

# SMH Series

- Endurance with ripple current : 2,000 hours at 85°C
- Non solvent resistant type
- RoHS2 Compliant



## ◆ SPECIFICATIONS

| Items                                                  | Characteristics                                                                                                                                                                                                                                                                        |                                       |      |      |      |      |      |      |      |      |                  |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------------------|
| Category                                               | -40 to +85°C                                                                                                                                                                                                                                                                           |                                       |      |      |      |      |      |      |      |      |                  |
| Temperature Range                                      |                                                                                                                                                                                                                                                                                        |                                       |      |      |      |      |      |      |      |      |                  |
| Rated Voltage Range                                    | 6.3 to 100V <sub>dc</sub>                                                                                                                                                                                                                                                              |                                       |      |      |      |      |      |      |      |      |                  |
| Capacitance Tolerance                                  | ±20% (M) (at 20°C, 120Hz)                                                                                                                                                                                                                                                              |                                       |      |      |      |      |      |      |      |      |                  |
| Leakage Current                                        | I=0.02CV or 3mA, whichever is smaller.<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> )                                                                                                                                                                                                                                                       | 6.3V                                  | 10V  | 16V  | 25V  | 35V  | 50V  | 63V  | 80V  | 100V |                  |
|                                                        | tan δ (Max.)                                                                                                                                                                                                                                                                           | 0.60                                  | 0.50 | 0.40 | 0.30 | 0.25 | 0.20 | 0.15 | 0.15 | 0.15 | (at 20°C, 120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                       | 6.3V                                  | 10V  | 16V  | 25V  | 35V  | 50V  | 63V  | 80V  | 100V |                  |
|                                                        | Z(-25°C)/Z(+20°C)                                                                                                                                                                                                                                                                      | 4                                     | 4    | 4    | 3    | 3    | 2    | 2    | 2    | 2    |                  |
|                                                        | Z(-40°C)/Z(+20°C)                                                                                                                                                                                                                                                                      | 15                                    | 15   | 15   | 10   | 8    | 6    | 6    | 5    | 5    | (at 120Hz)       |
| Endurance                                              | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 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                                                                                                                                                                                                                                                                     | ≤ ±20% 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)"

**◆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.           |
|-----------------------|----------|--------------------|-------|-----------------------------------------|--------------------|-----------------------|-----------|--------------------|--------------------|-----------------------------------------|--------------------|
| 6.3                   | 15,000   | 22 × 25            | 0.60  | 2.44                                    | ESMH6R3VSN153MP25S | 16                    | 27,000    | 25.4 × 45          | 0.40               | 4.72                                    | ESMH160VSN273MQ45S |
|                       | 18,000   | 22 × 30            | 0.60  | 2.67                                    | ESMH6R3VSN183MP30S |                       | 27,000    | 30 × 35            | 0.40               | 4.82                                    | ESMH160VSN273MR35S |
|                       | 18,000   | 25.4 × 25          | 0.60  | 2.70                                    | ESMH6R3VSN183MQ25S |                       | 27,000    | 35 × 30            | 0.40               | 4.65                                    | ESMH160VSN273MA30S |
|                       | 22,000   | 22 × 30            | 0.60  | 3.06                                    | ESMH6R3VSN223MP30S |                       | 33,000    | 25.4 × 50          | 0.40               | 5.33                                    | ESMH160VSN333MQ50S |
|                       | 22,000   | 25.4 × 25          | 0.60  | 3.07                                    | ESMH6R3VSN223MQ25S |                       | 33,000    | 30 × 40            | 0.40               | 5.36                                    | ESMH160VSN333MR40S |
|                       | 27,000   | 22 × 35            | 0.60  | 3.49                                    | ESMH6R3VSN273MP35S |                       | 33,000    | 35 × 30            | 0.40               | 5.15                                    | ESMH160VSN333MA30S |
|                       | 27,000   | 25.4 × 30          | 0.60  | 3.52                                    | ESMH6R3VSN273MQ30S |                       | 39,000    | 30 × 45            | 0.40               | 6.01                                    | ESMH160VSN393MR45S |
|                       | 27,000   | 30 × 25            | 0.60  | 3.57                                    | ESMH6R3VSN273MR25S |                       | 39,000    | 35 × 35            | 0.40               | 5.95                                    | ESMH160VSN393MA35S |
|                       | 33,000   | 22 × 40            | 0.60  | 3.97                                    | ESMH6R3VSN333MP40S |                       | 47,000    | 30 × 50            | 0.40               | 6.79                                    | ESMH160VSN473MR50S |
|                       | 33,000   | 25.4 × 35          | 0.60  | 4.02                                    | ESMH6R3VSN333MQ35S |                       | 47,000    | 35 × 40            | 0.40               | 6.76                                    | ESMH160VSN473MA40S |
|                       | 33,000   | 30 × 25            | 0.60  | 3.95                                    | ESMH6R3VSN333MQ25S |                       | 56,000    | 35 × 45            | 0.40               | 7.62                                    | ESMH160VSN563MA45S |
|                       | 39,000   | 22 × 50            | 0.60  | 4.55                                    | ESMH6R3VSN393MP50S |                       | 68,000    | 35 × 50            | 0.40               | 8.63                                    | ESMH160VSN683MA50S |
|                       | 39,000   | 25.4 × 40          | 0.60  | 4.50                                    | ESMH6R3VSN393MQ40S |                       | 5,600     | 22 × 25            | 0.30               | 2.21                                    | ESMH250VSN562MP25S |
|                       | 39,000   | 30 × 30            | 0.60  | 4.45                                    | ESMH6R3VSN393MR30S |                       | 6,800     | 22 × 30            | 0.30               | 2.40                                    | ESMH250VSN682MP30S |
|                       | 39,000   | 35 × 25            | 0.60  | 4.51                                    | ESMH6R3VSN393MA25S |                       | 6,800     | 25.4 × 25          | 0.30               | 2.56                                    | ESMH250VSN682MQ25S |
|                       | 47,000   | 25.4 × 45          | 0.60  | 5.09                                    | ESMH6R3VSN473MQ45S |                       | 8,200     | 22 × 35            | 0.30               | 2.72                                    | ESMH250VSN822MP35S |
|                       | 47,000   | 30 × 35            | 0.60  | 5.06                                    | ESMH6R3VSN473MR35S |                       | 8,200     | 25.4 × 25          | 0.30               | 2.80                                    | ESMH250VSN822MQ25S |
|                       | 47,000   | 35 × 30            | 0.60  | 5.01                                    | ESMH6R3VSN473MA30S |                       | 10,000    | 22 × 40            | 0.30               | 3.09                                    | ESMH250VSN103MP40S |
|                       | 56,000   | 25.4 × 50          | 0.60  | 5.71                                    | ESMH6R3VSN563MQ50S |                       | 10,000    | 25.4 × 30          | 0.30               | 3.12                                    | ESMH250VSN103MQ30S |
|                       | 56,000   | 30 × 40            | 0.60  | 5.70                                    | ESMH6R3VSN563MR40S |                       | 10,000    | 30 × 25            | 0.30               | 3.21                                    | ESMH250VSN103MR25S |
|                       | 56,000   | 35 × 30            | 0.60  | 5.77                                    | ESMH6R3VSN563MA30S |                       | 12,000    | 22 × 45            | 0.30               | 3.48                                    | ESMH250VSN123MP45S |
|                       | 68,000   | 30 × 45            | 0.60  | 6.48                                    | ESMH6R3VSN683MR45S |                       | 12,000    | 25.4 × 35          | 0.30               | 3.43                                    | ESMH250VSN123MQ35S |
|                       | 68,000   | 35 × 35            | 0.60  | 6.42                                    | ESMH6R3VSN683MA35S |                       | 12,000    | 30 × 30            | 0.30               | 3.86                                    | ESMH250VSN123MR30S |
|                       | 82,000   | 30 × 50            | 0.60  | 7.32                                    | ESMH6R3VSN823MR50S |                       | 12,000    | 35 × 25            | 0.30               | 3.54                                    | ESMH250VSN123MA25S |
|                       | 82,000   | 35 × 40            | 0.60  | 7.29                                    | ESMH6R3VSN823MA40S |                       | 15,000    | 22 × 50            | 0.30               | 4.00                                    | ESMH250VSN153MP50S |
| 100,000               | 35 × 45  | 0.60               | 8.31  | ESMH6R3VSN104MA45S                      | 15,000             | 25.4 × 40             | 0.30      | 3.95               | ESMH250VSN153MQ40S |                                         |                    |
| 10                    | 12,000   | 22 × 25            | 0.50  | 2.39                                    | ESMH100VSN123MP25S | 15,000                | 30 × 30   | 0.30               | 4.00               | ESMH250VSN153MR30S                      |                    |
|                       | 15,000   | 22 × 30            | 0.50  | 2.76                                    | ESMH100VSN153MP30S | 15,000                | 35 × 25   | 0.30               | 3.95               | ESMH250VSN153MA25S                      |                    |
|                       | 15,000   | 25.4 × 25          | 0.50  | 2.77                                    | ESMH100VSN153MQ25S | 18,000                | 25.4 × 45 | 0.30               | 4.45               | ESMH250VSN183MQ45S                      |                    |
|                       | 18,000   | 22 × 35            | 0.50  | 3.12                                    | ESMH100VSN183MP35S | 18,000                | 30 × 35   | 0.30               | 4.46               | ESMH250VSN183MR35S                      |                    |
|                       | 18,000   | 25.4 × 25          | 0.50  | 3.04                                    | ESMH100VSN183MQ25S | 18,000                | 35 × 30   | 0.30               | 4.63               | ESMH250VSN183MA30S                      |                    |
|                       | 22,000   | 22 × 40            | 0.50  | 3.55                                    | ESMH100VSN223MP40S | 22,000                | 25.4 × 50 | 0.30               | 5.02               | ESMH250VSN223MQ50S                      |                    |
|                       | 22,000   | 25.4 × 30          | 0.50  | 3.48                                    | ESMH100VSN223MQ30S | 22,000                | 30 × 45   | 0.30               | 5.21               | ESMH250VSN223MR45S                      |                    |
|                       | 22,000   | 30 × 25            | 0.50  | 3.53                                    | ESMH100VSN223MR25S | 22,000                | 35 × 35   | 0.30               | 5.16               | ESMH250VSN223MA35S                      |                    |
|                       | 27,000   | 22 × 45            | 0.50  | 4.04                                    | ESMH100VSN273MP45S | 27,000                | 30 × 50   | 0.30               | 5.94               | ESMH250VSN273MR50S                      |                    |
|                       | 27,000   | 25.4 × 35          | 0.50  | 3.98                                    | ESMH100VSN273MQ35S | 27,000                | 35 × 40   | 0.30               | 5.92               | ESMH250VSN273MA40S                      |                    |
|                       | 27,000   | 30 × 30            | 0.50  | 3.73                                    | ESMH100VSN273MR30S | 33,000                | 35 × 45   | 0.30               | 6.75               | ESMH250VSN333MA45S                      |                    |
|                       | 27,000   | 35 × 25            | 0.50  | 3.73                                    | ESMH100VSN273MA25S | 39,000                | 35 × 50   | 0.30               | 7.56               | ESMH250VSN393MA50S                      |                    |
|                       | 33,000   | 22 × 50            | 0.50  | 4.58                                    | ESMH100VSN333MP50S | 3,900                 | 22 × 25   | 0.25               | 2.22               | ESMH350VSN392MP25S                      |                    |
|                       | 33,000   | 25.4 × 40          | 0.50  | 4.54                                    | ESMH100VSN333MQ40S | 4,700                 | 22 × 30   | 0.25               | 2.41               | ESMH350VSN472MP30S                      |                    |
|                       | 33,000   | 30 × 30            | 0.50  | 4.13                                    | ESMH100VSN333MR30S | 4,700                 | 25.4 × 25 | 0.25               | 2.42               | ESMH350VSN472MQ25S                      |                    |
|                       | 33,000   | 35 × 25            | 0.50  | 4.13                                    | ESMH100VSN333MA25S | 5,600                 | 22 × 35   | 0.25               | 2.75               | ESMH350VSN562MP35S                      |                    |
|                       | 39,000   | 25.4 × 45          | 0.50  | 5.08                                    | ESMH100VSN393MQ45S | 5,600                 | 25.4 × 25 | 0.25               | 2.64               | ESMH350VSN562MQ25S                      |                    |
|                       | 39,000   | 30 × 35            | 0.50  | 5.05                                    | ESMH100VSN393MR35S | 6,800                 | 22 × 40   | 0.25               | 2.80               | ESMH350VSN682MP40S                      |                    |
|                       | 39,000   | 35 × 30            | 0.50  | 4.80                                    | ESMH100VSN393MA30S | 6,800                 | 25.4 × 30 | 0.25               | 2.74               | ESMH350VSN682MQ30S                      |                    |
|                       | 47,000   | 25.4 × 50          | 0.50  | 5.73                                    | ESMH100VSN473MQ50S | 6,800                 | 30 × 25   | 0.25               | 2.97               | ESMH350VSN682MR25S                      |                    |
|                       | 47,000   | 30 × 40            | 0.50  | 5.72                                    | ESMH100VSN473MR40S | 8,200                 | 22 × 45   | 0.25               | 3.47               | ESMH350VSN822MR45S                      |                    |
|                       | 47,000   | 35 × 30            | 0.50  | 5.27                                    | ESMH100VSN473MA30S | 8,200                 | 25.4 × 35 | 0.25               | 3.10               | ESMH350VSN822MQ35S                      |                    |
|                       | 56,000   | 30 × 45            | 0.50  | 6.44                                    | ESMH100VSN563MR45S | 8,200                 | 30 × 30   | 0.25               | 3.13               | ESMH350VSN822MR30S                      |                    |
|                       | 56,000   | 35 × 35            | 0.50  | 6.38                                    | ESMH100VSN563MA35S | 8,200                 | 35 × 25   | 0.25               | 2.73               | ESMH350VSN822MA25S                      |                    |
|                       | 68,000   | 30 × 50            | 0.50  | 7.27                                    | ESMH100VSN683MR50S | 10,000                | 22 × 50   | 0.25               | 3.57               | ESMH350VSN103MP50S                      |                    |
| 68,000                | 35 × 40  | 0.50               | 7.27  | ESMH100VSN683MA40S                      | 10,000             | 25.4 × 40             | 0.25      | 3.53               | ESMH350VSN103MQ40S |                                         |                    |
| 82,000                | 35 × 50  | 0.50               | 8.49  | ESMH100VSN823MA50S                      | 10,000             | 30 × 30               | 0.25      | 3.46               | ESMH350VSN103MR30S |                                         |                    |
| 16                    | 8,200    | 22 × 25            | 0.40  | 2.51                                    | ESMH160VSN822MP25S | 10,000                | 35 × 25   | 0.25               | 3.02               | ESMH350VSN103MA25S                      |                    |
|                       | 10,000   | 22 × 25            | 0.40  | 2.77                                    | ESMH160VSN103MP25S | 12,000                | 25.4 × 45 | 0.25               | 3.98               | ESMH350VSN123MQ45S                      |                    |
|                       | 12,000   | 22 × 30            | 0.40  | 2.86                                    | ESMH160VSN103MP30S | 12,000                | 30 × 35   | 0.25               | 4.01               | ESMH350VSN123MR35S                      |                    |
|                       | 12,000   | 25.4 × 25          | 0.40  | 2.95                                    | ESMH160VSN123MQ25S | 12,000                | 35 × 30   | 0.25               | 4.42               | ESMH350VSN123MA30S                      |                    |
|                       | 15,000   | 22 × 35            | 0.40  | 3.29                                    | ESMH160VSN153MP35S | 15,000                | 25.4 × 50 | 0.25               | 4.54               | ESMH350VSN153MQ50S                      |                    |
|                       | 15,000   | 25.4 × 30          | 0.40  | 3.46                                    | ESMH160VSN153MQ30S | 15,000                | 30 × 40   | 0.25               | 4.52               | ESMH350VSN153MR40S                      |                    |
|                       | 15,000   | 30 × 25            | 0.40  | 3.66                                    | ESMH160VSN153MR25S | 15,000                | 35 × 35   | 0.25               | 5.01               | ESMH350VSN153MA35S                      |                    |
|                       | 18,000   | 22 × 40            | 0.40  | 3.72                                    | ESMH160VSN183MP40S | 18,000                | 30 × 45   | 0.25               | 4.71               | ESMH350VSN183MR45S                      |                    |
|                       | 18,000   | 25.4 × 35          | 0.40  | 3.98                                    | ESMH160VSN183MQ35S | 18,000                | 35 × 40   | 0.25               | 5.54               | ESMH350VSN183MA40S                      |                    |
|                       | 18,000   | 30 × 25            | 0.40  | 4.00                                    | ESMH160VSN183MR25S | 22,000                | 30 × 50   | 0.25               | 5.33               | ESMH350VSN223MR50S                      |                    |
|                       | 22,000   | 22 × 50            | 0.40  | 4.37                                    | ESMH160VSN223MP50S | 22,000                | 35 × 45   | 0.25               | 6.04               | ESMH350VSN223MA45S                      |                    |
|                       | 22,000   | 25.4 × 40          | 0.40  | 4.26                                    | ESMH160VSN223MQ40S | 27,000                | 35 × 50   | 0.25               | 6.89               | ESMH350VSN273MA50S                      |                    |
|                       | 22,000   | 30 × 30            | 0.40  | 4.21                                    | ESMH160VSN223MR30S | 2,200                 | 22 × 25   | 0.20               | 1.91               | ESMH500VSN222MP25S                      |                    |
|                       | 22,000   | 35 × 25            | 0.40  | 4.15                                    | ESMH160VSN223MA25S | 3,300                 | 22 × 30   | 0.20               | 2.37               | ESMH500VSN332MP30S                      |                    |

## ◆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.           |
|--------------------------|-------------|-----------------------|-------|---------------------------------------------------|--------------------|--------------------------|-------------|-----------------------|--------------------|---------------------------------------------------|--------------------|
|                          |             |                       |       |                                                   |                    |                          |             |                       |                    |                                                   |                    |
| 50                       | 3,300       | 25.4 × 25             | 0.20  | 2.38                                              | ESMH500VSN332MQ25S | 80                       | 1,200       | 22 × 25               | 0.15               | 1.69                                              | ESMH800VSN122MP25S |
|                          | 3,900       | 22 × 35               | 0.20  | 2.65                                              | ESMH500VSN392MP35S |                          | 1,500       | 22 × 25               | 0.15               | 1.88                                              | ESMH800VSN152MP25S |
|                          | 3,900       | 25.4 × 30             | 0.20  | 2.68                                              | ESMH500VSN392MQ30S |                          | 1,800       | 22 × 30               | 0.15               | 2.14                                              | ESMH800VSN182MP30S |
|                          | 3,900       | 30 × 25               | 0.20  | 2.55                                              | ESMH500VSN392MR25S |                          | 1,800       | 25.4 × 25             | 0.15               | 2.26                                              | ESMH800VSN182MQ25S |
|                          | 4,700       | 22 × 40               | 0.20  | 2.99                                              | ESMH500VSN472MP40S |                          | 2,200       | 22 × 35               | 0.15               | 2.44                                              | ESMH800VSN222MP35S |
|                          | 4,700       | 25.4 × 35             | 0.20  | 3.03                                              | ESMH500VSN472MQ35S |                          | 2,200       | 25.4 × 30             | 0.15               | 2.46                                              | ESMH800VSN222MQ30S |
|                          | 4,700       | 30 × 25               | 0.20  | 2.81                                              | ESMH500VSN472MR25S |                          | 2,200       | 30 × 25               | 0.15               | 2.49                                              | ESMH800VSN222MR25S |
|                          | 5,600       | 22 × 45               | 0.20  | 3.36                                              | ESMH500VSN562MP45S |                          | 2,700       | 22 × 40               | 0.15               | 2.78                                              | ESMH800VSN272MP40S |
|                          | 5,600       | 25.4 × 35             | 0.20  | 3.31                                              | ESMH500VSN562MQ35S |                          | 2,700       | 25.4 × 35             | 0.15               | 2.81                                              | ESMH800VSN272MQ35S |
|                          | 5,600       | 30 × 30               | 0.20  | 3.37                                              | ESMH500VSN562MR30S |                          | 2,700       | 30 × 25               | 0.15               | 2.75                                              | ESMH800VSN272MR25S |
|                          | 5,600       | 35 × 25               | 0.20  | 3.42                                              | ESMH500VSN562MA25S |                          | 3,300       | 22 × 45               | 0.15               | 3.16                                              | ESMH800VSN332MP45S |
|                          | 6,800       | 22 × 50               | 0.20  | 3.81                                              | ESMH500VSN682MP50S |                          | 3,300       | 25.4 × 40             | 0.15               | 3.21                                              | ESMH800VSN332MQ40S |
|                          | 6,800       | 25.4 × 40             | 0.20  | 3.81                                              | ESMH500VSN682MQ40S |                          | 3,300       | 30 × 30               | 0.15               | 3.17                                              | ESMH800VSN332MR30S |
|                          | 6,800       | 30 × 35               | 0.20  | 3.85                                              | ESMH500VSN682MR35S |                          | 3,300       | 35 × 25               | 0.15               | 3.21                                              | ESMH800VSN332MA25S |
|                          | 6,800       | 35 × 30               | 0.20  | 3.85                                              | ESMH500VSN682MA30S |                          | 3,900       | 22 × 50               | 0.15               | 3.52                                              | ESMH800VSN392MP50S |
|                          | 8,200       | 25.4 × 50             | 0.20  | 4.37                                              | ESMH500VSN822MQ50S |                          | 3,900       | 25.4 × 45             | 0.15               | 3.59                                              | ESMH800VSN392MQ45S |
|                          | 8,200       | 30 × 40               | 0.20  | 4.36                                              | ESMH500VSN822MR40S |                          | 3,900       | 30 × 35               | 0.15               | 3.57                                              | ESMH800VSN392MR35S |
|                          | 8,200       | 35 × 30               | 0.20  | 4.41                                              | ESMH500VSN822MA30S |                          | 3,900       | 35 × 25               | 0.15               | 3.50                                              | ESMH800VSN392MA25S |
| 10,000                   | 30 × 45     | 0.20                  | 4.97  | ESMH500VSN103MR45S                                | 4,700              | 25.4 × 50                | 0.15        | 4.05                  | ESMH800VSN472MQ50S |                                                   |                    |
| 10,000                   | 35 × 35     | 0.20                  | 4.92  | ESMH500VSN103MA35S                                | 4,700              | 30 × 40                  | 0.15        | 4.05                  | ESMH800VSN472MR40S |                                                   |                    |
| 12,000                   | 30 × 50     | 0.20                  | 5.60  | ESMH500VSN123MR50S                                | 4,700              | 35 × 30                  | 0.15        | 4.09                  | ESMH800VSN472MA30S |                                                   |                    |
| 12,000                   | 35 × 40     | 0.20                  | 5.58  | ESMH500VSN123MA40S                                | 5,600              | 30 × 45                  | 0.15        | 4.55                  | ESMH800VSN562MR45S |                                                   |                    |
| 15,000                   | 35 × 45     | 0.20                  | 6.44  | ESMH500VSN153MA45S                                | 5,600              | 35 × 35                  | 0.15        | 4.51                  | ESMH800VSN562MA35S |                                                   |                    |
| 18,000                   | 35 × 50     | 0.20                  | 6.71  | ESMH500VSN183MA50S                                | 6,800              | 30 × 50                  | 0.15        | 5.16                  | ESMH800VSN682MR50S |                                                   |                    |
| 63                       | 1,800       | 22 × 25               | 0.15  | 1.82                                              | ESMH630VSN182MP25S | 6,800                    | 35 × 40     | 0.15                  | 5.14               | ESMH800VSN682MA40S                                |                    |
|                          | 2,200       | 22 × 30               | 0.15  | 2.31                                              | ESMH630VSN222MP30S | 8,200                    | 35 × 45     | 0.15                  | 5.83               | ESMH800VSN822MA45S                                |                    |
|                          | 2,200       | 25.4 × 25             | 0.15  | 2.30                                              | ESMH630VSN222MQ25S | 10,000                   | 35 × 50     | 0.15                  | 6.63               | ESMH800VSN103MA50S                                |                    |
|                          | 2,700       | 22 × 35               | 0.15  | 2.40                                              | ESMH630VSN272MP35S | 820                      | 22 × 25     | 0.15                  | 1.86               | ESMH101VSN821MP25S                                |                    |
|                          | 2,700       | 25.4 × 25             | 0.15  | 2.40                                              | ESMH630VSN272MQ25S | 1,200                    | 22 × 30     | 0.15                  | 2.09               | ESMH101VSN122MP30S                                |                    |
|                          | 3,300       | 22 × 35               | 0.15  | 2.62                                              | ESMH630VSN332MP35S | 1,200                    | 25.4 × 25   | 0.15                  | 2.10               | ESMH101VSN122MQ25S                                |                    |
|                          | 3,300       | 25.4 × 30             | 0.15  | 2.64                                              | ESMH630VSN332MQ30S | 1,500                    | 22 × 35     | 0.15                  | 2.41               | ESMH101VSN152MP35S                                |                    |
|                          | 3,300       | 30 × 25               | 0.15  | 2.78                                              | ESMH630VSN332MR25S | 1,500                    | 25.4 × 30   | 0.15                  | 2.43               | ESMH101VSN152MQ30S                                |                    |
|                          | 3,900       | 22 × 40               | 0.15  | 2.93                                              | ESMH630VSN392MP40S | 1,500                    | 30 × 25     | 0.15                  | 2.46               | ESMH101VSN152MR25S                                |                    |
|                          | 3,900       | 25.4 × 35             | 0.15  | 2.97                                              | ESMH630VSN392MQ35S | 1,800                    | 22 × 40     | 0.15                  | 2.71               | ESMH101VSN182MP40S                                |                    |
|                          | 3,900       | 30 × 30               | 0.15  | 3.00                                              | ESMH630VSN392MR30S | 1,800                    | 25.4 × 35   | 0.15                  | 2.75               | ESMH101VSN182MQ35S                                |                    |
|                          | 3,900       | 35 × 25               | 0.15  | 3.00                                              | ESMH630VSN392MA25S | 1,800                    | 30 × 25     | 0.15                  | 2.72               | ESMH101VSN182MR25S                                |                    |
|                          | 4,700       | 22 × 50               | 0.15  | 3.39                                              | ESMH630VSN472MP50S | 2,200                    | 22 × 45     | 0.15                  | 3.08               | ESMH101VSN222MP45S                                |                    |
|                          | 4,700       | 25.4 × 40             | 0.15  | 3.36                                              | ESMH630VSN472MQ40S | 2,200                    | 25.4 × 40   | 0.15                  | 3.13               | ESMH101VSN222MQ40S                                |                    |
|                          | 4,700       | 30 × 30               | 0.15  | 3.32                                              | ESMH630VSN472MR30S | 2,200                    | 30 × 30     | 0.15                  | 3.09               | ESMH101VSN222MR30S                                |                    |
|                          | 4,700       | 35 × 25               | 0.15  | 3.36                                              | ESMH630VSN472MA25S | 2,200                    | 35 × 25     | 0.15                  | 3.14               | ESMH101VSN222MA25S                                |                    |
|                          | 5,600       | 25.4 × 45             | 0.15  | 3.77                                              | ESMH630VSN562MQ45S | 2,700                    | 22 × 50     | 0.15                  | 3.53               | ESMH101VSN272MP50S                                |                    |
|                          | 5,600       | 30 × 35               | 0.15  | 3.75                                              | ESMH630VSN562MR35S | 2,700                    | 25.4 × 45   | 0.15                  | 3.57               | ESMH101VSN272MQ45S                                |                    |
|                          | 5,600       | 35 × 30               | 0.15  | 3.76                                              | ESMH630VSN562MA30S | 2,700                    | 30 × 35     | 0.15                  | 3.55               | ESMH101VSN272MR35S                                |                    |
|                          | 6,800       | 25.4 × 50             | 0.15  | 4.27                                              | ESMH630VSN682MQ50S | 2,700                    | 35 × 30     | 0.15                  | 3.71               | ESMH101VSN272MA30S                                |                    |
|                          | 6,800       | 30 × 40               | 0.15  | 4.27                                              | ESMH630VSN682MR40S | 3,300                    | 25.4 × 50   | 0.15                  | 4.06               | ESMH101VSN332MQ50S                                |                    |
|                          | 6,800       | 35 × 30               | 0.15  | 4.15                                              | ESMH630VSN682MA30S | 3,300                    | 30 × 40     | 0.15                  | 4.05               | ESMH101VSN332MR40S                                |                    |
|                          | 8,200       | 30 × 45               | 0.15  | 4.83                                              | ESMH630VSN822MR45S | 3,300                    | 35 × 30     | 0.15                  | 4.05               | ESMH101VSN332MA30S                                |                    |
|                          | 8,200       | 35 × 35               | 0.15  | 4.79                                              | ESMH630VSN822MA35S | 3,900                    | 30 × 45     | 0.15                  | 4.54               | ESMH101VSN392MR45S                                |                    |
| 10,000                   | 30 × 50     | 0.15                  | 5.49  | ESMH630VSN103MR50S                                | 3,900              | 35 × 35                  | 0.15        | 4.49                  | ESMH101VSN392MA35S |                                                   |                    |
| 10,000                   | 35 × 40     | 0.15                  | 5.47  | ESMH630VSN103MA40S                                | 4,700              | 30 × 50                  | 0.15        | 5.13                  | ESMH101VSN472MR50S |                                                   |                    |
| 12,000                   | 35 × 45     | 0.15                  | 6.19  | ESMH630VSN123MA45S                                | 4,700              | 35 × 40                  | 0.15        | 5.11                  | ESMH101VSN472MA40S |                                                   |                    |
|                          |             |                       |       |                                                   | 5,600              | 35 × 45                  | 0.15        | 5.75                  | ESMH101VSN562MA45S |                                                   |                    |
|                          |             |                       |       |                                                   | 6,800              | 35 × 50                  | 0.15        | 6.50                  | ESMH101VSN682MA50S |                                                   |                    |

\*For the rated voltage  $\geq 160V_{dc}$ , please use SMQ series

## ◆RATED RIPPLE CURRENT MULTIPLIERS

### ● Frequency Multipliers

| Frequency(Hz)            | 50   | 120  | 300  | 1k   | 10k  | 50k  |
|--------------------------|------|------|------|------|------|------|
| 6.3 to 50V <sub>dc</sub> | 0.95 | 1.00 | 1.03 | 1.05 | 1.08 | 1.08 |
| 63 to 100V <sub>dc</sub> | 0.92 | 1.00 | 1.07 | 1.13 | 1.19 | 1.20 |

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.