

CG7 Series



**Agency Approvals**

AGENCY	AGENCY FILE NUMBER
	E128662

**Two Electrode GDT Graphical Symbol**



**Description**

Littelfuse CG7 Series offers high surge ratings in a miniature surface mount package. Special design features provide high levels of protection against fast rising transients caused by lightning disturbances. These devices are extremely robust and are able to divert 1kA pulse without destruction.

Littelfuse CG7 mini Gas Tubes are specifically designed for protection of electrical, multimedia, and communication equipment against over voltage transients in surface mount assembly applications. This series offers the most cutting edge protection using non-radioactive elements. Low insertion loss is perfectly suited to broadband equipment applications.

**Features**

- 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
- 1kA surge capability tested with 8/20 $\mu$ S pulse as defined by IEC 61000-4-5
- Ultra small devices offered in SMD package
- Ultra Low capacitance (0.3pF)
- Voltage Ranges 75V to 470V
- UL recognized
- Conforms to ITU-T K12, IEC 61000-4-5

**Applications**

- Set top box
- Cable Modem
- Embedded Multimedia Terminal Adapter (EMTA)
- RF Connector
- RJ45 Connector
- Multimedia over Coax Alliance (MoCA)
- Antenna
- Coaxial Cable
- G.fast modem
- CATV equipment
- Data lines
- Telecom SLIC protection
- Broadband equipment
- ADSL equipment, including ADSL2+
- XDSL equipment
- IAD (Internet Access Device)

**Electrical Characteristics**

Part Number	Device Specifications (at 25°C)						Life Ratings					
	DC Breakdown in Volts (@100V/s)			Impulse Break-down in Volts (@100V/μs)	Impulse Break-down In Volts (@1kV/μsec)	Insulation Resistance	Capacitance (@1MHz)	Max Impulse Discharge Current (8x20μs)	Max Impulse Discharge Current (10x700μs)	AC Discharge Current (9 cycle @50Hz)	DC Holdover Voltage (<150ms)	Impulse Life (8x20μs) (100A)
	MIN	TYP	MAX	MAX		MIN	MAX			MIN		MIN
CG775	60	75	90	500	600	1GΩ@50V	0.3pf	±5 Shots (@1kA) <sup>1</sup> 1 Shot at 2kA	±5 Shots (@ 100A/4kV) <sup>2</sup>	1A	52V	300 Shots
CG790	72	90	108	500	600						52V	
CG7120	96	120	144	500	600	1GΩ@100V					80V	
CG7150	120	150	180	500	600						80V	
CG7200	160	200	240	600	700						135V	
CG7230	186	230	276	600	700						135V	
CG7250	200	250	300	600	700						135V	
CG7350	280	350	420	600	800						135V	
CG7400	360	400	480	700	800						135V	
CG7470	376	470	564	800	1000						1GΩ@250V	

Notes:  
 UL Pending for CG775 and CG7470.  
 1. 5 x (+) and 5 x (-) applications of 1kA 8x20μs sec.  
 2. 5 x (+) and 5 x (-) applications of 100A 10x700μs sec.

**Product Characteristics**

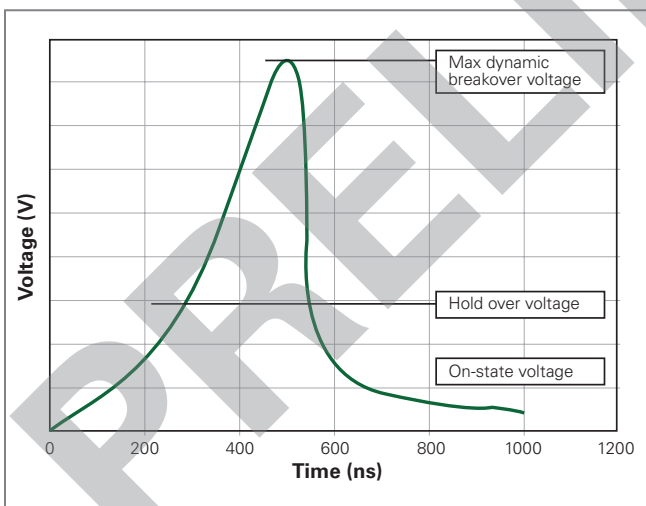
<b>Materials</b>	Device Tin Plated 17.5 ± 12.5 Microns Construction: Ceramic Insulator
<b>Storage and Operational Temperature</b>	-40 to +90°C

**Typical Insertion Loss**

@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

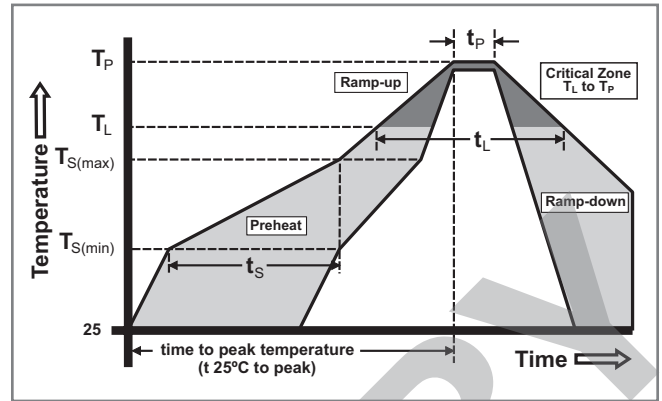
Note: Insertion data for customer reference only, application testing needed for verification.

**Voltage Vs. Time Characteristic**

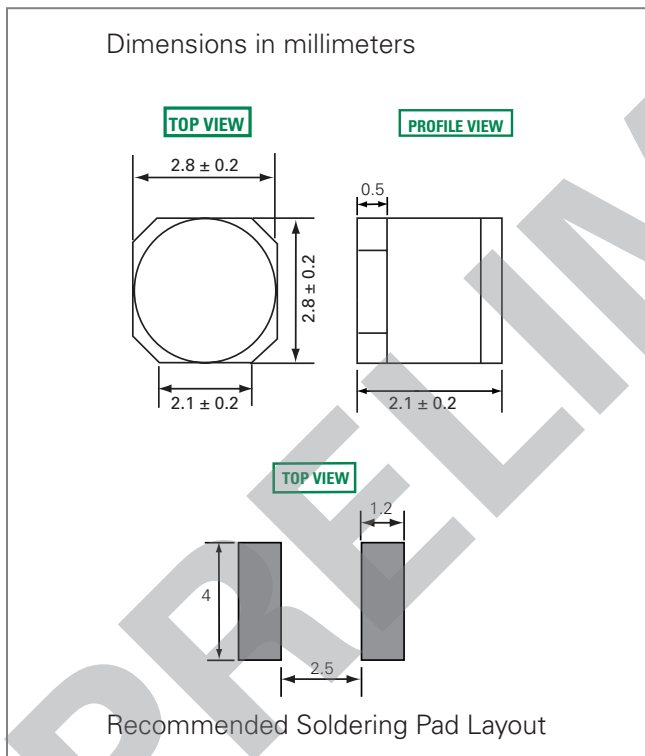


### Soldering Parameters - Reflow Soldering (Surface Mount Devices)

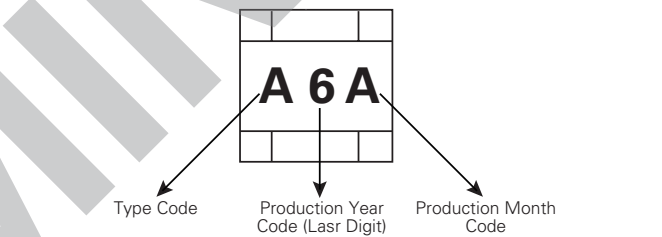
Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		5°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260 <sup>+0/-5</sup> °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



### Device Dimensions



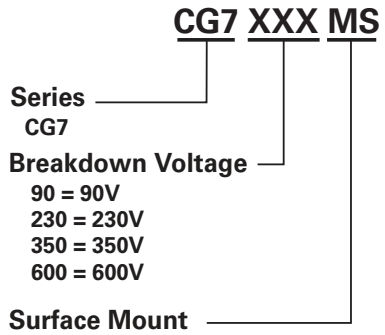
### Product Marking



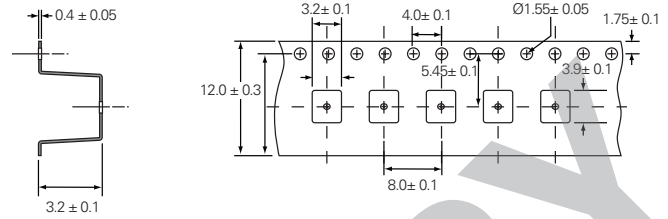
Type Code	
A	CG775
B	CG790
T	CG7120
C	CG7150
O	CG7200
D	CG7230
R	CG7250
G	CG7350
I	CG7400
P	CG7470

Month Code	
A	January
B	February
C	March
D	April
E	May
F	June
G	July
H	August
I	September
J	October
K	November
L	December

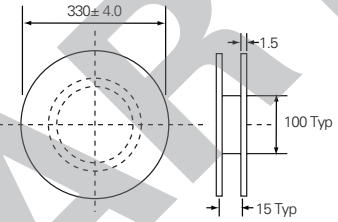
**Part Numbering System and Ordering Information**



**Taping and Reel Specifications**



**Packaging Quantity:**  
2500 pcs per reel  
3 reels per inner box  
5 inners box per carton  
37,500 pcs per full carton



PRELIMINARY