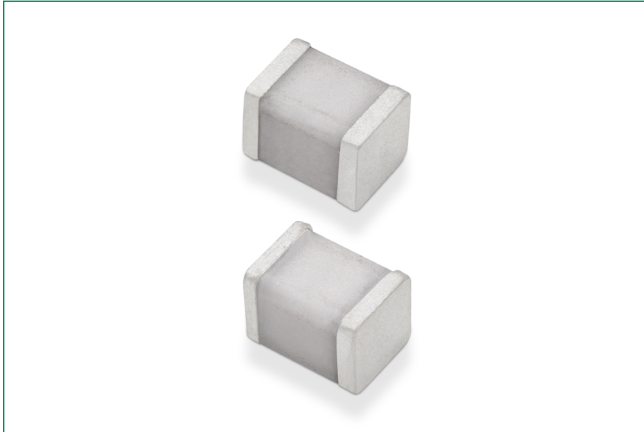


# SJ Series

## Gas Discharge Tubes



### Description

Littelfuse SJ series GDT offers high surge ratings in a miniature package. It's designed for surface mounting on PCB with small size 4.5x3.2x3.2mm. Low insertion loss is perfectly suited to broadband equipment applications. SJ series has very low capacitance and shows slight signal losses up to high frequencies in application of high frequency data lines.

### Features & Benefits

- RoHS compliant and Lead-free
- GHz working frequency
- Excellent stability on multiple pulse duty cycle
- Excellent response to fast rising transients.
- Ultra Low Insertion Loss
- 3-5KA surge capability tested with 8/20 $\mu$ S pulse
- Ultra small devices (EIA 1812)
- Non-Radioactive
- Low capacitance (<0.5pF)
- Voltage Ranges 90V to 1000V
- UL Recognized
- Conform to ITU-T Rec. K. 12; IEC 61643-311
- Square Outline

### Web Resources

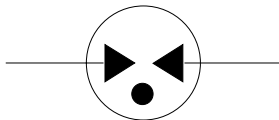


Download ECAD models, order samples, and find technical resources at [www.littelfuse.com](http://www.littelfuse.com)

### Agency Approvals

Agency	Agency File Number
	E302116

### 2 Electrode GDT Graphical Symbol



### Applications

- Communication equipment
- CATV equipment
- Test equipment
- Data lines
- Power supplies
- Telecom SLIC protection
- Broadband equipment
- ADSL equipment, including ADSL2+
- XDSL equipment
- Satellite and CATV equipment
- General telecom equipment

# SJ Series

## Gas Discharge Tubes

### Electrical Characteristics

Part Number	Device Specifications (at 25°C)								Life Ratings			
	DC Breakdown in Volts (@100V/s)			Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown In Volts (@1KV/μsec)	Insulation Resistance	Capacitance (@1MHz)	Arc Voltage (on state Voltage) @1Amp Min	Surge Life (@10A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Nominal AC Discharge Current (10x1sec @50Hz)	Max Impulse Discharge Current (2 Application @ 10/350μs)
	Min.	Typ.	Max.									
SJ90	72	90	108	500	600	1G Ohm	0.4pF	8V	300 shots	10 shots (@5kA), 300 shots (@100A)	5A	500A
SJ150	120	150	180	500	600	1G Ohm		9V				
SJ230	184	230	276	600	700	1G Ohm		10V				
SJ600	480	600	720	1000	1100	1G Ohm	0.5pF	20V	100 shots	15 shots (@3kA)	3A	
SJ800	640	800	960	1200	1300							
SJ1000	800	1000	1200	1400	1500							

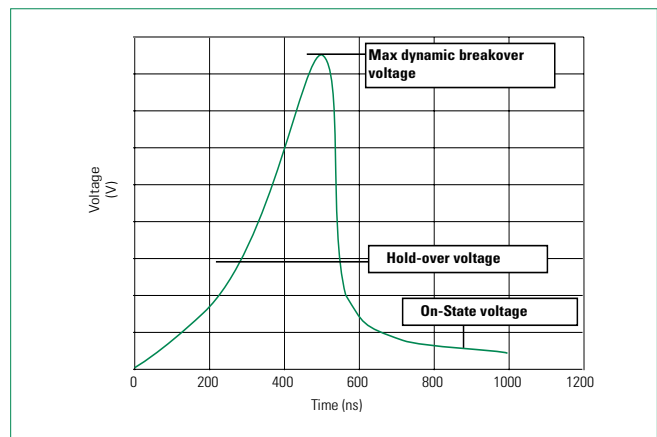
### Product Characteristics

<b>Materials</b>	Device Tin Plated 17.5±12.5 Microns Construction Ceramic Insulator.
<b>Storage and Operational Temperature</b>	-40 to +125 °C

### Typical Insertion Loss

@ 1.0 GHz = 0.01 dB
@ 1.4GHz = 0.1 dB
@ 1.8 GHz = 0.53 dB
@ 2.1 GHz = 0.81 dB
@ 2.45 GHz= 1 dB
@ 2.8 GHz = 1.2 dB
@ 3.1 GHz = 1.5 dB
@ 3.5 GHz = 2.1 dB

### Voltage vs. Time Characteristic

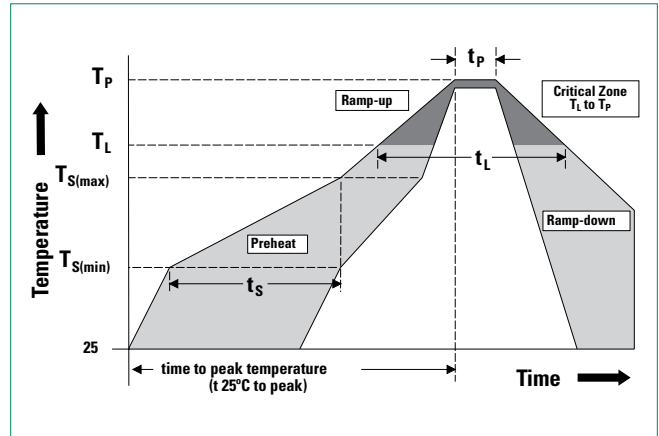


# SJ Series

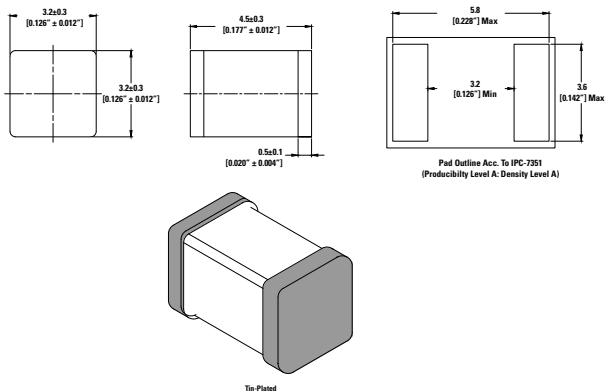
## Gas Discharge Tubes

### Soldering Parameters - Reflow Soldering (Surface Mount Devices)

<b>Reflow Condition</b>		Pb – Free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 180 secs
<b>Average ramp up rate (Liquidus Temp (<math>T_L</math>) to peak)</b>		3°C/second max
<b><math>T_{S(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>		5°C/second max
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_L$ )	60 – 150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>		260 <sup>+0/-5</sup> °C
<b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>		10 – 30 seconds
<b>Ramp-down Rate</b>		6°C/second max
<b>Time 25°C to peak Temperature (<math>T_p</math>)</b>		8 minutes Max.
<b>Do not exceed</b>		260°C



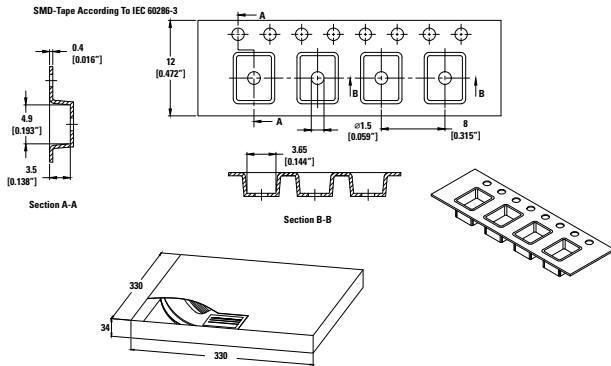
### Device Dimensions



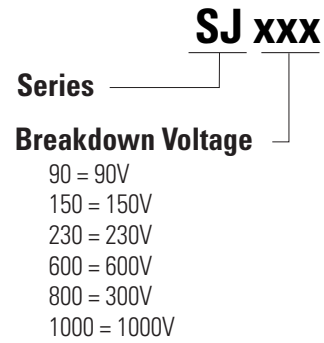
# SJ Series

## Gas Discharge Tubes

### Tape and Reel Dimensions (IEC 60286-3, dimension in mm)



### Part Numbering System and Ordering Information



### Packaging

Part Number and Device Type	Quantity and Packaging Description
SJxxx	Surface mount
	2200pcs/reel in tape and reel

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