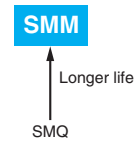


# SMM Series

- Longer life from SMQ series
- Endurance with ripple current : 3,000 hours at 85°C
- Non solvent resistant type
- RoHS2 Compliant



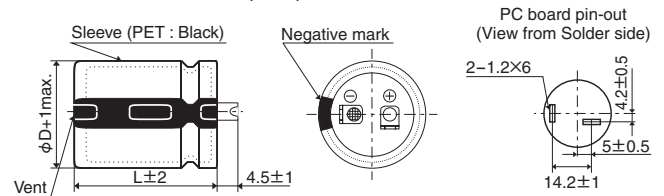
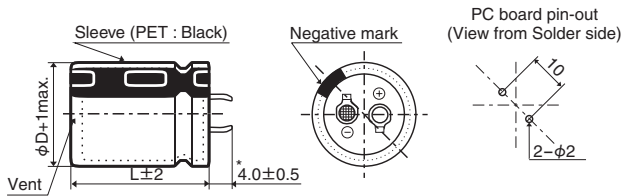
## SPECIFICATIONS

| Items  | Characteristics  |                                       |            |
|--|--|---------------------------------------|------------|
| Category   | -25 to +85°C   |                                       |            |
| Temperature Range                                      | -25 to +85°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 85°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 85°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

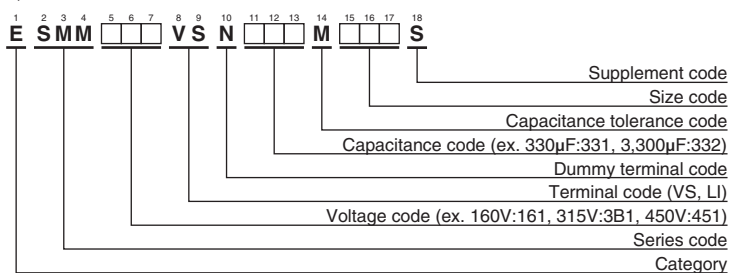
● Terminal Code : LI (φ35)



\* 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)"

## 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.

◆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>85°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>85°C, 120Hz) | Part No.           |
|--------------------------|-------------|-----------------------|-------|---|--------------------|--------------------------|-------------|-----------------------|--------------------|---|--------------------|
|                          |             |                       |       |   |                    |                          |             |                       |                    |   |                    |
| 160                      | 270         | 22 × 20               | 0.15  | 1.30  | ESMM161VSN271MP20S | 200                      | 390         | 22 × 30               | 0.15               | 1.73  | ESMM201VSN391MP30S |
|                          | 390         | 22 × 25               | 0.15  | 1.63  | ESMM161VSN391MP25S |                          | 390         | 25.4 × 25             | 0.15               | 1.71  | ESMM201VSN391MQ25S |
|                          | 390         | 25.4 × 20             | 0.15  | 1.62  | ESMM161VSN391MQ20S |                          | 390         | 30 × 20               | 0.15               | 1.71  | ESMM201VSN391MR20S |
|                          | 470         | 22 × 30               | 0.15  | 1.86  | ESMM161VSN471MP30S |                          | 470         | 22 × 30               | 0.15               | 1.97  | ESMM201VSN471MP30S |
|                          | 470         | 25.4 × 25             | 0.15  | 1.86  | ESMM161VSN471MQ25S |                          | 470         | 25.4 × 25             | 0.15               | 1.95  | ESMM201VSN471MQ25S |
|                          | 560         | 22 × 30               | 0.15  | 2.15  | ESMM161VSN561MP30S |                          | 470         | 30 × 20               | 0.15               | 1.88  | ESMM201VSN471MR20S |
|                          | 560         | 25.4 × 25             | 0.15  | 2.15  | ESMM161VSN561MQ25S |                          | 560         | 22 × 35               | 0.15               | 2.18  | ESMM201VSN561MP35S |
|                          | 560         | 30 × 20               | 0.15  | 2.05  | ESMM161VSN561MR20S |                          | 560         | 25.4 × 30             | 0.15               | 2.15  | ESMM201VSN561MQ30S |
|                          | 680         | 22 × 35               | 0.15  | 2.35  | ESMM161VSN681MP35S |                          | 560         | 30 × 25               | 0.15               | 2.15  | ESMM201VSN561MR25S |
|                          | 680         | 25.4 × 30             | 0.15  | 2.33  | ESMM161VSN681MQ30S |                          | 560         | 35 × 20               | 0.15               | 2.05  | ESMM201VSN561MA20S |
|                          | 680         | 30 × 25               | 0.15  | 2.33  | ESMM161VSN681MR25S |                          | 680         | 22 × 40               | 0.15               | 2.48  | ESMM201VSN681MP40S |
|                          | 680         | 35 × 20               | 0.15  | 2.26  | ESMM161VSN681MA20S |                          | 680         | 25.4 × 30             | 0.15               | 2.48  | ESMM201VSN681MQ30S |
|                          | 820         | 22 × 40               | 0.15  | 2.68  | ESMM161VSN821MP40S |                          | 680         | 30 × 25               | 0.15               | 2.48  | ESMM201VSN681MR25S |
|                          | 820         | 25.4 × 30             | 0.15  | 2.65  | ESMM161VSN821MQ30S |                          | 680         | 35 × 20               | 0.15               | 2.36  | ESMM201VSN681MA20S |
|                          | 820         | 30 × 25               | 0.15  | 2.64  | ESMM161VSN821MR25S |                          | 820         | 22 × 45               | 0.15               | 2.81  | ESMM201VSN821MP45S |
|                          | 820         | 35 × 20               | 0.15  | 2.49  | ESMM161VSN821MA20S |                          | 820         | 25.4 × 35             | 0.15               | 2.79  | ESMM201VSN821MQ35S |
|                          | 1,000       | 22 × 45               | 0.15  | 3.02  | ESMM161VSN102MP45S |                          | 820         | 30 × 30               | 0.15               | 2.80  | ESMM201VSN821MR30S |
|                          | 1,000       | 25.4 × 35             | 0.15  | 3.00  | ESMM161VSN102MQ35S |                          | 820         | 35 × 25               | 0.15               | 2.83  | ESMM201VSN821MA25S |
|                          | 1,000       | 30 × 30               | 0.15  | 2.96  | ESMM161VSN102MR30S |                          | 1,000       | 22 × 50               | 0.15               | 3.28  | ESMM201VSN102MP50S |
|                          | 1,000       | 35 × 25               | 0.15  | 3.13  | ESMM161VSN102MA25S |                          | 1,000       | 25.4 × 40             | 0.15               | 3.28  | ESMM201VSN102MQ40S |
|                          | 1,200       | 22 × 50               | 0.15  | 3.47  | ESMM161VSN122MP50S |                          | 1,000       | 30 × 35               | 0.15               | 3.15  | ESMM201VSN102MR35S |
|                          | 1,200       | 25.4 × 40             | 0.15  | 3.43  | ESMM161VSN122MQ40S |                          | 1,000       | 35 × 30               | 0.15               | 3.26  | ESMM201VSN102MA30S |
|                          | 1,200       | 30 × 30               | 0.15  | 3.41  | ESMM161VSN122MR30S |                          | 1,200       | 25.4 × 45             | 0.15               | 3.61  | ESMM201VSN122MQ45S |
|                          | 1,200       | 35 × 25               | 0.15  | 3.40  | ESMM161VSN122MA25S |                          | 1,200       | 30 × 35               | 0.15               | 3.61  | ESMM201VSN122MR35S |
|                          | 1,500       | 25.4 × 50             | 0.15  | 3.96  | ESMM161VSN152MQ50S |                          | 1,200       | 35 × 30               | 0.15               | 3.57  | ESMM201VSN122MA30S |
|                          | 1,500       | 30 × 35               | 0.15  | 3.96  | ESMM161VSN152MR35S |                          | 1,500       | 30 × 45               | 0.15               | 4.13  | ESMM201VSN152MR45S |
|                          | 1,500       | 35 × 30               | 0.15  | 3.94  | ESMM161VSN152MA30S |                          | 1,500       | 35 × 35               | 0.15               | 4.06  | ESMM201VSN152MA35S |
|                          | 1,800       | 30 × 40               | 0.15  | 4.31  | ESMM161VSN182MR40S |                          | 1,800       | 30 × 50               | 0.15               | 4.60  | ESMM201VSN182MR50S |
| 1,800                    | 35 × 35     | 0.15                  | 4.28  | ESMM161VSN182MA35S                                | 1,800              | 35 × 40                  | 0.15        | 4.59                  | ESMM201VSN182MA40S |   |                    |
| 2,200                    | 30 × 50     | 0.15                  | 4.96  | ESMM161VSN222MR50S                                | 2,200              | 35 × 45                  | 0.15        | 5.25                  | ESMM201VSN222MA45S |   |                    |
| 2,200                    | 35 × 40     | 0.15                  | 4.96  | ESMM161VSN222MA40S                                | 180                | 22 × 20                  | 0.15        | 1.06                  | ESMM221VSN181MP20S |   |                    |
| 2,700                    | 35 × 45     | 0.15                  | 5.57  | ESMM161VSN272MA45S                                | 270                | 22 × 25                  | 0.15        | 1.47                  | ESMM221VSN271MP25S |   |                    |
| 3,300                    | 35 × 50     | 0.15                  | 6.21  | ESMM161VSN332MA50S                                | 270                | 25.4 × 20                | 0.15        | 1.35                  | ESMM221VSN271MQ20S |   |                    |
| 180                      | 220         | 22 × 20               | 0.15  | 1.18  | ESMM181VSN221MP20S | 330                      | 22 × 30     | 0.15                  | 1.70               | ESMM221VSN331MP30S                                |                    |
|                          | 330         | 22 × 25               | 0.15  | 1.77  | ESMM181VSN331MP25S | 330                      | 25.4 × 25   | 0.15                  | 1.69               | ESMM221VSN331MQ25S                                |                    |
|                          | 330         | 25.4 × 20             | 0.15  | 1.49  | ESMM181VSN331MQ20S | 330                      | 30 × 20     | 0.15                  | 1.58               | ESMM221VSN331MR20S                                |                    |
|                          | 390         | 22 × 25               | 0.15  | 1.84  | ESMM181VSN391MP25S | 390                      | 22 × 30     | 0.15                  | 1.89               | ESMM221VSN391MP30S                                |                    |
|                          | 470         | 22 × 30               | 0.15  | 1.91  | ESMM181VSN471MP30S | 390                      | 25.4 × 25   | 0.15                  | 1.84               | ESMM221VSN391MQ25S                                |                    |
|                          | 470         | 25.4 × 25             | 0.15  | 2.08  | ESMM181VSN471MQ25S | 390                      | 30 × 20     | 0.15                  | 1.71               | ESMM221VSN391MR20S                                |                    |
|                          | 470         | 30 × 20               | 0.15  | 1.88  | ESMM181VSN471MR20S | 470                      | 22 × 35     | 0.15                  | 2.08               | ESMM221VSN471MP35S                                |                    |
|                          | 560         | 22 × 35               | 0.15  | 2.25  | ESMM181VSN561MP35S | 470                      | 25.4 × 30   | 0.15                  | 2.08               | ESMM221VSN471MQ30S                                |                    |
|                          | 560         | 25.4 × 25             | 0.15  | 2.25  | ESMM181VSN561MQ25S | 470                      | 30 × 25     | 0.15                  | 2.12               | ESMM221VSN471MR25S                                |                    |
|                          | 680         | 22 × 35               | 0.15  | 2.48  | ESMM181VSN681MP35S | 470                      | 35 × 20     | 0.15                  | 1.88               | ESMM221VSN471MA20S                                |                    |
|                          | 680         | 25.4 × 30             | 0.15  | 2.50  | ESMM181VSN681MQ30S | 560                      | 22 × 40     | 0.15                  | 2.33               | ESMM221VSN561MP40S                                |                    |
|                          | 680         | 30 × 25               | 0.15  | 2.46  | ESMM181VSN681MR25S | 560                      | 25.4 × 35   | 0.15                  | 2.38               | ESMM221VSN561MQ35S                                |                    |
|                          | 680         | 35 × 20               | 0.15  | 2.26  | ESMM181VSN681MA20S | 560                      | 30 × 25     | 0.15                  | 2.31               | ESMM221VSN561MR25S                                |                    |
|                          | 820         | 22 × 40               | 0.15  | 2.86  | ESMM181VSN821MP40S | 560                      | 35 × 20     | 0.15                  | 2.14               | ESMM221VSN561MA20S                                |                    |
|                          | 820         | 25.4 × 35             | 0.15  | 2.75  | ESMM181VSN821MQ35S | 680                      | 22 × 45     | 0.15                  | 2.63               | ESMM221VSN681MP45S                                |                    |
|                          | 820         | 30 × 25               | 0.15  | 2.69  | ESMM181VSN821MR25S | 680                      | 25.4 × 35   | 0.15                  | 2.68               | ESMM221VSN681MQ35S                                |                    |
|                          | 1,000       | 22 × 50               | 0.15  | 3.10  | ESMM181VSN102MP50S | 680                      | 30 × 30     | 0.15                  | 2.62               | ESMM221VSN681MR30S                                |                    |
|                          | 1,000       | 25.4 × 40             | 0.15  | 3.06  | ESMM181VSN102MQ40S | 680                      | 35 × 25     | 0.15                  | 2.58               | ESMM221VSN681MA25S                                |                    |
|                          | 1,000       | 30 × 30               | 0.15  | 3.10  | ESMM181VSN102MR30S | 820                      | 25.4 × 45   | 0.15                  | 3.01               | ESMM221VSN821MQ45S                                |                    |
|                          | 1,000       | 35 × 25               | 0.15  | 2.98  | ESMM181VSN102MA25S | 820                      | 30 × 35     | 0.15                  | 2.99               | ESMM221VSN821MR35S                                |                    |
|                          | 1,200       | 25.4 × 45             | 0.15  | 3.63  | ESMM181VSN122MQ45S | 820                      | 35 × 30     | 0.15                  | 2.79               | ESMM221VSN821MA30S                                |                    |
|                          | 1,200       | 30 × 35               | 0.15  | 3.55  | ESMM181VSN122MR35S | 1,000                    | 25.4 × 50   | 0.15                  | 3.40               | ESMM221VSN102MQ50S                                |                    |
|                          | 1,200       | 35 × 30               | 0.15  | 3.49  | ESMM181VSN122MA30S | 1,000                    | 30 × 35     | 0.15                  | 3.42               | ESMM221VSN102MR35S                                |                    |
|                          | 1,500       | 30 × 40               | 0.15  | 4.10  | ESMM181VSN152MR40S | 1,000                    | 35 × 30     | 0.15                  | 3.29               | ESMM221VSN102MA30S                                |                    |
|                          | 1,500       | 35 × 35               | 0.15  | 4.02  | ESMM181VSN152MA35S | 1,200                    | 30 × 40     | 0.15                  | 3.88               | ESMM221VSN122MR40S                                |                    |
|                          | 1,800       | 30 × 45               | 0.15  | 4.55  | ESMM181VSN182MR45S | 1,200                    | 35 × 35     | 0.15                  | 3.68               | ESMM221VSN122MA35S                                |                    |
|                          | 1,800       | 35 × 35               | 0.15  | 4.54  | ESMM181VSN182MA35S | 1,500                    | 30 × 50     | 0.15                  | 4.44               | ESMM221VSN152MR50S                                |                    |
|                          | 2,200       | 35 × 40               | 0.15  | 4.83  | ESMM181VSN222MA40S | 1,500                    | 35 × 40     | 0.15                  | 4.10               | ESMM221VSN152MA40S                                |                    |
| 2,700                    | 35 × 50     | 0.15                  | 5.30  | ESMM181VSN272MA50S                                | 1,800              | 35 × 45                  | 0.15        | 4.52                  | ESMM221VSN182MA45S |   |                    |
| 200                      | 220         | 22 × 20               | 0.15  | 1.18  | ESMM201VSN221MP20S | 150                      | 22 × 20     | 0.15                  | 0.97               | ESMM251VSN151MP20S                                |                    |
|                          | 270         | 22 × 25               | 0.15  | 1.37  | ESMM201VSN271MP25S | 180                      | 22 × 20     | 0.15                  | 1.06               | ESMM251VSN181MP20S                                |                    |
|                          | 270         | 25.4 × 20             | 0.15  | 1.35  | ESMM201VSN271MQ20S | 220                      | 22 × 25     | 0.15                  | 1.24               | ESMM251VSN221MP25S                                |                    |
|                          | 330         | 22 × 25               | 0.15  | 1.51  | ESMM201VSN331MP25S | 220                      | 25.4 × 20   | 0.15                  | 1.22               | ESMM251VSN221MQ20S                                |                    |
|                          | 330         | 25.4 × 20             | 0.15  | 1.49  | ESMM201VSN331MQ20S | 270                      | 22 × 25     | 0.15                  | 1.50               | ESMM251VSN271MP25S                                |                    |

◆STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF)  | Case size φD×L(mm) | tan δ | Rated ripple current (Arms/85°C, 120Hz) | Part No.           | WV (V <sub>dc</sub> ) | Cap (μF)  | Case size φD×L(mm) | tan δ              | Rated ripple current (Arms/85°C, 120Hz) | Part No.           |
|-----------------------|-----------|--------------------|-------|---|--------------------|-----------------------|-----------|--------------------|--------------------|---|--------------------|
| 250                   | 330       | 22 × 30            | 0.15  | 1.66                                    | ESMM251VSN331MP30S | 350                   | 180       | 30 × 20            | 0.15               | 1.16                                    | ESMM351VSN181MR20S |
|                       | 330       | 25.4 × 25          | 0.15  | 1.61                                    | ESMM251VSN331MQ25S |                       | 220       | 22 × 35            | 0.15               | 1.47                                    | ESMM351VSN221MP35S |
|                       | 330       | 30 × 20            | 0.15  | 1.58                                    | ESMM251VSN331MR20S |                       | 220       | 25.4 × 30          | 0.15               | 1.53                                    | ESMM351VSN221MQ30S |
|                       | 390       | 22 × 35            | 0.15  | 1.88                                    | ESMM251VSN391MP35S |                       | 220       | 30 × 25            | 0.15               | 1.54                                    | ESMM351VSN221MR25S |
|                       | 390       | 25.4 × 30          | 0.15  | 1.88                                    | ESMM251VSN391MQ30S |                       | 220       | 35 × 20            | 0.15               | 1.29                                    | ESMM351VSN221MA20S |
|                       | 390       | 30 × 25            | 0.15  | 1.86                                    | ESMM251VSN391MR25S |                       | 270       | 22 × 40            | 0.15               | 1.70                                    | ESMM351VSN271MP40S |
|                       | 390       | 35 × 20            | 0.15  | 1.71                                    | ESMM251VSN391MA20S |                       | 270       | 25.4 × 35          | 0.15               | 1.73                                    | ESMM351VSN271MQ35S |
|                       | 470       | 22 × 35            | 0.15  | 2.15                                    | ESMM251VSN471MP35S |                       | 270       | 30 × 25            | 0.15               | 1.80                                    | ESMM351VSN271MR25S |
|                       | 470       | 25.4 × 35          | 0.15  | 2.15                                    | ESMM251VSN471MQ35S |                       | 270       | 35 × 20            | 0.15               | 1.49                                    | ESMM351VSN271MA20S |
|                       | 470       | 30 × 25            | 0.15  | 2.05                                    | ESMM251VSN471MR25S |                       | 330       | 22 × 45            | 0.15               | 1.87                                    | ESMM351VSN331MP45S |
|                       | 470       | 35 × 20            | 0.15  | 1.88                                    | ESMM251VSN471MA20S |                       | 330       | 25.4 × 35          | 0.15               | 1.97                                    | ESMM351VSN331MQ35S |
|                       | 560       | 22 × 40            | 0.15  | 2.48                                    | ESMM251VSN561MP40S |                       | 330       | 30 × 30            | 0.15               | 2.03                                    | ESMM351VSN331MR30S |
|                       | 560       | 25.4 × 35          | 0.15  | 2.35                                    | ESMM251VSN561MQ35S |                       | 330       | 35 × 25            | 0.15               | 1.80                                    | ESMM351VSN331MA25S |
|                       | 560       | 30 × 25            | 0.15  | 2.35                                    | ESMM251VSN561MR25S |                       | 390       | 25.4 × 40          | 0.15               | 2.14                                    | ESMM351VSN391MQ40S |
|                       | 680       | 22 × 50            | 0.15  | 2.61                                    | ESMM251VSN681MP50S |                       | 390       | 30 × 35            | 0.15               | 2.23                                    | ESMM351VSN391MR35S |
|                       | 680       | 25.4 × 40          | 0.15  | 2.67                                    | ESMM251VSN681MQ40S |                       | 390       | 35 × 30            | 0.15               | 2.30                                    | ESMM351VSN391MA30S |
|                       | 680       | 30 × 30            | 0.15  | 2.71                                    | ESMM251VSN681MR30S |                       | 470       | 25.4 × 50          | 0.15               | 2.55                                    | ESMM351VSN471MQ50S |
|                       | 680       | 35 × 25            | 0.15  | 2.58                                    | ESMM251VSN681MA25S |                       | 470       | 30 × 35            | 0.15               | 2.53                                    | ESMM351VSN471MR35S |
|                       | 820       | 25.4 × 45          | 0.15  | 3.01                                    | ESMM251VSN821MQ45S |                       | 470       | 35 × 30            | 0.15               | 2.55                                    | ESMM351VSN471MA30S |
|                       | 820       | 30 × 35            | 0.15  | 2.98                                    | ESMM251VSN821MR35S |                       | 560       | 30 × 40            | 0.15               | 2.73                                    | ESMM351VSN561MR40S |
| 820                   | 35 × 30   | 0.15               | 2.96  | ESMM251VSN821MA30S                      | 560                | 35 × 35               | 0.15      | 2.75               | ESMM351VSN561MA35S |   |                    |
| 1,000                 | 30 × 40   | 0.15               | 3.56  | ESMM251VSN102MR40S                      | 680                | 30 × 50               | 0.15      | 3.15               | ESMM351VSN681MR50S |   |                    |
| 1,000                 | 35 × 35   | 0.15               | 3.48  | ESMM251VSN102MA35S                      | 680                | 35 × 40               | 0.15      | 3.15               | ESMM351VSN681MA40S |   |                    |
| 1,200                 | 30 × 45   | 0.15               | 3.99  | ESMM251VSN122MR45S                      | 820                | 35 × 45               | 0.15      | 3.47               | ESMM351VSN821MA45S |   |                    |
| 1,200                 | 35 × 35   | 0.15               | 3.84  | ESMM251VSN122MA35S                      | 1,000              | 35 × 50               | 0.15      | 3.60               | ESMM351VSN102MA50S |   |                    |
| 1,500                 | 35 × 40   | 0.15               | 4.33  | ESMM251VSN152MA40S                      | 400                | 68                    | 22 × 20   | 0.15               | 0.65               | ESMM401VSN680MP20S                      |                    |
| 1,800                 | 35 × 50   | 0.15               | 4.54  | ESMM251VSN182MA50S                      |                    | 82                    | 22 × 25   | 0.15               | 0.84               | ESMM401VSN820MP25S                      |                    |
| 315                   | 100       | 22 × 20            | 0.15  | 0.79                                    |                    | ESMM3B1VSN101MP20S    | 82        | 25.4 × 20          | 0.15               | 0.74                                    | ESMM401VSN820MQ20S |
|                       | 120       | 25.4 × 20          | 0.15  | 0.90                                    |                    | ESMM3B1VSN121MQ20S    | 100       | 22 × 25            | 0.15               | 0.99                                    | ESMM401VSN101MP25S |
|                       | 150       | 22 × 25            | 0.15  | 1.06                                    |                    | ESMM3B1VSN151MP25S    | 100       | 25.4 × 20          | 0.15               | 0.82                                    | ESMM401VSN101MQ20S |
|                       | 150       | 25.4 × 20          | 0.15  | 1.00                                    |                    | ESMM3B1VSN151MQ20S    | 120       | 22 × 30            | 0.15               | 1.09                                    | ESMM401VSN121MP30S |
|                       | 180       | 22 × 30            | 0.15  | 1.29                                    |                    | ESMM3B1VSN181MP30S    | 120       | 25.4 × 25          | 0.15               | 1.13                                    | ESMM401VSN121MQ25S |
|                       | 180       | 25.4 × 25          | 0.15  | 1.38                                    |                    | ESMM3B1VSN181MQ25S    | 120       | 30 × 20            | 0.15               | 0.95                                    | ESMM401VSN121MR20S |
|                       | 180       | 30 × 20            | 0.15  | 1.16                                    |                    | ESMM3B1VSN181MR20S    | 150       | 22 × 35            | 0.15               | 1.24                                    | ESMM401VSN151MP35S |
|                       | 220       | 22 × 30            | 0.15  | 1.41                                    |                    | ESMM3B1VSN221MP30S    | 150       | 25.4 × 30          | 0.15               | 1.27                                    | ESMM401VSN151MQ30S |
|                       | 220       | 25.4 × 25          | 0.15  | 1.47                                    |                    | ESMM3B1VSN221MQ25S    | 150       | 30 × 25            | 0.15               | 1.20                                    | ESMM401VSN151MR25S |
|                       | 220       | 30 × 20            | 0.15  | 1.28                                    |                    | ESMM3B1VSN221MR20S    | 180       | 22 × 40            | 0.15               | 1.41                                    | ESMM401VSN181MP40S |
|                       | 270       | 22 × 35            | 0.15  | 1.68                                    |                    | ESMM3B1VSN271MP35S    | 180       | 25.4 × 30          | 0.15               | 1.44                                    | ESMM401VSN181MQ30S |
|                       | 270       | 25.4 × 30          | 0.15  | 1.70                                    |                    | ESMM3B1VSN271MQ30S    | 180       | 30 × 25            | 0.15               | 1.52                                    | ESMM401VSN181MR25S |
|                       | 270       | 30 × 25            | 0.15  | 1.55                                    |                    | ESMM3B1VSN271MR25S    | 180       | 35 × 20            | 0.15               | 1.16                                    | ESMM401VSN181MA20S |
|                       | 270       | 35 × 20            | 0.15  | 1.43                                    |                    | ESMM3B1VSN271MA20S    | 220       | 22 × 45            | 0.15               | 1.58                                    | ESMM401VSN221MP45S |
|                       | 330       | 22 × 40            | 0.15  | 1.91                                    |                    | ESMM3B1VSN331MP40S    | 220       | 25.4 × 35          | 0.15               | 1.64                                    | ESMM401VSN221MQ35S |
|                       | 330       | 25.4 × 35          | 0.15  | 1.94                                    |                    | ESMM3B1VSN331MQ35S    | 220       | 30 × 30            | 0.15               | 1.66                                    | ESMM401VSN221MR30S |
|                       | 330       | 30 × 25            | 0.15  | 1.98                                    |                    | ESMM3B1VSN331MR25S    | 220       | 35 × 25            | 0.15               | 1.47                                    | ESMM401VSN221MA25S |
|                       | 390       | 22 × 45            | 0.15  | 2.07                                    |                    | ESMM3B1VSN391MP45S    | 270       | 22 × 50            | 0.15               | 1.65                                    | ESMM401VSN271MP50S |
|                       | 390       | 25.4 × 40          | 0.15  | 2.11                                    | ESMM3B1VSN391MQ40S | 270                   | 25.4 × 40 | 0.15               | 1.79               | ESMM401VSN271MQ40S                      |                    |
|                       | 390       | 30 × 30            | 0.15  | 2.15                                    | ESMM3B1VSN391MR30S | 270                   | 30 × 30   | 0.15               | 1.82               | ESMM401VSN271MR30S                      |                    |
| 390                   | 35 × 25   | 0.15               | 1.95  | ESMM3B1VSN391MA25S                      | 270                | 35 × 25               | 0.15      | 1.63               | ESMM401VSN271MA25S |   |                    |
| 470                   | 25.4 × 45 | 0.15               | 2.31  | ESMM3B1VSN471MQ45S                      | 330                | 25.4 × 45             | 0.15      | 2.00               | ESMM401VSN331MQ45S |   |                    |
| 470                   | 30 × 35   | 0.15               | 2.38  | ESMM3B1VSN471MR35S                      | 330                | 30 × 35               | 0.15      | 2.05               | ESMM401VSN331MR35S |   |                    |
| 470                   | 35 × 30   | 0.15               | 2.46  | ESMM3B1VSN471MA30S                      | 330                | 35 × 30               | 0.15      | 2.05               | ESMM401VSN331MA30S |   |                    |
| 560                   | 25.4 × 50 | 0.15               | 2.46  | ESMM3B1VSN561MQ50S                      | 390                | 25.4 × 50             | 0.15      | 2.12               | ESMM401VSN391MQ50S |   |                    |
| 560                   | 30 × 35   | 0.15               | 2.63  | ESMM3B1VSN561MR35S                      | 390                | 30 × 40               | 0.15      | 2.26               | ESMM401VSN391MR40S |   |                    |
| 560                   | 35 × 30   | 0.15               | 2.69  | ESMM3B1VSN561MA30S                      | 390                | 35 × 35               | 0.15      | 2.28               | ESMM401VSN391MA35S |   |                    |
| 680                   | 30 × 45   | 0.15               | 2.82  | ESMM3B1VSN681MR45S                      | 470                | 30 × 45               | 0.15      | 2.51               | ESMM401VSN471MR45S |   |                    |
| 680                   | 35 × 35   | 0.15               | 3.05  | ESMM3B1VSN681MA35S                      | 470                | 35 × 35               | 0.15      | 2.54               | ESMM401VSN471MA35S |   |                    |
| 820                   | 30 × 50   | 0.15               | 3.28  | ESMM3B1VSN821MR50S                      | 560                | 30 × 50               | 0.15      | 2.85               | ESMM401VSN561MR50S |   |                    |
| 820                   | 35 × 40   | 0.15               | 3.45  | ESMM3B1VSN821MA40S                      | 560                | 35 × 40               | 0.15      | 2.85               | ESMM401VSN561MA40S |   |                    |
| 1,000                 | 35 × 45   | 0.15               | 3.59  | ESMM3B1VSN102MA45S                      | 680                | 35 × 50               | 0.15      | 3.10               | ESMM401VSN681MA50S |   |                    |
| 350                   | 82        | 22 × 20            | 0.15  | 0.72                                    | ESMM351VSN820MP20S | 420                   | 47        | 22 × 20            | 0.20               | 0.54                                    | ESMM421VSN470MP20S |
|                       | 120       | 22 × 25            | 0.15  | 1.04                                    | ESMM351VSN121MP25S |                       | 56        | 22 × 20            | 0.20               | 0.59                                    | ESMM421VSN560MP20S |
|                       | 120       | 25.4 × 20          | 0.15  | 0.90                                    | ESMM351VSN121MQ20S |                       | 68        | 25.4 × 20          | 0.20               | 0.68                                    | ESMM421VSN680MQ20S |
|                       | 150       | 22 × 30            | 0.15  | 1.20                                    | ESMM351VSN151MP30S |                       | 82        | 22 × 25            | 0.20               | 0.85                                    | ESMM421VSN820MP25S |
|                       | 150       | 25.4 × 25          | 0.15  | 1.22                                    | ESMM351VSN151MQ25S |                       | 82        | 25.4 × 20          | 0.20               | 0.74                                    | ESMM421VSN820MQ20S |
|                       | 150       | 30 × 20            | 0.15  | 1.06                                    | ESMM351VSN151MR20S |                       | 100       | 22 × 30            | 0.20               | 0.97                                    | ESMM421VSN101MP30S |
|                       | 180       | 22 × 30            | 0.15  | 1.34                                    | ESMM351VSN181MP30S |                       | 100       | 25.4 × 25          | 0.20               | 0.98                                    | ESMM421VSN101MQ25S |
|                       | 180       | 25.4 × 25          | 0.15  | 1.37                                    | ESMM351VSN181MQ25S |                       | 100       | 30 × 20            | 0.20               | 0.87                                    | ESMM421VSN101MR20S |

SMM Series

◆STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (Arms/85°C, 120Hz) | Part No.           | WV (V <sub>dc</sub> ) | Cap (μF) | Case size φD×L(mm) | tan δ              | Rated ripple current (Arms/85°C, 120Hz) | Part No.           |
|-----------------------|----------|--------------------|-------|---|--------------------|-----------------------|----------|--------------------|--------------------|---|--------------------|
| 420                   | 120      | 22 × 30            | 0.20  | 1.07                                    | ESMM421VSN121MP30S | 450                   | 82       | 25.4 × 20          | 0.20               | 0.74                                    | ESMM451VSN820MQ20S |
|                       | 120      | 25.4 × 25          | 0.20  | 1.08                                    | ESMM421VSN121MQ25S |                       | 82       | 30 × 20            | 0.20               | 0.79                                    | ESMM451VSN820MR20S |
|                       | 120      | 30 × 20            | 0.20  | 0.95                                    | ESMM421VSN121MR20S |                       | 100      | 22 × 30            | 0.20               | 0.95                                    | ESMM451VSN101MP30S |
|                       | 150      | 22 × 35            | 0.20  | 1.21                                    | ESMM421VSN151MP35S |                       | 100      | 25.4 × 25          | 0.20               | 0.97                                    | ESMM451VSN101MQ25S |
|                       | 150      | 25.4 × 30          | 0.20  | 1.26                                    | ESMM421VSN151MQ30S |                       | 100      | 30 × 20            | 0.20               | 0.87                                    | ESMM451VSN101MR20S |
|                       | 150      | 30 × 25            | 0.20  | 1.30                                    | ESMM421VSN151MR25S |                       | 120      | 22 × 35            | 0.20               | 1.07                                    | ESMM451VSN121MP35S |
|                       | 150      | 35 × 20            | 0.20  | 1.11                                    | ESMM421VSN151MA20S |                       | 120      | 25.4 × 30          | 0.20               | 1.09                                    | ESMM451VSN121MQ30S |
|                       | 180      | 22 × 40            | 0.20  | 1.33                                    | ESMM421VSN181MP40S |                       | 120      | 30 × 25            | 0.20               | 1.12                                    | ESMM451VSN121MR25S |
|                       | 180      | 25.4 × 35          | 0.20  | 1.42                                    | ESMM421VSN181MQ35S |                       | 120      | 35 × 20            | 0.20               | 0.99                                    | ESMM451VSN121MA20S |
|                       | 180      | 30 × 25            | 0.20  | 1.48                                    | ESMM421VSN181MR25S |                       | 150      | 22 × 40            | 0.20               | 1.18                                    | ESMM451VSN151MP40S |
|                       | 180      | 35 × 20            | 0.20  | 1.16                                    | ESMM421VSN181MA20S |                       | 150      | 25.4 × 30          | 0.20               | 1.25                                    | ESMM451VSN151MQ30S |
|                       | 220      | 22 × 45            | 0.20  | 1.55                                    | ESMM421VSN221MP45S |                       | 150      | 30 × 25            | 0.20               | 1.29                                    | ESMM451VSN151MR25S |
|                       | 220      | 25.4 × 35          | 0.20  | 1.58                                    | ESMM421VSN221MQ35S |                       | 150      | 35 × 20            | 0.20               | 1.06                                    | ESMM451VSN151MA20S |
|                       | 220      | 30 × 30            | 0.20  | 1.65                                    | ESMM421VSN221MR30S |                       | 180      | 22 × 45            | 0.20               | 1.32                                    | ESMM451VSN181MP45S |
|                       | 220      | 35 × 25            | 0.20  | 1.47                                    | ESMM421VSN221MA25S |                       | 180      | 25.4 × 35          | 0.20               | 1.40                                    | ESMM451VSN181MQ35S |
|                       | 270      | 25.4 × 40          | 0.20  | 1.74                                    | ESMM421VSN271MQ40S |                       | 180      | 30 × 30            | 0.20               | 1.45                                    | ESMM451VSN181MR30S |
|                       | 270      | 30 × 35            | 0.20  | 1.90                                    | ESMM421VSN271MR35S |                       | 180      | 35 × 25            | 0.20               | 1.33                                    | ESMM451VSN181MA25S |
|                       | 270      | 35 × 30            | 0.20  | 1.94                                    | ESMM421VSN271MA30S |                       | 220      | 22 × 50            | 0.20               | 1.48                                    | ESMM451VSN221MP50S |
|                       | 330      | 25.4 × 50          | 0.20  | 2.20                                    | ESMM421VSN331MQ50S |                       | 220      | 25.4 × 40          | 0.20               | 1.59                                    | ESMM451VSN221MQ40S |
|                       | 330      | 30 × 35            | 0.20  | 1.98                                    | ESMM421VSN331MR35S |                       | 220      | 30 × 30            | 0.20               | 1.64                                    | ESMM451VSN221MR30S |
| 330                   | 35 × 35  | 0.20               | 2.17  | ESMM421VSN331MA35S                      | 220                | 35 × 25               | 0.20     | 1.66               | ESMM451VSN221MA25S |   |                    |
| 390                   | 30 × 40  | 0.20               | 2.22  | ESMM421VSN391MR40S                      | 270                | 25.4 × 45             | 0.20     | 1.73               | ESMM451VSN271MQ45S |   |                    |
| 390                   | 35 × 35  | 0.20               | 2.27  | ESMM421VSN391MA35S                      | 270                | 30 × 35               | 0.20     | 1.89               | ESMM451VSN271MR35S |   |                    |
| 470                   | 30 × 45  | 0.20               | 2.50  | ESMM421VSN471MR45S                      | 270                | 35 × 30               | 0.20     | 1.90               | ESMM451VSN271MA30S |   |                    |
| 470                   | 35 × 40  | 0.20               | 2.61  | ESMM421VSN471MA40S                      | 330                | 25.4 × 50             | 0.20     | 2.12               | ESMM451VSN331MQ50S |   |                    |
| 560                   | 35 × 45  | 0.20               | 2.95  | ESMM421VSN561MA45S                      | 330                | 30 × 40               | 0.20     | 2.12               | ESMM451VSN331MR40S |   |                    |
| 680                   | 35 × 50  | 0.20               | 3.15  | ESMM421VSN681MA50S                      | 330                | 35 × 35               | 0.20     | 2.15               | ESMM451VSN331MA35S |   |                    |
| 450                   | 47       | 22 × 20            | 0.20  | 0.54                                    | ESMM451VSN470MP20S | 390                   | 30 × 45  | 0.20               | 2.35               | ESMM451VSN391MR45S                      |                    |
|                       | 56       | 22 × 20            | 0.20  | 0.59                                    | ESMM451VSN560MP20S | 390                   | 35 × 40  | 0.20               | 2.38               | ESMM451VSN391MA40S                      |                    |
|                       | 68       | 22 × 25            | 0.20  | 0.71                                    | ESMM451VSN680MP25S | 470                   | 30 × 50  | 0.20               | 2.65               | ESMM451VSN471MR50S                      |                    |
|                       | 68       | 25.4 × 20          | 0.20  | 0.68                                    | ESMM451VSN680MQ20S | 470                   | 35 × 45  | 0.20               | 2.68               | ESMM451VSN471MA45S                      |                    |
|                       | 82       | 22 × 25            | 0.20  | 0.86                                    | ESMM451VSN820MP25S | 560                   | 35 × 50  | 0.20               | 2.88               | ESMM451VSN561MA50S                      |                    |

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