

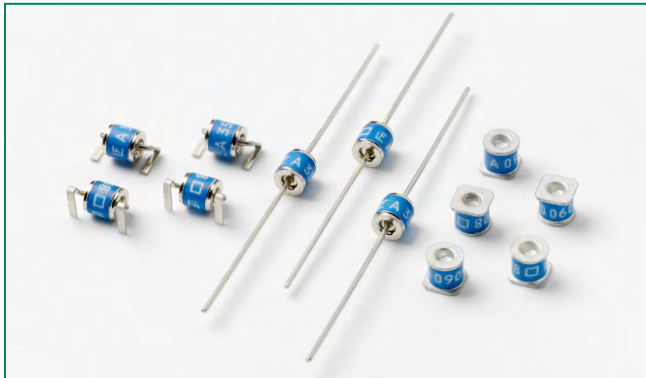
## 阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

## Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

CG5 and SL0902A Series



**Description**

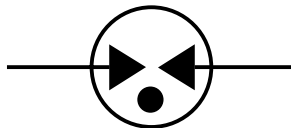
Littelfuse Broadband Optimized™ SL0902A Series offers high surge ratings in a miniature package. Special design features provide high levels of protection against fast rising transients in the 100V/μs to 1kV/μs range usually caused by lightning disturbances. Low insertion loss is perfectly suited to broadband equipment applications. The capacitance does not vary with voltage, and will not cause operational problems with ADSL2+, where capacitance variation across Tip and Ring is undesirable. These devices are extremely robust and are able to divert a 2500A pulse without destruction. For AC Power Cross of long duration, overcurrent protection is recommended.

Littelfuse CG5 MS mini surge arresters are specifically designed for protection of electrical and communication equipment against over voltage transients in surface mount assembly applications. This series offers the most cutting edge protection using non-radioactive elements.

**Agency Approvals**

AGENCY	AGENCY FILE NUMBER
	E128662 (exception: CG550)

**2 Electrode GDT Graphical Symbol**



**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
- 5KA surge capability tested with 8/20μS pulse as defined by IEC 61000-4-5, 2nd edition
- Ultra small devices offered in a variety of mounting lead forms
- Non-Radioactive
- Low capacitance (<1pF)
- Voltage Ranges 90V to 600V
- UL Recognized
- Conforms to ITU-T K12, IEC 61000-4-5, 2nd edition

**Additional Information**



**Datasheet**  
CG5 Series



**Resources**  
CG5 Series



**Samples**  
CG5 Series

**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

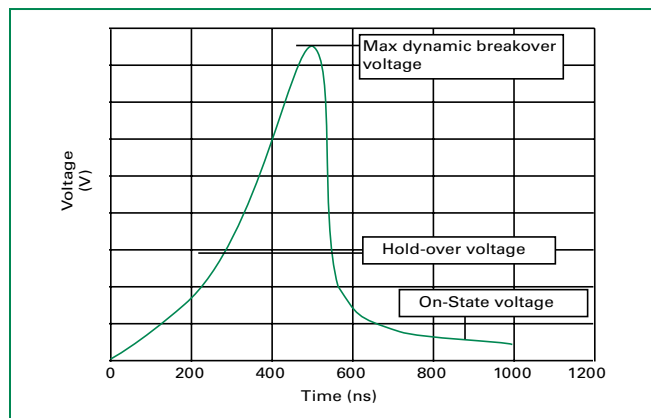
### Electrical Characteristics

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 (@1 Kv/μsec)	Insulation Resistance	Capacitance (@1MHz)	Surge Life (10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Nominal AC Discharge Current (10x1sec @50-60Hz)	AC Discharge Current (9 cycle @50Hz)	Max Impulse Discharge Current (1 Application @ 10/350μs)
	MIN	TYP	MAX	MAX		MIN	MAX					
SL0902A090 CG590	72	90	108	550	700	10 <sup>10</sup> Ω (at 50V)	1.5 pf	300 shots (@100A)	10 shots (@5kA)	5 A	10 A	0.5kA
CG5145	116	145	174	550	650	10 <sup>10</sup> Ω (at 100V)						
CG5150	120	150	180	550								
SL0902A230 CG5230	184	230	276	550	650							
CG5250	200	250	300	600								
CG5270	216	270	324	650								
SL0902A350 CG5350	280	350	420	800	900							
CG5400	320	400	480	900								
SL0902A420	336	420	504	900	1000							
CG5470	376	470	564	1000	1200							
SL0902A600 CG5600	480	600	720	1350	1500							

### Product Characteristics

<b>Materials</b>	<b>CG5xxxLS (Outline 500), CG5xxxxLTR &amp; CG5350L-03TR (Outline 502), and CG5xxxL-02 (Outline 503):</b> Device Nickel Plated 2–5 Microns Wire Tin Plated 17.5±12.5 Microns Construction Ceramic Insulator.	<b>Product Marking</b>	LF Logo, Voltage and date code
	<b>CG5xxx (Outline 501), and CG5xxxMS &amp; SL0902AxxxSM (Outline 505):</b> Device Tin Plated 17.5±12.5 Microns Construction Ceramic Insulator.	<b>Glow to arc transition current</b>	< 0.5Amps
		<b>Glow Voltage</b>	140 Volts
		<b>Storage and Operational Temperature</b>	-40 to +90

### Voltage vs. Time Characteristic

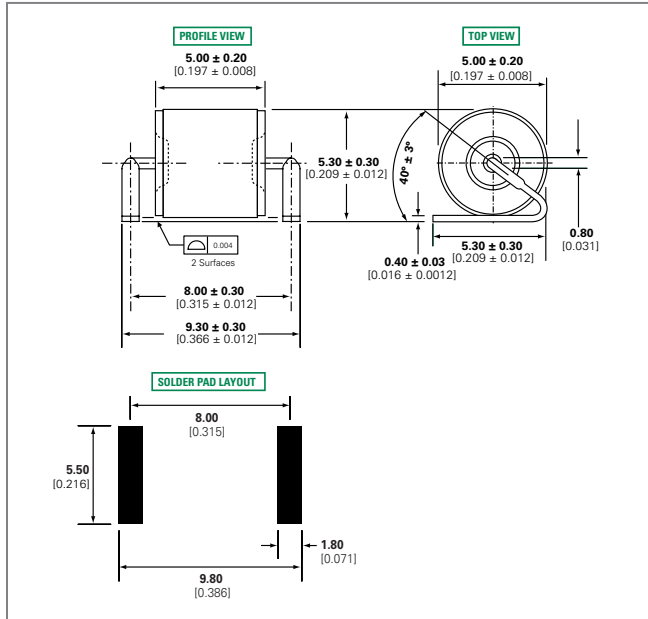


### Typical Insertion Loss

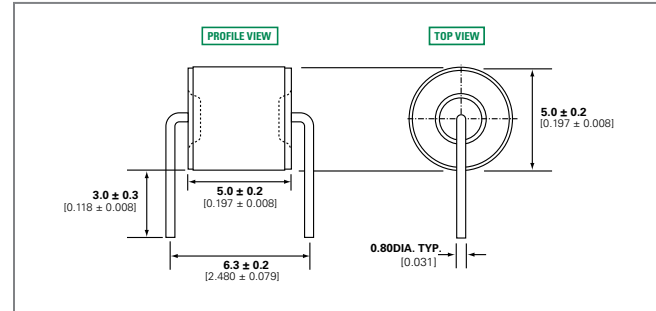
@ 1.0 GHz = 0.01 dB
@ 1.4GHz = 0.1 dB
@ 1.8 GHz = 0.53 dB
@ 2.1 GHz = 0.81 dB
@ 2.45 GHz = 1 dB
@ 2.8 GHz = 1.2 dB
@ 3.1 GHz = 1.5 dB
@ 3.5 GHz = 2.1 dB

**Device Dimensions**

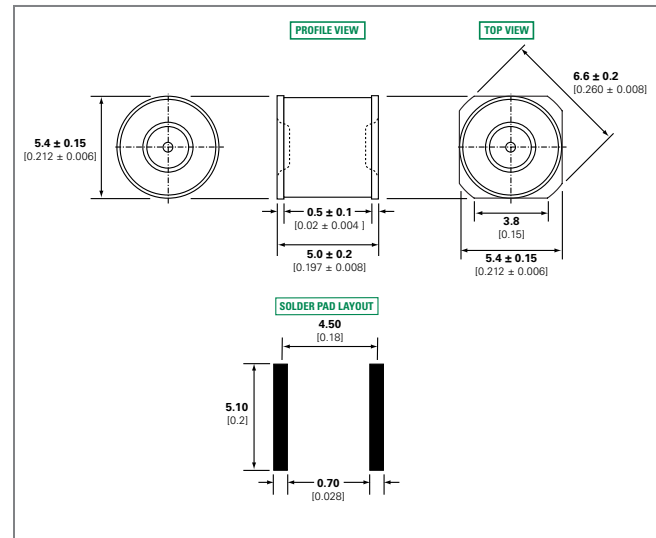
**Outline 500 - CG5xxxLS**



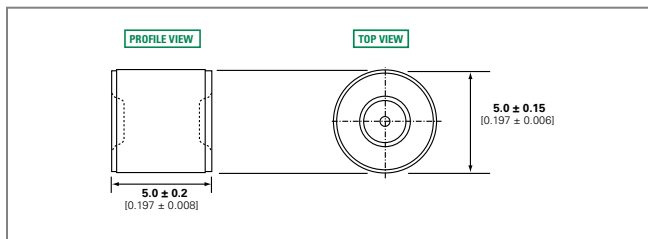
**Outline 503 - CG5xxxL-02** (except CG5600L-02, see Outline 502)



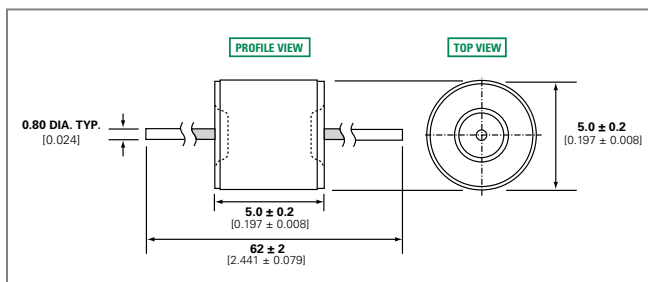
**Outline 505 - CG5xxxMS and SL0902AxxxSM**



**Outline 501 - CG5xxx**

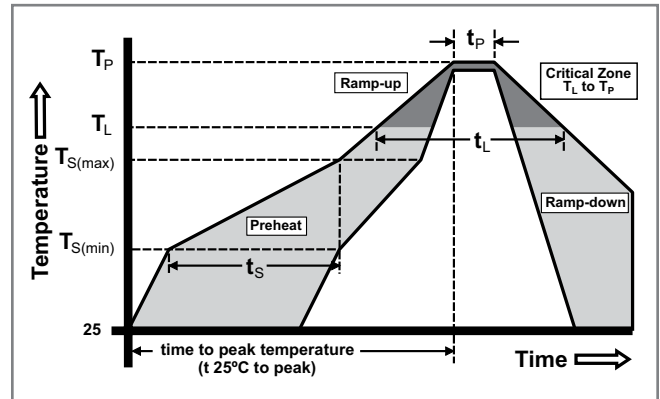


**Outline 502 - CG5xxxLTR** (also CG5350L-03TR, CG5600L-02)



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

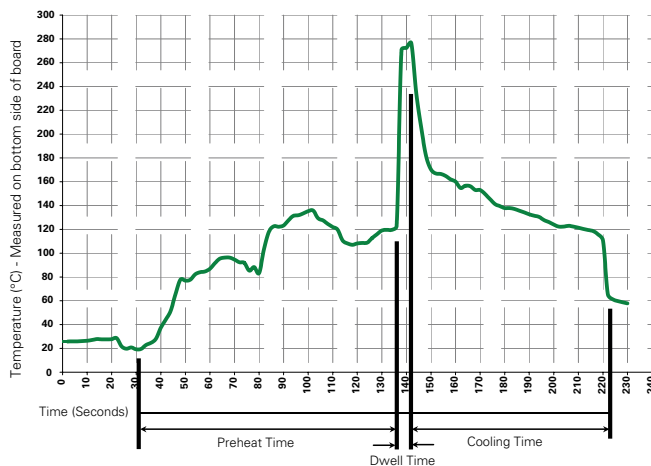
Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		5°C/second max
Reflow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



### Soldering Parameters - Hand Soldering

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

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

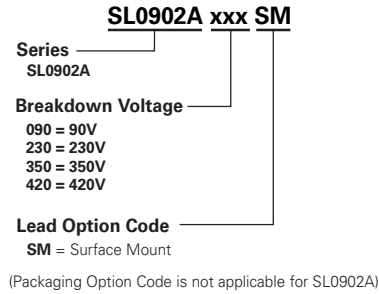
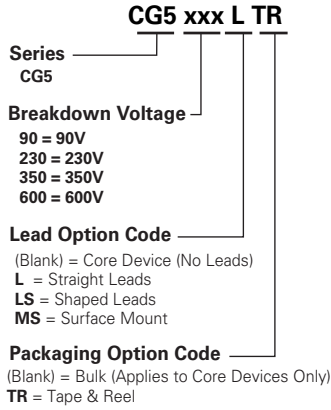


### Recommended Process Parameters:

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

**Note: These devices are not recommended for IR or Convection Reflow process.**

**Part Numbering System and Ordering Information**



**Packaging**

Part Number and Device Type		Device Dimensions Reference	Quantity and Packaging Description
CG5xxx	Core	Outline 501	1000pcs/bag in bulk packaging
CG5xxxLS	Shaped Leads	Outline 500	900pcs/reel in carrier and tape*
CG5xxxLTR CG5xxxL03TR**	Straight Axial Leads	Outline 502	1000pcs/reel in tape and reel*
CG5xxxL02**	Bent Radial Leads	Outline 503	50pcs/tray in tray and cover
CG5xxxMS SL0902AxxxSM	Surface mount	Outline 505	900pcs/reel in carrier and tape*

\* For tape specifications and dimensions, please contact factory.  
\*\* Special order items not available for general sale. Please contact Littelfuse for details.

**Surface Mount Device Orientation**

Note: Surface Mount device orientation on carrier tape as shown below

