AC and CG3 Series
Gas Discharge Tubes

Description
Littelfuse AC series two-electrode line protectors provide a high degree of surge protection in AC line applications. The two models, AC120 and AC240 are designed for use with 120VAC and 240VAC lines respectively. They are able to extinguish AC follow-on currents of at least 200A.
Littelfuse CG3 two electrode high voltage (1.0 - 7.5 KV) devices are designed for surge protection and high isolation applications, and for applications for which bias voltages or signal levels of several hundred volts are normally present.

Features
- Rugged ceramic-metal construction
- Low capacitance (<1.5 pF)
- Available in tape-and-reel packaging
- Available with or without leads

Applications
AC Series:
- Long branch circuits (AC wall outlet)
- Short branch circuits (at breaker box, computer, etc)
- Power supplies

CG3 Series:
- CRT terminals
- CATV equipment
- Antennas
- Test equipment
- Submersible pumps
- Medical electronics
- Power supplies
- Medical electronics

Agency Approvals

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<td>E320116*</td>
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*Note: CG3 7.5 product UL approval is currently pending

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Accessories
Samples
CG3 Series

2 Electrode GDT Graphical Symbol
## AC and CG3 Series
Gas Discharge Tubes

### Electrical Characteristics

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<th>Part Number</th>
<th>Device Dimension Type</th>
<th>DC Breakdown in Volts (@100V/s)</th>
<th>Impulse Breakdown in Volts (@100V/µs)</th>
<th>Impulse Breakdown in Volts (@1 Kv/µsec)</th>
<th>Insulation Resistance (@1MHz)</th>
<th>Nominal AC Discharge Current (10x1sec @50-60Hz)</th>
<th>Nominal Impulse Discharge Current (@8/20µs)</th>
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<th>Life Ratings</th>
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<td>MAX</td>
<td>MIN</td>
<td>MAX</td>
<td>MIN</td>
<td>MAX</td>
<td>TYP</td>
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<tr>
<td>AC120</td>
<td>A</td>
<td>230</td>
<td>285</td>
<td>340</td>
<td>500</td>
<td>550</td>
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<td>AC240</td>
<td>A</td>
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<td>1100</td>
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<td>1400</td>
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<td>1100</td>
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<td>1600</td>
<td>1700</td>
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<td>1440</td>
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<td>1300</td>
<td>1560</td>
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<td>1900</td>
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<td>~ 25 V</td>
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<tr>
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<td>A</td>
<td>1200</td>
<td>1500</td>
<td>1800</td>
<td>1800</td>
<td>1900</td>
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<td>2000</td>
<td>2400</td>
<td>2500</td>
<td>2750</td>
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<tr>
<td>CG3 2.5</td>
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<td>2000</td>
<td>2500</td>
<td>3000</td>
<td>3200</td>
<td>3500</td>
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<td>CG3 2.7</td>
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<td>2160</td>
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<td>3600</td>
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<td>3300</td>
<td>3960</td>
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<td>4000</td>
<td>4800</td>
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<td>6000</td>
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<td>7800</td>
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<td>10 GΩ (at 100V)</td>
<td>&lt;1.5 pf</td>
<td>~ 25 V</td>
</tr>
</tbody>
</table>

### Notes:
1. Refer to Production Dimensions section, outline A devices
2. Refer to Production Dimensions section, outline B devices
3. Tested to UL1449 – 120V r.m.s. for AC120, 230V r.m.s. all others.
   Conducted with suitable MOV connected in series.
4. 5x(+) and 5x(–) applications 5kA @ 8/20µs
5. 1 application 10kA @ 8/20µs
6. CG3 7.5 product UL approval is currently pending
7. When ordering this item, use suffix code D004 when entering the part number.
   The older product version without D004 suffix code has been discontinued.
   Refer to Part Numbering System section for additional information.

### Product Characteristics

**Materials**
- **Core Outline A & B items:**
  - Device: Tin Plated 17.5±12.5 Microns
- **Axial Outline A & B items:**
  - Device & Wire: Tin Plated 17.5±12.5 Microns

**Product Marking**
- LF Logo, Voltage and date code;
- Black ink positive print

**Glow to arc transition current**
- < 0.5Amps

**Glow Voltage**
- ~ 140 Volts

**Storage and Operational Temperature**
- -40 to +90
Soldering Parameters - Reflow Soldering (Surface Mount Devices)

Reflow Condition: Pb – Free assembly

- Temperature Min \( (T_{\text{S(min)}}) \): 150°C
- Temperature Max \( (T_{\text{S(max)}}) \): 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

\( T_{\text{S(max)}} \) 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°C maximum

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 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 Dwell Time: 2-5 seconds

Soldering Parameters - Hand Soldering

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

Heating Time: 5 seconds max.
### AC and CG3 Series
Gas Discharge Tubes

#### Device Dimensions

**Axial**

- **PROFILE VIEW**
- **TOP VIEW**

**Core**

- **PROFILE VIEW**
- **TOP VIEW**

#### Part Numbering System and Ordering Information

**Series**

- **AC XXX XXX**

**AC Line Voltage**
- 120V – 120V
- 240V – 240V

**Lead / Packaging Option**
- C = Core (no leads) / Bulk pack, 400 pcs per bag
- L = Leaded / Bulk pack, 50 pcs per tray
- LTR = Leaded / Tape & Reel, 500 pcs per reel

**CG3 X.X XXX D004**

**Series CG3**
- Breakdown Voltage
  - 1.0 = 1000V
  - 1.1 = 1100V
  - 1.2 = 1200V
  - 1.3 = 1300V
  - 1.5 = 1500V
  - 2.0 = 2000V
  - 2.5 = 2500V
  - 2.7 = 2700V
  - 3.0 = 3000V
  - 3.3 = 3300V
  - 4.0 = 4000V
  - 4.5 = 4500V
  - 5.0 = 5000V
  - 6.2 = 6200V
  - 6.5 = 6500V
  - 7.5 = 7500V

**Lead / Packaging Option**
- C = Core (no leads) / Bulk pack, 400 pcs per bag
- L = Leaded / Bulk pack, 50 pcs per tray
- LTR = Leaded / Tape & Reel, 500 pcs per reel

**Special Suffix Code**

Enter this D004 special suffix code when placing orders for CG36.2, CG36.5 and CG37.5 only

#### Packaging Dimensions

**For ‘LTR’ Option Code Axial Lead Items**

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