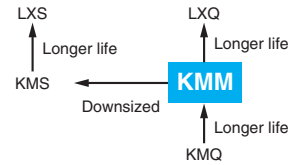


# KMM Series

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

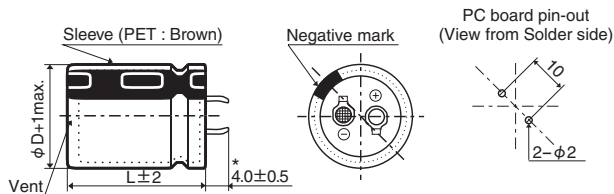


## SPECIFICATIONS

| Items                                                  | Characteristics                                                                                                                                                                                                                                                                       |                                       |            |                 |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------|-----------------|
| Category                                               | -25 to +105℃                                                                                                                                                                                                                                                                          |                                       |            |                 |
| Temperature Range                                      |                                                                                                                                                                                                                                                                                       |                                       |            |                 |
| Rated Voltage Range                                    | 160 to 450V <sub>dc</sub>                                                                                                                                                                                                                                                             |                                       |            |                 |
| Capacitance Tolerance                                  | ± 20% (M) (at 20℃, 120Hz)                                                                                                                                                                                                                                                             |                                       |            |                 |
| Leakage Current                                        | I ≤ 3/CV<br>Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 5 minutes)                                                                                                                                                        |                                       |            |                 |
| Dissipation Factor (tan δ )                            | Rated voltage (V <sub>ac</sub> )                                                                                                                                                                                                                                                      | 160 to 400V                           | 420 & 450V | (at 20℃, 120Hz) |
|                                                        | tan δ (Max.)                                                                                                                                                                                                                                                                          | 0.15                                  | 0.20       |                 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (V <sub>ac</sub> )                                                                                                                                                                                                                                                      | 160 to 400V                           | 420 & 450V | (at 120Hz)      |
|                                                        | Z(-25℃)/Z(+20℃)                                                                                                                                                                                                                                                                       | 4                                     | 8          |                 |
| Endurance                                              | The following specifications shall be satisfied when the capacitors are restored to 20℃ 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℃.                                          |                                       |            |                 |
|                                                        | 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℃ after exposing them for 1,000 hours at 105℃ 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]

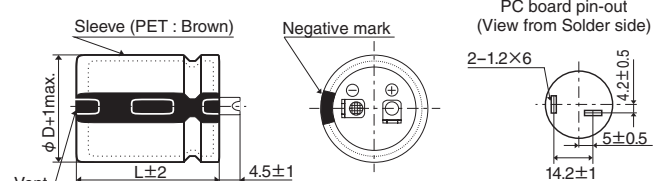
- Terminal Code : VS (φ22 to φ35) : Standard



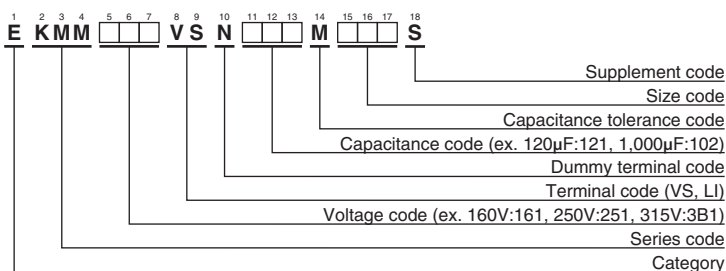
\*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

- Terminal Code : LI (φ35)



## PART NUMBERING SYSTEM



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

## ◆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 | 220                      | 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 |                          | 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<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.           |
|--------------------------|-------------|-----------------------|-------|----------------------------------------------------|--------------------|--------------------------|-------------|-----------------------|-------|----------------------------------------------------|--------------------|
| 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 | 350                      | 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 |                          | 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 | 400                      | 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 |                          | 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 |

◆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.           |                    |
|--------------------------|-------------|-----------------------|-------|----------------------------------------------------|--------------------|--------------------------|-------------|-----------------------|-----------|----------------------------------------------------|--------------------|--------------------|
| 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.

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