

CG/CG2 Series









Agency Approvals

| AGENCY | AGENCY FILE NUMBER |
|-----------|--------------------|
| 71 | E128662 |
| 71 | E320116 |

2 Electrode GDT Graphical Symbol



Description

Littelfuse highly reliable CG/CG2 Series GDTs provide a high degree of surge protection 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 CG/CG2 series comes in a variety of forms including surface mount, core, straight and shaped leads, to serve a variety of mounting methods.

The CG Series (75-110V) is ideal for protection of test and communication equipment and other devices in which low voltage limits and extremely low arc voltages are required.

The CG2 Series (145V-1000V) is ideal for protecting equipment where higher voltage limits and holdover voltages are necessary.

Features

- Rugged Ceramic-Metal construction
- Low Capacitance (<1.5pf)
- Meets REA PE-80
- Available in surface mount, and a variety of lead options options

Applications

- Communication lines and equipment
- CATV equipment
- Test equipment
- Data lines
- Power supplies

- Instrumentation circuits
- Medical electronics
- ADSL equipment
- Telecom SLIC protection

Gas Discharge Tube (GDT) Products CG/CG2 Series

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 (@1 Kv/µsec) | Insulation Resistance | Capaci- tance (@1MHz) | Arc Voltage (on state Voltage) @1Amp Min | Surge Life (@500A 10/1000µs) | Nominal Impulse Discharge Current (8/20µs) | Nominal AC Discharge Current (10x1sec @50-60Hz) | AC Dischage Current (9 cycle @50Hz) | DC Holdover Voltage ² | Max Impulse Discharge Current (1 Application @ 10/350µs) | | | | | | | |
| Number | MIN | TYP | MAX | MAX | | MIN | MAX | TYP | | | | | TYP | | | | | | | | |
| CG75 | 60 | 75 | 90 | 400 | 650 | | | | | | | | | | | | | | | | |
| CG90 | 72 | 90 | 108 | 400 | 600 | 10 ¹⁰ Ω (at 50V) | | | | | | | 52 V | 4kA | | | | | | | |
| CG90 SN | 72 | 90 | 108 | 400 | 600 | | | | | | | | | | | | | | | | |
| CG110 | 88 | 110 | 132 | 450 | 600 | | | | | | | | | | | | | | | | |
| CG2145 | 116 | 145 | 174 | 500 | 600 | | 1 | - | | | | | | | 80 V | | | | | | |
| CG2145 SN | 120 | 145 | 174 | 500 | 600 | | | | | 1.3 | | | | | | | | | | | |
| CG2230 | 195 | 230 | 265 | 600 | 700 | | | | | | | | | | | | | | | | |
| CG2230 SN | 184 | 230 | 276 | 600 | 700 | | | | | | | | | | | | | | | | |
| CG2250 | 213 | 250 | 288 | 625 | 725 | | | | | | | | | | | | 10 shots | | | | |
| CG2250 SN | 200 | 250 | 300 | 625 | 725 | | | | | | | | | | | 400 | (@20kA) ³ | 20 A | 100 A | | |
| CG2300 | 255 | 300 | 345 | 700 | 800 | | | | | | | | | 1.5 pf | 15 V | shots | , | | 10071 | | |
| CG2300 SN | 240 | 300 | 360 | 700 | 800 | | | | | | | | | | 2.5kA | | | | | | |
| CG2350 | 297 | 350 | 403 | 750 | 900 | | | | | | | | | 2.010 (| | | | | | | |
| CG2350 SN | 280 | 350 | 420 | 750 | 900 | | | | | | | | 135 V | | | | | | | | |
| CG2420 | 357 | 420 | 483 | 800 | 1000 | | | | | | | | | | | | | | | | |
| CG2470 | 400 | 470 | 540 | 850 | 1200 | | | | | | | | | | | | | | | | |
| CG2470 SN | 376 | 470 | 564 | 850 | 1200 | | | | | | | | | | | | | | | | |
| CG2600 | 510 | 600 | 690 | 1000 | 1400 | | | | | | | | | | | | | | | | |
| CG2600 SN | 480 | 600 | 720 | 1000 | 1400 | | | | | | | | | | | | | | | | |
| CG2800 ¹ | 680 | 800 | 920 | 1200 | 1500 | | | | | 10 shots | 10 A | | | | | | | | | | |
| CG21000 ¹ | 850 | 1000 | 1150 | 1500 | 1600 | | | | | (@10kA) | 107 | 65 A | | | | | | | | | |

NOTES:

- 1. Tested to UL1449 Third Edition
- 2. Reference REA PE-80, 0.2A. Tested to ITU-T Rec K.12 and REA PE 80 < 150 mSec.

Product Characteristics

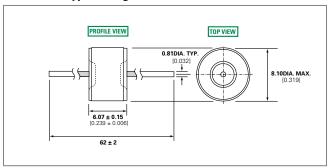
| Materials | LS, Axial: Device: Tin Plated 2–5 Microns Lead Wires: Tin Plated 17.5 ± 12.5 Microns Construction: Ceramic Insulator Core: Device: Tin Plated 17.5 ± 12.5 Microns. Construction: Ceramic Insulator MS: Device: Dull Tin Plated 7–9 Microns Construction: Ceramic Insulator |
|-----------------|--|
| Product Marking | LF Logo, Voltage and date code; Black in positive print |

| Glow to arc transition current | < 0.5Amps |
|---|---|
| Glow Voltage | 60-160 Volts |
| Storage and Operational Temperature | -40 to +90 |
| Maximum Follow On Current ¹ | 230 Volts r.m.s, 200 Amps. (800V and 1000V devices tested to UL1449 3rd edition) |

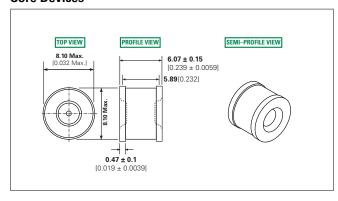


Device Dimensions

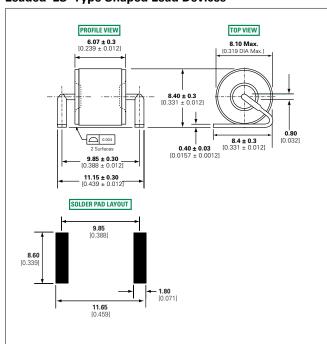
Leaded 'L' Type Straight Axial Devices



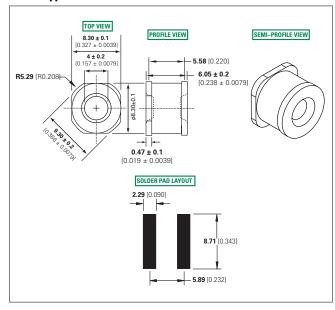
Core Devices



Leaded 'LS' Type Shaped Lead Devices



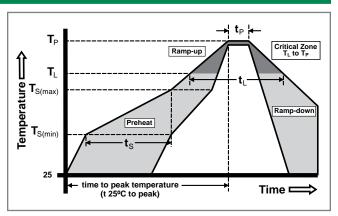
'MS' Type Devices



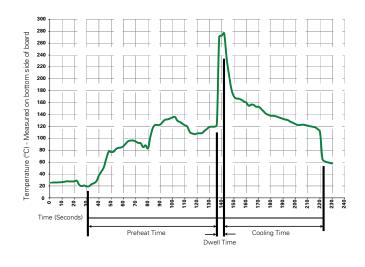


Soldering Parameters - Reflow Soldering (Surface Mount Devices)

| Reflow Co | ndition | Pb – Free assembly | | |
|---------------------------------------|--|-------------------------|--|--|
| | -Temperature Min (T _{s(min)}) | 150°C | | |
| Pre Heat | -Temperature Max (T _{s(max)}) | 200°C | | |
| | -Time (Min to Max) (t _s) | 60 – 180 secs | | |
| Average ra | amp up rate (LiquidusTemp k | 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 | | |
| PeakTemp | erature (T _P) | 260 ^{+0/-5} °C | | |
| Time with Temperatu | in 5°C of actual peak ıre (t _p) | 10 – 30 seconds | | |
| Ramp-dov | vn Rate | 6°C/second max | | |
| Time 25°C | to peakTemperature (T _P) | 8 minutes Max. | | |
| Do not exc | ceed | 260°C | | |



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 DwellTime: | 2-5 seconds | | |

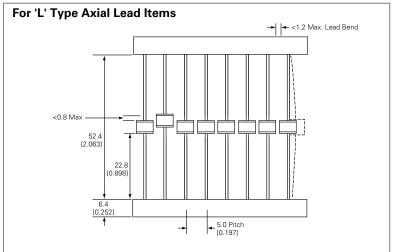
Soldering Parameters - Hand Soldering

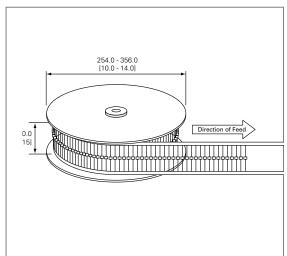
Solder Iron Temperature: 350° C +/- 5°C

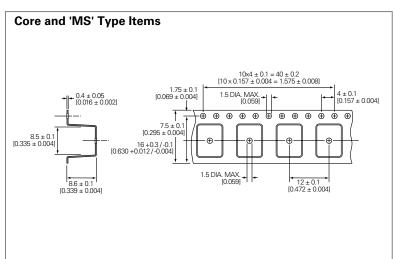
Heating Time: 5 seconds max.

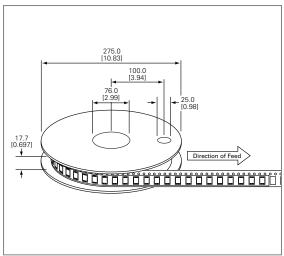


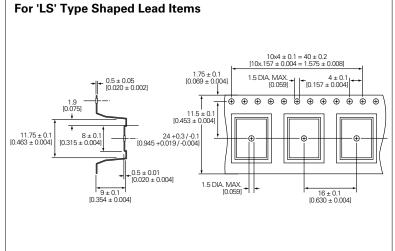
Packaging Dimensions

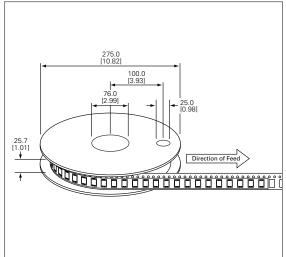






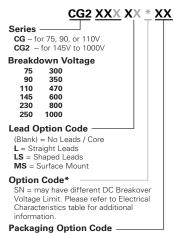






Gas Discharge Tube (GDT) Products CG/CG2 Series

Part Numbering System and Ordering Information



Examples:

CG75 – A non-leaded 75V device **CG2230L** – A leaded 230V device

CG2800LTR - A leaded 800V device, tape-and-reel (per EIA standard RS-296-D)

Notes:

CG/CG2 devices with other breakdown voltages in the 75-1000 V range are available upon request.

(Blank) = No Leads / Core, Bulk Bag - 400 pcs L(Blank) = Straight Lead, Tray - 50 pcs LTR = Straight Lead, Tape & Reel per EIA RS-296-E - 500 per reel LTE = Straight Lead, Tape & Reel per IEC 60286-1 - 500 per reel LS(Blank) = Shaped Lead (see LS dimensions), Tape & Reel - 500 per reel