                                     | EKMM351VSN151MA20S |
|                       | 560       | 25.4 × 40          | 0.15  | 1.80                                     | EKMM251VSN561MQ40S |                       | 180       | 22 × 40            | 0.15  | 0.92                                     | EKMM351VSN181MP40S |
|                       | 560       | 30 × 30            | 0.15  | 1.80                                     | EKMM251VSN561MR30S |                       | 180       | 25.4 × 30          | 0.15  | 0.92                                     | EKMM351VSN181MQ30S |
|                       | 560       | 35 × 25            | 0.15  | 1.80                                     | EKMM251VSN561MA25S |                       | 180       | 30 × 25            | 0.15  | 0.90                                     | EKMM351VSN181MR25S |
|                       | 680       | 25.4 × 50          | 0.15  | 2.00                                     | EKMM251VSN681MQ50S |                       | 220       | 22 × 45            | 0.15  | 1.05                                     | EKMM351VSN221MP45S |
|                       | 680       | 30 × 35            | 0.15  | 2.00                                     | EKMM251VSN681MR35S |                       | 220       | 25.4 × 35          | 0.15  | 1.04                                     | EKMM351VSN221MQ35S |
|                       | 680       | 35 × 30            | 0.15  | 2.00                                     | EKMM251VSN681MA30S |                       | 220       | 30 × 30            | 0.15  | 1.02                                     | EKMM351VSN221MR30S |
| 820                   | 25.4 × 60 | 0.15               | 2.20  | EKMM251VSN821MQ60S                       | 220                |                       | 35 × 25   | 0.15               | 1.04  | EKMM351VSN221MA25S                       |                    |
| 820                   | 30 × 40   | 0.15               | 2.30  | EKMM251VSN821MR40S                       | 270                |                       | 22 × 50   | 0.15               | 1.16  | EKMM351VSN271MP50S                       |                    |
| 820                   | 35 × 35   | 0.15               | 2.30  | EKMM251VSN821MA35S                       | 270                |                       | 25.4 × 40 | 0.15               | 1.18  | EKMM351VSN271MQ40S                       |                    |
| 1,000                 | 30 × 50   | 0.15               | 2.47  | EKMM251VSN102MR50S                       | 270                |                       | 30 × 30   | 0.15               | 1.17  | EKMM351VSN271MR30S                       |                    |
| 1,000                 | 35 × 40   | 0.15               | 2.47  | EKMM251VSN102MA40S                       | 270                |                       | 35 × 25   | 0.15               | 1.20  | EKMM351VSN271MA25S                       |                    |
| 1,200                 | 30 × 60   | 0.15               | 2.85  | EKMM251VSN122MR60S                       | 330                |                       | 25.4 × 45 | 0.15               | 1.29  | EKMM351VSN331MQ45S                       |                    |
| 1,200                 | 35 × 45   | 0.15               | 2.60  | EKMM251VSN122MA45S                       | 330                |                       | 30 × 35   | 0.15               | 1.34  | EKMM351VSN331MR35S                       |                    |
| 1,500                 | 35 × 50   | 0.15               | 3.00  | EKMM251VSN152MA50S                       | 330                |                       | 35 × 30   | 0.15               | 1.22  | EKMM351VSN331MA30S                       |                    |
| 1,800                 | 35 × 60   | 0.15               | 3.42  | EKMM251VSN182MA60S                       | 390                |                       | 25.4 × 50 | 0.15               | 1.51  | EKMM351VSN391MQ50S                       |                    |
| 315                   | 68        | 22 × 20            | 0.15  | 0.45                                     | EKMM3B1VSN680MP20S | 390                   | 30 × 40   | 0.15               | 1.51  | EKMM351VSN391MR40S                       |                    |
|                       | 82        | 22 × 20            | 0.15  | 0.47                                     | EKMM3B1VSN820MP20S | 390                   | 35 × 35   | 0.15               | 1.47  | EKMM351VSN391MA35S                       |                    |
|                       | 100       | 22 × 25            | 0.15  | 0.61                                     | EKMM3B1VSN101MP25S | 470                   | 25.4 × 60 | 0.15               | 1.66  | EKMM351VSN471MQ60S                       |                    |
|                       | 100       | 25.4 × 20          | 0.15  | 0.56                                     | EKMM3B1VSN101MQ20S | 470                   | 30 × 45   | 0.15               | 1.65  | EKMM351VSN471MR45S                       |                    |
|                       | 120       | 22 × 25            | 0.15  | 0.75                                     | EKMM3B1VSN121MP25S | 470                   | 35 × 35   | 0.15               | 1.69  | EKMM351VSN471MA35S                       |                    |
|                       | 120       | 25.4 × 20          | 0.15  | 0.62                                     | EKMM3B1VSN121MQ20S | 560                   | 30 × 50   | 0.15               | 1.85  | EKMM351VSN561MR50S                       |                    |
|                       | 120       | 30 × 20            | 0.15  | 0.65                                     | EKMM3B1VSN121MR20S | 560                   | 35 × 40   | 0.15               | 1.90  | EKMM351VSN561MA40S                       |                    |
|                       | 150       | 22 × 30            | 0.15  | 0.82                                     | EKMM3B1VSN151MP30S | 680                   | 30 × 60   | 0.15               | 2.15  | EKMM351VSN681MR60S                       |                    |
|                       | 150       | 25.4 × 25          | 0.15  | 0.82                                     | EKMM3B1VSN151MQ25S | 680                   | 35 × 50   | 0.15               | 1.99  | EKMM351VSN681MA50S                       |                    |
|                       | 150       | 30 × 20            | 0.15  | 0.70                                     | EKMM3B1VSN151MR20S | 820                   | 35 × 60   | 0.15               | 2.31  | EKMM351VSN821MA60S                       |                    |
|                       | 150       | 35 × 20            | 0.15  | 0.76                                     | EKMM3B1VSN151MA20S | 400                   | 47        | 22 × 20            | 0.15  | 0.37                                     | EKMM401VSN470MP20S |
|                       | 180       | 22 × 35            | 0.15  | 0.92                                     | EKMM3B1VSN181MP35S |                       | 56        | 25.4 × 20          | 0.15  | 0.42                                     | EKMM401VSN560MQ20S |
|                       | 180       | 25.4 × 25          | 0.15  | 0.92                                     | EKMM3B1VSN181MQ25S |                       | 68        | 22 × 25            | 0.15  | 0.50                                     | EKMM401VSN680MP25S |
|                       | 180       | 30 × 25            | 0.15  | 0.90                                     | EKMM3B1VSN181MR25S |                       | 68        | 25.4 × 20          | 0.15  | 0.46                                     | EKMM401VSN680MQ20S |
| 180                   | 35 × 20   | 0.15               | 0.85  | EKMM3B1VSN181MA20S                       | 82                 |                       | 22 × 25   | 0.15               | 0.64  | EKMM401VSN820MP25S                       |                    |
| 220                   | 22 × 40   | 0.15               | 1.04  | EKMM3B1VSN221MP40S                       | 82                 |                       | 30 × 20   | 0.15               | 0.55  | EKMM401VSN820MR20S                       |                    |

KMM Series

◆STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (Arms/105°C, 120Hz) | Part No.           | WV (V <sub>dc</sub> ) | Cap (μF) | Case size φD×L(mm) | tan δ     | Rated ripple current (Arms/105°C, 120Hz) | Part No.           |                    |
|-----------------------|----------|--------------------|-------|--|--------------------|-----------------------|----------|--------------------|-----------|--|--------------------|--------------------|
| 400                   | 100      | 22 × 30            | 0.15  | 0.70                                     | EKMM401VSN101MP30S | 420                   | 180      | 25.4 × 35          | 0.20      | 0.95                                     | EKMM421VSN181MQ35S |                    |
|                       | 100      | 25.4 × 25          | 0.15  | 0.70                                     | EKMM401VSN101MQ25S |                       | 180      | 30 × 30            | 0.20      | 0.95                                     | EKMM421VSN181MR30S |                    |
|                       | 100      | 30 × 20            | 0.15  | 0.60                                     | EKMM401VSN101MR20S |                       | 180      | 35 × 25            | 0.20      | 0.94                                     | EKMM421VSN181MA25S |                    |
|                       | 120      | 22 × 35            | 0.15  | 0.75                                     | EKMM401VSN121MP35S |                       | 220      | 22 × 50            | 0.20      | 1.10                                     | EKMM421VSN221MP50S |                    |
|                       | 120      | 25.4 × 25          | 0.15  | 0.75                                     | EKMM401VSN121MQ25S |                       | 220      | 25.4 × 45          | 0.20      | 1.10                                     | EKMM421VSN221MQ45S |                    |
|                       | 120      | 30 × 25            | 0.15  | 0.73                                     | EKMM401VSN121MR25S |                       | 220      | 30 × 35            | 0.20      | 1.10                                     | EKMM421VSN221MR35S |                    |
|                       | 120      | 35 × 20            | 0.15  | 0.75                                     | EKMM401VSN121MA20S |                       | 220      | 35 × 25            | 0.20      | 1.10                                     | EKMM421VSN221MA25S |                    |
|                       | 150      | 22 × 40            | 0.15  | 0.88                                     | EKMM401VSN151MP40S |                       | 270      | 25.4 × 50          | 0.20      | 1.22                                     | EKMM421VSN271MQ50S |                    |
|                       | 150      | 25.4 × 30          | 0.15  | 0.88                                     | EKMM401VSN151MQ30S |                       | 270      | 30 × 40            | 0.20      | 1.22                                     | EKMM421VSN271MR40S |                    |
|                       | 150      | 30 × 25            | 0.15  | 0.88                                     | EKMM401VSN151MR25S |                       | 270      | 35 × 30            | 0.20      | 1.22                                     | EKMM421VSN271MA30S |                    |
|                       | 150      | 35 × 20            | 0.15  | 0.80                                     | EKMM401VSN151MA20S |                       | 330      | 25.4 × 60          | 0.20      | 1.41                                     | EKMM421VSN331MQ60S |                    |
|                       | 180      | 22 × 45            | 0.15  | 0.98                                     | EKMM401VSN181MP45S |                       | 330      | 30 × 45            | 0.20      | 1.45                                     | EKMM421VSN331MR45S |                    |
|                       | 180      | 25.4 × 35          | 0.15  | 0.98                                     | EKMM401VSN181MQ35S |                       | 330      | 35 × 35            | 0.20      | 1.45                                     | EKMM421VSN331MA35S |                    |
|                       | 180      | 30 × 30            | 0.15  | 0.98                                     | EKMM401VSN181MR30S |                       | 390      | 30 × 50            | 0.20      | 1.55                                     | EKMM421VSN391MR50S |                    |
|                       | 180      | 35 × 25            | 0.15  | 0.98                                     | EKMM401VSN181MA25S |                       | 390      | 35 × 40            | 0.20      | 1.55                                     | EKMM421VSN391MA40S |                    |
|                       | 220      | 22 × 50            | 0.15  | 1.10                                     | EKMM401VSN221MP50S |                       | 470      | 30 × 60            | 0.20      | 1.79                                     | EKMM421VSN471MR60S |                    |
|                       | 220      | 25.4 × 40          | 0.15  | 1.10                                     | EKMM401VSN221MQ40S |                       | 470      | 35 × 45            | 0.20      | 1.90                                     | EKMM421VSN471MA45S |                    |
|                       | 220      | 30 × 30            | 0.15  | 1.10                                     | EKMM401VSN221MR30S |                       | 560      | 35 × 50            | 0.20      | 2.15                                     | EKMM421VSN561MA50S |                    |
|                       | 220      | 35 × 25            | 0.15  | 1.10                                     | EKMM401VSN221MA25S |                       | 680      | 35 × 60            | 0.20      | 2.27                                     | EKMM421VSN681MA60S |                    |
|                       | 270      | 25.4 × 45          | 0.15  | 1.22                                     | EKMM401VSN271MQ45S |                       | 450      | 56                 | 22 × 25   | 0.20                                     | 0.40               | EKMM451VSN560MP25S |
|                       | 270      | 30 × 35            | 0.15  | 1.22                                     | EKMM401VSN271MR35S |                       |          | 68                 | 22 × 30   | 0.20                                     | 0.53               | EKMM451VSN680MP30S |
|                       | 270      | 35 × 30            | 0.15  | 1.22                                     | EKMM401VSN271MA30S |                       |          | 68                 | 25.4 × 25 | 0.20                                     | 0.50               | EKMM451VSN680MQ25S |
|                       | 330      | 25.4 × 50          | 0.15  | 1.44                                     | EKMM401VSN331MQ50S |                       |          | 82                 | 22 × 30   | 0.20                                     | 0.64               | EKMM451VSN820MP30S |
|                       | 330      | 30 × 40            | 0.15  | 1.44                                     | EKMM401VSN331MR40S |                       |          | 82                 | 25.4 × 25 | 0.20                                     | 0.64               | EKMM451VSN820MQ25S |
|                       | 330      | 35 × 30            | 0.15  | 1.44                                     | EKMM401VSN331MA30S |                       |          | 100                | 22 × 35   | 0.20                                     | 0.69               | EKMM451VSN101MP35S |
|                       | 390      | 25.4 × 60          | 0.15  | 1.51                                     | EKMM401VSN391MQ60S |                       |          | 100                | 25.4 × 30 | 0.20                                     | 0.69               | EKMM451VSN101MQ30S |
|                       | 390      | 30 × 45            | 0.15  | 1.60                                     | EKMM401VSN391MR45S |                       |          | 100                | 30 × 25   | 0.20                                     | 0.64               | EKMM451VSN101MR25S |
|                       | 390      | 35 × 35            | 0.15  | 1.60                                     | EKMM401VSN391MA35S |                       |          | 120                | 22 × 40   | 0.20                                     | 0.80               | EKMM451VSN121MP40S |
| 470                   | 30 × 50  | 0.15               | 1.90  | EKMM401VSN471MR50S                       | 120                | 25.4 × 30             |          | 0.20               | 0.80      | EKMM451VSN121MQ30S                       |                    |                    |
| 470                   | 35 × 40  | 0.15               | 1.90  | EKMM401VSN471MA40S                       | 120                | 30 × 25               |          | 0.20               | 0.80      | EKMM451VSN121MR25S                       |                    |                    |
| 560                   | 30 × 60  | 0.15               | 2.10  | EKMM401VSN561MR60S                       | 120                | 35 × 25               |          | 0.20               | 0.73      | EKMM451VSN121MA25S                       |                    |                    |
| 560                   | 35 × 45  | 0.15               | 2.12  | EKMM401VSN561MA45S                       | 150                | 22 × 45               |          | 0.20               | 0.88      | EKMM451VSN151MP45S                       |                    |                    |
| 680                   | 35 × 60  | 0.15               | 2.27  | EKMM401VSN681MA60S                       | 150                | 25.4 × 35             |          | 0.20               | 0.88      | EKMM451VSN151MQ35S                       |                    |                    |
| 420                   | 47       | 22 × 20            | 0.20  | 0.37                                     | EKMM421VSN470MP20S | 150                   |          | 30 × 30            | 0.20      | 0.88                                     | EKMM451VSN151MR30S |                    |
|                       | 56       | 25.4 × 20          | 0.20  | 0.42                                     | EKMM421VSN560MQ20S | 150                   |          | 35 × 25            | 0.20      | 0.75                                     | EKMM451VSN151MA25S |                    |
|                       | 68       | 22 × 25            | 0.20  | 0.50                                     | EKMM421VSN680MP25S | 180                   |          | 22 × 50            | 0.20      | 1.00                                     | EKMM451VSN181MP50S |                    |
|                       | 68       | 25.4 × 20          | 0.20  | 0.46                                     | EKMM421VSN680MQ20S | 180                   |          | 25.4 × 40          | 0.20      | 1.00                                     | EKMM451VSN181MQ40S |                    |
|                       | 82       | 22 × 25            | 0.20  | 0.64                                     | EKMM421VSN820MP25S | 180                   |          | 30 × 30            | 0.20      | 1.00                                     | EKMM451VSN181MR30S |                    |
|                       | 82       | 25.4 × 25          | 0.20  | 0.58                                     | EKMM421VSN820MQ25S | 220                   |          | 25.4 × 45          | 0.20      | 1.12                                     | EKMM451VSN221MQ45S |                    |
|                       | 82       | 30 × 20            | 0.20  | 0.53                                     | EKMM421VSN820MR20S | 220                   |          | 30 × 35            | 0.20      | 1.12                                     | EKMM451VSN221MR35S |                    |
|                       | 100      | 22 × 30            | 0.20  | 0.70                                     | EKMM421VSN101MP30S | 220                   |          | 35 × 30            | 0.20      | 1.12                                     | EKMM451VSN221MA30S |                    |
|                       | 100      | 25.4 × 25          | 0.20  | 0.70                                     | EKMM421VSN101MQ25S | 270                   |          | 25.4 × 60          | 0.20      | 1.18                                     | EKMM451VSN271MQ60S |                    |
|                       | 100      | 30 × 20            | 0.20  | 0.59                                     | EKMM421VSN101MR20S | 270                   |          | 30 × 40            | 0.20      | 1.28                                     | EKMM451VSN271MR40S |                    |
|                       | 120      | 22 × 35            | 0.20  | 0.75                                     | EKMM421VSN121MP35S | 270                   |          | 35 × 35            | 0.20      | 1.28                                     | EKMM451VSN271MA35S |                    |
|                       | 120      | 25.4 × 30          | 0.20  | 0.75                                     | EKMM421VSN121MQ30S | 330                   |          | 30 × 50            | 0.20      | 1.45                                     | EKMM451VSN331MR50S |                    |
|                       | 120      | 30 × 25            | 0.20  | 0.73                                     | EKMM421VSN121MR25S | 330                   |          | 35 × 40            | 0.20      | 1.45                                     | EKMM451VSN331MA40S |                    |
|                       | 120      | 35 × 20            | 0.20  | 0.67                                     | EKMM421VSN121MA20S | 390                   |          | 30 × 60            | 0.20      | 1.51                                     | EKMM451VSN391MR60S |                    |
|                       | 150      | 22 × 40            | 0.20  | 0.88                                     | EKMM421VSN151MP40S | 390                   | 35 × 40  | 0.20               | 1.55      | EKMM451VSN391MA40S                       |                    |                    |
|                       | 150      | 25.4 × 35          | 0.20  | 0.88                                     | EKMM421VSN151MQ35S | 470                   | 35 × 50  | 0.20               | 1.85      | EKMM451VSN471MA50S                       |                    |                    |
|                       | 150      | 30 × 25            | 0.20  | 0.88                                     | EKMM421VSN151MR25S | 560                   | 35 × 60  | 0.20               | 1.91      | EKMM451VSN561MA60S                       |                    |                    |
|                       | 180      | 22 × 45            | 0.20  | 0.95                                     | EKMM421VSN181MP45S |                       |          |                    |           |  |                    |                    |

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

| Frequency(Hz)             | 50   | 120  | 300  | 1k   | 10k  | 50k  |
|---------------------------|------|------|------|------|------|------|
| 160 to 250V <sub>dc</sub> | 0.81 | 1.00 | 1.17 | 1.32 | 1.45 | 1.50 |
| 315 to 450V <sub>dc</sub> | 0.77 | 1.00 | 1.16 | 1.30 | 1.41 | 1.43 |

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.