

## IGBT Snubber Protection Capacitor C33



### Characteristics

- PET tape wrapping, epoxy resin sealing
- Axial leads with tinned copper wire
- Resistance to high voltage, low dissipation factor
- Low ESL and ESR
- High pulse current ,high dv/dt

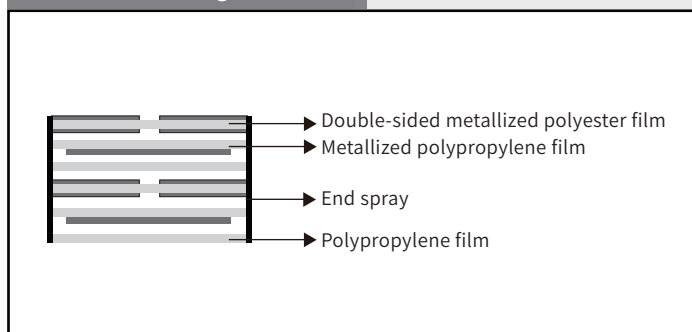
### Application

- IGBT Snubber circuit; IGBT Snubber equipment
- Widely used in power electronic equipment UPS, inverter, induction heater, welding machine for protect and absorb peak current and peak voltage.

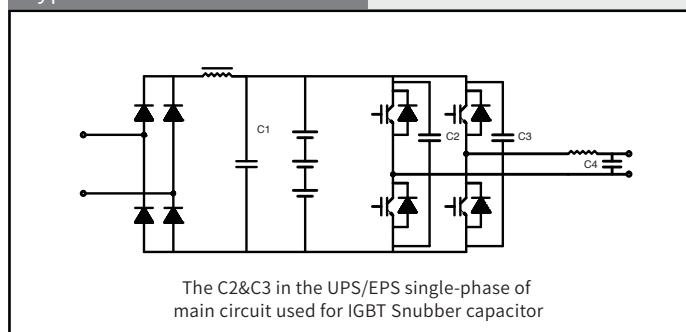
### Technical Data

|                               |   |
|-------------------------------|---|
| • Reference standard          | IEC61071 .GB/T17702   |
| • Operating temperature range | -40°C~+70°C Tmax+85°C   |
| • Capacitance range           | 0.1μF ~5.0μF  |
| • Rated voltage               | 700VDC~3000VDC  |
| • Capacitance tolerance       | ±5%(J); ±10%(K)   |
| • Withstand voltage           | 1.5Un DC/10S  |
| • Dissipation factor          | $tg\delta \leq 0.0005$ $C \leq 1\mu F$ $f=10KHz$ at 20°C        |
|                               | $tg\delta \geq 0.0010$ $C \geq 1\mu F$ $f=10KHz$ at 20°C        |
| • Insulation resistance       | $C \leq 0.33\mu F$ $R_s \geq 30000M\Omega$ (at 20°C 100VDC 60S) |
|                               | $C > 0.33\mu F$ $R_s C \geq 10000S$ (at 20°C 100VDC 60S)        |
| • Flame retardation           | UL94V-0   |
| • Life expectancy             | 100000hrs ( Un hotspot $\leq 70^\circ C$ )                      |

### Construction Diagram



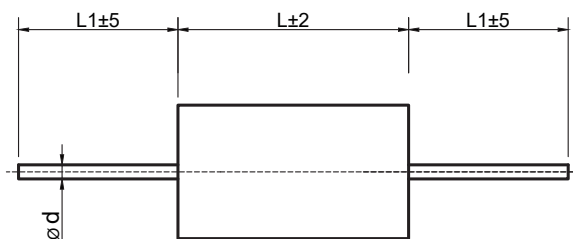
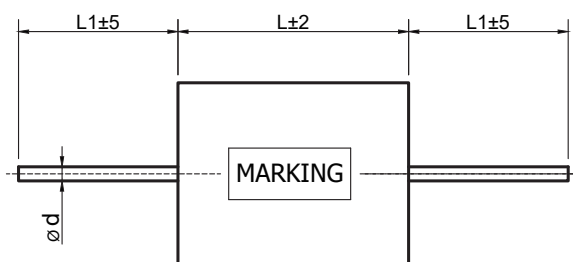
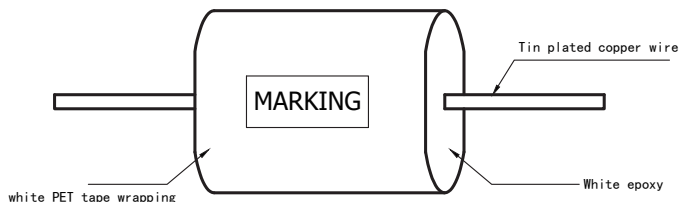
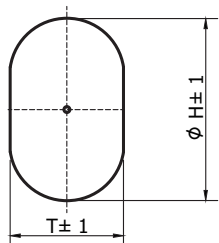
### Typical Circuit



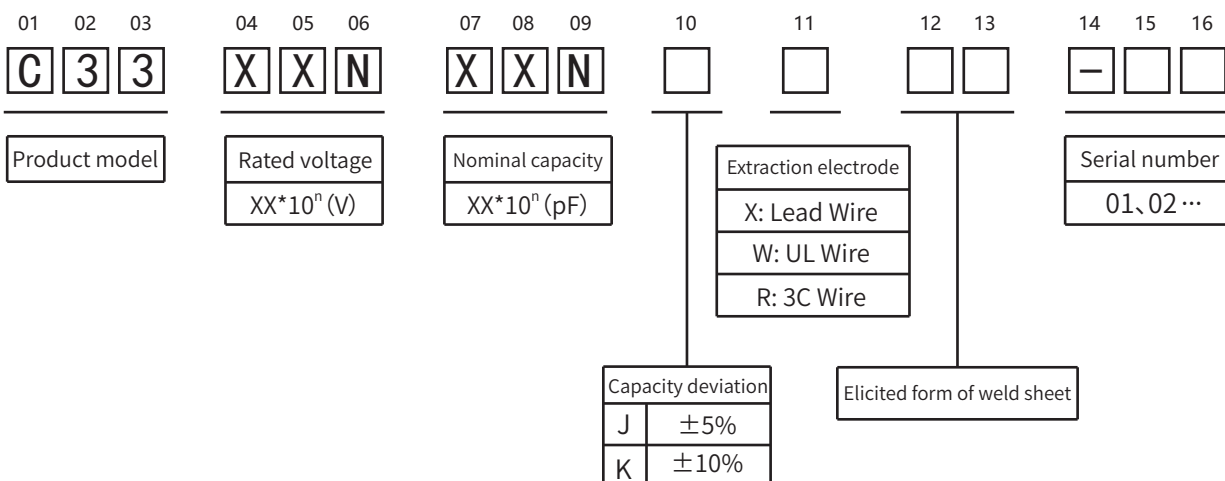
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IGBT Snubber Protection Capacitor

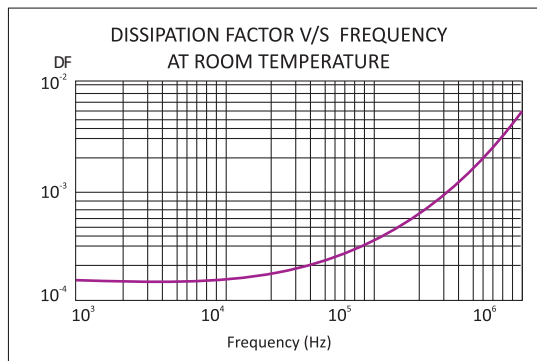
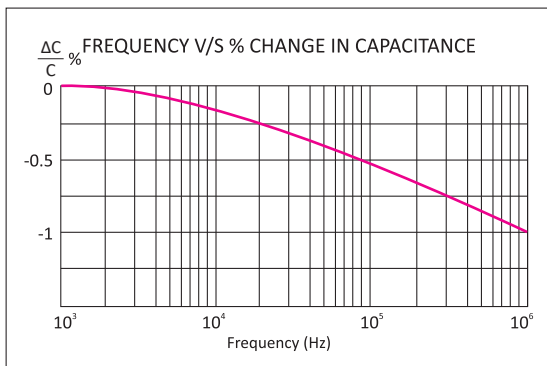
Product shape



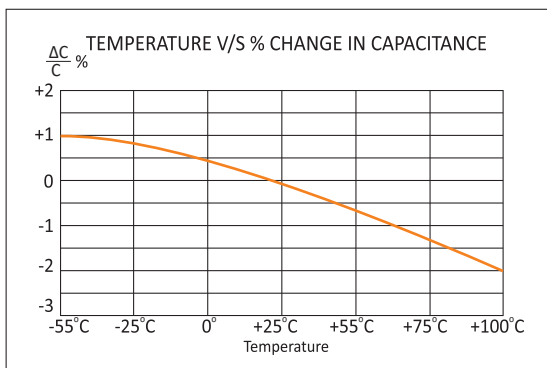
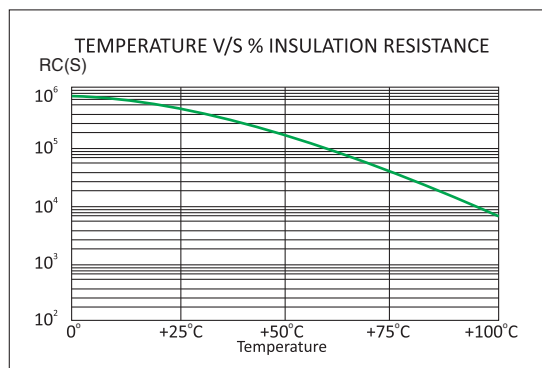
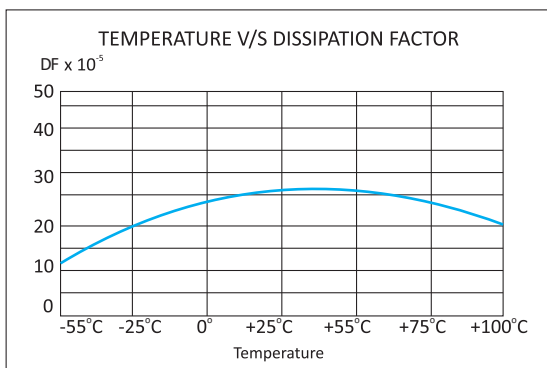
Product Coding



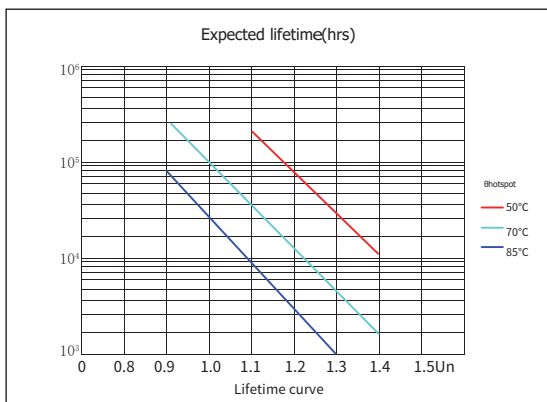
### Temperature Characteristics



### Frequency Characteristics



### Life Expectancy



### Article Table

| Part Number                                    | CAP<br>μF | Dimension (mm) |      |      |     | dv/dt<br>(V/μs) | Ipeak<br>(A) | Irms<br>@100KHz70℃<br>(A) | ESL<br>(nH) | ESR<br>@100KHz20℃<br>(mΩ) |
|--|-----------|----------------|------|------|-----|-----------------|--------------|---------------------------|-------------|---------------------------|
|  |           | L              | T    | H    | d   |                 |              |                           |             |                           |
| U <sub>N</sub> 700VDC Urms 380VAC Upk 1000VDC  |           |                |      |      |     |                 |              |                           |             |                           |
| C33701334JX08***                               | 0.33      | 32.0           | 9.5  | 17.5 | 0.8 | 200             | 66           | 6.0                       | 22          | 14                        |
| C33701474JX08***                               | 0.47      | 32.0           | 12.0 | 20.0 | 0.8 | 180             | 84.6         | 8.0                       | 21          | 12                        |
| C33701684JX10***                               | 0.68      | 32.0           | 15.0 | 23.0 | 1.0 | 180             | 122.4        | 9.0                       | 20          | 11                        |
| C33701105JX12***                               | 1.0       | 44.0           | 14.0 | 22.0 | 1.2 | 150             | 150          | 8.5                       | 30          | 7.5                       |
| C33701155JX12***                               | 1.5       | 44.0           | 16.5 | 27.5 | 1.2 | 150             | 225          | 10                        | 28          | 7.0                       |
| C33701205JX12***                               | 2.0       | 44.0           | 20.0 | 31.0 | 1.2 | 130             | 260          | 12                        | 25          | 6.0                       |
| C33701225JX12***                               | 2.2       | 44.0           | 21.0 | 32.0 | 1.2 | 120             | 264          | 13                        | 25          | 6.0                       |
| C33701255JX12***                               | 2.5       | 44.0           | 22.5 | 33.5 | 1.2 | 120             | 300          | 13.5                      | 24          | 5.5                       |
| C33701305JX12***                               | 3.0       | 44.0           | 25.0 | 36.0 | 1.2 | 110             | 330          | 14.0                      | 23          | 5.0                       |
| C33701355JX12***                               | 3.5       | 57.0           | 22.0 | 33.0 | 1.2 | 110             | 385          | 14.2                      | 32          | 4.5                       |
| C33701475JX12***                               | 4.7       | 57.0           | 26.0 | 37.0 | 1.2 | 180             | 846          | 14.8                      | 32          | 3.8                       |
| C33701565JX12***                               | 5.6       | 57.0           | 28.0 | 40.0 | 1.2 | 180             | 1008         | 15.0                      | 32          | 3.5                       |
| U <sub>N</sub> 1000VDC Urms 480VAC Upk 1400VDC |           |                |      |      |     |                 |              |                           |             |                           |
| C33102104JX08***                               | 0.1       | 32.0           | 8.0  | 12.5 | 0.8 | 1100            | 110          | 4.0                       | 20          | 25                        |
| C33102154JX08***                               | 0.15      | 32.0           | 9.0  | 15.5 | 0.8 | 1100            | 165          | 5.0                       | 21          | 20                        |
| C33102224JX10***                               | 0.22      | 32.0           | 11.0 | 19.0 | 1.0 | 1000            | 220          | 7.0                       | 21          | 15                        |
| C33102334JX10***                               | 0.33      | 32.0           | 14.0 | 22.0 | 1.0 | 1000            | 330          | 8.5                       | 21          | 13                        |
| C33102474JX10***                               | 0.47      | 32.0           | 16.0 | 27.0 | 1.0 | 1000            | 470          | 10.5                      | 23          | 11                        |
| C33102684JX10***                               | 0.68      | 44.0           | 14.5 | 26.0 | 1.0 | 900             | 612          | 10.2                      | 25          | 6.0                       |
| C33102105JX12***                               | 1.0       | 44.0           | 18.5 | 30.0 | 1.2 | 850             | 850          | 11.0                      | 27          | 5.6                       |
| C33102155JX12***                               | 1.5       | 44.0           | 24.0 | 35.0 | 1.2 | 850             | 1275         | 12.0                      | 29          | 5.0                       |
| C33102205JX12***                               | 2.0       | 57.0           | 22.5 | 34.0 | 1.2 | 600             | 1200         | 12.8                      | 32          | 4.8                       |
| C33102225JX12***                               | 2.2       | 57.0           | 24.0 | 35.0 | 1.2 | 500             | 1100         | 13.5                      | 32          | 4.2                       |
| C33102305JX12***                               | 3.0       | 57.0           | 28.5 | 40.0 | 1.2 | 480             | 1440         | 15.6                      | 34          | 3.5                       |
| C33102335JX12***                               | 3.3       | 57.0           | 33.0 | 40.0 | 1.2 | 450             | 1485         | 16.5                      | 36          | 3.2                       |
| U <sub>N</sub> 1200VDC Urms 500VAC Upk 1600VDC |           |                |      |      |     |                 |              |                           |             |                           |
| C33122683JX08***                               | 0.068     | 32.0           | 7.0  | 11.5 | 0.8 | 1300            | 88.4         | 4.5                       | 18          | 25                        |
| C33122104JX08***                               | 0.1       | 32.0           | 8.5  | 13.5 | 0.8 | 1200            | 120          | 6.0                       | 20          | 20                        |
| C33122154JX10***                               | 0.15      | 32.0           | 9.5  | 17.5 | 1.0 | 1200            | 180          | 7.5                       | 20          | 18                        |
| C33122224JX10***                               | 0.22      | 32.0           | 12.5 | 20.5 | 1.0 | 1200            | 264          | 8.3                       | 22          | 15                        |
| C33122334JX10***                               | 0.33      | 32.0           | 15.5 | 23.5 | 1.0 | 1200            | 363          | 9.0                       | 23          | 12                        |
| C33122474JX10***                               | 0.47      | 44.0           | 14.5 | 22.5 | 1.0 | 1100            | 517          | 9.8                       | 26          | 9.0                       |
| C33122684JX12***                               | 0.68      | 44.0           | 16.5 | 27.5 | 1.2 | 1000            | 680          | 11.7                      | 27          | 6.0                       |
| C33122105JX12***                               | 1.0       | 44.0           | 21.0 | 32.5 | 1.2 | 1000            | 1000         | 12.4                      | 28          | 5.0                       |
| C33122155JX12***                               | 1.5       | 44.0           | 27.0 | 38.0 | 1.2 | 950             | 1425         | 13.5                      | 30          | 5.0                       |
| C33122205JX12***                               | 2.0       | 57.0           | 25.5 | 36.5 | 1.2 | 750             | 1500         | 13.8                      | 30          | 4.8                       |
| C33122225JX12***                               | 2.2       | 57.0           | 27.0 | 38.0 | 1.2 | 700             | 1540         | 14.5                      | 35          | 4.2                       |

The above table / graphics are for reference only, subject to the actual product (unit: mm)

### Article Table

| Part Number                                    | CAP<br>μF | Dimension (mm) |      |      |     | dv/dt<br>(V/μs) | I <sub>peak</sub><br>(A) | I <sub>rms</sub><br>@100KHz70°C<br>(A) | ESL<br>(nH) | ESR<br>@100KHz20°C<br>(mΩ) |
|--|-----------|----------------|------|------|-----|-----------------|--------------------------|--|-------------|----------------------------|
|  |           | L              | T    | H    | d   |                 |                          |  |             |                            |
| U <sub>N</sub> 1600VDC Urms 500VAC Upk 2000VDC |           |                |      |      |     |                 |                          |  |             |                            |
| C33162473JX08***                               | 0.047     | 32.0           | 7.5  | 13.5 | 0.8 | 1500            | 70.5                     | 4.5                                    | 25          | 25                         |
| C33162683JX08***                               | 0.068     | 32.0           | 8.5  | 17.0 | 0.8 | 1500            | 102                      | 6.0                                    | 25          | 22                         |
| C33162104JX10***                               | 0.1       | 32.0           | 11.0 | 19.0 | 0.8 | 1300            | 130                      | 7.5                                    | 25          | 18                         |
| C33162154JX10***                               | 0.15      | 32.0           | 14.5 | 22.5 | 1.0 | 1200            | 180                      | 8.5                                    | 24          | 16                         |
| C33162224JX10***                               | 0.22      | 32.0           | 16.5 | 28.5 | 1.0 | 1200            | 264                      | 9.3                                    | 24          | 15                         |
| C33162334JX10***                               | 0.33      | 44.0           | 15.5 | 26.5 | 1.0 | 1100            | 363                      | 10.2                                   | 29          | 12                         |
| C33162474JX12***                               | 0.47      | 44.0           | 19.5 | 32.5 | 1.2 | 1000            | 470                      | 11.2                                   | 28          | 9.0                        |
| C33162684JX12***                               | 0.68      | 44.0           | 24.5 | 35.5 | 1.2 | 1000            | 680                      | 11.7                                   | 27          | 8.0                        |
| C33162105JX12***                               | 1.0       | 44.0           | 31.0 | 42.0 | 1.2 | 900             | 900                      | 12.4                                   | 26          | 5.6                        |
| C33162125JX12***                               | 1.2       | 57.0           | 27.5 | 38.5 | 1.2 | 800             | 960                      | 12.5                                   | 35          | 5.5                        |
| U <sub>N</sub> 2000VDC Urms 630VAC Upk 2500VDC |           |                |      |      |     |                 |                          |  |             |                            |
| C33202223JX08***                               | 0.022     | 32.0           | 5.5  | 12.0 | 0.8 | 1800            | 39.6                     | 3.0                                    | 25          | 34                         |
| C33202333JX08***                               | 0.033     | 32.0           | 7.0  | 13.5 | 0.8 | 1800            | 59.4                     | 4.0                                    | 24          | 31                         |
| C33202473JX08***                               | 0.047     | 32.0           | 8.0  | 16.5 | 0.8 | 1500            | 70.5                     | 5.5                                    | 24          | 29                         |
| C33202683JX08***                               | 0.068     | 32.0           | 10.5 | 18.5 | 0.8 | 1500            | 102                      | 6.9                                    | 23          | 25                         |
| C33202104JX10***                               | 0.1       | 32.0           | 13.0 | 21.5 | 1.0 | 1500            | 150                      | 8.2                                    | 22          | 18                         |
| C33202154JX10***                               | 0.15      | 44.0           | 12.5 | 20.5 | 1.0 | 1200            | 180                      | 8.5                                    | 31          | 16                         |
| C33202224JX10***                               | 0.22      | 44.0           | 15.5 | 23.5 | 1.0 | 1100            | 242                      | 9.0                                    | 31          | 15                         |
| C33202334JX12***                               | 0.33      | 44.0           | 18.5 | 30.0 | 1.2 | 1100            | 363                      | 10.2                                   | 30          | 12                         |
| C33202474JX12***                               | 0.47      | 44.0           | 23.5 | 34.5 | 1.2 | 1100            | 517                      | 12.4                                   | 29          | 10                         |
| C33202684JX12***                               | 0.68      | 57.0           | 23.0 | 34.0 | 1.2 | 1000            | 680                      | 14.2                                   | 27          | 8.0                        |
| C33202105JX12***                               | 1.0       | 57.0           | 29.0 | 40.0 | 1.2 | 950             | 950                      | 14.5                                   | 31          | 6.0                        |
| U <sub>N</sub> 3000VDC Urms 750VAC Upk 3500VDC |           |                |      |      |     |                 |                          |  |             |                            |
| C33302682JX08***                               | 0.0068    | 32.0           | 5.0  | 10.0 | 0.8 | 3000            | 20.4                     | 2.3                                    | 18          | 33                         |
| C33302103JX08***                               | 0.01      | 32.0           | 6.0  | 12.5 | 0.8 | 3000            | 30                       | 3.0                                    | 18          | 27                         |
| C33302223JX08***                               | 0.022     | 32.0           | 8.5  | 16.5 | 0.8 | 2500            | 55                       | 5.5                                    | 19          | 24                         |
| C33302333JX10***                               | 0.033     | 32.0           | 11.0 | 19.0 | 1.0 | 2500            | 82.5                     | 7.0                                    | 19          | 22                         |
| C33302473JX10***                               | 0.047     | 32.0           | 14.0 | 21.5 | 1.0 | 2000            | 94                       | 8.5                                    | 20          | 20                         |
| C33302683JX10***                               | 0.068     | 44.0           | 12.5 | 21.0 | 1.0 | 1800            | 122.4                    | 10.5                                   | 20          | 18                         |
| C33302104JX12***                               | 0.1       | 44.0           | 14.5 | 26.0 | 1.2 | 1500            | 150                      | 12.4                                   | 20          | 16                         |
| C33302224JX12***                               | 0.22      | 44.0           | 24.0 | 35.0 | 1.2 | 1200            | 264                      | 14.5                                   | 22          | 15                         |
| C33302334JX12***                               | 0.33      | 57.0           | 24.0 | 35.5 | 1.2 | 1200            | 396                      | 15.5                                   | 23          | 14.5                       |

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