

## Part Numbering System



① Category code

| Type                   | Code |   |
|------------------------|------|---|
|                        | 2    | 3 |
| Electrolytic Capacitor | E    |   |
| Conductive Polymer     | S    |   |

② Series code

| Series name | Code |   |
|-------------|------|---|
|             | 2    | 3 |
| WH          | W    | H |
| CD11GE      | G    | E |
| CD11GES     | G    | X |
| CD11GAS     | G    | W |
| CD11GHS     | G    | S |
| NR          | N    | R |
| PZ          | P    | Z |

③ Voltage code

| WV (V <sub>dc</sub> ) | Code |   |
|-----------------------|------|---|
|                       | 4    | 5 |
| 2.5                   | 0    | E |
| 3                     | 0    | D |
| 4                     | 0    | G |
| 6.3                   | 0    | J |
| 6.8                   | 0    | C |
| 7                     | 0    | Q |
| 7.5                   | 0    | A |
| 10                    | 1    | A |
| 12                    | 1    | T |
| 16                    | 1    | C |
| 25                    | 1    | E |
| 35                    | 1    | V |
| 40                    | 1    | G |
| 50                    | 1    | H |
| 63                    | 1    | J |
| 80                    | 1    | B |
| 100                   | 1    | K |
| 120                   | 2    | B |
| 160                   | 2    | C |
| 180                   | 2    | L |
| 200                   | 2    | D |
| 220                   | 2    | N |
| 250                   | 2    | E |
| 315                   | 2    | F |
| 350                   | 2    | V |
| 380                   | 2    | P |
| 400                   | 2    | G |
| 420                   | 2    | T |
| 450                   | 2    | W |
| 500                   | 2    | H |
| 550                   | 2    | J |
| 600                   | 2    | K |

④ Capacitance tolerance code

| Tol. (%) | Code |  |
|----------|------|--|
|          | 6    |  |
| -10~+10  | K    |  |
| -20~+20  | M    |  |
| -10~+30  | Q    |  |
| -10~+20  | V    |  |
| 0~+20    | A    |  |
| -5~+20   | C    |  |
| -10~-20  | B    |  |
| -5~+5    | D    |  |
| 0~+10    | E    |  |
| -5~-20   | F    |  |
| -15~+5   | N    |  |

⑤ Capacitance code

| Cap (μF) | Code |   |   |
|----------|------|---|---|
|          | 7    | 8 | 9 |
| 0.10     | R    | 1 | 0 |
| 0.22     | R    | 2 | 2 |
| 0.33     | R    | 3 | 3 |
| 0.47     | R    | 4 | 7 |
| 0.68     | R    | 6 | 8 |
| 1        | 0    | 1 | 0 |
| 2.2      | 2    | R | 2 |
| 3.3      | 3    | R | 3 |
| 4.7      | 4    | R | 7 |
| 6.8      | 6    | R | 8 |
| 10       | 1    | 0 | 0 |
| 22       | 2    | 2 | 0 |
| 33       | 3    | 3 | 0 |
| 47       | 4    | 7 | 0 |
| 68       | 6    | 8 | 0 |
| 100      | 1    | 0 | 1 |
| 220      | 2    | 2 | 1 |
| 330      | 3    | 3 | 1 |
| 470      | 4    | 7 | 1 |
| 680      | 6    | 8 | 1 |
| 1000     | 1    | 0 | 2 |
| 2200     | 2    | 2 | 2 |
| 3300     | 3    | 3 | 2 |
| 4700     | 4    | 7 | 2 |
| 6800     | 6    | 8 | 2 |
| 10000    | 1    | 0 | 3 |
| 22000    | 2    | 2 | 3 |
| 33000    | 3    | 3 | 3 |
| 68000    | 6    | 8 | 3 |

⑥ Size code

| ΦD (mm) | Code |
|---------|------|
| 4       | C    |
| 5       | D    |
| 6.3     | E    |
| 8       | F    |
| 10      | G    |
| 11      | H    |
| 12      | J    |
| 12.5    | W    |
| 13      | K    |
| 14      | X    |
| 16      | L    |
| 18      | M    |
| 19      | Z    |
| 20      | N    |
| 22      | O    |
| 25      | P    |
| 30      | Q    |
| 35      | R    |
| 40      | Y    |
| 51.6    | S    |
| 64.3    | T    |
| 76.9    | U    |
| 91      | V    |
| 100     | A    |

| L (mm) | Code |    |
|--------|------|----|
|        | 11   | 12 |
| 5      | 0    | 5  |
| 7      | 0    | 7  |
| 11     | 1    | 1  |
| 12     | 1    | 2  |
| 16     | 1    | 6  |
| 20     | 2    | 0  |
| 25     | 2    | 5  |
| 30     | 3    | 0  |
| 35     | 3    | 5  |
| 40     | 4    | 0  |
| 46     | 4    | 6  |
| 50     | 5    | 0  |
| 60     | 6    | 0  |
| 80     | 8    | 0  |
| 100    | A    | 0  |
| 115    | B    | 5  |
| 120    | C    | 0  |
| 130    | D    | 0  |
| 140    | E    | 0  |
| 160    | G    | 0  |
| 200    | K    | 0  |
| 220    | M    | 0  |
| 236    | N    | 6  |
| 250    | P    | 0  |

⑦ Terminal code

| Specification                         | Code |    |    |
|---------------------------------------|------|----|----|
|                                       | 13   | 14 | 15 |
| Bulk packing                          | O    | -  | -  |
| Taping (SMD Type)                     | D    | 0  | 0  |
| Φ4~8 Taping F=5.0mm                   | P    | 5  | 0  |
| Φ10~12.5 Taping F=5.0mm               | B    | 5  | 0  |
| Lead Cut L=3.5mm                      | C    | 3  | 5  |
| Lead Cut L=11.0mm                     | C    | B  | 0  |
| Lead Forming & Cut L=4.5mm            | F    | -  | -  |
| Kink & Cut L=4.5mm                    | J    | -  | -  |
| Snap-in type Terminal 4.0mm in length | K    | -  | -  |
| Three Terminals                       | T    | -  | -  |
| Ring clip mounting standard design    | A    | 0  | 0  |
| Ring clip mounting special design     | S    | -  | -  |

⑧ Sleeve/Marking code

| Sleeve/Marking | Code |  |
|----------------|------|--|
|                | 16   |  |
| PVC            | C    |  |
| PET            | T    |  |
| Dark blue      | B    |  |
| Bright red     | R    |  |
| Sky-blue       | S    |  |
| Light blue     | T    |  |
| Pink           | Z    |  |
| Black          | H    |  |
| Purple-blue    | V    |  |
| Red            | O    |  |

Lead Forming  
Taping Specifications

Fig.1 code: X



Fig.2 code: B



Fig.3 code: B



Fig.4 code: P



## Lead Forming

Specification Fig.1 & Fig.2 & Fig.3

| Items                                         | Symbol | Case size  |     |            |      |      |      |       |                |                  |                                   | Tolerance |              |                                            |
|-----------------------------------------------|--------|------------|-----|------------|------|------|------|-------|----------------|------------------|-----------------------------------|-----------|--------------|--------------------------------------------|
|                                               |        | 4*5<br>4*7 |     | 5*5<br>5*7 |      | 5*11 |      | 6.3*5 | 6.3*7<br>6.3*9 | 6.3*11<br>6.3*12 | 8*5/7<br>8*9/11<br>8*11.5<br>8*12 |           | 8*16<br>8*20 | 10*9/12<br>10*12.5<br>10*13/16<br>10*20/25 |
| Pin Code                                      |        | X          | B   | X          | B    | X    | B    | B     | B              | B                | B                                 | B         | B            |                                            |
| Lead wire diameter                            | Φd     | 0.45       |     | 0.45       |      | 0.5  |      | 0.45  | 0.5            | 0.5              | 0.45/0.5                          | 0.6       | 0.6          | ±0.05                                      |
| Pitch of body                                 | P      | 12.7       |     | 12.7       |      | 12.7 |      | 12.7  | 12.7           | 12.7             | 12.7                              | 12.7      | 12.7         | ±1.0                                       |
| Feed hole pitch                               | P0     | 12.7       |     | 12.7       |      | 12.7 |      | 12.7  | 12.7           | 12.7             | 12.7                              | 12.7      | 12.7         | ±0.2                                       |
| Distance from hole center to lead             | P1     | 5.1        | 5.6 | 5.1        | 5.35 | 5.1  | 5.35 | 5.1   | 5.1            | 5.1              | 4.6                               | 4.6       | 3.85         | ±0.7                                       |
| Distance from feed hole center to body center | P2     | 6.35       |     | 6.35       |      | 6.35 |      | 6.35  | 6.35           | 6.35             | 6.35                              | 6.35      | 6.35         | ±1.0                                       |
| Lead-to-lead distance                         | F      | 2.5        | 1.5 | 2.5        | 2.0  | 2.5  | 2.0  | 2.5   | 2.5            | 2.5              | 3.5                               | 3.5       | 5.0          | ±0.5                                       |
| Height of body from tape center               | H      | 18.5       |     | 18.5       |      | 18.5 |      | 18.5  | 18.5           | 18.5             | 18.5                              | 18.5      | 18.5         | ±0.75                                      |
| Base tape width                               | W      | 18.0       |     | 18.0       |      | 18.0 |      | 18.0  | 18.0           | 18.0             | 18.0                              | 18.0      | 18.0         | ±0.5                                       |
| Adhesive tape width                           | W0     | 6.0        |     | 6.0        |      | 6.0  |      | 6.0   | 6.0            | 8.0              | 8.0                               | 8.0       | 11.0         | min                                        |
| Hole position                                 | W1     | 9.0        |     | 9.0        |      | 9.0  |      | 9.0   | 9.0            | 9.0              | 9.0                               | 9.0       | 9.0          | +0.75<br>-0.5                              |
| Hole down tape position                       | W2     | 3.0        |     | 3.0        |      | 3.0  |      | 3.0   | 3.0            | 3.0              | 3.0                               | 3.0       | 3.0          | max                                        |

Specification Fig.4

| Items                                         | Symbol | Case size  |      |      |      |       |                |                  |                              |              | Tolerance     |
|-----------------------------------------------|--------|------------|------|------|------|-------|----------------|------------------|------------------------------|--------------|---------------|
|                                               |        | 4*5<br>4*7 | 5*5  | 5*7  | 5*11 | 6.3*5 | 6.3*7<br>6.3*9 | 6.3*11<br>6.3*12 | 8*5/7<br>8*9/11<br>8*11.5/12 | 8*16<br>8*20 |               |
| Pin Code                                      |        | P          | P    | P    | P    | P     | P              | P                | P                            | P            |               |
| Lead wire diameter                            | Φd     | 0.45       | 0.45 | 0.45 | 0.5  | 0.45  | 0.5            | 0.5              | 0.45/0.5                     | 0.6          | ±0.05         |
| Pitch of body                                 | P      | 12.7       | 12.7 | 12.7 | 12.7 | 12.7  | 12.7           | 12.7             | 12.7                         | 12.7         | ±1.0          |
| Feed hole pitch                               | P0     | 12.7       | 12.7 | 12.7 | 12.7 | 12.7  | 12.7           | 12.7             | 12.7                         | 12.7         | ±0.2          |
| Distance from hole center to lead             | P1     | 3.85       | 3.85 | 3.85 | 3.85 | 3.85  | 3.85           | 3.85             | 3.85                         | 3.85         | ±0.7          |
| Distance from feed hole center to body center | P2     | 6.35       | 6.35 | 6.35 | 6.35 | 6.35  | 6.35           | 6.35             | 6.35                         | 6.35         | ±1.0          |
| Lead-to-lead distance                         | F      | 1.5        | 2.0  | 2.0  | 2.0  | 2.5   | 2.5            | 2.5              | 3.5                          | 3.5          | ±0.5          |
| Lead to lead distance                         | F1     | 5.0        | 5.0  | 5.0  | 5.0  | 5.0   | 5.0            | 5.0              | 5.0                          | 5.0          | +0.8<br>-0.2  |
| Height of body from tape center               | H      | 18.5       | 18.5 | 18.5 | 18.5 | 18.5  | 18.5           | 18.5             | 18.5                         | 18.5         | ±0.75         |
| Lead wire clinch height                       | H0     | 16.0       | 16.0 | 16.0 | 16.0 | 16.0  | 16.0           | 16.0             | 16.0                         | 16.0         | ±0.5          |
| Base tape width                               | W      | 18.0       | 18.0 | 18.0 | 18.0 | 18.0  | 18.0           | 18.0             | 18.0                         | 18.0         | ±0.5          |
| Adhesive tape width                           | W0     | 6.0        | 6.0  | 6.0  | 6.0  | 6.0   | 6.0            | 8.0              | 8.0                          | 8.0          | min           |
| Hole position                                 | W1     | 9.0        | 9.0  | 9.0  | 9.0  | 9.0   | 9.0            | 9.0              | 9.0                          | 9.0          | +0.75<br>-0.5 |
| Hole down tape position                       | W2     | 3.0        | 3.0  | 3.0  | 3.0  | 3.0   | 3.0            | 3.0              | 3.0                          | 3.0          | max           |

### Lead Forming

#### Lead Forming & Cut

Code:C  
RANGE:  $\Phi 4\sim\Phi 18$



Code:F  
RANGE:  $\Phi 4\sim\Phi 8$



| $\Phi D$ | F   | L        | $\Phi D$ | F   | L                  |
|----------|-----|----------|----------|-----|--------------------|
| 4        | 1.5 | 3.0~12.0 | 4        | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 5        | 2.0 | 3.0~12.0 | 5        | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 6.3      | 2.5 | 3.0~12.0 | 6.3      | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 8        | 3.5 | 3.0~12.0 | 8        | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 10       | 5.0 | 3.0~12.0 | -        | -   | -                  |
| 12.5     | 5.0 | 3.0~12.0 | -        | -   | -                  |
| 16       | 7.5 | 3.0~12.0 | -        | -   | -                  |
| 18       | 7.5 | 3.0~12.0 | -        | -   | -                  |

Code:J  
RANGE:  $\Phi 10\sim\Phi 18$



| $\Phi D$ | F   | L             |
|----------|-----|---------------|
| 10       | 5.0 | 4.0, 4.5, 5.0 |
| 12.5     | 5.0 | 4.0, 4.5, 5.0 |
| 16       | 7.5 | 4.0, 4.5, 5.0 |
| 18       | 7.5 | 4.0, 4.5, 5.0 |

# CD11GHS series

Upgrade

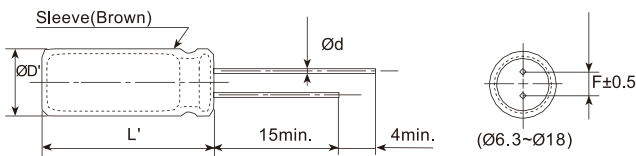
- Upgrade for CD11GH Series, longer life, better performance, cost-effective
- Endurance: +105°C 6,000 hours
- Suitable for electronic ballast and electronic energy saving lamp.
- **RoHS Compliant**



**SPECIFICATIONS**

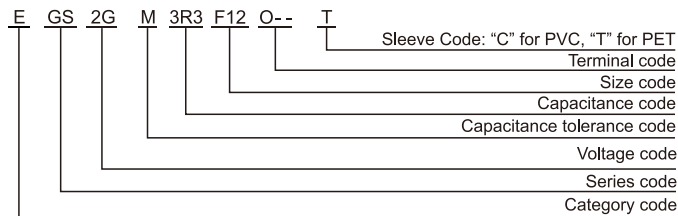
| Items                                                  | Characteristics                                                                                                                                                                                                            |                                      |      |                                                                                        |      |      |      |                           |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------|----------------------------------------------------------------------------------------|------|------|------|---------------------------|
| Category Temperature Range                             | -40~+105°C(160~450 V <sub>dc</sub> )                                                                                                                                                                                       |                                      |      |                                                                                        |      |      |      |                           |
| Rated Voltage Range                                    | 160~450 V <sub>dc</sub>                                                                                                                                                                                                    |                                      |      |                                                                                        |      |      |      |                           |
| Capacitance Tolerance                                  | ±20%(M) (at 20°C,120Hz)                                                                                                                                                                                                    |                                      |      |                                                                                        |      |      |      |                           |
| Leakage Current                                        | 160~400 V <sub>dc</sub>                                                                                                                                                                                                    | 450 V <sub>dc</sub>                  |      | Where, I: Max.leakage current (μA),C:Nominal capacitance (μF),<br>V: Rated voltage (V) |      |      |      | (at 20°C after 2 minutes) |
|                                                        | I≤0.02CV+10μA                                                                                                                                                                                                              | I≤0.03CV+10μA                        |      |                                                                                        |      |      |      |                           |
| Dissipation Factor (tanδ)                              | Rated Voltage(V <sub>dc</sub> )                                                                                                                                                                                            | 160                                  | 200  | 250                                                                                    | 350  | 400  | 450  | (at 20°C,120Hz)           |
|                                                        | tanδ (max.)                                                                                                                                                                                                                | 0.15                                 | 0.15 | 0.15                                                                                   | 0.20 | 0.20 | 0.20 |                           |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V <sub>dc</sub> )                                                                                                                                                                                            | 160                                  | 200  | 250                                                                                    | 350  | 400  | 450  | (at 120Hz)                |
|                                                        | Z(-25°C)/Z(+20°C)                                                                                                                                                                                                          | 3                                    | 3    | 3                                                                                      | 5    | 5    | 6    |                           |
|                                                        | Z(-40°C)/Z(+20°C)                                                                                                                                                                                                          | 6                                    | 6    | 6                                                                                      | 6    | 6    | 9    |                           |
| Endurance                                              | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 6,000 hours at 105°C, the peak voltage shall not exceed the rated voltage. |                                      |      |                                                                                        |      |      |      |                           |
|                                                        | 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 leaving them under no load at 105°C for 1,000 hours.                                                                        |                                      |      |                                                                                        |      |      |      |                           |
|                                                        | Capacitance Change                                                                                                                                                                                                         | ≤±20% of the initial value           |      |                                                                                        |      |      |      |                           |
|                                                        | D.F. (tanδ)                                                                                                                                                                                                                | ≤200% of the initial specified value |      |                                                                                        |      |      |      |                           |
|                                                        | Leakage Current                                                                                                                                                                                                            | ≤200% of the initial specified value |      |                                                                                        |      |      |      |                           |

**DIMENSIONS[mm]**



|     |            |     |     |      |     |     |
|-----|------------|-----|-----|------|-----|-----|
| ØD  | 6.3        | 8   | 10  | 12.5 | 16  | 18  |
| Ød  | 0.5        | 0.5 | 0.6 | 0.6  | 0.8 | 0.8 |
| F   | 2.5        | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 |
| ØD' | ØD+0.5max. |     |     |      |     |     |
| L'  | L+2max.    |     |     |      |     |     |

**PART NUMBERING SYSTEM**



**RATED RIPPLE CURRENT MULTIPLIERS**

Frequency correction factor for ripple current

|                                 |           |      |      |      |      |
|---------------------------------|-----------|------|------|------|------|
|                                 | Freq.(Hz) | 120  | 1k   | 10k  | 100k |
| Rated voltage(V <sub>dc</sub> ) | 160~450   | 0.50 | 0.80 | 0.90 | 1.00 |

# CD11GHS series

■ STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Size ΦDxL(mm) | tanδ | Rated ripple current (mA <sub>rms</sub> /105°C,100kHz) |
|-----------------------|----------|---------------|------|--------------------------------------------------------|
| 160(2C)               | 1        | 6.3*9         | 0.15 | 36                                                     |
|                       |          | 6.3*12        | 0.15 | 40                                                     |
|                       | 1.5      | 6.3*12        | 0.15 | 50                                                     |
|                       |          | 6.3*9         | 0.15 | 50                                                     |
|                       | 1.8      | 6.3*12        | 0.15 | 56                                                     |
|                       |          | 6.3*9         | 0.15 | 56                                                     |
|                       | 2.2      | 6.3*12        | 0.15 | 60                                                     |
|                       |          | 6.3*9         | 0.15 | 62                                                     |
|                       | 2.8      | 6.3*12        | 0.15 | 68                                                     |
|                       |          | 6.3*9         | 0.15 | 67                                                     |
|                       | 3.3      | 6.3*12        | 0.15 | 72                                                     |
|                       |          | 6.3*12        | 0.15 | 75                                                     |
|                       | 4.7      | 8*12          | 0.15 | 80                                                     |
|                       |          | 6.3*12        | 0.15 | 79                                                     |
|                       | 5.6      | 8*12          | 0.15 | 84                                                     |
|                       |          | 8*9           | 0.15 | 89                                                     |
|                       | 6.8      | 8*12          | 0.15 | 96                                                     |
|                       |          | 8*9           | 0.15 | 105                                                    |
|                       | 8.2      | 8*12          | 0.15 | 110                                                    |
|                       |          | 8*9           | 0.15 | 165                                                    |
|                       | 10       | 8*12          | 0.15 | 206                                                    |
|                       |          | 8*12          | 0.15 | 230                                                    |
|                       | 15       | 8*16          | 0.15 | 250                                                    |
|                       |          | 8*16          | 0.15 | 340                                                    |
|                       | 22       | 8*20          | 0.15 | 400                                                    |
|                       |          | 10*16         | 0.15 | 420                                                    |
|                       | 33       | 10*20         | 0.15 | 450                                                    |
|                       |          | 10*16         | 0.15 | 460                                                    |
| 47                    | 10*20    | 0.15          | 500  |                                                        |
|                       | 12.5*16  | 0.15          | 570  |                                                        |
| 68                    | 12.5*20  | 0.15          | 630  |                                                        |
|                       | 12.5*20  | 0.15          | 680  |                                                        |
| 100                   | 12.5*25  | 0.15          | 720  |                                                        |
|                       | 16*20    | 0.15          | 760  |                                                        |
| 150                   | 16*25    | 0.15          | 850  |                                                        |
|                       | 6.3*9    | 0.15          | 38   |                                                        |
| 1                     | 6.3*12   | 0.15          | 42   |                                                        |
|                       | 6.3*9    | 0.15          | 50   |                                                        |
| 1.5                   | 6.3*12   | 0.15          | 54   |                                                        |
|                       | 6.3*9    | 0.15          | 54   |                                                        |
| 1.8                   | 6.3*12   | 0.15          | 60   |                                                        |
|                       | 6.3*9    | 0.15          | 60   |                                                        |
| 2.2                   | 6.3*12   | 0.15          | 68   |                                                        |
|                       | 6.3*9    | 0.15          | 68   |                                                        |
| 2.8                   | 6.3*12   | 0.15          | 71   |                                                        |
|                       | 6.3*9    | 0.15          | 74   |                                                        |
| 3.3                   | 6.3*12   | 0.15          | 80   |                                                        |
|                       | 6.3*12   | 0.15          | 90   |                                                        |
| 4.7                   | 8*12     | 0.15          | 95   |                                                        |
|                       | 8*9      | 0.15          | 92   |                                                        |
| 5.6                   | 8*12     | 0.15          | 98   |                                                        |
|                       | 8*9      | 0.15          | 98   |                                                        |
| 6.8                   | 8*12     | 0.15          | 110  |                                                        |
|                       | 8*12     | 0.15          | 115  |                                                        |
| 8.2                   | 8*16     | 0.15          | 120  |                                                        |
|                       | 8*12     | 0.15          | 185  |                                                        |
| 10                    | 8*16     | 0.15          | 210  |                                                        |

| WV (V <sub>dc</sub> ) | Cap (μF) | Size ΦDxL(mm) | tanδ | Rated ripple current (mA <sub>rms</sub> /105°C,100kHz) |
|-----------------------|----------|---------------|------|--------------------------------------------------------|
| 200(2D)               | 15       | 8*16          | 0.15 | 250                                                    |
|                       |          | 8*20          | 0.15 | 268                                                    |
|                       | 22       | 8*20          | 0.15 | 400                                                    |
|                       |          | 10*16         | 0.15 | 400                                                    |
|                       | 33       | 10*20         | 0.15 | 450                                                    |
|                       |          | 12.5*20       | 0.15 | 610                                                    |
|                       | 47       | 12.5*20       | 0.15 | 635                                                    |
|                       |          | 12.5*25       | 0.15 | 700                                                    |
|                       | 68       | 16*20         | 0.15 | 735                                                    |
|                       |          | 16*25         | 0.15 | 800                                                    |
|                       | 100      | 16*25         | 0.15 | 855                                                    |
|                       |          | 16*30         | 0.15 | 900                                                    |
| 250(2E)               | 1        | 6.3*9         | 0.15 | 40                                                     |
|                       |          | 6.3*12        | 0.15 | 46                                                     |
|                       | 1.5      | 6.3*9         | 0.15 | 54                                                     |
|                       |          | 6.3*12        | 0.15 | 58                                                     |
|                       | 1.8      | 6.3*9         | 0.15 | 59                                                     |
|                       |          | 6.3*12        | 0.15 | 63                                                     |
|                       | 2.2      | 6.3*9         | 0.15 | 71                                                     |
|                       |          | 6.3*12        | 0.15 | 75                                                     |
|                       | 2.8      | 6.3*9         | 0.15 | 73                                                     |
|                       |          | 6.3*12        | 0.15 | 78                                                     |
|                       | 3.3      | 6.3*9         | 0.15 | 78                                                     |
|                       |          | 6.3*12        | 0.15 | 83                                                     |
|                       | 4.7      | 6.3*12        | 0.15 | 91                                                     |
|                       |          | 8*12          | 0.15 | 102                                                    |
|                       | 5.6      | 8*9           | 0.15 | 95                                                     |
|                       |          | 8*12          | 0.15 | 105                                                    |
|                       | 6.8      | 8*12          | 0.15 | 109                                                    |
|                       |          | 8*16          | 0.15 | 115                                                    |
|                       | 8.2      | 8*12          | 0.15 | 116                                                    |
|                       |          | 8*16          | 0.15 | 120                                                    |
|                       | 10       | 8*12          | 0.15 | 170                                                    |
|                       |          | 8*16          | 0.15 | 210                                                    |
|                       | 15       | 8*20          | 0.15 | 310                                                    |
|                       |          | 10*16         | 0.15 | 320                                                    |
|                       | 22       | 8*20          | 0.15 | 390                                                    |
|                       |          | 10*16         | 0.15 | 400                                                    |
|                       | 33       | 10*20         | 0.15 | 480                                                    |
|                       |          | 12.5*20       | 0.15 | 530                                                    |
| 47                    | 12.5*20  | 0.15          | 627  |                                                        |
|                       | 16*20    | 0.15          | 660  |                                                        |
| 68                    | 16*25    | 0.15          | 720  |                                                        |
|                       | 16*25    | 0.15          | 800  |                                                        |
| 100                   | 16*30    | 0.15          | 880  |                                                        |
|                       | 16*30    | 0.15          | 930  |                                                        |
| 150                   | 16*35    | 0.15          | 1030 |                                                        |

Radial Type

# CD11GHS series

■ STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Size ΦDxL (mm) | tanδ | Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz) |
|-----------------------|----------|----------------|------|---------------------------------------------------------|
| 350(2V)               | 1        | 6.3*9          | 0.20 | 58                                                      |
|                       |          | 6.3*12         | 0.20 | 65                                                      |
|                       | 1.5      | 6.3*9          | 0.20 | 68                                                      |
|                       |          | 6.3*12         | 0.20 | 72                                                      |
|                       | 1.8      | 6.3*9          | 0.20 | 74                                                      |
|                       |          | 6.3*12         | 0.20 | 80                                                      |
|                       | 2.2      | 6.3*9          | 0.20 | 85                                                      |
|                       |          | 6.3*12         | 0.20 | 90                                                      |
|                       | 2.8      | 8*9            | 0.20 | 101                                                     |
|                       |          | 8*12           | 0.20 | 106                                                     |
|                       | 3.3      | 8*9            | 0.20 | 106                                                     |
|                       |          | 8*12           | 0.20 | 110                                                     |
|                       | 4.7      | 8*12           | 0.20 | 115                                                     |
|                       |          | 8*16           | 0.20 | 120                                                     |
|                       | 5.6      | 8*12           | 0.20 | 130                                                     |
|                       |          | 8*16           | 0.20 | 150                                                     |
|                       | 6.8      | 8*16           | 0.20 | 160                                                     |
|                       |          | 8*20           | 0.20 | 170                                                     |
|                       | 8.2      | 8*20           | 0.20 | 189                                                     |
|                       |          | 8*20           | 0.20 | 230                                                     |
| 10                    | 8*20     | 0.20           | 230  |                                                         |
|                       | 10*20    | 0.20           | 310  |                                                         |
| 22                    | 12.5*20  | 0.20           | 430  |                                                         |
|                       | 12.5*20  | 0.20           | 515  |                                                         |
| 33                    | 12.5*25  | 0.20           | 535  |                                                         |
|                       | 16*20    | 0.20           | 650  |                                                         |
| 68                    | 18*20    | 0.20           | 726  |                                                         |
|                       | 18*25    | 0.20           | 910  |                                                         |
| 400(2G)               | 1        | 6.3*9          | 0.20 | 70                                                      |
|                       |          | 6.3*12         | 0.20 | 75                                                      |
|                       | 1.5      | 6.3*12         | 0.20 | 78                                                      |
|                       |          | 8*12           | 0.20 | 80                                                      |
|                       | 1.8      | 6.3*12         | 0.20 | 85                                                      |
|                       |          | 8*12           | 0.20 | 90                                                      |
|                       | 2.2      | 6.3*12         | 0.20 | 88                                                      |
|                       |          | 8*12           | 0.20 | 105                                                     |
|                       | 2.8      | 8*12           | 0.20 | 107                                                     |
|                       |          | 8*16           | 0.20 | 109                                                     |
|                       | 3.3      | 8*12           | 0.20 | 108                                                     |
|                       |          | 8*16           | 0.20 | 112                                                     |
|                       | 4.7      | 8*12           | 0.20 | 114                                                     |
|                       |          | 8*16           | 0.20 | 120                                                     |
|                       | 5.6      | 8*16           | 0.20 | 145                                                     |
|                       |          | 8*20           | 0.20 | 155                                                     |
|                       | 6.8      | 8*20           | 0.20 | 170                                                     |
|                       |          | 10*12          | 0.20 | 160                                                     |
|                       | 8.2      | 10*16          | 0.20 | 210                                                     |
|                       |          | 10*20          | 0.20 | 230                                                     |

| WV (V <sub>dc</sub> ) | Cap (μF) | Size ΦDxL (mm) | tanδ | Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz) |
|-----------------------|----------|----------------|------|---------------------------------------------------------|
| 400(2G)               | 10       | 10*16          | 0.20 | 225                                                     |
|                       |          | 10*20          | 0.20 | 280                                                     |
|                       | 12       | 10*20          | 0.20 | 290                                                     |
|                       |          | 10*20          | 0.20 | 300                                                     |
|                       | 15       | 12.5*20        | 0.20 | 320                                                     |
|                       |          | 12.5*20        | 0.20 | 390                                                     |
|                       | 22       | 12.5*25        | 0.20 | 450                                                     |
|                       |          | 16*25          | 0.20 | 550                                                     |
|                       | 47       | 16*25          | 0.20 | 640                                                     |
|                       |          | 16*30          | 0.20 | 670                                                     |
|                       | 56       | 16*30          | 0.20 | 680                                                     |
|                       |          | 16*35          | 0.20 | 720                                                     |
| 68                    | 18*30    | 0.20           | 800  |                                                         |
|                       | 18*35    | 0.20           | 930  |                                                         |
| 100                   | 18*40    | 0.20           | 950  |                                                         |
|                       | 450(2W)  | 1              | 8*12 | 0.20                                                    |
| 1.5                   |          | 8*12           | 0.20 | 75                                                      |
| 1.8                   |          | 8*12           | 0.20 | 90                                                      |
| 2.2                   |          | 8*12           | 0.20 | 103                                                     |
|                       |          | 8*16           | 0.20 | 115                                                     |
| 2.8                   |          | 8*12           | 0.20 | 115                                                     |
|                       |          | 8*16           | 0.20 | 120                                                     |
| 3.3                   |          | 8*16           | 0.20 | 128                                                     |
| 4.7                   |          | 8*20           | 0.20 | 140                                                     |
| 5.6                   |          | 10*16          | 0.20 | 158                                                     |
| 6.8                   |          | 10*16          | 0.20 | 180                                                     |
|                       |          | 10*20          | 0.20 | 200                                                     |
| 8.2                   | 10*20    | 0.20           | 230  |                                                         |
| 10                    | 10*20    | 0.20           | 250  |                                                         |
| 15                    | 12.5*20  | 0.20           | 350  |                                                         |
| 22                    | 12.5*25  | 0.20           | 450  |                                                         |
| 33                    | 16*25    | 0.20           | 550  |                                                         |
| 47                    | 16*35    | 0.20           | 700  |                                                         |
| 68                    | 18*30    | 0.20           | 810  |                                                         |
| 100                   | 18*40    | 0.20           | 950  |                                                         |

### Solering Recommendation

■ Flow Soldering(Radial Lead Type)



■ Reflow Soldering

- (For Polymer SMD Type)

#### Recommended Reflow Profile



| Item        | Preheating                      | T1(°C) | T2(°C) | T3(°C) | t1(sec.) | t2(sec.) | t3(sec.) | Reflow cycle |
|-------------|---------------------------------|--------|--------|--------|----------|----------|----------|--------------|
| Condition 1 | 150°C to 180°C<br>Within 90sec. | ≤260   | 230    | 200    | ≤10      | ≤40      | ≤60      | 1            |
| Condition 2 |                                 | ≤250   | 230    | 200    | ≤10      | ≤40      | ≤60      | 2            |



● (For Liquid SMD Type)

Case size:  $\Phi 6.3$ – $\Phi 10$ mm:

- Temperature at surface of capacitor shall not exceed  $T^{\circ}\text{C}$ .
- The duration for over  $200^{\circ}\text{C}$  temperature and  $T_1^{\circ}\text{C}$  at surface of capacitor shall not exceed  $t$  and  $t_1$  seconds, respectively.
- Preheat shall be done at  $100^{\circ}\text{C}$  to  $200^{\circ}\text{C}$  and for Maximum 180 seconds.



| Case size (mm) | $T(^{\circ}\text{C})$ ① | $T_1(^{\circ}\text{C})$ | $t(\text{sec.})$ ② | $t_1(\text{sec.})$ ③ | Reflow cycle |
|----------------|-------------------------|-------------------------|--------------------|----------------------|--------------|
| $\Phi 6.3$     | 250                     | 230                     | 90                 | 40                   | 1            |
| $\Phi 8$       | 240                     | 230                     | 90                 | 30                   | 1            |
| $\Phi 10$      | 235                     | 230                     | 60                 | 30                   | 1            |

- ① Peak temperature
- ② The duration over  $200^{\circ}\text{C}$  (max.)
- ③ The duration over  $T_1^{\circ}\text{C}$
- Please contact us if capacitors are subject to the conditions other than the allowable range of reflow.

Case size:  $\Phi 12.5$ – $\Phi 18$ mm:

- Temperature at surface of capacitor shall not exceed  $T^{\circ}\text{C}$ .
- The duration for over  $200^{\circ}\text{C}$  temperature and  $T_1^{\circ}\text{C}$  at surface of capacitor shall not exceed  $t$  and  $t_1$  seconds, respectively.
- Preheat shall be done at  $100^{\circ}\text{C}$  to  $180^{\circ}\text{C}$  and for Maximum 150 seconds.



| Case size (mm)          | $T(^{\circ}\text{C})$ ① | $T_1(^{\circ}\text{C})$ | $t(\text{sec.})$ ② | $t_1(\text{sec.})$ ③ | Reflow cycle |
|-------------------------|-------------------------|-------------------------|--------------------|----------------------|--------------|
| $\Phi 12.5$ – $\Phi 18$ | 240                     | 230                     | 60                 | 30                   | 1            |

- ① Peak temperature
- ② The duration over  $200^{\circ}\text{C}$  (max.)
- ③ The duration over  $T_1^{\circ}\text{C}$
- Please contact us if capacitors are subject to the conditions other than the allowable range of reflow.

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