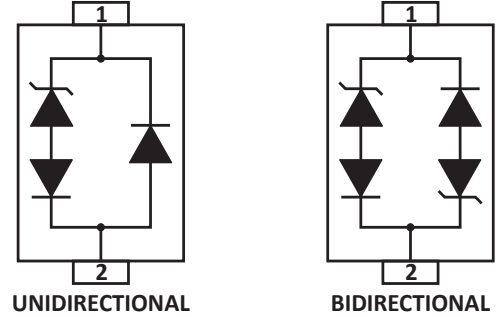


DESCRIPTION

The GBLCxxI and GBLCxxCI Series are ultra low capacitance transient voltage suppressor arrays, designed to protect applications such as portable electronics and SMART phones. This series is available in both unidirectional and bidi-rectional configurations and is rated at 250W for an 8/20µs waveshape.

The GBLCxxI and GBLCxxCI Series meets IEC 61000-4-2 (ESD) and IEC 61000-4-4 (EFT) requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. This series offers a ultra low capacitance and low leakage current in a miniature SOD-323 package.



FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
Exceeds Level 4: Handles 10kV Contact & 25kV Air Discharge
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
250W Peak Pulse Power per Line (tp = 8/20µs)
- Replacement for MLV (0805)
- Unidirectional & Bidirectional Configurations
- Protects One Power or I/O Port
- ESD Protection > 25kV
- Low Clamping Voltage
- Available in Multiple Voltages Ranging From 3V to 24V
- Ultra Low Capacitance: 0.6pF (Typical)
- RoHS Compliant
- REACH Compliant

APPLICATIONS

- Ethernet 10/100/1000 Base T
- SMART Phones
- Handheld - Wireless Systems
- USB Interface

MACHANICAL DATA

- Molded JEDEC SOD-323 Package
- Approximate Weight: 5 milligrams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
Pure-Tin - Sn, 100: 260-270°C
- 8mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0
- Patent Pending

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

| PARAMETER | SYMBOL | VALUE | UNITS |
|---|------------------|------------|-------|
| Peak Pulse Power (tp = 8/20µs) - See Figure 1 | P _{PP} | 250 | W |
| Operating Temperature | T _A | -55 to 150 | °C |
| Storage Temperature | T _{STG} | -55 to 150 | °C |

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

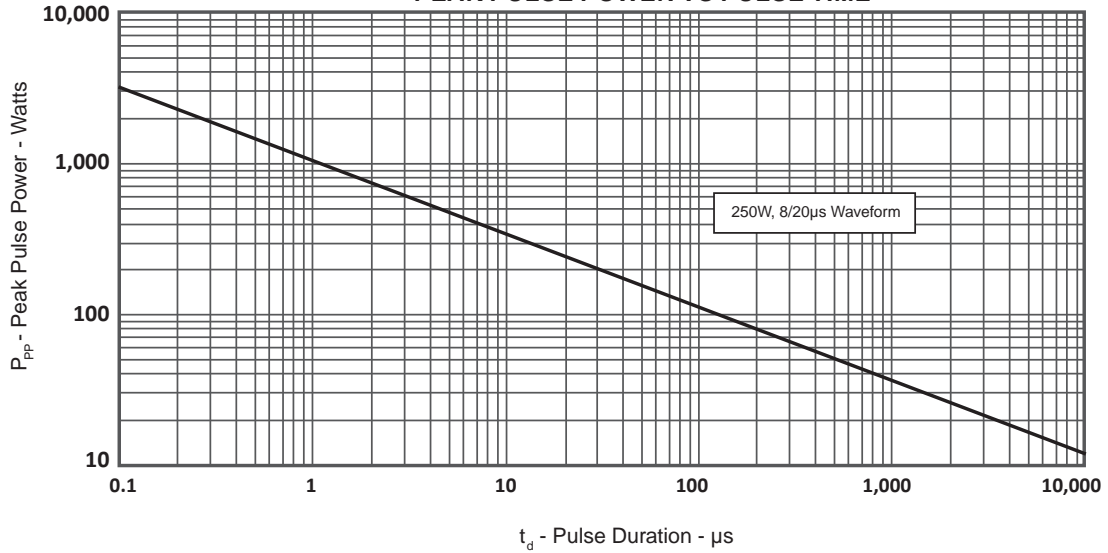
| PART NUMBER (Note 1-2) | RATED STAND-OFF VOLTAGE | MINIMUM BREAKDOWN VOLTAGE | MAXIMUM CLAMPING VOLTAGE (Fig. 2) | MAXIMUM LEAKAGE CURRENT | TYPICAL CAPACITANCE |
|---------------------------|-------------------------|------------------------------|--------------------------------------|--------------------------------|----------------------|
| | V_{WM} VOLTS | @ 1mA $V_{(BR)}$ VOLTS | @ IP = 1A V_C VOLTS | @ V_{WM} I_D μA | @0V, 1MHz C pF |
| GBLC03I | 3.0 | 4.0 | 7.0 | 5 | 0.6 |
| GBLC03CI | 3.0 | 4.0 | 7.0 | 5 | 0.6 |
| GBLC05I | 5.0 | 6.0 | 9.8 | 5 | 0.6 |
| GBLC05CI | 5.0 | 6.0 | 9.8 | 5 | 0.6 |
| GBLC08I | 8.0 | 8.5 | 13.4 | 2 | 0.6 |
| GBLC08CI | 8.0 | 8.5 | 13.4 | 2 | 0.6 |
| GBLC12I | 12.0 | 13.3 | 19.0 | 1 | 0.6 |
| GBLC12CI | 12.0 | 13.3 | 19.0 | 1 | 0.6 |
| GBLC15I | 15.0 | 16.7 | 24.0 | 1 | 0.6 |
| GBLC15CI | 15.0 | 16.7 | 24.0 | 1 | 0.6 |
| GBLC18I | 18.0 | 20.0 | 29.0 | 1 | 0.6 |
| GBLC18CI | 18.0 | 20.0 | 29.0 | 1 | 0.6 |
| GBLC24I | 24.0 | 26.7 | 43.0 | 1 | 0.6 |
| GBLC24CI | 24.0 | 26.7 | 43.0 | 1 | 0.6 |

NOTES

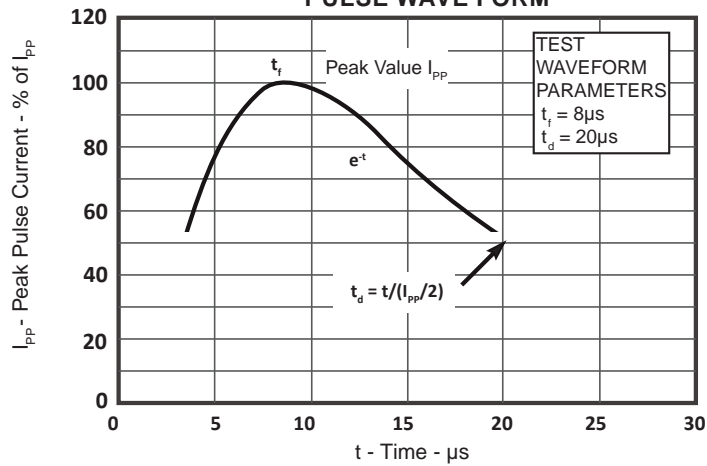
1. Part numbers with an additional "C" suffix are bidirectional devices, i.e., GBLC05CI.
2. Unidirectional Only: Positive potential is applied from pin 1 to 2.

TYPICAL DEVICE CHARACTERISTICS

**FIGURE 1
PEAK PULSE POWER VS PULSE TIME**

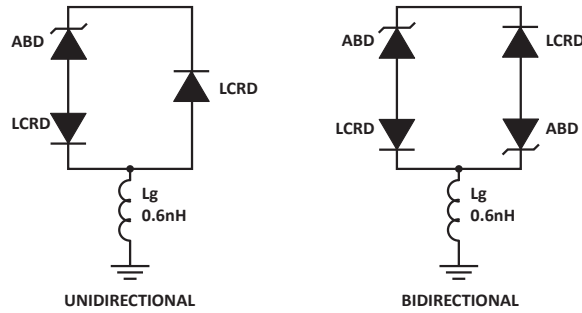


**FIGURE 2
PULSE WAVE FORM**



SPICE MODEL

**FIGURE 1
SPICE MODEL**

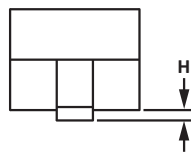
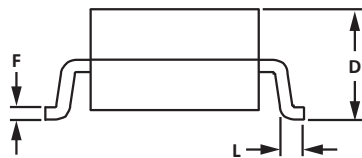
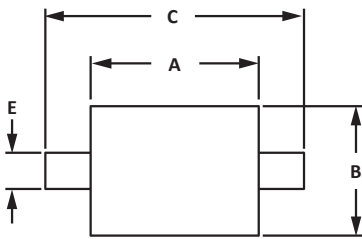


ABD - Avalanche Breakdown Diode (TVS)
LCRD: Low Capacitance Rectifier Diode
Lg - Lead Inductance

| PARAMETER | UNIT | ABD(TVS) | LCRD |
|-----------|---------|-------------|-------|
| BV | V | See Table 2 | 100 |
| IBV | μ A | 1 | 0.5 |
| C_j | pF | See Table 2 | 0.3 |
| I_s | A | See Table 2 | 1E-11 |
| V_j | V | 0.6 | 0.6 |
| M | - | 0.33 | 0.33 |
| N | - | 1 | 1 |
| R_s | Ohms | See Table 2 | 0.75 |
| TT | s | 1E-8 | 1E-9 |
| EG | eV | 1.11 | 1.11 |

| PART NUMBER | B_V (VOLTS) | C_j (pF) | I_s (AMPS) | R_s (OHMS) |
|-------------|---------------|------------|--------------|--------------|
| GBLC03I | 4.0 | 200 | 1E-11 | 0.22 |
| GBLC05I | 6.0 | 140 | 1E-11 | 0.18 |
| GBLC08I | 8.5 | 67 | 1E-11 | 0.12 |
| GBLC12I | 13.3 | 55 | 1E-13 | 1.10 |
| GBLC15I | 16.7 | 47 | 1E-13 | 1.43 |
| GBLC18I | 20.0 | 40 | 1E-13 | 2.30 |
| GBLC24I | 26.7 | 28 | 1E-13 | 4.24 |
| GBLC03CI | 4.0 | 200 | 1E-11 | 0.22 |
| GBLC05CI | 6.0 | 140 | 1E-11 | 0.18 |
| GBLC08CI | 8.5 | 67 | 1E-11 | 0.12 |
| GBLC12CI | 13.3 | 55 | 1E-13 | 1.10 |
| GBLC15CI | 16.7 | 47 | 1E-13 | 1.43 |
| GBLC18CI | 20.0 | 40 | 1E-13 | 2.3 |
| GBLC24CI | 26.7 | 28 | 1E-13 | 4.24 |

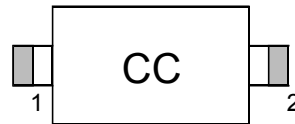
SOD-323 PACKAGE OUTLINE DIMENSIONS



| OUTLINE DIMENSIONS | | | | |
|--------------------|-------------|------|--------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 1.60 | 1.90 | 0.063 | 0.075 |
| B | 1.15 | 1.45 | 0.045 | 0.057 |
| C | 2.39 | 2.70 | 0.094 | 0.106 |
| D | 0.80 | 1.10 | 0.031 | 0.043 |
| E | 0.25 | 0.40 | 0.010 | 0.016 |
| F | 0.10 | 0.20 | 0.004 | 0.008 |
| H | - | 0.10 | - | 0.004 |
| L | 0.20 | - | 0.008 | - |

NOTES
 1. Controlling dimension: millimeters.
 2. Dimensioning and tolerances per ANSI Y14.5M, 1985.
 3. Dimensions are exclusive of mold flash and metal burrs.

Marking



Ordering information

| Order code | Marking code | Package | Baseqty | Deliverymode |
|-----------------|--------------|---------|---------|---------------|
| GBLC03I-LF-T7 | C | SOD-323 | 3000 | Tape and reel |
| GBLC03CI-LF-T7 | CC | SOD-323 | 3000 | Tape and reel |
| GBLC05I-LF-T7 | A | SOD-323 | 3000 | Tape and reel |
| GBLC05CI-LF-T7 | AC | SOD-323 | 3000 | Tape and reel |
| GBLC08I-LF-T7 | B | SOD-323 | 3000 | Tape and reel |
| GBLC08CI-LF-T7 | BC | SOD-323 | 3000 | Tape and reel |
| GBLC012I-LF-T7 | D | SOD-323 | 3000 | Tape and reel |
| GBLC012CI-LF-T7 | DC | SOD-323 | 3000 | Tape and reel |
| GBLC015I-LF-T7 | E | SOD-323 | 3000 | Tape and reel |
| GBLC015CI-LF-T7 | EC | SOD-323 | 3000 | Tape and reel |
| GBLC018I-LF-T7 | F | SOD-323 | 3000 | Tape and reel |
| GBLC018CI-LF-T7 | FC | SOD-323 | 3000 | Tape and reel |
| GBLC024I-LF-T7 | H | SOD-323 | 3000 | Tape and reel |
| GBLC024CI-LF-T7 | HC | SOD-323 | 3000 | Tape and reel |