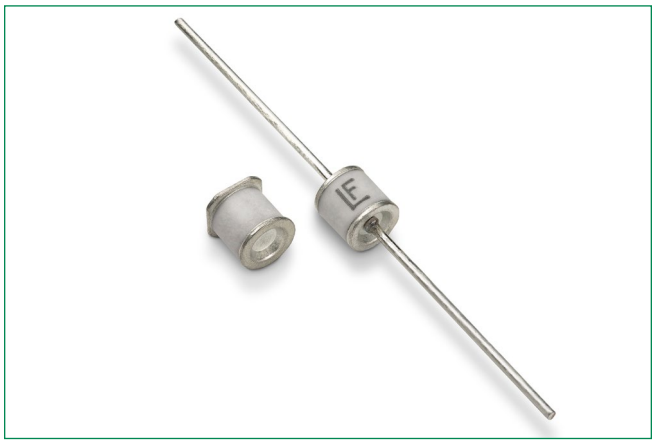
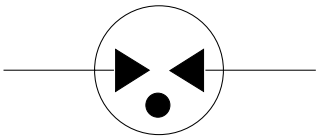
CG10 Series
Gas Discharge Tubes



Agency Approvals

Agency	Agency File Number
	E128662

Two Electrode GDT Graphical Symbol



Description

The Littelfuse highly reliable CG10 Series GDTs provide a high surge capability in a small size ideal for board level circuit protection.

GDTs function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection. Their gas-filled, rugged ceramic metal construction make them well suited to adverse environments.

The CG10 series comes different forms including surface mount, straight leads, to serve a variety of mounting methods.

Features

- High surge current rating
- Rugged ceramic-metal construction
- Low Capacitance (<1.0 pf)
- High operating temperature up to 125 °C
- Available in surface mount and axial straight leads options
- RoHS-compliant and lead-free

Applications

- Communication lines and equipment
- CATV equipment
- Test equipment
- Data lines
- Power supplies
- Instrumentation circuits
- Medical electronics
- ADSL equipment
- Telecom SLIC protection
- Alarm system

Electrical Characteristics

Part Number	Device Specifications (at 25 °C)								Life Rating			
	DC Breakdown in Volts (@100 V/s)			Impulse Break-down In Volts (@100 V/µs)	Impulse Break-down In Volts (@1 kV/µs)	Insulation Resistance	Capa-citance (@1 MHz)	Arc Voltage (on state Voltage) @1Amp Min	Surge Life (@100A 10/1000µs)	Nominal Impulse Discharge Current (8/20µs)	Nominal AC Discharge Current (10x1sec @50Hz)	Max Impulse Discharge Current (1 Application @ 10/350 µs)
	MIN	TYP	MAX			MIN		TYP				
CG1090	72	90	108	500	600		<1 pF	10 V	300 shots	10 shots (@20 kA)	10 A	2.5 kA
CG10230	184	230	276	550	650	$10^{10}\Omega$ at 50VDC	<1 pF	10 V	300 shots	10 shots (@20 kA)	20 A	2.5 kA
CG10350	280	350	420	700	900		<1 pF	10 V	300 shots	10 shots (@20 kA)	20 A	2.5 kA
CG10470	376	470	564	1000	1100	$10^{9}\Omega$ at 100VDC	<1 pF	10 V	300 shots	10 shots (@20 kA)	20 A	2.5 kA
CG10600	480	600	720	1100	1400	$10^{10}\Omega$ at 100VDC	<1 pF	10 V	300 shots	10 shots (@20 kA)	20 A	2.5 kA
CG10800	640	800	960	1300	1500	$10^{10}\Omega$ at 100VDC	<1 pF	10 V	300 shots	10 shots (@20 kA)	20 A	1.5 kA
CG101000	800	1000	1200	1400	1500	$10^{9}\Omega$ at 100VDC	<1 pF	30 V	–	10 shots (@10 kA), 1 shot (@15 kA)	10 A	–

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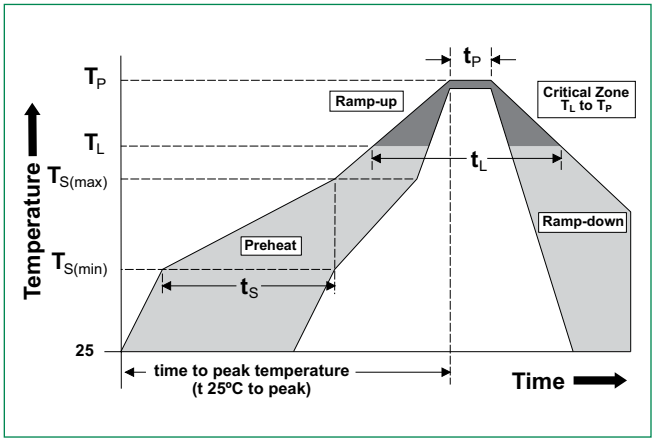
Product Characteristics

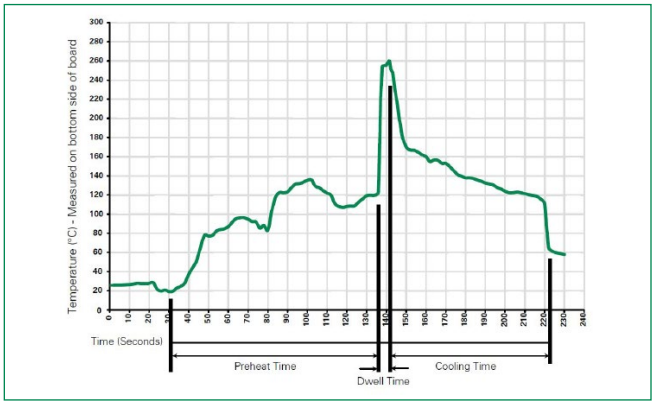
Materials	**LTR, Axial** Device: 17.5±12.5 Microns Lead Wires: 6-9 Microns **SM, SMD** Device: 17.5±12.5 Microns
Operating & Storage Temperature	-40 °C to 125 °C
Product Marking	LF Logo, Voltage and date code; Black ink positive print
Glow to arc transition current	<0.5 Amps
Glow Voltage	65 to 180 Volts
Storage & Operational Temperature	-40 to +125

Soldering Parameters - Reflow Soldering (Surface Mount Devices)

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



Soldering Parameters: Wave Soldering (Thru-Hole Devices)



Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flex 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

Recommended Hand-Solder Parameters:
Solder Iron Temperature: 350 °C +/- 5 °C
Heating Time: 5 seconds max.
Note: These devices are not recommended for IR or Convection Reflow process.

Soldering Parameters: Hand Soldering

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

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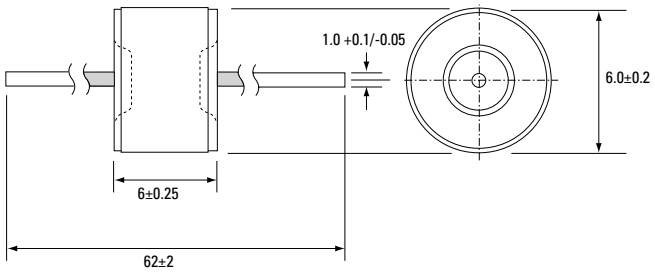
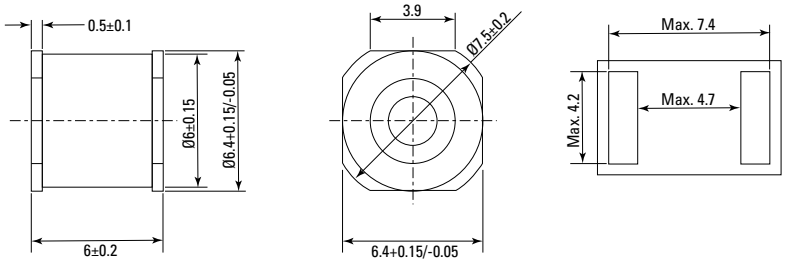
Device Dimensions

Leaded LTR Type Straight Axial Devices

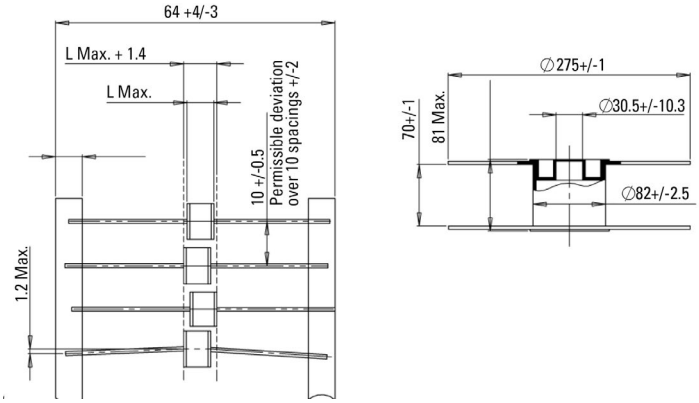


SM Type Devices

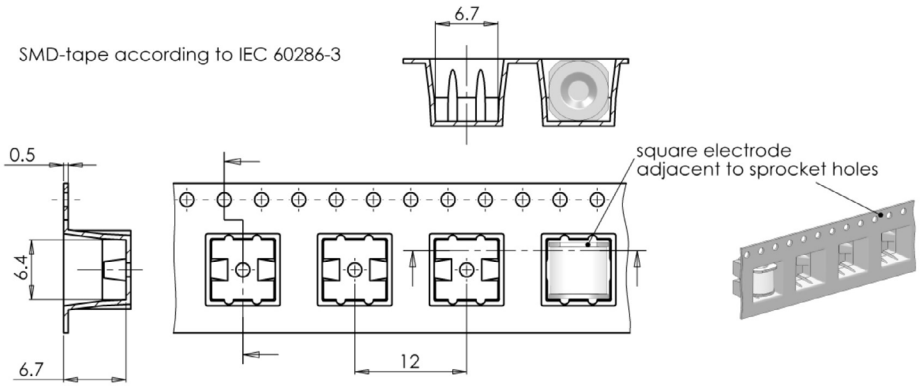


Packaging Dimensions

For LTR Type Axial Lead Items



For SM Type Items



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CG10 Series
Gas Discharge Tubes

Part Numbering System and Ordering Information

CG10 XXX XX

Series

Breakdown Voltage
- **90**
- **230**
- **350**
- **470**
- **600**
- **800**
- **1000**

Packaging Option Code

SM = Surface Mount
700 pcs on SMD tape, per IEC60286-3

LTR = Straight Lead, Tape and Reel
per IEC60286-1, 800 pcs per reel

Examples: **CG1090SM =** SMD 90 V device
CG1090LTR = LTR 90 V device

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