

# SMQ Series

- Downsized from current downsized snap-ins SMH series
- Endurance with ripple current : 2,000 hours at 85°C
- Non solvent-proof type
- RoHS Compliant

SMQ

↑  
Downsized  
SMH

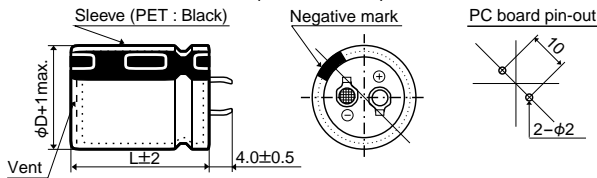


## ◆ SPECIFICATIONS

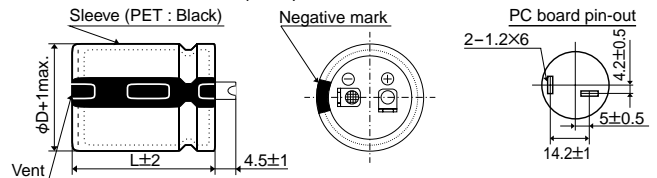
| Items  | Characteristics  |                                       |             |            |
|--|--|---------------------------------------|-------------|------------|
| Category   | -25 to +85°C   |                                       |             |            |
| Temperature Range                                      | -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·C/V<br>Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes)   |                                       |             |            |
| Dissipation Factor (tanδ)                              | Rated voltage (V <sub>dc</sub> )   | 160 to 250V                           | 315 to 400V | 420 & 450V |
|  | tanδ (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 |
|  | 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 for 2,000 hours at 85°C. |                                       |             |            |
|  | Capacitance change   | ≤ ±20% of the initial value           |             |            |
|  | D.F. (tanδ)  | ≤ 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.                            |                                       |             |            |
|  | Capacitance change   | ≤ ±15% of the initial value           |             |            |
|  | D.F. (tanδ)  | ≤ 150% of the initial specified value |             |            |
|  | Leakage current  | ≤ The initial specified value         |             |            |

## ◆ DIMENSIONS [mm]

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

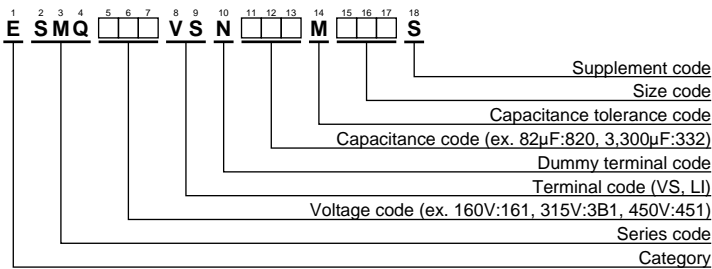


● Terminal Code : LI (φ35)



No plastic disk is the standard design.

## ◆ PART NUMBERING SYSTEM



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

◆STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case size φD×L(mm) | tanδ | Rated ripple current (Arms/85°C,120Hz) | Part No.           |
|----------|----------|--------------------|------|--|--------------------|
| 160      | 560      | 22×25              | 0.15 | 2.25                                   | ESMQ161VSN561MP25S |
|          | 680      | 22×30              | 0.15 | 2.50                                   | ESMQ161VSN681MP30S |
|          | 820      | 22×35              | 0.15 | 2.75                                   | ESMQ161VSN821MP35S |
|          | 1,000    | 22×40              | 0.15 | 3.00                                   | ESMQ161VSN102MP40S |
|          | 1,000    | 25.4×30            | 0.15 | 3.00                                   | ESMQ161VSN102MQ30S |
|          | 1,200    | 22×45              | 0.15 | 3.25                                   | ESMQ161VSN122MP45S |
|          | 1,200    | 25.4×35            | 0.15 | 3.25                                   | ESMQ161VSN122MQ35S |
|          | 1,200    | 30×25              | 0.15 | 3.25                                   | ESMQ161VSN122MR25S |
|          | 1,500    | 22×50              | 0.15 | 3.73                                   | ESMQ161VSN152MP50S |
|          | 1,500    | 25.4×40            | 0.15 | 3.73                                   | ESMQ161VSN152MQ40S |
|          | 1,500    | 30×30              | 0.15 | 3.73                                   | ESMQ161VSN152MR30S |
|          | 1,500    | 35×25              | 0.15 | 3.73                                   | ESMQ161VSN152MA25S |
|          | 1,800    | 25.4×45            | 0.15 | 4.20                                   | ESMQ161VSN182MP45S |
|          | 1,800    | 30×35              | 0.15 | 4.20                                   | ESMQ161VSN182MR35S |
|          | 1,800    | 35×30              | 0.15 | 4.20                                   | ESMQ161VSN182MA30S |
|          | 2,200    | 30×40              | 0.15 | 4.78                                   | ESMQ161VSN222MR40S |
|          | 2,200    | 35×35              | 0.15 | 4.78                                   | ESMQ161VSN222MA35S |
|          | 2,700    | 35×40              | 0.15 | 5.45                                   | ESMQ161VSN272MA40S |
|          | 3,300    | 35×45              | 0.15 | 5.75                                   | ESMQ161VSN332MA45S |
|          | 3,900    | 35×50              | 0.15 | 6.00                                   | ESMQ161VSN392MA50S |
| 180      | 470      | 22×25              | 0.15 | 2.08                                   | ESMQ181VSN471MP25S |
|          | 560      | 22×30              | 0.15 | 2.25                                   | ESMQ181VSN561MP30S |
|          | 680      | 22×30              | 0.15 | 2.50                                   | ESMQ181VSN681MP30S |
|          | 680      | 25.4×25            | 0.15 | 2.50                                   | ESMQ181VSN681MQ25S |
|          | 820      | 22×35              | 0.15 | 2.75                                   | ESMQ181VSN821MP35S |
|          | 820      | 25.4×30            | 0.15 | 2.75                                   | ESMQ181VSN821MQ30S |
|          | 1,000    | 22×45              | 0.15 | 3.00                                   | ESMQ181VSN102MP45S |
|          | 1,000    | 25.4×35            | 0.15 | 3.00                                   | ESMQ181VSN102MQ35S |
|          | 1,000    | 30×25              | 0.15 | 3.00                                   | ESMQ181VSN102MR25S |
|          | 1,200    | 22×50              | 0.15 | 3.31                                   | ESMQ181VSN122MP50S |
|          | 1,200    | 25.4×40            | 0.15 | 3.31                                   | ESMQ181VSN122MQ40S |
|          | 1,200    | 30×30              | 0.15 | 3.31                                   | ESMQ181VSN122MR30S |
|          | 1,200    | 35×25              | 0.15 | 3.31                                   | ESMQ181VSN122MA25S |
|          | 1,500    | 25.4×45            | 0.15 | 3.83                                   | ESMQ181VSN152MP45S |
|          | 1,500    | 30×35              | 0.15 | 3.83                                   | ESMQ181VSN152MR35S |
|          | 1,500    | 35×30              | 0.15 | 3.83                                   | ESMQ181VSN152MA30S |
|          | 1,800    | 25.4×50            | 0.15 | 4.32                                   | ESMQ181VSN182MQ50S |
|          | 1,800    | 30×40              | 0.15 | 4.32                                   | ESMQ181VSN182MR40S |
|          | 1,800    | 35×30              | 0.15 | 4.32                                   | ESMQ181VSN182MA30S |
|          | 2,200    | 30×45              | 0.15 | 4.92                                   | ESMQ181VSN222MR45S |
| 2,200    | 35×40    | 0.15               | 4.92 | ESMQ181VSN222MA40S                     |                    |
| 2,700    | 35×45    | 0.15               | 5.52 | ESMQ181VSN272MA45S                     |                    |
| 3,300    | 35×50    | 0.15               | 5.75 | ESMQ181VSN332MA50S                     |                    |
| 200      | 390      | 22×25              | 0.15 | 1.68                                   | ESMQ201VSN391MP25S |
|          | 470      | 22×30              | 0.15 | 1.85                                   | ESMQ201VSN471MP30S |
|          | 560      | 22×30              | 0.15 | 2.43                                   | ESMQ201VSN561MP30S |
|          | 560      | 25.4×25            | 0.15 | 2.43                                   | ESMQ201VSN561MQ25S |
|          | 680      | 22×35              | 0.15 | 2.68                                   | ESMQ201VSN681MP35S |
|          | 680      | 25.4×30            | 0.15 | 2.68                                   | ESMQ201VSN681MQ30S |
|          | 820      | 22×40              | 0.15 | 2.93                                   | ESMQ201VSN821MP40S |
|          | 820      | 25.4×30            | 0.15 | 2.93                                   | ESMQ201VSN821MQ30S |
|          | 820      | 30×25              | 0.15 | 2.93                                   | ESMQ201VSN821MR25S |
|          | 1,000    | 22×45              | 0.15 | 3.25                                   | ESMQ201VSN102MP45S |
|          | 1,000    | 25.4×35            | 0.15 | 3.25                                   | ESMQ201VSN102MQ35S |
|          | 1,000    | 30×30              | 0.15 | 3.25                                   | ESMQ201VSN102MR30S |
|          | 1,000    | 35×25              | 0.15 | 3.25                                   | ESMQ201VSN102MA25S |
|          | 1,200    | 25.4×40            | 0.15 | 3.50                                   | ESMQ201VSN122MQ40S |
|          | 1,200    | 30×30              | 0.15 | 3.50                                   | ESMQ201VSN122MR30S |
|          | 1,200    | 35×30              | 0.15 | 3.50                                   | ESMQ201VSN122MA30S |
|          | 1,500    | 25.4×50            | 0.15 | 3.87                                   | ESMQ201VSN152MQ50S |
|          | 1,500    | 30×35              | 0.15 | 3.87                                   | ESMQ201VSN152MR35S |
|          | 1,500    | 35×30              | 0.15 | 3.87                                   | ESMQ201VSN152MA30S |
|          | 1,800    | 30×45              | 0.15 | 4.32                                   | ESMQ201VSN182MR45S |
| 1,800    | 35×35    | 0.15               | 4.32 | ESMQ201VSN182MA35S                     |                    |
| 2,200    | 30×50    | 0.15               | 4.92 | ESMQ201VSN222MR50S                     |                    |
| 2,200    | 35×40    | 0.15               | 4.92 | ESMQ201VSN222MA40S                     |                    |
| 2,700    | 35×50    | 0.15               | 5.45 | ESMQ201VSN272MA50S                     |                    |
| 250      | 270      | 22×25              | 0.15 | 1.31                                   | ESMQ251VSN271MP25S |
|          | 330      | 22×30              | 0.15 | 1.75                                   | ESMQ251VSN331MP30S |
|          | 390      | 22×30              | 0.15 | 1.91                                   | ESMQ251VSN391MP30S |
|          | 390      | 25.4×25            | 0.15 | 1.91                                   | ESMQ251VSN391MQ25S |
|          | 470      | 22×35              | 0.15 | 2.11                                   | ESMQ251VSN471MP35S |
|          | 470      | 25.4×30            | 0.15 | 2.11                                   | ESMQ251VSN471MQ30S |
|          | 560      | 22×40              | 0.15 | 2.25                                   | ESMQ251VSN561MP40S |
|          | 560      | 25.4×30            | 0.15 | 2.25                                   | ESMQ251VSN561MQ30S |
|          | 560      | 30×25              | 0.15 | 2.25                                   | ESMQ251VSN561MR25S |
|          | 680      | 22×45              | 0.15 | 2.50                                   | ESMQ251VSN681MP45S |
|          | 680      | 25.4×35            | 0.15 | 2.50                                   | ESMQ251VSN681MQ35S |
|          | 680      | 30×30              | 0.15 | 2.50                                   | ESMQ251VSN681MR30S |
|          | 820      | 22×50              | 0.15 | 2.77                                   | ESMQ251VSN821MP50S |
|          | 820      | 25.4×40            | 0.15 | 2.77                                   | ESMQ251VSN821MQ40S |
|          | 820      | 30×30              | 0.15 | 2.77                                   | ESMQ251VSN821MR30S |
|          | 820      | 35×25              | 0.15 | 2.77                                   | ESMQ251VSN821MA25S |
|          | 1,000    | 25.4×45            | 0.15 | 3.32                                   | ESMQ251VSN102MQ45S |
|          | 1,000    | 30×35              | 0.15 | 3.32                                   | ESMQ251VSN102MR35S |
|          | 1,000    | 35×30              | 0.15 | 3.32                                   | ESMQ251VSN102MA30S |
|          | 1,200    | 30×40              | 0.15 | 3.53                                   | ESMQ251VSN122MR40S |
| 1,200    | 35×35    | 0.15               | 3.53 | ESMQ251VSN122MA35S                     |                    |
| 1,500    | 30×50    | 0.15               | 4.04 | ESMQ251VSN152MR50S                     |                    |
| 1,500    | 35×40    | 0.15               | 4.04 | ESMQ251VSN152MA40S                     |                    |
| 1,800    | 35×45    | 0.15               | 4.55 | ESMQ251VSN182MA45S                     |                    |
| 315      | 180      | 22×25              | 0.15 | 1.21                                   | ESMQ315VSN181MP25S |
|          | 220      | 22×30              | 0.15 | 1.41                                   | ESMQ315VSN221MP30S |
|          | 270      | 22×30              | 0.15 | 1.60                                   | ESMQ315VSN271MP30S |
|          | 330      | 22×40              | 0.15 | 1.82                                   | ESMQ315VSN331MP40S |
|          | 330      | 25.4×30            | 0.15 | 1.82                                   | ESMQ315VSN331MQ30S |
|          | 330      | 30×25              | 0.15 | 1.82                                   | ESMQ315VSN331MR25S |
|          | 390      | 22×45              | 0.15 | 2.01                                   | ESMQ315VSN391MP45S |
|          | 390      | 25.4×35            | 0.15 | 2.01                                   | ESMQ315VSN391MQ35S |
|          | 390      | 30×30              | 0.15 | 2.01                                   | ESMQ315VSN391MR30S |
|          | 470      | 22×50              | 0.15 | 2.27                                   | ESMQ315VSN471MP50S |
|          | 470      | 25.4×40            | 0.15 | 2.27                                   | ESMQ315VSN471MQ40S |
|          | 470      | 30×30              | 0.15 | 2.27                                   | ESMQ315VSN471MR30S |
|          | 470      | 35×25              | 0.15 | 2.27                                   | ESMQ315VSN471MA25S |
|          | 560      | 25.4×45            | 0.15 | 2.56                                   | ESMQ315VSN561MQ45S |
|          | 560      | 30×35              | 0.15 | 2.56                                   | ESMQ315VSN561MR35S |
|          | 560      | 35×30              | 0.15 | 2.56                                   | ESMQ315VSN561MA30S |
|          | 680      | 30×40              | 0.15 | 2.87                                   | ESMQ315VSN681MR40S |
|          | 680      | 35×35              | 0.15 | 2.87                                   | ESMQ315VSN681MA35S |
|          | 820      | 30×45              | 0.15 | 3.25                                   | ESMQ315VSN821MR45S |
|          | 820      | 35×40              | 0.15 | 3.25                                   | ESMQ315VSN821MA40S |
| 1,000    | 30×50    | 0.15               | 3.63 | ESMQ315VSN102MR50S                     |                    |
| 1,000    | 35×45    | 0.15               | 3.63 | ESMQ315VSN102MA45S                     |                    |
| 350      | 150      | 22×25              | 0.15 | 1.12                                   | ESMQ351VSN151MP25S |
|          | 180      | 22×30              | 0.15 | 1.22                                   | ESMQ351VSN181MP30S |
|          | 220      | 22×35              | 0.15 | 1.44                                   | ESMQ351VSN221MP35S |
|          | 270      | 22×40              | 0.15 | 1.66                                   | ESMQ351VSN271MP40S |
|          | 270      | 25.4×30            | 0.15 | 1.66                                   | ESMQ351VSN271MQ30S |
|          | 330      | 22×45              | 0.15 | 1.88                                   | ESMQ351VSN331MP45S |
|          | 330      | 25.4×35            | 0.15 | 1.88                                   | ESMQ351VSN331MQ35S |
|          | 390      | 22×50              | 0.15 | 2.06                                   | ESMQ351VSN391MP50S |
|          | 390      | 25.4×40            | 0.15 | 2.06                                   | ESMQ351VSN391MQ40S |
|          | 390      | 30×30              | 0.15 | 2.06                                   | ESMQ351VSN391MR30S |
|          | 390      | 35×25              | 0.15 | 2.06                                   | ESMQ351VSN391MA25S |
|          | 470      | 25.4×45            | 0.15 | 2.40                                   | ESMQ351VSN471MP45S |
|          | 470      | 30×35              | 0.15 | 2.40                                   | ESMQ351VSN471MR35S |
|          | 470      | 35×30              | 0.15 | 2.40                                   | ESMQ351VSN471MA30S |
|          | 560      | 25.4×50            | 0.15 | 2.60                                   | ESMQ351VSN561MQ50S |
|          | 560      | 30×40              | 0.15 | 2.60                                   | ESMQ351VSN561MR40S |
|          | 560      | 35×30              | 0.15 | 2.60                                   | ESMQ351VSN561MA30S |
|          | 680      | 30×45              | 0.15 | 2.96                                   | ESMQ351VSN681MR45S |
|          | 680      | 35×35              | 0.15 | 2.96                                   | ESMQ351VSN681MA35S |
|          | 820      | 30×50              | 0.15 | 3.25                                   | ESMQ351VSN821MR50S |
| 820      | 35×45    | 0.15               | 3.25 | ESMQ351VSN821MA45S                     |                    |

## ◆STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Case size φD×L(mm) | tanδ | Rated ripple current (Arms/85°C,120Hz) | Part No.           | WV (V <sub>dc</sub> ) | Cap (μF) | Case size φD×L(mm) | tanδ  | Rated ripple current (Arms/85°C,120Hz) | Part No.           |                    |
|-----------------------|----------|--------------------|------|--|--------------------|-----------------------|----------|--------------------|-------|--|--------------------|--------------------|
| 350                   | 1,000    | 35×50              | 0.15 | 3.54                                   | ESMQ351VSN102MA50S | 420                   | 270      | 30×30              | 0.20  | 1.94                                   | ESMQ421VSN271MR30S |                    |
| 400                   | 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                                   | ESMQ401VSN271MP25S |                       | 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                                   | ESMQ401VSN391MR35S |                       |          | 120                | 22×30 | 0.20                                   | 1.04               | ESMQ451VSN121MP30S |
|                       | 390      | 35×30              | 0.15 | 2.13                                   | ESMQ401VSN391MA30S |                       |          | 150                | 22×35 | 0.20                                   | 1.19               | ESMQ451VSN151MP35S |
| 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                     |                    |                    |
| 420                   | 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                     |                    |                    |
|                       | 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 shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.