

**SMG** Series

- Endurance : 2,000 hours at 85°C
- Solvent resistant type except 315 to 450V<sub>dc</sub>  
(see PRECAUTIONS AND GUIDELINES)
- RoHS Compliant

SMQ  
↑  
Downsized  
**SMG**

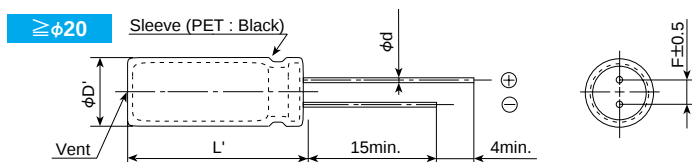
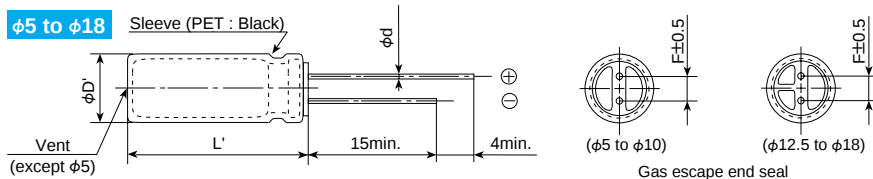


## ◆SPECIFICATIONS

| Items                                                                                                             | Characteristics                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------|------|------|------|-----------|--------------------------------------|------|-------------------|-------------|------------------|--------------|
| Category                                                                                                          |                                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
| Temperature Range                                                                                                 | -40 to +85°C(6.3 to 400V <sub>dc</sub> )    -25 to +85°C(450V <sub>dc</sub> )                                                                                                                                                                                                          |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
| Rated Voltage Range                                                                                               | 6.3 to 450V <sub>dc</sub>                                                                                                                                                                                                                                                              |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
| Capacitance Tolerance                                                                                             | ±20% (M) (at 20°C, 120Hz)                                                                                                                                                                                                                                                              |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
| Leakage Current                                                                                                   |                                                                                                                                                                                                                                                                                        | 6.3 to 100V <sub>dc</sub>                                              |      |      |      |      |           | 160 to 450V <sub>dc</sub>            |      |                   |             |                  |              |
|                                                                                                                   | ≤φ18                                                                                                                                                                                                                                                                                   | I=0.03CV or 4μA, whichever is greater.<br><br>(at 20°C after 1 minute) |      |      |      |      |           | CV \ Time                            |      | After 1minute     |             | After 5minutes   |              |
|                                                                                                                   |                                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      |           | CV≤1,000                             |      | I=0.1CV+40 max.   |             | I=0.03CV+15 max. |              |
|                                                                                                                   |                                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      |           | CV>1,000                             |      | I=0.04CV+100 max. |             | I=0.02CV+25 max. |              |
|                                                                                                                   |                                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      | (at 20°C) |                                      |      |                   |             |                  |              |
|                                                                                                                   | ≥φ20                                                                                                                                                                                                                                                                                   | I=0.03CV                                                               |      |      |      |      |           | (at 20°C after 3 minutes)            |      |                   |             |                  |              |
| Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)                         |                                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
| Dissipation Factor (tanδ)                                                                                         | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                       |                                                                        | 6.3V | 10V  | 16V  | 25V  | 35V       | 50V                                  | 63V  | 100V              | 160 to 250V | 315 to 400V      | 450V         |
|                                                                                                                   | tanδ (Max.)                                                                                                                                                                                                                                                                            | ≤φ18                                                                   | 0.34 | 0.24 | 0.20 | 0.16 | 0.14      | 0.12                                 | 0.09 | 0.08              | 0.20        | 0.24             | 0.24         |
|                                                                                                                   |                                                                                                                                                                                                                                                                                        | ≥φ20                                                                   | 0.28 | 0.24 | 0.20 | 0.16 | 0.14      | 0.12                                 | 0.09 | 0.08              | 0.15        | 0.15             | 0.20         |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) |                                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
| Low Temperature Characteristics (Max. Impedance Ratio)                                                            | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                       |                                                                        | 6.3V | 10V  | 16V  | 25V  | 35V       | 50V                                  | 63V  | 100V              | 160 to 250V | 315 to 400V      | 450V         |
|                                                                                                                   | Z(-25°C)/Z(+20°C)                                                                                                                                                                                                                                                                      | ≤φ18                                                                   | 5    | 4    | 3    | 2    | 2         | 2                                    | 2    | 2                 | 3           | 6                | 6            |
|                                                                                                                   |                                                                                                                                                                                                                                                                                        | ≥φ20                                                                   | 5    | 4    | 3    | 2    | 2         | 2                                    | 2    | 2                 | 4           | 6                | 6            |
| Z(-40°C)/Z(+20°C)                                                                                                 |                                                                                                                                                                                                                                                                                        | ≤φ18                                                                   | 12   | 10   | 8    | 5    | 4         | 3                                    | 3    | 3                 | 4           | 6                | — (at 120Hz) |
| Endurance                                                                                                         | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage 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. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |
|                                                                                                                   | Rated voltage                                                                                                                                                                                                                                                                          | 6.3 to 100V <sub>dc</sub>                                              |      |      |      |      |           | 160 to 450V <sub>dc</sub>            |      |                   |             |                  |              |
|                                                                                                                   | Capacitance change                                                                                                                                                                                                                                                                     | ≤±20% of the initial value                                             |      |      |      |      |           | ≤±20% of the initial value           |      |                   |             |                  |              |
|                                                                                                                   | D.F. (tanδ)                                                                                                                                                                                                                                                                            | ≤200% of the initial specified value                                   |      |      |      |      |           | ≤200% of the initial specified value |      |                   |             |                  |              |
|                                                                                                                   | Leakage current                                                                                                                                                                                                                                                                        | ≤The initial specified value                                           |      |      |      |      |           | ≤500% of the initial specified value |      |                   |             |                  |              |
|                                                                                                                   |                                                                                                                                                                                                                                                                                        |                                                                        |      |      |      |      |           |                                      |      |                   |             |                  |              |

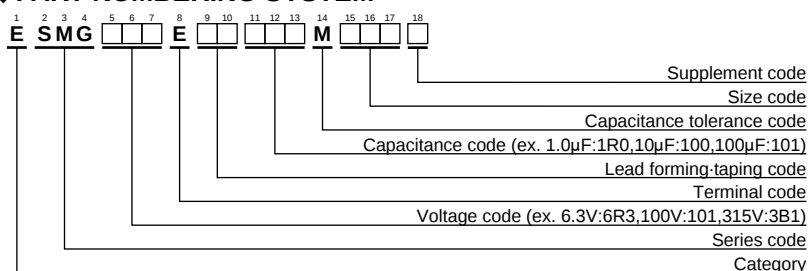
## ◆DIMENSIONS [mm]

- Terminal Code : E



| φD  | 5          | 6.3 | 8   | 10  | 12.5 | 16  | 18  | 20         | 22   |
|-----|------------|-----|-----|-----|------|-----|-----|------------|------|
| φd  | 0.5        | 0.5 | 0.6 | 0.6 | 0.6  | 0.8 | 0.8 | 1.0        | 1.0  |
| F   | 2.0        | 2.5 | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 | 10.0       | 10.0 |
| φD' | φD+0.5max. |     |     |     |      |     |     | φD+0.5max. |      |
| L'  | L+1.5max.  |     |     |     |      |     |     | L+2.0max.  |      |

## ◆PART NUMBERING SYSTEM



Please refer to "Product code guide  
(radial lead type)"

## ◆STANDARD RATINGS

| WV<br>(Vdc) | Cap<br>(μF) | Case size<br>φDXL(mm) | tanδ | Rated ripple<br>current<br>(mA rms/<br>85°C, 120Hz) | Part No.           | WV<br>(Vdc) | Cap<br>(μF) | Case size<br>φDXL(mm) | tanδ | Rated ripple<br>current<br>(mA rms/<br>85°C, 120Hz) | Part No.           |
|-------------|-------------|-----------------------|------|-----------------------------------------------------|--------------------|-------------|-------------|-----------------------|------|-----------------------------------------------------|--------------------|
| 6.3         | 220         | 5×11                  | 0.34 | 200                                                 | ESMG6R3E□□221ME11D | 25          | 6,800       | 22×30                 | 0.26 | 2,510                                               | ESMG250E□□682MP30S |
|             | 330         | 6.3×11                | 0.34 | 270                                                 | ESMG6R3E□□331MF11D |             | 8,200       | 20×40                 | 0.30 | 2,810                                               | ESMG250E□□822MN40S |
|             | 470         | 6.3×11                | 0.34 | 320                                                 | ESMG6R3E□□471MF11D |             | 8,200       | 22×35                 | 0.30 | 2,810                                               | ESMG250E□□822MP35S |
|             | 1,000       | 8×11.5                | 0.34 | 540                                                 | ESMG6R3E□□102MHB5D |             | 10,000      | 22×40                 | 0.34 | 3,240                                               | ESMG250E□□103MP40S |
|             | 2,200       | 10×20                 | 0.36 | 1,000                                               | ESMG6R3E□□222MJ20S |             | 12,000      | 22×40                 | 0.38 | 3,240                                               | ESMG250E□□123MP40S |
|             | 3,300       | 10×20                 | 0.38 | 1,185                                               | ESMG6R3E□□332MJ20S | 35          | 47          | 5×11                  | 0.14 | 130                                                 | ESMG350E□□470ME11D |
|             | 4,700       | 12.5×20               | 0.40 | 1,545                                               | ESMG6R3E□□472MK20S |             | 100         | 6.3×11                | 0.14 | 210                                                 | ESMG350E□□101MF11D |
|             | 6,800       | 12.5×25               | 0.44 | 1,915                                               | ESMG6R3E□□682MK25S |             | 220         | 8×11.5                | 0.14 | 385                                                 | ESMG350E□□221MHB5D |
|             | 10,000      | 16×25                 | 0.52 | 2,330                                               | ESMG6R3E□□103ML25S |             | 330         | 10×12.5               | 0.14 | 490                                                 | ESMG350E□□331MJC5S |
|             | 10,000      | 20×25                 | 0.46 | 2,310                                               | ESMG6R3E□□103MN25S |             | 470         | 10×16                 | 0.14 | 645                                                 | ESMG350E□□471MJ16S |
|             | 15,000      | 16×35.5               | 0.62 | 2,845                                               | ESMG6R3E□□153MLP1S |             | 1,000       | 12.5×20               | 0.14 | 1,145                                               | ESMG350E□□102MK20S |
|             | 15,000      | 20×30                 | 0.56 | 2,660                                               | ESMG6R3E□□153MN30S |             | 2,200       | 16×25                 | 0.16 | 1,785                                               | ESMG350E□□222ML25S |
|             | 18,000      | 20×35                 | 0.62 | 2,890                                               | ESMG6R3E□□183MN35S |             | 2,200       | 20×20                 | 0.16 | 1,670                                               | ESMG350E□□222MN20S |
|             | 18,000      | 22×30                 | 0.62 | 2,860                                               | ESMG6R3E□□183MP30S |             | 3,300       | 16×35.5               | 0.18 | 2,275                                               | ESMG350E□□332MLP1S |
|             | 22,000      | 18×40                 | 0.76 | 3,320                                               | ESMG6R3E□□223MM40S |             | 3,300       | 20×25                 | 0.18 | 2,050                                               | ESMG350E□□332MN25S |
|             | 22,000      | 20×40                 | 0.70 | 3,130                                               | ESMG6R3E□□223MN40S |             | 3,900       | 20×30                 | 0.18 | 2,310                                               | ESMG350E□□392MN30S |
|             | 22,000      | 22×35                 | 0.70 | 3,130                                               | ESMG6R3E□□223MP35S |             | 4,700       | 18×35.5               | 0.20 | 2,700                                               | ESMG350E□□472MMP1S |
|             | 27,000      | 22×40                 | 0.80 | 3,280                                               | ESMG6R3E□□273MP40S |             | 4,700       | 20×35                 | 0.20 | 2,510                                               | ESMG350E□□472MN35S |
|             |             |                       |      |                                                     |                    |             | 4,700       | 22×30                 | 0.20 | 2,380                                               | ESMG350E□□472MP30S |
|             |             |                       |      |                                                     |                    |             | 5,600       | 20×40                 | 0.22 | 2,690                                               | ESMG350E□□562MN40S |
| 10          | 220         | 5×11                  | 0.24 | 240                                                 | ESMG100E□□221ME11D |             | 5,600       | 22×35                 | 0.22 | 2,690                                               | ESMG350E□□562MP35S |
|             | 330         | 6.3×11                | 0.24 | 290                                                 | ESMG100E□□331MF11D |             | 6,800       | 22×40                 | 0.24 | 3,090                                               | ESMG350E□□682MP40S |
|             | 470         | 6.3×11                | 0.24 | 350                                                 | ESMG100E□□471MF11D | 50          | 1.0         | 5×11                  | 0.12 | 17                                                  | ESMG500E□□1R0ME11D |
|             | 1,000       | 10×12.5               | 0.24 | 650                                                 | ESMG100E□□102MJC5S |             | 2.2         | 5×11                  | 0.12 | 28                                                  | ESMG500E□□2R2ME11D |
|             | 2,200       | 10×20                 | 0.26 | 1,070                                               | ESMG100E□□222MJ20S |             | 3.3         | 5×11                  | 0.12 | 35                                                  | ESMG500E□□3R3ME11D |
|             | 3,300       | 12.5×20               | 0.28 | 1,420                                               | ESMG100E□□332MK20S |             | 4.7         | 5×11                  | 0.12 | 41                                                  | ESMG500E□□4R7ME11D |
|             | 4,700       | 12.5×25               | 0.30 | 1,780                                               | ESMG100E□□472MK25S |             | 10          | 5×11                  | 0.12 | 60                                                  | ESMG500E□□100ME11D |
|             | 6,800       | 16×25                 | 0.34 | 2,220                                               | ESMG100E□□682ML25S |             | 22          | 5×11                  | 0.12 | 95                                                  | ESMG500E□□220ME11D |
|             | 6,800       | 20×20                 | 0.34 | 2,080                                               | ESMG100E□□682MN20S |             | 33          | 5×11                  | 0.12 | 125                                                 | ESMG500E□□330ME11D |
|             | 10,000      | 16×35.5               | 0.42 | 2,670                                               | ESMG100E□□103MLP1S |             | 47          | 6.3×11                | 0.12 | 155                                                 | ESMG500E□□470MF11D |
|             | 10,000      | 20×25                 | 0.42 | 2,410                                               | ESMG100E□□103MN25S |             | 100         | 8×11.5                | 0.12 | 260                                                 | ESMG500E□□101MHB5D |
|             | 12,000      | 20×30                 | 0.46 | 2,620                                               | ESMG100E□□123MN30S |             | 220         | 10×12.5               | 0.12 | 430                                                 | ESMG500E□□221MJC5S |
|             | 15,000      | 18×35.5               | 0.52 | 3,080                                               | ESMG100E□□153MMP1S |             | 330         | 10×16                 | 0.12 | 585                                                 | ESMG500E□□331MJ16S |
|             | 15,000      | 20×35                 | 0.52 | 2,870                                               | ESMG100E□□153MN35S |             | 470         | 10×20                 | 0.12 | 755                                                 | ESMG500E□□471MJ20S |
|             | 15,000      | 22×30                 | 0.52 | 2,660                                               | ESMG100E□□153MP30S |             | 1,000       | 12.5×25               | 0.12 | 1,340                                               | ESMG500E□□102MK25S |
|             | 18,000      | 22×35                 | 0.58 | 3,050                                               | ESMG100E□□183MP35S |             | 1,500       | 20×20                 | 0.12 | 1,570                                               | ESMG500E□□152MN20S |
|             | 22,000      | 22×40                 | 0.66 | 3,480                                               | ESMG100E□□223MP40S |             | 2,200       | 16×35.5               | 0.14 | 2,075                                               | ESMG500E□□222MLP1S |
| 16          | 100         | 5×11                  | 0.20 | 160                                                 | ESMG160E□□101ME11D |             | 2,200       | 20×25                 | 0.14 | 1,880                                               | ESMG500E□□222MN25S |
|             | 220         | 6.3×11                | 0.20 | 260                                                 | ESMG160E□□221MF11D |             | 2,700       | 20×30                 | 0.14 | 2,150                                               | ESMG500E□□272MN30S |
|             | 330         | 8×11.5                | 0.20 | 370                                                 | ESMG160E□□331MHB5D |             | 3,300       | 18×35.5               | 0.16 | 2,500                                               | ESMG500E□□332MMP1S |
|             | 470         | 8×11.5                | 0.20 | 440                                                 | ESMG160E□□471MHB5D |             | 3,300       | 20×35                 | 0.16 | 2,420                                               | ESMG500E□□332MN35S |
|             | 1,000       | 10×16                 | 0.20 | 785                                                 | ESMG160E□□102MJ16S |             | 3,300       | 22×30                 | 0.16 | 2,420                                               | ESMG500E□□332MP30S |
|             | 2,200       | 12.5×20               | 0.22 | 1,295                                               | ESMG160E□□222MK20S |             | 3,900       | 20×40                 | 0.16 | 2,590                                               | ESMG500E□□392MN40S |
|             | 3,300       | 12.5×25               | 0.24 | 1,655                                               | ESMG160E□□332MK25S |             | 3,900       | 22×35                 | 0.16 | 2,590                                               | ESMG500E□□392MP35S |
|             | 4,700       | 16×25                 | 0.26 | 2,090                                               | ESMG160E□□472ML25S |             | 4,700       | 22×40                 | 0.18 | 2,960                                               | ESMG500E□□472MP40S |
|             | 4,700       | 20×20                 | 0.26 | 1,960                                               | ESMG160E□□472MN20S | 63          | 10          | 5×11                  | 0.09 | 65                                                  | ESMG630E□□100ME11D |
|             | 6,800       | 16×31.5               | 0.30 | 2,520                                               | ESMG160E□□682MLN3S |             | 22          | 5×11                  | 0.09 | 100                                                 | ESMG630E□□220ME11D |
|             | 6,800       | 20×25                 | 0.30 | 2,330                                               | ESMG160E□□682MN25S |             | 33          | 6.3×11                | 0.09 | 140                                                 | ESMG630E□□330MF11D |
|             | 8,200       | 20×30                 | 0.34 | 2,500                                               | ESMG160E□□822MN30S |             | 47          | 6.3×11                | 0.09 | 170                                                 | ESMG630E□□470MF11D |
|             | 10,000      | 18×35.5               | 0.38 | 2,920                                               | ESMG160E□□103MMP1S |             | 100         | 10×12.5               | 0.09 | 300                                                 | ESMG630E□□101MJC5S |
|             | 10,000      | 20×35                 | 0.38 | 2,720                                               | ESMG160E□□103MN35S |             | 220         | 10×16                 | 0.09 | 490                                                 | ESMG630E□□221MJ16S |
|             | 10,000      | 22×30                 | 0.38 | 2,660                                               | ESMG160E□□103MP30S |             | 330         | 10×20                 | 0.09 | 710                                                 | ESMG630E□□331MJ20S |
|             | 12,000      | 20×40                 | 0.42 | 2,900                                               | ESMG160E□□123MN40S |             | 470         | 12.5×20               | 0.09 | 900                                                 | ESMG630E□□471MK20S |
|             | 12,000      | 22×35                 | 0.42 | 2,900                                               | ESMG160E□□123MP35S |             | 820         | 20×20                 | 0.09 | 1,370                                               | ESMG630E□□821MN20S |
|             | 15,000      | 22×40                 | 0.48 | 3,380                                               | ESMG160E□□153MP40S |             | 1,000       | 16×25                 | 0.09 | 1,300                                               | ESMG630E□□102ML25S |
| 25          | 47          | 5×11                  | 0.16 | 115                                                 | ESMG250E□□470ME11D |             | 1,000       | 20×25                 | 0.09 | 1,600                                               | ESMG630E□□102MN25S |
|             | 100         | 6.3×11                | 0.16 | 190                                                 | ESMG250E□□101MF11D |             | 1,500       | 20×30                 | 0.09 | 1,850                                               | ESMG630E□□152MN30S |
|             | 220         | 8×11.5                | 0.16 | 330                                                 | ESMG250E□□221MHB5D |             | 2,200       | 20×35                 | 0.11 | 2,330                                               | ESMG630E□□222MN35S |
|             | 330         | 8×11.5                | 0.16 | 440                                                 | ESMG250E□□331MHB5D |             | 2,200       | 22×30                 | 0.11 | 2,190                                               | ESMG630E□□222MP30S |
|             | 470         | 10×12.5               | 0.16 | 545                                                 | ESMG250E□□471MJC5S |             | 2,700       | 20×40                 | 0.11 | 2,640                                               | ESMG630E□□272MN40S |
|             | 1,000       | 10×20                 | 0.16 | 955                                                 | ESMG250E□□102MJ20S |             | 3,300       | 22×40                 | 0.13 | 2,810                                               | ESMG630E□□332MP40S |
|             | 2,200       | 12.5×25               | 0.18 | 1,540                                               | ESMG250E□□222MK25S | 100         | 1.0         | 5×11                  | 0.08 | 21                                                  | ESMG101E□□1R0ME11D |
|             | 3,300       | 16×25                 | 0.20 | 1,975                                               | ESMG250E□□332ML25S |             | 2.2         | 5×11                  | 0.08 | 30                                                  | ESMG101E□□2R2ME11D |
|             | 3,300       | 20×20                 | 0.20 | 1,850                                               | ESMG250E□□332MN20S |             | 3.3         | 5×11                  | 0.08 | 40                                                  | ESMG101E□□3R3ME11D |
|             | 4,700       | 16×31.5               | 0.22 | 2,420                                               | ESMG250E□□472MLN3S |             | 4.7         | 5×11                  | 0.08 | 45                                                  | ESMG101E□□4R7ME11D |
|             | 4,700       | 20×25                 | 0.22 | 2,420                                               | ESMG250E□□472MN25S |             | 10          | 6.3×11                | 0.08 | 75                                                  | ESMG101E□□100MF11D |
|             | 5,600       | 20×30                 | 0.24 | 2,430                                               | ESMG250E□□562MN30S |             | 22          | 8×11.5                | 0.08 | 130                                                 | ESMG101E□□220MHB5D |
|             | 6,800       | 18×35.5               | 0.26 | 2,880                                               | ESMG250E□□682MMP1S |             |             |                       |      |                                                     |                    |
|             | 6,800       | 20×35                 | 0.26 | 2,680                                               | ESMG250E□□682MN35S |             |             |                       |      |                                                     |                    |
|             |             |                       |      |                                                     |                    |             |             |                       |      |                                                     |                    |
|             |             |                       |      |                                                     |                    |             |             |                       |      |                                                     |                    |

□□ : Enter the appropriate lead forming or taping code.

## ◆STANDARD RATINGS

☐ is not solvent resistant.

| WV (Vdc) | Cap (μF) | Case size φDXL(mm) | tanδ | Rated ripple current (mAmps/85°C,120Hz) | Part No.           | WV (Vdc) | Cap (μF) | Case size φDXL(mm) | tanδ | Rated ripple current (mAmps/85°C,120Hz) | Part No.           |
|----------|----------|--------------------|------|-----------------------------------------|--------------------|----------|----------|--------------------|------|-----------------------------------------|--------------------|
| 100      | 33       | 8×11.5             | 0.08 | 180                                     | ESMG101E□□330MHB5D | 315      | 47       | 20×20              | 0.15 | 310                                     | ESMG3B1E□□470MN20S |
|          | 47       | 10×12.5            | 0.08 | 230                                     | ESMG101E□□470MJC5S |          | 68       | 20×25              | 0.15 | 400                                     | ESMG3B1E□□680MN25S |
|          | 100      | 10×20              | 0.08 | 370                                     | ESMG101E□□101MJ20S |          | 82       | 20×25              | 0.15 | 440                                     | ESMG3B1E□□820MN25S |
|          | 220      | 12.5×25            | 0.08 | 620                                     | ESMG101E□□221MK25S |          | 100      | 20×30              | 0.15 | 500                                     | ESMG3B1E□□101MN30S |
|          | 330      | 12.5×25            | 0.08 | 760                                     | ESMG101E□□331MK25S |          | 120      | 20×30              | 0.15 | 550                                     | ESMG3B1E□□121MN30S |
|          | 330      | 20×20              | 0.08 | 870                                     | ESMG101E□□331MN20S |          | 180      | 20×40              | 0.15 | 720                                     | ESMG3B1E□□181MN40S |
|          | 470      | 16×25              | 0.08 | 1,000                                   | ESMG101E□□471ML25S |          | 180      | 22×35              | 0.15 | 720                                     | ESMG3B1E□□181MP35S |
|          | 680      | 20×30              | 0.08 | 1,360                                   | ESMG101E□□681MN30S |          | 220      | 22×40              | 0.15 | 810                                     | ESMG3B1E□□221MP40S |
|          | 820      | 22×30              | 0.08 | 1,540                                   | ESMG101E□□821MP30S | 350      | 1.0      | 6.3×11             | 0.24 | 22                                      | ESMG351E□□1R0MF11D |
|          | 1,000    | 18×40              | 0.08 | 1,380                                   | ESMG101E□□102MM40S |          | 2.2      | 8×11.5             | 0.24 | 38                                      | ESMG351E□□2R2MHB5D |
|          | 1,000    | 20×35              | 0.08 | 1,720                                   | ESMG101E□□102MN35S |          | 3.3      | 8×11.5             | 0.24 | 46                                      | ESMG351E□□3R3MHB5D |
| 160      | 1,200    | 22×40              | 0.08 | 1,980                                   | ESMG101E□□122MP40S |          | 4.7      | 10×12.5            | 0.24 | 65                                      | ESMG351E□□4R7MJC5S |
|          | 3.3      | 6.3×11             | 0.20 | 40                                      | ESMG161E□□3R3MF11D |          | 10       | 10×20              | 0.24 | 115                                     | ESMG351E□□100MJ20S |
|          | 4.7      | 6.3×11             | 0.20 | 48                                      | ESMG161E□□4R7MF11D |          | 22       | 12.5×20            | 0.24 | 185                                     | ESMG351E□□2R2MK20S |
|          | 10       | 10×12.5            | 0.20 | 94                                      | ESMG161E□□100MJC5S |          | 33       | 16×25              | 0.24 | 275                                     | ESMG351E□□330ML25S |
|          | 22       | 10×20              | 0.20 | 170                                     | ESMG161E□□220MJ20S |          | 47       | 16×25              | 0.24 | 325                                     | ESMG351E□□470ML25S |
|          | 33       | 10×20              | 0.20 | 205                                     | ESMG161E□□330MJ20S |          | 47       | 20×20              | 0.15 | 310                                     | ESMG351E□□470MN20S |
|          | 47       | 12.5×20            | 0.20 | 270                                     | ESMG161E□□470MK20S |          | 68       | 20×25              | 0.15 | 400                                     | ESMG351E□□680MN25S |
|          | 100      | 12.5×25            | 0.20 | 430                                     | ESMG161E□□101MK25S |          | 100      | 18×31.5            | 0.24 | 530                                     | ESMG351E□□101MMN3S |
|          | 220      | 16×31.5            | 0.20 | 760                                     | ESMG161E□□221MLN3S |          | 100      | 20×30              | 0.15 | 500                                     | ESMG351E□□101MN30S |
|          | 220      | 20×25              | 0.15 | 730                                     | ESMG161E□□221MN25S |          | 120      | 20×35              | 0.15 | 560                                     | ESMG351E□□121MN35S |
|          | 330      | 18×35.5            | 0.20 | 995                                     | ESMG161E□□331MMP1S | 400      | 1.0      | 6.3×11             | 0.24 | 22                                      | ESMG401E□□1R0MF11D |
| 200      | 330      | 20×30              | 0.15 | 920                                     | ESMG161E□□331MN30S |          | 2.2      | 8×11.5             | 0.24 | 38                                      | ESMG401E□□2R2MHB5D |
|          | 390      | 20×35              | 0.15 | 1,160                                   | ESMG161E□□391MN35S |          | 3.3      | 10×12.5            | 0.24 | 54                                      | ESMG401E□□3R3MJC5S |
|          | 390      | 22×30              | 0.15 | 1,160                                   | ESMG161E□□391MP30S |          | 4.7      | 10×16              | 0.24 | 71                                      | ESMG401E□□4R7MJ16S |
|          | 470      | 20×40              | 0.15 | 1,340                                   | ESMG161E□□471MN40S |          | 10       | 10×20              | 0.24 | 115                                     | ESMG401E□□100MJ20S |
|          | 470      | 22×35              | 0.15 | 1,340                                   | ESMG161E□□471MP35S |          | 22       | 12.5×25            | 0.24 | 205                                     | ESMG401E□□220MK25S |
|          | 560      | 22×40              | 0.15 | 1,470                                   | ESMG161E□□561MP40S |          | 33       | 16×25              | 0.24 | 275                                     | ESMG401E□□330ML25S |
|          | 3.3      | 6.3×11             | 0.20 | 40                                      | ESMG201E□□3R3MF11D |          | 33       | 20×20              | 0.15 | 260                                     | ESMG401E□□330MN20S |
|          | 4.7      | 8×11.5             | 0.20 | 55                                      | ESMG201E□□4R7MHB5D |          | 47       | 16×31.5            | 0.24 | 350                                     | ESMG401E□□470MLN3S |
|          | 10       | 10×12.5            | 0.20 | 94                                      | ESMG201E□□100MJC5S |          | 56       | 20×25              | 0.15 | 350                                     | ESMG401E□□560MN25S |
|          | 22       | 10×20              | 0.20 | 170                                     | ESMG201E□□220MJ20S |          | 68       | 20×30              | 0.15 | 420                                     | ESMG401E□□680MN30S |
|          | 33       | 10×20              | 0.20 | 205                                     | ESMG201E□□330MJ20S | 450      | 100      | 20×35              | 0.15 | 520                                     | ESMG401E□□101MN35S |
| 250      | 47       | 12.5×20            | 0.20 | 270                                     | ESMG201E□□470MK20S |          | 100      | 22×30              | 0.15 | 520                                     | ESMG401E□□101MP30S |
|          | 100      | 16×25              | 0.20 | 475                                     | ESMG201E□□101ML25S |          | 120      | 20×40              | 0.15 | 580                                     | ESMG401E□□121MN40S |
|          | 100      | 20×20              | 0.15 | 460                                     | ESMG201E□□101MN20S |          | 120      | 22×35              | 0.15 | 580                                     | ESMG401E□□121MP35S |
|          | 180      | 20×25              | 0.15 | 660                                     | ESMG201E□□181MN25S |          | 2.2      | 10×12.5            | 0.24 | 32                                      | ESMG451E□□2R2MJC5S |
|          | 220      | 18×35.5            | 0.20 | 810                                     | ESMG201E□□221MMP1S |          | 3.3      | 10×16              | 0.24 | 44                                      | ESMG451E□□3R3MJ16S |
|          | 220      | 20×30              | 0.15 | 750                                     | ESMG201E□□221MN30S |          | 4.7      | 10×20              | 0.24 | 56                                      | ESMG451E□□4R7MJ20S |
|          | 270      | 20×30              | 0.15 | 830                                     | ESMG201E□□271MN30S |          | 10       | 12.5×20            | 0.24 | 91                                      | ESMG451E□□100MK20S |
|          | 330      | 20×35              | 0.15 | 1,070                                   | ESMG201E□□331MN35S |          | 22       | 16×25              | 0.24 | 165                                     | ESMG451E□□220ML25S |
|          | 330      | 22×30              | 0.15 | 1,070                                   | ESMG201E□□331MP30S |          | 22       | 20×20              | 0.20 | 180                                     | ESMG451E□□220MN20S |
|          | 390      | 20×40              | 0.15 | 1,190                                   | ESMG201E□□391MN40S |          | 33       | 16×31.5            | 0.24 | 215                                     | ESMG451E□□330MLN3S |
|          | 390      | 22×30              | 0.15 | 1,160                                   | ESMG201E□□391MP30S |          | 33       | 20×25              | 0.20 | 240                                     | ESMG451E□□330MN25S |
|          | 470      | 22×40              | 0.15 | 1,350                                   | ESMG201E□□471MP40S |          | 47       | 16×35.5            | 0.24 | 265                                     | ESMG451E□□470MLP1S |
| 250      | 560      | 22×40              | 0.15 | 1,430                                   | ESMG201E□□561MP40S |          | 47       | 20×25              | 0.20 | 290                                     | ESMG451E□□470MN25S |
|          | 2.2      | 6.3×11             | 0.20 | 32                                      | ESMG251E□□2R2MF11D |          | 56       | 20×30              | 0.20 | 320                                     | ESMG451E□□560MN30S |
|          | 3.3      | 8×11.5             | 0.20 | 46                                      | ESMG251E□□3R3MHB5D |          | 68       | 20×35              | 0.20 | 370                                     | ESMG451E□□680MN35S |
|          | 4.7      | 8×11.5             | 0.20 | 55                                      | ESMG251E□□4R7MHB5D |          | 68       | 22×30              | 0.20 | 370                                     | ESMG451E□□680MP30S |
|          | 10       | 10×16              | 0.20 | 105                                     | ESMG251E□□100MJ16S |          | 82       | 20×40              | 0.20 | 420                                     | ESMG451E□□820MN40S |
|          | 22       | 10×20              | 0.20 | 170                                     | ESMG251E□□220MJ20S |          | 82       | 22×35              | 0.20 | 420                                     | ESMG451E□□820MP35S |
|          | 33       | 12.5×20            | 0.20 | 230                                     | ESMG251E□□330MK20S |          | 100      | 22×40              | 0.20 | 470                                     | ESMG451E□□101MP40S |
|          | 47       | 12.5×25            | 0.20 | 295                                     | ESMG251E□□470MK25S |          |          |                    |      |                                         |                    |
|          | 82       | 20×20              | 0.15 | 420                                     | ESMG251E□□820MN20S |          |          |                    |      |                                         |                    |
|          | 100      | 16×31.5            | 0.20 | 515                                     | ESMG251E□□101MLN3S |          |          |                    |      |                                         |                    |
|          | 100      | 20×25              | 0.15 | 490                                     | ESMG251E□□101MN25S |          |          |                    |      |                                         |                    |
|          | 120      | 20×25              | 0.15 | 530                                     | ESMG251E□□121MN25S |          |          |                    |      |                                         |                    |
|          | 180      | 20×30              | 0.15 | 680                                     | ESMG251E□□181MN30S |          |          |                    |      |                                         |                    |
|          | 220      | 18×40              | 0.20 | 825                                     | ESMG251E□□221MM40S |          |          |                    |      |                                         |                    |
|          | 220      | 20×35              | 0.15 | 780                                     | ESMG251E□□221MN35S |          |          |                    |      |                                         |                    |
|          | 220      | 22×30              | 0.15 | 820                                     | ESMG251E□□221MP30S |          |          |                    |      |                                         |                    |
|          | 270      | 20×40              | 0.15 | 880                                     | ESMG251E□□271MN40S |          |          |                    |      |                                         |                    |
|          | 270      | 22×35              | 0.15 | 880                                     | ESMG251E□□271MP35S |          |          |                    |      |                                         |                    |
|          | 330      | 22×40              | 0.15 | 1,060                                   | ESMG251E□□331MP40S |          |          |                    |      |                                         |                    |

□□ : Enter the appropriate lead forming or taping code.

## SMG Series

### ◆RATED RIPPLE CURRENT MULTIPLIERS

#### ●Frequency Multipliers

( $\phi 5$  to  $\phi 18$ )

| Capacitance ( $\mu\text{F}$ ) \ Frequency (Hz) | 50   | 120  | 300  | 1k   | 10k  | 100k |
|------------------------------------------------|------|------|------|------|------|------|
| <b>1.0 to 4.7</b>                              | 0.65 | 1.00 | 1.35 | 1.75 | 2.30 | 2.50 |
| <b>10 to 47</b>                                | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 1.80 |
| <b>100 to 1,000</b>                            | 0.80 | 1.00 | 1.15 | 1.30 | 1.40 | 1.50 |
| <b>2,200 to</b>                                | 0.85 | 1.00 | 1.03 | 1.05 | 1.08 | 1.08 |

( $\phi 20$ ,  $\phi 22$ )

| Rated Voltage (V <sub>o</sub> ) \ Frequency (Hz) | 50   | 120  | 300  | 1k   | 10k  | 100k |
|--------------------------------------------------|------|------|------|------|------|------|
| <b>6.3 to 50</b>                                 | 0.95 | 1.00 | 1.03 | 1.05 | 1.08 | 1.08 |
| <b>63 to 100</b>                                 | 0.92 | 1.00 | 1.07 | 1.13 | 1.19 | 1.20 |
| <b>160 to 250</b>                                | 0.81 | 1.00 | 1.17 | 1.32 | 1.45 | 1.50 |
| <b>315 to 450</b>                                | 0.77 | 1.00 | 1.16 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.