

# SMQ Series

- Endurance with ripple current : 2,000 hours at 85°C
- Non solvent resistant type
- RoHS Compliant

SMR P223  
Downsized

SMQ

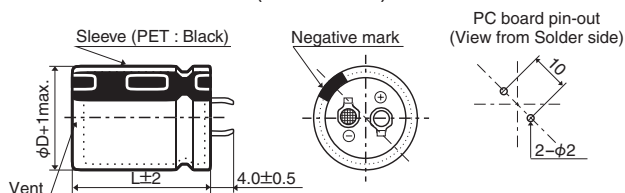


## SPECIFICATIONS

| Items                                                  | Characteristics                                                                                                                                                                                                                                                                        |                                      |             |            |                  |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------|------------|------------------|
| Category                                               | -25 to +85°C                                                                                                                                                                                                                                                                           |                                      |             |            |                  |
| Temperature Range                                      |                                                                                                                                                                                                                                                                                        |                                      |             |            |                  |
| 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 250V                          | 315 to 400V | 420 & 450V | (at 20°C, 120Hz) |
|                                                        | tan δ (Max.)                                                                                                                                                                                                                                                                           | 0.15                                 | 0.15        | 0.20       |                  |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                       | 160 to 250V                          | 315 to 400V | 420 & 450V | (at 120Hz)       |
|                                                        | Z(-25°C)/Z(+20°C)                                                                                                                                                                                                                                                                      | 4                                    | 8           | 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 2,000 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         |             |            |                  |

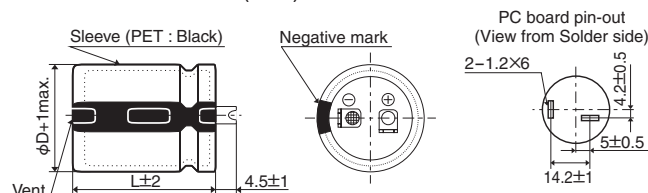
## DIMENSIONS [mm]

Terminal Code : VS (φ22 to φ35) : Standard

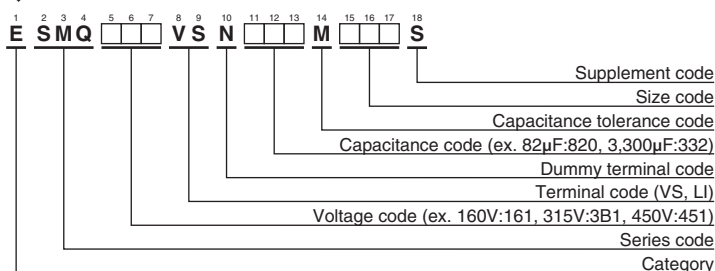


The standard design has no plastic disc.

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>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                      | 560         | 22 × 25               | 0.15  | 2.25                                              | ESMQ161VSN561MP25S | 250                      | 270         | 22 × 25               | 0.15  | 1.31                                              | ESMQ251VSN271MP25S |
|                          | 680         | 22 × 30               | 0.15  | 2.50                                              | ESMQ161VSN681MP30S |                          | 330         | 22 × 30               | 0.15  | 1.75                                              | ESMQ251VSN331MP30S |
|                          | 820         | 22 × 35               | 0.15  | 2.75                                              | ESMQ161VSN821MP35S |                          | 390         | 22 × 30               | 0.15  | 1.91                                              | ESMQ251VSN391MP30S |
|                          | 1,000       | 22 × 40               | 0.15  | 3.00                                              | ESMQ161VSN102MP40S |                          | 390         | 25.4 × 25             | 0.15  | 1.91                                              | ESMQ251VSN391MQ25S |
|                          | 1,000       | 25.4 × 30             | 0.15  | 3.00                                              | ESMQ161VSN102MQ30S |                          | 470         | 22 × 35               | 0.15  | 2.11                                              | ESMQ251VSN471MP35S |
|                          | 1,200       | 22 × 45               | 0.15  | 3.25                                              | ESMQ161VSN122MP45S |                          | 470         | 25.4 × 30             | 0.15  | 2.11                                              | ESMQ251VSN471MQ30S |
|                          | 1,200       | 25.4 × 35             | 0.15  | 3.25                                              | ESMQ161VSN122MQ35S |                          | 560         | 22 × 40               | 0.15  | 2.25                                              | ESMQ251VSN561MP40S |
|                          | 1,200       | 30 × 25               | 0.15  | 3.25                                              | ESMQ161VSN122MR25S |                          | 560         | 25.4 × 30             | 0.15  | 2.25                                              | ESMQ251VSN561MQ30S |
|                          | 1,500       | 22 × 50               | 0.15  | 3.73                                              | ESMQ161VSN152MP50S |                          | 560         | 30 × 25               | 0.15  | 2.25                                              | ESMQ251VSN561MR25S |
|                          | 1,500       | 25.4 × 40             | 0.15  | 3.73                                              | ESMQ161VSN152MQ40S |                          | 680         | 22 × 45               | 0.15  | 2.50                                              | ESMQ251VSN681MP45S |
|                          | 1,500       | 30 × 30               | 0.15  | 3.73                                              | ESMQ161VSN152MR30S |                          | 680         | 25.4 × 35             | 0.15  | 2.50                                              | ESMQ251VSN681MQ35S |
|                          | 1,500       | 35 × 25               | 0.15  | 3.73                                              | ESMQ161VSN152MA25S |                          | 680         | 30 × 30               | 0.15  | 2.50                                              | ESMQ251VSN681MR30S |
|                          | 1,800       | 25.4 × 45             | 0.15  | 4.20                                              | ESMQ161VSN182MQ45S |                          | 820         | 22 × 50               | 0.15  | 2.77                                              | ESMQ251VSN821MP50S |
|                          | 1,800       | 30 × 35               | 0.15  | 4.20                                              | ESMQ161VSN182MR35S |                          | 820         | 25.4 × 40             | 0.15  | 2.77                                              | ESMQ251VSN821MQ40S |
|                          | 1,800       | 35 × 30               | 0.15  | 4.20                                              | ESMQ161VSN182MA30S |                          | 820         | 30 × 30               | 0.15  | 2.77                                              | ESMQ251VSN821MA30S |
|                          | 2,200       | 30 × 40               | 0.15  | 4.78                                              | ESMQ161VSN222MR40S |                          | 820         | 35 × 25               | 0.15  | 2.77                                              | ESMQ251VSN821MA25S |
|                          | 2,200       | 35 × 35               | 0.15  | 4.78                                              | ESMQ161VSN222MA35S |                          | 1,000       | 25.4 × 45             | 0.15  | 3.32                                              | ESMQ251VSN102MQ45S |
|                          | 2,700       | 35 × 40               | 0.15  | 5.45                                              | ESMQ161VSN272MA40S |                          | 1,000       | 30 × 35               | 0.15  | 3.32                                              | ESMQ251VSN102MR35S |
|                          | 3,300       | 35 × 45               | 0.15  | 5.75                                              | ESMQ161VSN332MA45S |                          | 1,000       | 35 × 30               | 0.15  | 3.32                                              | ESMQ251VSN102MA30S |
|                          | 3,900       | 35 × 50               | 0.15  | 6.00                                              | ESMQ161VSN392MA50S |                          | 1,200       | 30 × 40               | 0.15  | 3.53                                              | ESMQ251VSN122MR40S |
| 180                      | 470         | 22 × 25               | 0.15  | 2.08                                              | ESMQ181VSN471MP25S | 315                      | 1,200       | 35 × 35               | 0.15  | 3.53                                              | ESMQ251VSN122MA35S |
|                          | 560         | 22 × 30               | 0.15  | 2.25                                              | ESMQ181VSN561MP30S |                          | 1,500       | 30 × 50               | 0.15  | 4.04                                              | ESMQ251VSN152MR50S |
|                          | 680         | 22 × 30               | 0.15  | 2.50                                              | ESMQ181VSN681MP30S |                          | 1,500       | 35 × 40               | 0.15  | 4.04                                              | ESMQ251VSN152MA40S |
|                          | 680         | 25.4 × 25             | 0.15  | 2.50                                              | ESMQ181VSN681MQ25S |                          | 1,800       | 35 × 45               | 0.15  | 4.55                                              | ESMQ251VSN182MA45S |
|                          | 820         | 22 × 35               | 0.15  | 2.75                                              | ESMQ181VSN821MP35S |                          | 180         | 22 × 25               | 0.15  | 1.21                                              | ESMQ3B1VSN181MP25S |
|                          | 820         | 25.4 × 30             | 0.15  | 2.75                                              | ESMQ181VSN821MQ30S |                          | 220         | 22 × 30               | 0.15  | 1.41                                              | ESMQ3B1VSN221MP30S |
|                          | 1,000       | 22 × 45               | 0.15  | 3.00                                              | ESMQ181VSN102MP45S |                          | 270         | 22 × 30               | 0.15  | 1.60                                              | ESMQ3B1VSN271MP30S |
|                          | 1,000       | 25.4 × 35             | 0.15  | 3.00                                              | ESMQ181VSN102MQ35S |                          | 330         | 22 × 40               | 0.15  | 1.82                                              | ESMQ3B1VSN331MP40S |
|                          | 1,000       | 30 × 25               | 0.15  | 3.00                                              | ESMQ181VSN102MR25S |                          | 330         | 25.4 × 30             | 0.15  | 1.82                                              | ESMQ3B1VSN331MQ30S |
|                          | 1,200       | 22 × 50               | 0.15  | 3.31                                              | ESMQ181VSN122MP50S |                          | 330         | 30 × 25               | 0.15  | 1.82                                              | ESMQ3B1VSN331MR25S |
|                          | 1,200       | 25.4 × 40             | 0.15  | 3.31                                              | ESMQ181VSN122MQ40S |                          | 390         | 22 × 45               | 0.15  | 2.01                                              | ESMQ3B1VSN391MP45S |
|                          | 1,200       | 30 × 30               | 0.15  | 3.31                                              | ESMQ181VSN122MR30S |                          | 390         | 25.4 × 35             | 0.15  | 2.01                                              | ESMQ3B1VSN391MQ35S |
|                          | 1,200       | 35 × 25               | 0.15  | 3.31                                              | ESMQ181VSN122MA25S |                          | 390         | 30 × 30               | 0.15  | 2.01                                              | ESMQ3B1VSN391MR30S |
|                          | 1,500       | 25.4 × 45             | 0.15  | 3.83                                              | ESMQ181VSN152MQ45S |                          | 470         | 22 × 50               | 0.15  | 2.27                                              | ESMQ3B1VSN471MP50S |
|                          | 1,500       | 30 × 35               | 0.15  | 3.83                                              | ESMQ181VSN152MR35S |                          | 470         | 25.4 × 40             | 0.15  | 2.27                                              | ESMQ3B1VSN471MQ40S |
|                          | 1,500       | 35 × 30               | 0.15  | 3.83                                              | ESMQ181VSN152MA30S |                          | 470         | 30 × 30               | 0.15  | 2.27                                              | ESMQ3B1VSN471MR30S |
|                          | 1,800       | 25.4 × 50             | 0.15  | 4.32                                              | ESMQ181VSN182MQ50S |                          | 470         | 35 × 25               | 0.15  | 2.27                                              | ESMQ3B1VSN471MA25S |
|                          | 1,800       | 30 × 40               | 0.15  | 4.32                                              | ESMQ181VSN182MR40S |                          | 560         | 25.4 × 45             | 0.15  | 2.56                                              | ESMQ3B1VSN561MQ45S |
|                          | 1,800       | 35 × 30               | 0.15  | 4.32                                              | ESMQ181VSN182MA30S |                          | 560         | 30 × 35               | 0.15  | 2.56                                              | ESMQ3B1VSN561MR35S |
| 200                      | 2,200       | 30 × 45               | 0.15  | 4.92                                              | ESMQ181VSN222MR45S | 350                      | 560         | 35 × 30               | 0.15  | 2.56                                              | ESMQ3B1VSN561MA30S |
|                          | 2,200       | 35 × 40               | 0.15  | 4.92                                              | ESMQ181VSN222MA40S |                          | 680         | 30 × 40               | 0.15  | 2.87                                              | ESMQ3B1VSN681MR40S |
|                          | 2,700       | 35 × 45               | 0.15  | 5.52                                              | ESMQ181VSN272MA45S |                          | 680         | 35 × 35               | 0.15  | 2.87                                              | ESMQ3B1VSN681MA35S |
|                          | 3,300       | 35 × 50               | 0.15  | 5.75                                              | ESMQ181VSN332MA50S |                          | 820         | 30 × 45               | 0.15  | 3.25                                              | ESMQ3B1VSN821MR45S |
|                          | 390         | 22 × 25               | 0.15  | 1.68                                              | ESMQ201VSN391MP25S |                          | 820         | 35 × 40               | 0.15  | 3.25                                              | ESMQ3B1VSN821MA40S |
|                          | 470         | 22 × 30               | 0.15  | 1.85                                              | ESMQ201VSN471MP30S |                          | 1,000       | 30 × 50               | 0.15  | 3.63                                              | ESMQ3B1VSN102MR50S |
|                          | 560         | 22 × 30               | 0.15  | 2.43                                              | ESMQ201VSN561MP30S |                          | 1,000       | 35 × 45               | 0.15  | 3.63                                              | ESMQ3B1VSN102MA45S |
|                          | 560         | 25.4 × 25             | 0.15  | 2.43                                              | ESMQ201VSN561MQ25S |                          | 150         | 22 × 25               | 0.15  | 1.12                                              | ESMQ351VSN151MP25S |
|                          | 680         | 22 × 35               | 0.15  | 2.68                                              | ESMQ201VSN681MP35S |                          | 180         | 22 × 30               | 0.15  | 1.22                                              | ESMQ351VSN181MP30S |
|                          | 680         | 25.4 × 30             | 0.15  | 2.68                                              | ESMQ201VSN681MQ30S |                          | 220         | 22 × 35               | 0.15  | 1.44                                              | ESMQ351VSN221MP35S |
|                          | 820         | 22 × 40               | 0.15  | 2.93                                              | ESMQ201VSN821MP40S |                          | 270         | 22 × 40               | 0.15  | 1.66                                              | ESMQ351VSN271MP40S |
|                          | 820         | 25.4 × 30             | 0.15  | 2.93                                              | ESMQ201VSN821MQ30S |                          | 270         | 25.4 × 30             | 0.15  | 1.66                                              | ESMQ351VSN271MQ30S |
|                          | 820         | 30 × 25               | 0.15  | 2.93                                              | ESMQ201VSN821MR25S |                          | 330         | 22 × 45               | 0.15  | 1.88                                              | ESMQ351VSN331MP45S |
|                          | 1,000       | 22 × 45               | 0.15  | 3.25                                              | ESMQ201VSN102MP45S |                          | 330         | 25.4 × 35             | 0.15  | 1.88                                              | ESMQ351VSN331MQ35S |
|                          | 1,000       | 25.4 × 35             | 0.15  | 3.25                                              | ESMQ201VSN102MQ35S |                          | 390         | 22 × 50               | 0.15  | 2.06                                              | ESMQ351VSN391MP50S |
|                          | 1,000       | 30 × 30               | 0.15  | 3.25                                              | ESMQ201VSN102MR30S |                          | 390         | 25.4 × 40             | 0.15  | 2.06                                              | ESMQ351VSN391MQ40S |
|                          | 1,000       | 35 × 25               | 0.15  | 3.25                                              | ESMQ201VSN102MA25S |                          | 390         | 30 × 30               | 0.15  | 2.06                                              | ESMQ351VSN391MR30S |
|                          | 1,200       | 25.4 × 40             | 0.15  | 3.50                                              | ESMQ201VSN122MQ40S |                          | 390         | 35 × 25               | 0.15  | 2.06                                              | ESMQ351VSN391MA25S |
|                          | 1,200       | 30 × 30               | 0.15  | 3.50                                              | ESMQ201VSN122MR30S |                          | 470         | 25.4 × 45             | 0.15  | 2.40                                              | ESMQ351VSN471MQ45S |
|                          | 1,200       | 35 × 30               | 0.15  | 3.50                                              | ESMQ201VSN122MA30S |                          | 470         | 30 × 35               | 0.15  | 2.40                                              | ESMQ351VSN471MR35S |
|                          | 1,500       | 25.4 × 50             | 0.15  | 3.87                                              | ESMQ201VSN152MQ50S |                          | 470         | 35 × 30               | 0.15  | 2.40                                              | ESMQ351VSN471MA30S |
| 250                      | 1,500       | 30 × 35               | 0.15  | 3.87                                              | ESMQ201VSN152MR35S | 350                      | 560         | 25.4 × 50             | 0.15  | 2.60                                              | ESMQ351VSN561MQ50S |
|                          | 1,500       | 35 × 30               | 0.15  | 3.87                                              | ESMQ201VSN152MA30S |                          | 560         | 30 × 40               | 0.15  | 2.60                                              | ESMQ351VSN561MR40S |
|                          | 1,800       | 30 × 45               | 0.15  | 4.32                                              | ESMQ201VSN182MR45S |                          | 560         | 35 × 30               | 0.15  | 2.60                                              | ESMQ351VSN561MA30S |
|                          | 1,800       | 35 × 35               | 0.15  | 4.32                                              | ESMQ201VSN182MA35S |                          | 680         | 30 × 45               | 0.15  | 2.96                                              | ESMQ351VSN681MR45S |
|                          | 2,200       | 30 × 50               | 0.15  | 4.92                                              | ESMQ201VSN222MR50S |                          | 680         | 35 × 35               | 0.15  | 2.96                                              | ESMQ351VSN681MA35S |
|                          | 2,200       | 35 × 40               | 0.15  | 4.92                                              | ESMQ201VSN222MA40S |                          | 820         | 30 × 50               | 0.15  | 3.25                                              | ESMQ351VSN821MR50S |
|                          | 2,700       | 35 × 50               | 0.15  | 5.45                                              | ESMQ201VSN272MA50S |                          | 820         | 35 × 45               | 0.15  | 3.25                                              | ESMQ351VSN821MA45S |

◆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.           |
|--------------------------|-------------|-----------------------|-------|---------------------------------------------------|--------------------|--------------------------|-------------|-----------------------|-------|---------------------------------------------------|--------------------|
| 350                      | 1,000       | 35 × 50               | 0.15  | 3.54                                              | ESMQ351VSN102MA50S | 420                      | 270         | 30 × 30               | 0.20  | 1.94                                              | ESMQ421VSN271MR30S |
|                          | 120         | 22 × 25               | 0.15  | 1.02                                              | ESMQ401VSN121MP25S |                          | 330         | 25.4 × 45             | 0.20  | 2.17                                              | ESMQ421VSN331MQ45S |
|                          | 150         | 22 × 30               | 0.15  | 1.16                                              | ESMQ401VSN151MP30S |                          | 330         | 30 × 35               | 0.20  | 2.17                                              | ESMQ421VSN331MR35S |
|                          | 180         | 22 × 35               | 0.15  | 1.44                                              | ESMQ401VSN181MP35S |                          | 330         | 35 × 30               | 0.20  | 2.17                                              | ESMQ421VSN331MA30S |
|                          | 220         | 22 × 40               | 0.15  | 1.49                                              | ESMQ401VSN221MP40S |                          | 390         | 25.4 × 50             | 0.20  | 2.27                                              | ESMQ421VSN391MQ50S |
|                          | 220         | 25.4 × 30             | 0.15  | 1.49                                              | ESMQ401VSN221MQ30S |                          | 390         | 30 × 35               | 0.20  | 2.27                                              | ESMQ421VSN391MR35S |
|                          | 270         | 22 × 45               | 0.15  | 1.67                                              | ESMQ401VSN271MP45S |                          | 390         | 35 × 30               | 0.20  | 2.27                                              | ESMQ421VSN391MA30S |
|                          | 270         | 25.4 × 35             | 0.15  | 1.67                                              | ESMQ401VSN271MQ35S |                          | 470         | 30 × 40               | 0.20  | 2.61                                              | ESMQ421VSN471MR40S |
|                          | 270         | 30 × 25               | 0.15  | 1.67                                              | ESMQ401VSN271MR25S |                          | 470         | 35 × 35               | 0.20  | 2.61                                              | ESMQ421VSN471MA35S |
|                          | 330         | 22 × 50               | 0.15  | 1.90                                              | ESMQ401VSN331MP50S |                          | 560         | 30 × 50               | 0.20  | 2.82                                              | ESMQ421VSN561MR50S |
|                          | 330         | 25.4 × 40             | 0.15  | 1.90                                              | ESMQ401VSN331MQ40S |                          | 560         | 35 × 40               | 0.20  | 2.82                                              | ESMQ421VSN561MA40S |
|                          | 330         | 30 × 30               | 0.15  | 1.90                                              | ESMQ401VSN331MR30S |                          | 680         | 35 × 45               | 0.20  | 3.11                                              | ESMQ421VSN681MA45S |
|                          | 330         | 35 × 25               | 0.15  | 1.90                                              | ESMQ401VSN331MA25S | 450                      | 82          | 22 × 25               | 0.20  | 0.83                                              | ESMQ451VSN820MP25S |
|                          | 390         | 25.4 × 45             | 0.15  | 2.13                                              | ESMQ401VSN391MQ45S |                          | 100         | 22 × 25               | 0.20  | 0.93                                              | ESMQ451VSN101MP25S |
|                          | 390         | 30 × 35               | 0.15  | 2.13                                              | ESMQ401VSN391MP35S |                          | 120         | 22 × 30               | 0.20  | 1.04                                              | ESMQ451VSN121MP30S |
|                          | 390         | 35 × 30               | 0.15  | 2.13                                              | ESMQ401VSN391MA30S |                          | 150         | 22 × 35               | 0.20  | 1.19                                              | ESMQ451VSN151MP35S |
| 400                      | 470         | 25.4 × 50             | 0.15  | 2.39                                              | ESMQ401VSN471MQ50S |                          | 150         | 25.4 × 25             | 0.20  | 1.19                                              | ESMQ451VSN151MQ25S |
|                          | 470         | 30 × 40               | 0.15  | 2.39                                              | ESMQ401VSN471MR40S |                          | 180         | 22 × 40               | 0.20  | 1.35                                              | ESMQ451VSN181MP40S |
|                          | 470         | 35 × 30               | 0.15  | 2.39                                              | ESMQ401VSN471MA30S |                          | 180         | 25.4 × 30             | 0.20  | 1.35                                              | ESMQ451VSN181MQ30S |
|                          | 560         | 30 × 45               | 0.15  | 2.69                                              | ESMQ401VSN561MR45S |                          | 220         | 22 × 45               | 0.20  | 1.55                                              | ESMQ451VSN221MP45S |
|                          | 560         | 35 × 35               | 0.15  | 2.69                                              | ESMQ401VSN561MA35S |                          | 220         | 25.4 × 40             | 0.20  | 1.55                                              | ESMQ451VSN221MQ40S |
|                          | 680         | 30 × 50               | 0.15  | 2.96                                              | ESMQ401VSN681MR50S |                          | 220         | 30 × 30               | 0.20  | 1.55                                              | ESMQ451VSN221MR30S |
|                          | 680         | 35 × 40               | 0.15  | 2.96                                              | ESMQ401VSN681MA40S |                          | 220         | 35 × 25               | 0.20  | 1.55                                              | ESMQ451VSN221MA25S |
|                          | 820         | 35 × 45               | 0.15  | 3.25                                              | ESMQ401VSN821MA45S |                          | 270         | 22 × 50               | 0.20  | 1.78                                              | ESMQ451VSN271MP50S |
|                          | 100         | 22 × 25               | 0.20  | 0.97                                              | ESMQ421VSN101MP25S |                          | 270         | 25.4 × 40             | 0.20  | 1.78                                              | ESMQ451VSN271MQ40S |
|                          | 120         | 22 × 25               | 0.20  | 1.08                                              | ESMQ421VSN121MP25S |                          | 270         | 30 × 30               | 0.20  | 1.78                                              | ESMQ451VSN271MR30S |
|                          | 150         | 22 × 30               | 0.20  | 1.30                                              | ESMQ421VSN151MP30S |                          | 330         | 25.4 × 50             | 0.20  | 2.01                                              | ESMQ451VSN331MQ50S |
|                          | 150         | 25.4 × 25             | 0.20  | 1.30                                              | ESMQ421VSN151MQ25S |                          | 330         | 30 × 40               | 0.20  | 2.01                                              | ESMQ451VSN331MR40S |
|                          | 180         | 22 × 35               | 0.20  | 1.48                                              | ESMQ421VSN181MP35S |                          | 330         | 35 × 30               | 0.20  | 2.01                                              | ESMQ451VSN331MA30S |
|                          | 180         | 25.4 × 30             | 0.20  | 1.48                                              | ESMQ421VSN181MQ30S |                          | 390         | 30 × 40               | 0.20  | 2.24                                              | ESMQ451VSN391MR40S |
|                          | 220         | 22 × 40               | 0.20  | 1.65                                              | ESMQ421VSN221MP40S |                          | 390         | 35 × 35               | 0.20  | 2.24                                              | ESMQ451VSN391MA35S |
| 420                      | 220         | 25.4 × 35             | 0.20  | 1.65                                              | ESMQ421VSN221MQ35S |                          | 470         | 30 × 45               | 0.20  | 2.53                                              | ESMQ451VSN471MR45S |
|                          | 220         | 30 × 25               | 0.20  | 1.65                                              | ESMQ421VSN221MR25S |                          | 470         | 35 × 40               | 0.20  | 2.53                                              | ESMQ451VSN471MA40S |
|                          | 270         | 22 × 50               | 0.20  | 1.94                                              | ESMQ421VSN271MP50S |                          | 560         | 30 × 50               | 0.20  | 2.82                                              | ESMQ451VSN561MR50S |
|                          | 270         | 25.4 × 35             | 0.20  | 1.94                                              | ESMQ421VSN271MQ35S |                          | 560         | 35 × 45               | 0.20  | 2.82                                              | ESMQ451VSN561MA45S |

◆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.

# Mouser Electronics

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| <a href="#"><u>ESMQ161VSN152MP50S</u></a> | <a href="#"><u>ESMQ401VSN121MP25S</u></a> |                                           |                                           |