

# SL1021A/B Series

## Gas Discharge Tubes



### Description

GDT circuit protection devices dissipate electrical surge energy safely within a contained plasma gas. Commonly used to help protect sensitive telecom and networking equipment and lines, GDTs protect from damage that may result from lightning strikes and equipment switching operations.

The Littelfuse GDT series described in this document are available in a variety of leaded and surface mount forms and offered with and without optional fail-safe clip. Please refer to the electrical specifications, dimension and packaging options section of this document for additional information.

#### SL1021A/B Series:

SL1021A/B series GDTs are designed to offer high levels of performance on fast rising transients in the range of 100V/μS to 1KV/μS, which are those most likely created by induced lightning disturbances.

These devices feature ultra low capacitance (typically 1.5pF or less) and are extremely robust with SL1021A devices able to divert a 10,000 Amp pulse without destruction, and SL1021B suffix devices able to divert a 20,000 Amp pulse without destruction.

These series offer optimized internal geometry which provide low insertion loss at high frequencies, ideal for the protection of broadband and other high speed transmission equipment.

### Additional Information



Resources  
SL1021A



Accessories  
SL1021A



Samples  
SL1021A



Resources  
SL1021B



Accessories  
SL1021B

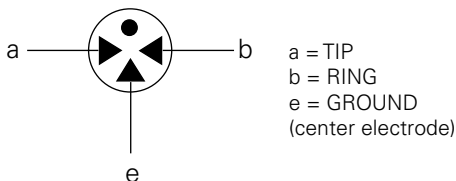


Samples  
SL1021B

### Agency Approvals

Agency	Agency File Number
	E128662

### 3 Electrode GDT Graphical Symbol



### Features

- RoHS compliant
- Low insertion loss
- Excellent response to fast rising transients
- Ultra low capacitance
- 10KA (A suffix devices) / 20KA (B suffix devices) surge capability tested with 8/20μs pulse as defined by IEC 61000-4-5
- Available with thermal failsafe option (add 'F' suffix to part number)

### Applications

#### SL1021:

- Broadband equipment
- ADSL equipment
- XDSL equipment
- Satellite and CATV equipment
- Splitters

- General telecom equipment
- Telecom network interfaces
- Telephone line cards
- Repeaters
- Modems
- Line test equipment

# SL1021A/B Series

## Gas Discharge Tubes

### Product Characteristics

<b>Materials</b>	Dull Tin Plate 17.5 ± 12.5 Microns. with ceramic insulator
<b>Product Marking</b>	'LF' mark, voltage & date code: SL1021A - <b>Red</b> /White text SL1021B - <b>Blue</b> /White text
<b>Glow to arc transition current</b>	~ 1Amp
<b>Glow Voltage</b>	~60-200 Volts
<b>Storage and Operation Temperature</b>	-40 to +90°C
<b>Transverse Voltage (Delay Time)</b>	< 0.2µSec (Tested to ITU-T Rec. K.12)
<b>Arc Voltage</b>	~10 to 35 Volts
<b>Holdover Voltage</b>	<150mS (Tested to ITU-T Rec. K.12)

### Electrical Characteristics

Part Number	Device Specifications (at 25°C)						Life Ratings						
	DC Voltage 100V/Sec.			DC Voltage 100 V/µSec.	DC Voltage 1kV/µSec.	Capacitance (@1Mhz)	Insulation Resistance MIN	AC Current 50Hz 1Sec. x10 <sup>1</sup>	Surge Current 8/20µSec x10 <sup>1</sup>	Max Single Surge 8/20µSec <sup>1</sup>	Max Single Surge 10/350µSec <sup>1</sup>	Surge Life 10/1000 µSecx300 <sup>1</sup>	
	MIN	TYP	MAX										
SL1021B075	60	75	90	500	650	<1.5pF	>10 <sup>10</sup> Ω (at 50V)	10Amps	10kA <sup>2</sup> 20kA <sup>3</sup>	15kA <sup>2</sup> 25kA <sup>3</sup>	2.5kA <sup>2</sup> 5kA <sup>3</sup>	200Amps	
SL1021A090	72	90	108		650								
SL1021B090	72	90	108		650								
SL1021A145	116	145	174		600								
SL1021B145	116	145	174		600								
SL1021A150	120	150	180		600								
SL1021B150	120	150	180		600								
SL1021A200	150	200	250		600								
SL1021A230	184	230	276		450								650
SL1021B230	184	230	276		450								650
SL1021A250	200	250	300	500	700								
SL1021B250	200	250	300	500	700								
SL1021A260	210	260	310	550	850								
SL1021B260	210	260	310	550	850								
SL1021A300	240	300	360	650	900								
SL1021B300	240	300	360	650	900								
SL1021A350	280	350	420	700	950								
SL1021B350	280	350	420	700	950								
SL1021A400	320	400	480	850	1000								
SL1021B400	320	400	480	850	1000								
SL1021A420	345	420	500	900	1100								
SL1021B420	345	420	500	900	1100								
SL1021A450	360	450	540	950	1200								
SL1021B450	360	450	540	950	1200								
SL1021A500	400	500	600	1000	1200								
SL1021B500	400	500	600	1000	1200								
SL1021A600	480	600	720	1000	1200								

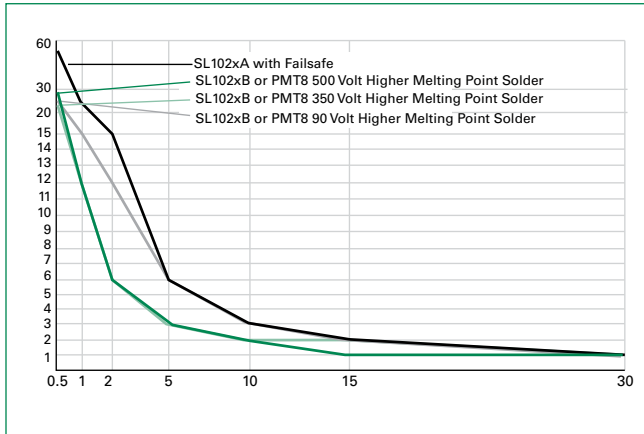
#### Notes:

- Total current through centre electrode, tested in accordance with ITU-T Rec. K.12
- SL1021A series
- SL1021B series

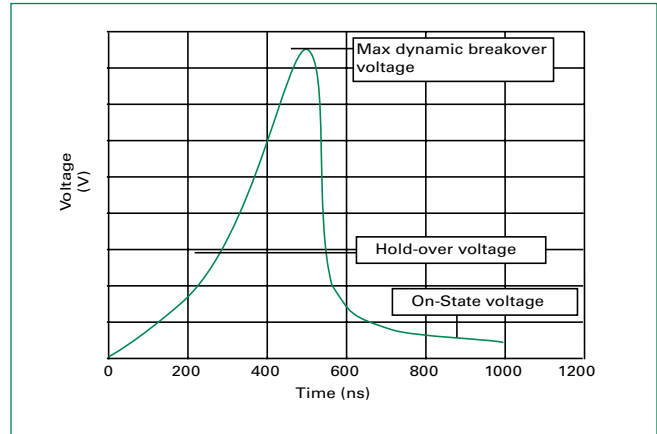
# SL1021A/B Series

## Gas Discharge Tubes

**Time vs. Current for Failsafe**

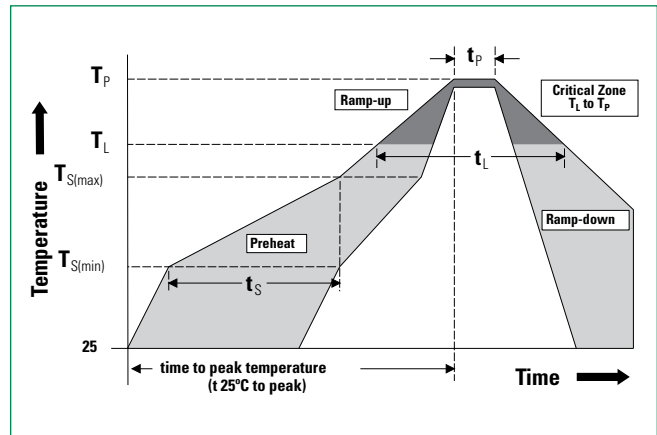


**Voltage vs. Time Characteristic**



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

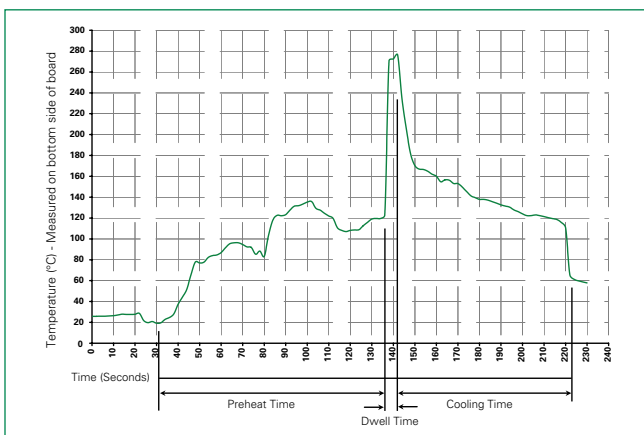
<b>Reflow Condition</b>	Pb – Free assembly	
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_p$ )	60 – 180 secs
<b>Average ramp up rate (Liquidus Temp (<math>T_L</math>) to peak)</b>	3°C/second max	
<b><math>T_{s(max)}</math> 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	



### Soldering Parameters - Hand Soldering

Solder Iron Temperature: 350° C +/- 5°C  
Heating Time: 5 seconds max.

### Soldering Parameters - Wave Soldering (Thru-Hole Devices)



### Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	280° C Maximum
Solder Dwell Time:	2-5 seconds

**Note:** Surge Arrestors with a Failsafe mechanism should be individually examined after soldering

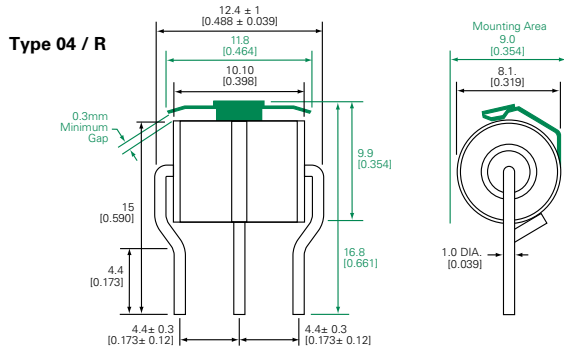
# SL1021A/B Series

## Gas Discharge Tubes

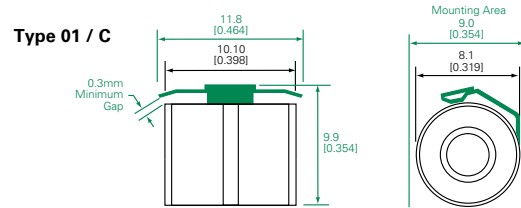
### Device Dimensions

**Note:** Failsafe option dimensions shown in green.

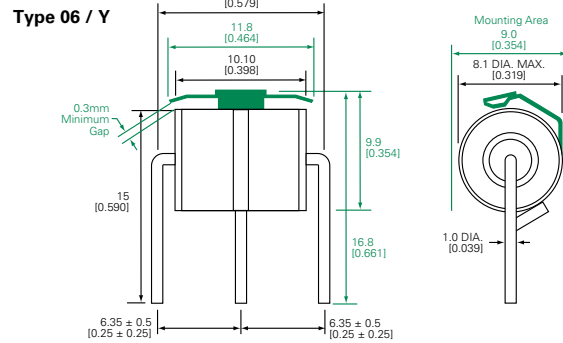
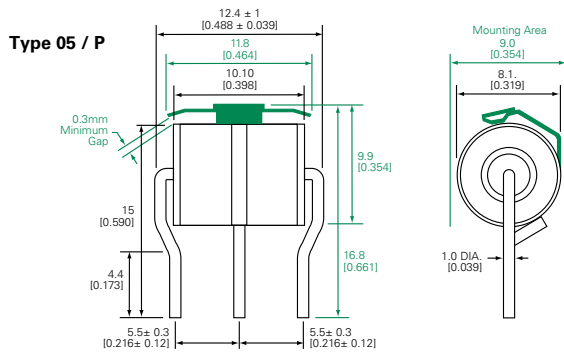
#### Shaped Radial Leaded Devices:



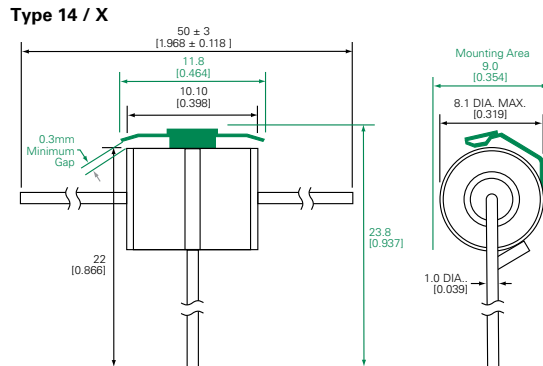
#### Core Devices:



#### Straight Radial Leaded Devices:



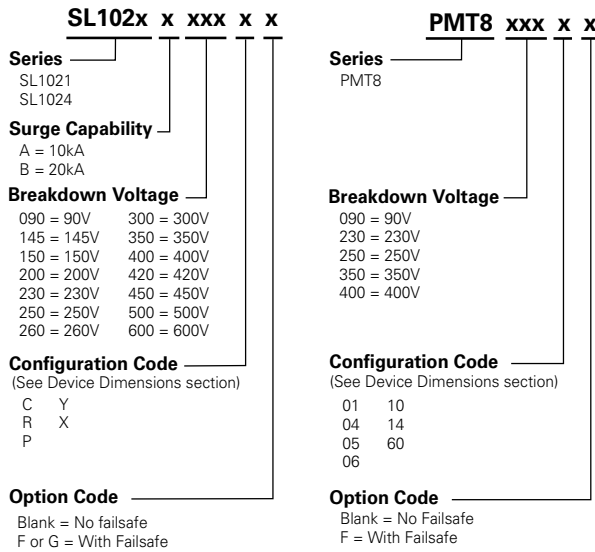
#### Straight "T" Leaded Devices:



# SL1021A/B Series

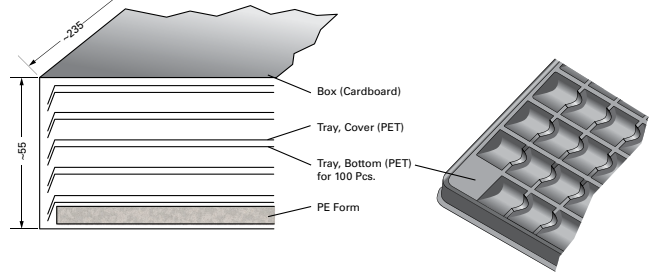
## Gas Discharge Tubes

### Part Numbering System and Ordering Information

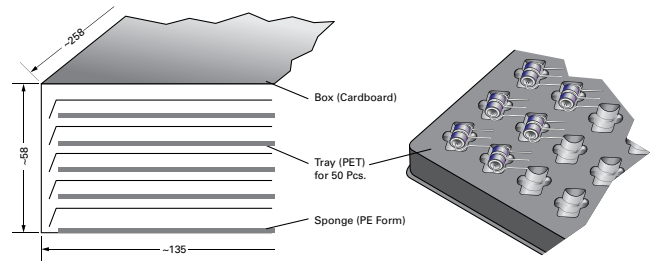


### Packaging

#### For 'SL1021A/B' device type C, R, P, Y packing



#### For 'SL1021A/B' device type X packing



Device Type	Description	Quantity
Type C	100pcs/tray x 5 trays per carton	500
Type R	100pcs/tray x 5 trays per carton	500
Type P	100pcs/tray x 5 trays per carton	500
Type Y	100pcs/tray x 5 trays per carton	500
Type X	50pcs/tray x 5 trays per carton	250

\* Please contact the factory for further packaging information.

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