# Gas Discharge Tubes CG7 Series



RoHS

# CG7 Series



#### **Agency Approvals**

AGENCY	AGENCY AGENCY FILE NUMBER				
<b>71</b>	E128662				
<b>7</b> 1	E320116				

#### **Two Electrode GDT Graphical Symbol**



#### **Additional Information**







### Description

The Littelfuse CG7 series GDT is a miniature surface mount device with a 1kA 8/20µS surge rating. Its low insertion loss and thus low off-state capacitance makes it compatible with high bandwidth applications up to the GHz RF range. This GDT's crowbarring characteristic protects sensitive ICs from surges as defined in ITU K.20/21/45 Basic and Enhanced Recommendations, GR-1089-CORE first level lightning Port Type 1 and 3, and IEC 61000-4-5 2<sup>nd</sup> edition. It is hermetically sealed using non-radioactive materials Classes 1-3 and some Class 4 & 5 cases and is thus environmentally safe. Its 2.8mm diameter size makes it the world's smallest two-electrode single chamber GDT available.

### Features

- RoHS compliant and Lead-free
- Excellent Surge Withstanding Capability
- Excellent response to fast rising transients.
- Ultra Low Insertion Loss and low off-state capacitance for GHz bandwidth compatibility
- Ultra small devices offered in SMD package

- 1kA 8/20µS surge capability pulse as defined by IEC 61000-4-5 2<sup>nd</sup> edition
- Ultra Low capacitance (<0.3pF)
- Voltage Range 75V to 470V
- UL recognized

### Applications

- Set top box
- Cable Modem
- Embedded Multimedia Terminal Adapter (EMTA)
- RF Connector
- Multimedia over Coax Alliance (MoCA)
- Base Station RF antenna transmitter
- G.Fast 106MHz and 212 MHz bandplans compatible
- CATV/Broadband equipment

- Data lines and Ethernet (up to 10GbE)
- Telecom line protection
- Broadband equipment
- xDSL equipment, including ADSL2, ADSL, VDSL, VDSL2 30a bandplan compatible
- IAD (Integrated Access Device)
- Aerospace and Automotive



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#### **Electrical Characteristics**

	Device Specifications (at 25°C)						Life Ratings						
Part		Breakd in Volts @100V/s	S	Impulse Break- down in Volts (@100V/µs)	Impulse Break- down In Volts (@1kV/µs)	Insulation Resistance	Capaci- tance (@1MHz)	Max Impulse Discharge Current (8/20µs)	Max Impulse Discharge Current (10/700µs)	AC Dischage Current (9 cycle @50Hz)	DC Holdover Voltage (<150ms)	Impulse Life (8/20μs) (100A)	
Number	MIN	TYP	MAX	MAX		MIN	MAX			MIN		MIN	
CG775	60	75	90	600	700	1GΩ@50V				52V			
CG790	72	90	108	600	700	1976200					52V		
CG7120	96	120	144	600	700						80V		
CG7150	120	150	180	600	700	1GΩ@100V			10 Shots			80V	1
CG7200	160	200	240	600	700			0.2-f	(@1kA) 1	10 Shots	1A	135V	300
CG7230	186	230	276	600	700		0.3pf	1 Shot	(@ 100A/4kV) <sup>2</sup>	IA	135V	Shots	
CG7250	200	250	300	600	700				at 2kA			135V	1
CG7350	280	350	420	750	900						135V	1	
CG7400	360	400	480	850	1000						135V	]	
CG7470	376	470	564	900	1100	1GΩ@250V					135V	1	

Notes:

UL Pending for CG775 and CG7470.

1. 5 x (+) and 5 x (-) applications of 1kA 8/20 $\mu s$  sec.

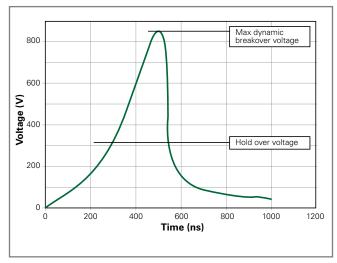
2. 5 x (+) and 5 x (-) applications of 100A 10/700 $\mu s$  sec.

#### **Product Characteristics**

Materials	Device Tin Plated 17.5 ± 12.5 Microns Construction: Ceramic Insulator			
Storage and Operational Temperature	-40 to +90°C			

@1.0GHz = 0.02dB
@1.4GHz = 0.03dB
@1.8GHz = 0.05dB
@2.0GHz = 0.06dB
@2.4GHz = 0.07dB
@2.8GHz = 0.08dB
@3.1GHz = 0.09dB
@3.5GHz = 0.10dB
@4.0GHz = 0.12dB

Voltage Vs. Time Characteristic

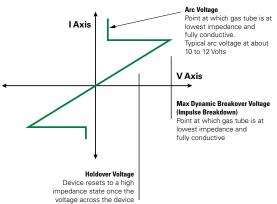


Note: Tested per 1kV/µs waveform

#### **V-I Characteristic Curve**

**Typical Insertion Loss** 

Characteristics of Gas Plasma -response to transient condition



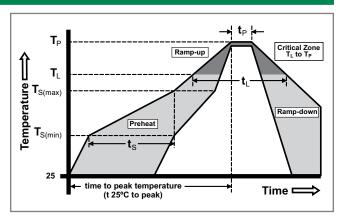
falls below this level.

Note: Insertion data for customer reference only, application testing needed for verification.



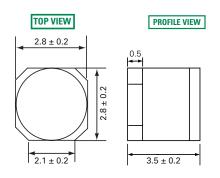
#### Soldering Parameters - Reflow Soldering (Surface Mount Devices)

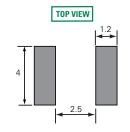
Reflow Co	ndition	Pb – Free assembly		
	-Temperature Min (T <sub>s(min)</sub> )	150°C		
Pre Heat	-Temperature Max (T <sub>s(max)</sub> )	200°C		
	-Time (Min to Max) (t <sub>s</sub> )	60 – 180 secs		
Average ra (T <sub>L</sub> ) to pea	amp up rate (LiquidusTemp k	3°C/second max		
T <sub>S(max)</sub> to T <sub>L</sub> - Ramp-up Rate		5°C/second max		
Reflow	-Temperature (T <sub>L</sub> ) (Liquidus)	217°C		
nellow	-Temperature (t <sub>L</sub> )	60 – 150 seconds		
PeakTemp	erature (T <sub>P</sub> )	260 <sup>+0/-5</sup> °C		
Time with Temperatu	in 5°C of actual peak ıre (t <sub>p</sub> )	10 – 30 seconds		
Ramp-dov	vn Rate	6°C/second max		
Time 25°C	to peakTemperature (T <sub>P</sub> )	8 minutes Max.		
Do not exc	ceed	260°C		



#### **Device Dimensions**

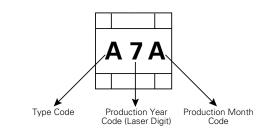
#### Dimensions in millimeters





Recommended Soldering Pad Layout

#### **Product Marking**



Type Code							
Α	CG775						
В	CG790						
Т	CG7120						
С	CG7150						
0	CG7200						
D	CG7230						
R	CG7250						
G	CG7350						
I	CG7400						
Р	CG7470						

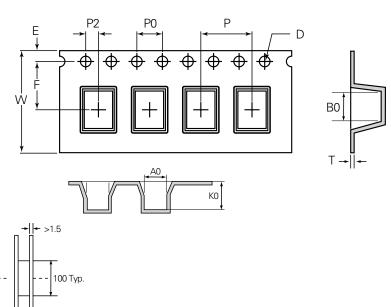
Month Code					
Α	January				
В	February				
С	March				
D	April				
E	May				
F	June				
G	July				
Н	August				
I	September				
J	October				
К	November				
L	December				



## Taping and Reel Specifications

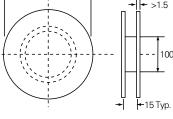
#### Unit = mm

ltem	Spec	ltem	Spec
Р	8.0 ± 0.1	Е	1.75 ± 0.1
P0	4.0 ± 0.1	D	1.50 + 0.1/-0.0
P2	2.0 ± 0.1	B0	3.9 ± 0.1
W	12.0 ± 0.3	K0	3.2 ± 0.1
F	5.5 ± 0.1	Т	0.4 ± 0.1
A0	3.2 ± 0.1	10P0	4.0 ± 0.2



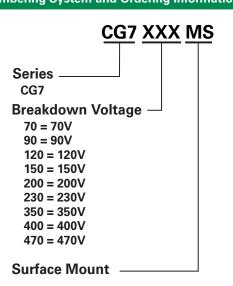
Packaging Quantity: 2500 pcs per reel (13") 1 reels per inner box 10 inners box per carton

25,000 pcs per full carton



330±4.0

Part Numbering System and Ordering Information



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