

# SMQ Series

- Downsized from current downsized snap-ins SMM series
- Endurance with ripple current : 85°C 2000 hours
- Non solvent-proof type

SMQ

↑  
downsized  
SMH

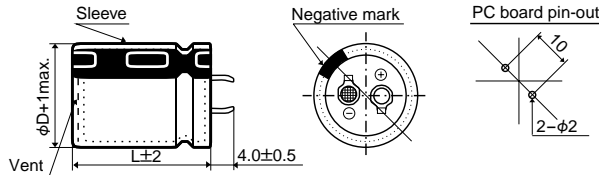


## ◆ SPECIFICATIONS

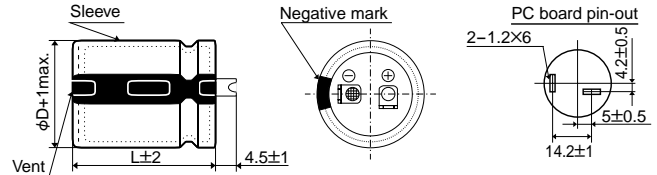
| Items  | Characteristics   |                                       |             |            |
|--|---|---------------------------------------|-------------|------------|
| Category   | -25 to +85°C  |                                       |             |            |
| Temperature Range                                      | -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√CV<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 2000 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 1000 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]

● Standard Terminal Type : VSSN (φ22 to φ35)

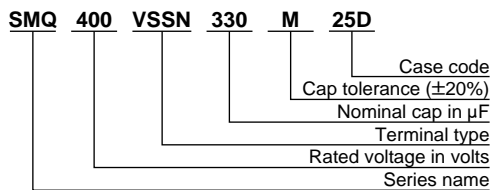


● Terminal Type : LISN (φ35)



\* No plastic disk is the standard design.

## ◆ PART NUMBERING SYSTEM



## ◆ CASE CODE [mm]

| Case code | Case size φDXL | Case code | Case size φDXL | Case code | Case size φDXL | Case code | Case size φDXL |
|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
| 22A       | 22×25          | 25A       | 25.4×25        | 30A       | 30×25          | 35A       | 35×25          |
| 22B       | 22×30          | 25B       | 25.4×30        | 30B       | 30×30          | 35B       | 35×30          |
| 22C       | 22×35          | 25C       | 25.4×35        | 30C       | 30×35          | 35C       | 35×35          |
| 22D       | 22×40          | 25D       | 25.4×40        | 30D       | 30×40          | 35D       | 35×40          |
| 22E       | 22×45          | 25E       | 25.4×45        | 30E       | 30×45          | 35E       | 35×45          |
| 22F       | 22×50          | 25F       | 25.4×50        | 30F       | 30×50          | 35F       | 35×50          |

## ◆STANDARD RATINGS

| μF    | V <sub>dc</sub> |               | 160             |               |               |    | 180           |                 |               |               | 200           |                 |               |               |
|-------|-----------------|---------------|-----------------|---------------|---------------|----|---------------|-----------------|---------------|---------------|---------------|-----------------|---------------|---------------|
|       | φD              |               | 22              | 25            | 30            | 35 | 22            | 25              | 30            | 35            | 22            | 25              | 30            | 35            |
| 390   |                 |               |                 |               |               |    |               |                 |               |               | 22×25<br>1.68 |                 |               |               |
| 470   |                 |               |                 |               |               |    | 22×25<br>2.08 |                 |               |               | 22×30<br>1.85 |                 |               |               |
| 560   |                 | 22×25<br>2.25 |                 |               |               |    | 22×30<br>2.25 |                 |               |               | 22×30<br>2.43 | 25.4×25<br>2.43 |               |               |
| 680   |                 | 22×30<br>2.50 |                 |               |               |    | 22×30<br>2.50 | 25.4×25<br>2.50 |               |               | 22×35<br>2.68 | 25.4×30<br>2.68 |               |               |
| 820   |                 | 22×35<br>2.75 |                 |               |               |    | 22×35<br>2.75 | 25.4×30<br>2.75 |               |               | 22×40<br>2.93 | 25.4×30<br>2.93 | 30×25<br>2.93 |               |
| 1,000 |                 | 22×40<br>3.00 | 25.4×30<br>3.00 |               |               |    | 22×45<br>3.00 | 25.4×35<br>3.00 | 30×25<br>3.00 |               | 22×45<br>3.25 | 25.4×35<br>3.25 | 30×30<br>3.25 | 35×25<br>3.25 |
| 1,200 |                 | 22×45<br>3.25 | 25.4×35<br>3.25 | 30×25<br>3.25 |               |    | 22×50<br>3.31 | 25.4×40<br>3.31 | 30×30<br>3.31 | 35×25<br>3.31 |               | 25.4×40<br>3.50 | 30×30<br>3.50 | 35×30<br>3.50 |
| 1,500 |                 | 22×50<br>3.73 | 25.4×40<br>3.73 | 30×30<br>3.73 | 35×25<br>3.73 |    |               | 25.4×45<br>3.83 | 30×35<br>3.83 | 35×30<br>3.83 |               | 25.4×50<br>3.87 | 30×35<br>3.87 | 35×30<br>3.87 |
| 1,800 |                 |               | 25.4×45<br>4.20 | 30×35<br>4.20 | 35×30<br>4.20 |    |               | 25.4×50<br>4.32 | 30×40<br>4.32 | 35×30<br>4.32 |               |                 | 30×45<br>4.32 | 35×35<br>4.32 |
| 2,200 |                 |               |                 | 30×40<br>4.78 | 35×35<br>4.78 |    |               |                 |               | 30×45<br>4.92 | 35×40<br>4.92 |                 | 30×50<br>4.92 | 35×40<br>4.92 |
| 2,700 |                 |               |                 |               | 35×40<br>5.45 |    |               |                 |               |               | 35×45<br>5.52 |                 |               | 35×50<br>5.45 |
| 3,300 |                 |               |                 |               | 35×45<br>5.75 |    |               |                 |               |               | 35×50<br>5.75 |                 |               |               |
| 3,900 |                 |               |                 |               | 35×50<br>6.00 |    |               |                 |               |               |               |                 |               |               |

← Upper : Case size φD×L (mm)  
 ← Lower : Rated ripple current (Arms) at 85°C, 120Hz

| μF    | V <sub>dc</sub> |               | 250             |               |               |    | 315           |                 |               |               | 350           |                 |               |               |
|-------|-----------------|---------------|-----------------|---------------|---------------|----|---------------|-----------------|---------------|---------------|---------------|-----------------|---------------|---------------|
|       | φD              |               | 22              | 25            | 30            | 35 | 22            | 25              | 30            | 35            | 22            | 25              | 30            | 35            |
| 150   |                 |               |                 |               |               |    |               |                 |               |               | 22×25<br>1.12 |                 |               |               |
| 180   |                 |               |                 |               |               |    | 22×25<br>1.21 |                 |               |               | 22×30<br>1.22 |                 |               |               |
| 220   |                 |               |                 |               |               |    | 22×30<br>1.41 |                 |               |               | 22×35<br>1.44 |                 |               |               |
| 270   |                 | 22×25<br>1.31 |                 |               |               |    | 22×30<br>1.60 |                 |               |               | 22×40<br>1.66 | 25.4×30<br>1.66 |               |               |
| 330   |                 | 22×30<br>1.75 |                 |               |               |    | 22×40<br>1.82 | 25.4×30<br>1.82 | 30×25<br>1.82 |               | 22×45<br>1.88 | 25.4×35<br>1.88 |               |               |
| 390   |                 | 22×30<br>1.91 | 25.4×25<br>1.91 |               |               |    | 22×45<br>2.01 | 25.4×35<br>2.01 | 30×30<br>2.01 |               | 22×50<br>2.06 | 25.4×40<br>2.06 | 30×30<br>2.06 | 35×25<br>2.06 |
| 470   |                 | 22×35<br>2.11 | 25.4×30<br>2.11 |               |               |    | 22×50<br>2.27 | 25.4×40<br>2.27 | 30×30<br>2.27 | 35×25<br>2.27 |               | 25.4×45<br>2.40 | 30×35<br>2.40 | 35×30<br>2.40 |
| 560   |                 | 22×40<br>2.25 | 25.4×30<br>2.25 | 30×25<br>2.25 |               |    |               | 25.4×45<br>2.56 | 30×35<br>2.56 | 35×30<br>2.56 |               | 25.4×50<br>2.60 | 30×40<br>2.60 | 35×30<br>2.60 |
| 680   |                 | 22×45<br>2.50 | 25.4×35<br>2.50 | 30×30<br>2.50 |               |    |               |                 | 30×40<br>2.87 | 35×35<br>2.87 |               |                 | 30×45<br>2.96 | 35×35<br>2.96 |
| 820   |                 | 22×50<br>2.77 | 25.4×40<br>2.77 | 30×30<br>2.77 | 35×25<br>2.77 |    |               |                 | 30×45<br>3.25 | 35×40<br>3.25 |               |                 | 30×50<br>3.25 | 35×45<br>3.25 |
| 1,000 |                 |               | 25.4×45<br>3.32 | 30×35<br>3.32 | 35×30<br>3.32 |    |               |                 | 30×50<br>3.63 | 35×45<br>3.63 |               |                 |               | 35×50<br>3.54 |
| 1,200 |                 |               |                 | 30×40<br>3.53 | 35×35<br>3.53 |    |               |                 |               |               |               |                 |               |               |
| 1,500 |                 |               |                 | 30×50<br>4.04 | 35×40<br>4.04 |    |               |                 |               |               |               |                 |               |               |
| 1,800 |                 |               |                 |               | 35×45<br>4.55 |    |               |                 |               |               |               |                 |               |               |

← Upper : Case size φD×L (mm)  
 ← Lower : Rated ripple current (Arms) at 85°C, 120Hz



◆STANDARD RATINGS

| μF  | V <sub>dc</sub> |   | 400           |                 |               |               | 420   |                 |               |               | 450           |                 |               |               |
|-----|-----------------|---|---------------|-----------------|---------------|---------------|---|-----------------|---------------|---------------|---------------|-----------------|---------------|---------------|
|     | φ               | D | 22            | 25              | 30            | 35            | 22  | 25              | 30            | 35            | 22            | 25              | 30            | 35            |
| 82  |                 |   |               |                 |               |               |   |                 |               |               | 22×25<br>0.83 |                 |               |               |
| 100 |                 |   |               |                 |               |               | 22×25<br>0.97   |                 |               |               | 22×25<br>0.93 |                 |               |               |
| 120 |                 |   | 22×25<br>1.02 |                 |               |               | 22×25<br>1.08   |                 |               |               | 22×30<br>1.04 |                 |               |               |
| 150 |                 |   | 22×30<br>1.16 |                 |               |               | 22×30<br>1.30   | 25.4×25<br>1.30 |               |               | 22×35<br>1.19 | 25.4×25<br>1.19 |               |               |
| 180 |                 |   | 22×35<br>1.44 |                 |               |               | 22×35<br>1.48   | 25.4×30<br>1.48 |               |               | 22×40<br>1.35 | 25.4×30<br>1.35 |               |               |
| 220 |                 |   | 22×40<br>1.49 | 25.4×30<br>1.49 |               |               | 22×40<br>1.65   | 25.4×35<br>1.65 | 30×25<br>1.65 |               | 22×45<br>1.55 | 25.4×40<br>1.55 | 30×30<br>1.55 | 35×25<br>1.55 |
| 270 |                 |   | 22×45<br>1.67 | 25.4×35<br>1.67 | 30×25<br>1.67 |               | 22×50<br>1.94   | 25.4×35<br>1.94 | 30×30<br>1.94 |               | 22×50<br>1.78 | 25.4×40<br>1.78 | 30×30<br>1.78 |               |
| 330 |                 |   | 22×50<br>1.90 | 25.4×40<br>1.90 | 30×30<br>1.90 | 35×25<br>1.90 |   | 25.4×45<br>2.17 | 30×35<br>2.17 | 35×30<br>2.17 |               | 25.4×50<br>2.01 | 30×40<br>2.01 | 35×30<br>2.01 |
| 390 |                 |   |               | 25.4×45<br>2.13 | 30×35<br>2.13 | 35×30<br>2.13 |   | 25.4×50<br>2.27 | 30×35<br>2.27 | 35×30<br>2.27 |               |                 | 30×40<br>2.24 | 35×35<br>2.24 |
| 470 |                 |   |               | 25.4×50<br>2.39 | 30×40<br>2.39 | 35×30<br>2.39 |   |                 | 30×40<br>2.61 | 35×35<br>2.61 |               |                 | 30×45<br>2.53 | 35×40<br>2.53 |
| 560 |                 |   |               |                 | 30×45<br>2.69 | 35×35<br>2.69 |   |                 | 30×50<br>2.82 | 35×40<br>2.82 |               |                 | 30×50<br>2.82 | 35×45<br>2.82 |
| 680 |                 |   |               |                 | 30×50<br>2.96 | 35×40<br>2.96 |   |                 |               | 35×45<br>3.11 |               |                 |               |               |
| 820 |                 |   |               |                 |               | 35×45<br>3.25 | ← Upper : Case size φDXL (mm)<br>← Lower : Rated ripple current (Arms) at 85°C, 120Hz |                 |               |               |               |                 |               |               |

◆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 |