

### High Voltage Ceramic Capacitors For Surface Mounting 1 to 5 kVDC



#### ■ Features

- Resin molded SMD type for reflow soldering
- High reliability
- Excellent "Voltage vs. Temperature Rise"
- Wide rated voltage range 1 to 5 kV
- Smaller type (5.7 × 4.5mm) available for 4kV

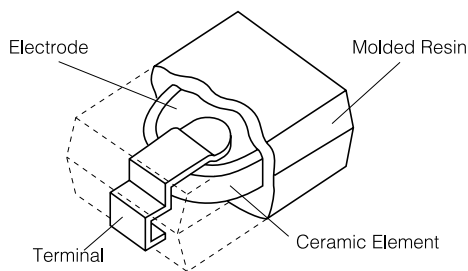
#### ■ Recommended Applications

- Ballast circuit of LCD backlighting inverter (For 3 to 5 kVDC Char.SL/GP)
- Snubber circuit of switching power supply (For 1 to 2 kVDC Char.B/Y5P)

#### ■ Explanation of Part Numbers

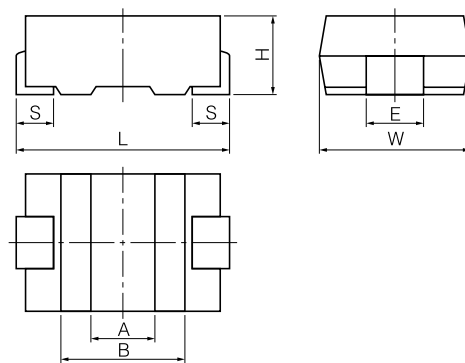
|              |        |                 |            |               |               |                     |             |                |       |             |             |            |            |
|--------------|--------|-----------------|------------|---------------|---------------|---------------------|-------------|----------------|-------|-------------|-------------|------------|------------|
| 1            | 2      | 3               | 4          | 5             | 6             | 7                   | 8           | 9              | 10    | 11          | 12          | (Examples) |            |
| E            | C      | C               | T          | 3             | F             | 4                   | 7           | 0              | J     | G           |             |            |            |
| Product Code |        | Packaging Style |            | Rated Voltage |               | Nominal Capacitance |             | Cap. Tolerance |       | Temp. Char. |             | Suffix     |            |
| Code         | Class  | Code            | Style      | Code          | Rated Voltage | Ex.                 | Capacitance | Code           | Tol.  | Code        | Temp. Char. | Code       | Style code |
| ECC          | Class1 | S               | Bulk       | 3A            | 1 kVDC        | 100                 | 10 pF       | J              | ±5 %  | G           | SL/GP       | Nil        | 1          |
| ECK          | Class2 | T               | Taped type | 3D            | 2 kVDC        | 470                 | 47 pF       | K              | ±10 % | B           | B/Y5P       | M          | 2          |
|              |        |                 |            | 3F            | 3 kVDC        | 101                 | 100 pF      | M              | ±20 % |             |             | 2          | 3          |
|              |        |                 |            | 3G            | 4 kVDC        | 221                 | 220 pF      |                |       |             |             |            |            |
|              |        |                 |            | 3H            | 5 kVDC        |                     |             |                |       |             |             |            |            |

#### ■ Construction



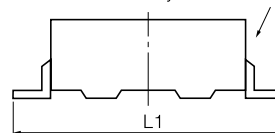
#### ■ Dimensions in mm (not to scale)

- style 1, 3



- style 2

This Figure applied to Style Code 2 only (Add dim.L1)



#### ■ Handling Precautions

See Pages 80 to 81

#### ■ Packaging Information

See Pages 82 to 83

|             |         | Unit : (mm) |         |         |         |           |         |       |       |   |
|-------------|---------|-------------|---------|---------|---------|-----------|---------|-------|-------|---|
|             |         | Symbol      | L1      | L       | W       | H         | S       | E     | A     | B |
| Dim<br>(mm) | Style 1 | —           | 7.1±0.5 | 6.3±0.3 | 2.5±0.3 | 1.45±0.30 | 2.5±0.2 | (2.0) | (3.7) |   |
|             | Style 2 | 10.8±0.5    | 7.1±0.5 | 6.3±0.3 | 2.5±0.3 | —         | 2.5±0.2 | (2.0) | (3.7) |   |
|             | Style 3 | —           | 5.7±0.5 | 4.5±0.3 | 2.3max. | 0.85±0.30 | 2.5±0.2 | (1.7) | (3.1) |   |

Rev. 02/04

### Specifications

| Characteristics                 | Char. SL/GP  |   | Char. B/Y5P   |
|---------------------------------|--|---|---|
|                                 | -25 to 105 °C  |   |   |
| Operating Temperature Range     |  |   |   |
| Rated Voltage                   | 4 to 5 kVDC  | 2 to 3 kVDC                               | 1 to 2 kVDC   |
| Dielectric Withstanding Voltage | 150 % of Rated Voltage for 1 to 5 seconds  | 200 % of Rated Voltage for 1 to 5 seconds |   |
| Capacitance                     | Within the specified tolerance, when measured at 1 MHz±20 %, 1 to 5 Vrms. and 20 °C              |   | Within the specified tolerance, when measured at 1 kHz±20 %, 1 to 5 Vrms. and 20 °C |
| Q or Dissipation Factor (tan δ) | 30 pF or under Q ≥ 400+20 C (C:Cap.pF) over 30 pF Q ≥ 1000 at 1 MHz±20 %, 1 to 5 Vrms. and 20 °C |   | tan δ ≤ 0.025 at 1 kHz±20 %, 1 to 5 Vrms. and 20 °C                                 |
| Insulation Resistance           | 10000 M Ω min. at 500 VDC and 1 minute electrification   |   |   |
| Temperature Characteristics     | Temperature Coefficient:<br>+350 to -1000 ppm/ °C<br>(Temperature Range : 20 to 85 °C)           |   | (Temperature Range : -25 to 85 °C)  |

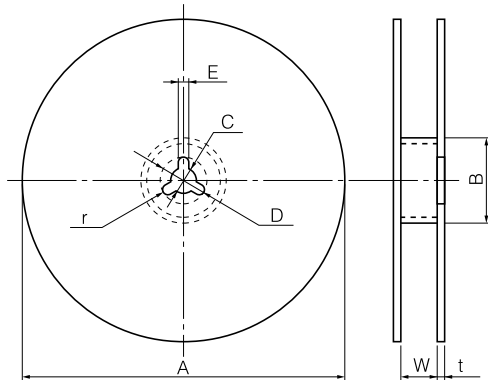
### Packaging Specifications

#### Standard Packing Quantity

Bulk: 1000 pcs./bag

Embossed taping: 2000 pcs./reel for style 1, 2  
: 3000 pcs./reel for style 3

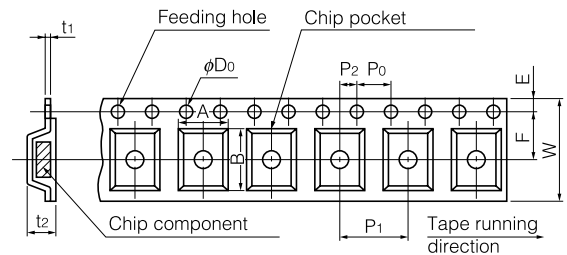
#### Reel



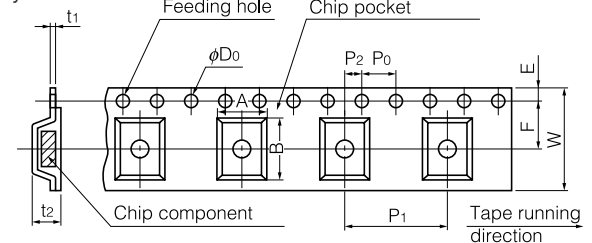
#### Embossed taping

style 1, 3

(W=12 mm)



style 2



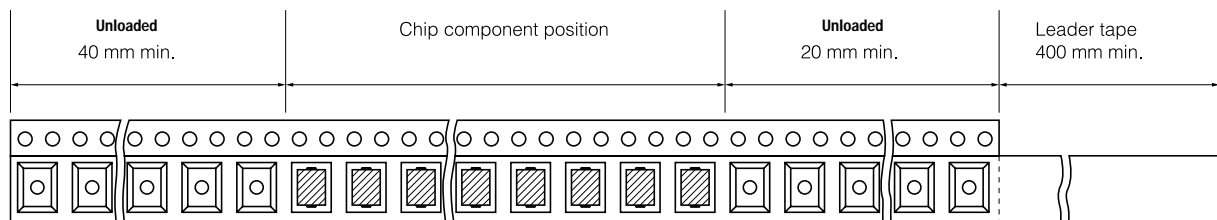
Unit:(mm)

| Symbol    | A          | B     | C       | D        | E        | W       | t        | r            |
|-----------|------------|-------|---------|----------|----------|---------|----------|--------------|
| Dim. (mm) | style 1, 3 | 330±5 | 60 min. | 13.0±0.5 | 21.0±1.0 | 2.0±0.5 | 13.5±1.5 | 2.0±0.5 R1.0 |
|           | style 2    |       |         |          |          |         | 25.5±1.5 |              |

Unit:(mm)

| Symbol    | A      | B          | W         | F         | E         | P1         | P2        | P0       | φD0      | t1       | t2       |          |
|-----------|--------|------------|-----------|-----------|-----------|------------|-----------|----------|----------|----------|----------|----------|
| Dim. (mm) | style1 | 6.5 ±0.2   | 7.5 ±0.2  | 12.0 ±0.3 | 5.5 ±0.1  | 1.75 ±0.10 | 8.0 ±0.1  | 2.0 ±0.1 | 4.0 ±0.1 | 1.5 ±0.1 | 0.3 ±0.1 | 3.2 ±0.3 |
|           | style2 | 6.65 ±0.20 | 11.2 ±0.2 | 24.0 ±0.3 | 11.5 ±0.1 | 1.75 ±0.10 | 12.0 ±0.1 | 2.0 ±0.1 | 4.0 ±0.1 | 1.5 ±0.1 | 0.3 ±0.1 | 3.2 ±0.3 |
|           | style3 | 4.8 ±0.2   | 6.0 ±0.2  | 12.0 ±0.3 | 5.5 ±0.1  | 1.75 ±0.10 | 8.0 ±0.1  | 2.0 ±0.1 | 4.0 ±0.1 | 1.5 ±0.1 | 0.3 ±0.1 | 2.8 ±0.3 |

#### Leader Part and Taped End



### ■ Ratings and Characteristics

#### ● Rated Voltage 1 to 5 kVDC

| Rated Voltage | Part Number  | Capacitance (pF) | Cap. Tolerance (%) | Temp. Char | Style   |
|---------------|--------------|------------------|--------------------|------------|---|
| 5 kVDC        | ECCT3H100JGM | 10               | ±5                 | SL/GP      | Style 2<br>7.1L×6.3W×2.5H mm<br>Outside kinked terminal |
|               | ECCT3H120JGM | 12               | ±5                 | SL/GP      |   |
|               | ECCT3H150JGM | 15               | ±5                 | SL/GP      |   |
|               | ECCT3H180JGM | 18               | ±5                 | SL/GP      |   |
|               | ECCT3H220JGM | 22               | ±5                 | SL/GP      |   |
|               | ECCT3H270JGM | 27               | ±5                 | SL/GP      |   |
| 4 kVDC        | ECCT3G100JG  | 10               | ±5                 | SL/GP      | Style 1<br>7.1L×6.3W×2.5H mm<br>Inside kink terminal    |
|               | ECCT3G120JG  | 12               | ±5                 | SL/GP      |   |
|               | ECCT3G150JG  | 15               | ±5                 | SL/GP      |   |
|               | ECCT3G180JG  | 18               | ±5                 | SL/GP      |   |
|               | ECCT3G220JG  | 22               | ±5                 | SL/GP      |   |
|               | ECCT3G270JG  | 27               | ±5                 | SL/GP      |   |
|               | ECCT3G330JG  | 33               | ±5                 | SL/GP      |   |
|               | ECCT3G390JG  | 39               | ±5                 | SL/GP      |   |
| ECCT3G470JG   | 47           | ±5               | SL/GP              |            |   |
| 3 kVDC        | ECCT3F100JG  | 10               | ±5                 | SL/GP      |   |
|               | ECCT3F120JG  | 12               | ±5                 | SL/GP      |   |
|               | ECCT3F150JG  | 15               | ±5                 | SL/GP      |   |
|               | ECCT3F180JG  | 18               | ±5                 | SL/GP      |   |
|               | ECCT3F220JG  | 22               | ±5                 | SL/GP      |   |
|               | ECCT3F270JG  | 27               | ±5                 | SL/GP      |   |
|               | ECCT3F330JG  | 33               | ±5                 | SL/GP      |   |
|               | ECCT3F390JG  | 39               | ±5                 | SL/GP      |   |
| 2 kVDC        | ECCT3F470JG  | 47               | ±5                 | SL/GP      |   |
|               | ECCT3F560JG  | 56               | ±5                 | SL/GP      |   |
|               | ECCT3D680JG  | 68               | ±5                 | SL/GP      |   |
|               | ECKT3D101KB  | 100              | ±10                | B/Y5P      |   |
|               | ECKT3D121KB  | 120              | ±10                | B/Y5P      |   |
|               | ECKT3D151KB  | 150              | ±10                | B/Y5P      |   |
|               | ECKT3D181KB  | 180              | ±10                | B/Y5P      |   |
| 1 kVDC        | ECKT3D221KB  | 220              | ±10                | B/Y5P      |   |
|               | ECKT3D271KB  | 270              | ±10                | B/Y5P      |   |
|               | ECKT3D331KB  | 330              | ±10                | B/Y5P      |   |
|               | ECKT3A391KB  | 390              | ±10                | B/Y5P      |   |
|               | ECKT3A471KB  | 470              | ±10                | B/Y5P      |   |

Notes \* This Part Number indicates Taped type, Bulk type is indicated for ECCS..... or ECKS.....  
 \* Capacitance 9pF or under is available on special order.  
 \* Style code 2 (Outside kinked terminal) is available for rated voltage 4kVDC

### NEW

#### ● Rated Voltage 4 kVDC Smaller Size

| Rated Voltage | Part Number  | Capacitance (pF) | Cap. Tolerance (%) | Temp. Char | Style  |
|---------------|--------------|------------------|--------------------|------------|--|
| 4 kVDC        | ECCT3G100JG2 | 10               | ±5                 | SL/GP      | Style 3<br>5.7L×4.5W×2.3H mm<br>Inside kink terminal |
|               | ECCT3G120JG2 | 12               | ±5                 | SL/GP      |  |
|               | ECCT3G150JG2 | 15               | ±5                 | SL/GP      |  |
|               | ECCT3G180JG2 | 18               | ±5                 | SL/GP      |  |
|               | ECCT3G220JG2 | 22               | ±5                 | SL/GP      |  |

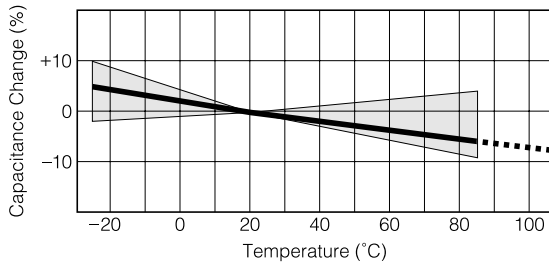
Notes \* This Part Number indicates Taped type, Bulk type is indicated for ECCS3G.....JG2  
 \* Capacitance 9pF or under is available on special order.

### ■ Typical Characteristics

#### ● Temperature Characteristics

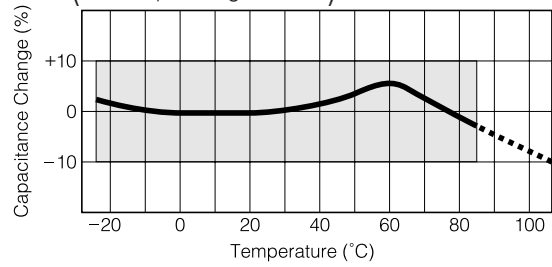
Char. SL/GP

(Temp.Coeff.: +350 to -1000 ppm/°C)



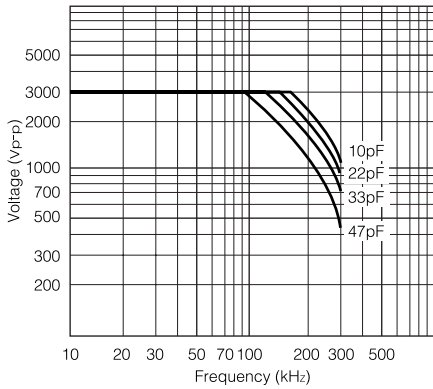
Char. B/Y5P

(Temp.Range: -25 to 85 °C)  
(max.Cap.Change: ±10 %)

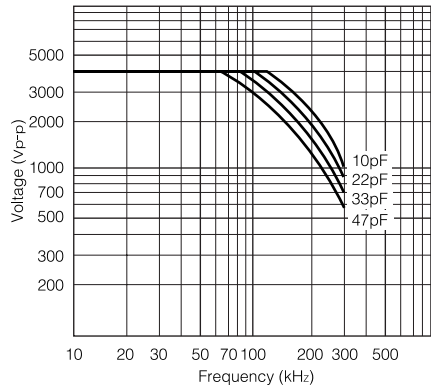


#### ● Characteristics of Voltage-Frequency

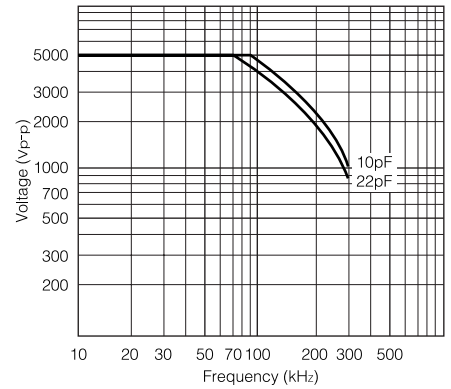
Rated Voltage 3kVDC



Rated Voltage 4kVDC

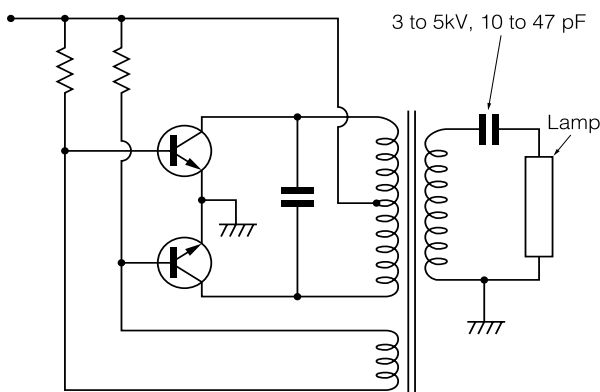


Rated Voltage 5kVDC



### ■ Example Applications

#### ● LCD Backlighting Inverter



#### ● Primary circuit and Snubber circuit of Switching Power Supply

