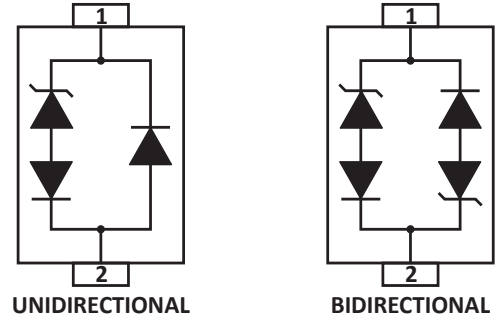


## DESCRIPTION

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 8/20 $\mu$ s 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 = 8/20 $\mu$ s)
- 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 = 8/20 $\mu$ s) - See Figure 1	P <sub>PP</sub>	250	W
Operating Temperature	T <sub>A</sub>	-55 to 150	°C
Storage Temperature	T <sub>STG</sub>	-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	@ $I_P = 1A$ $V_C$ VOLTS	@ $V_{WM}$ $I_D$ $\mu A$	@ 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

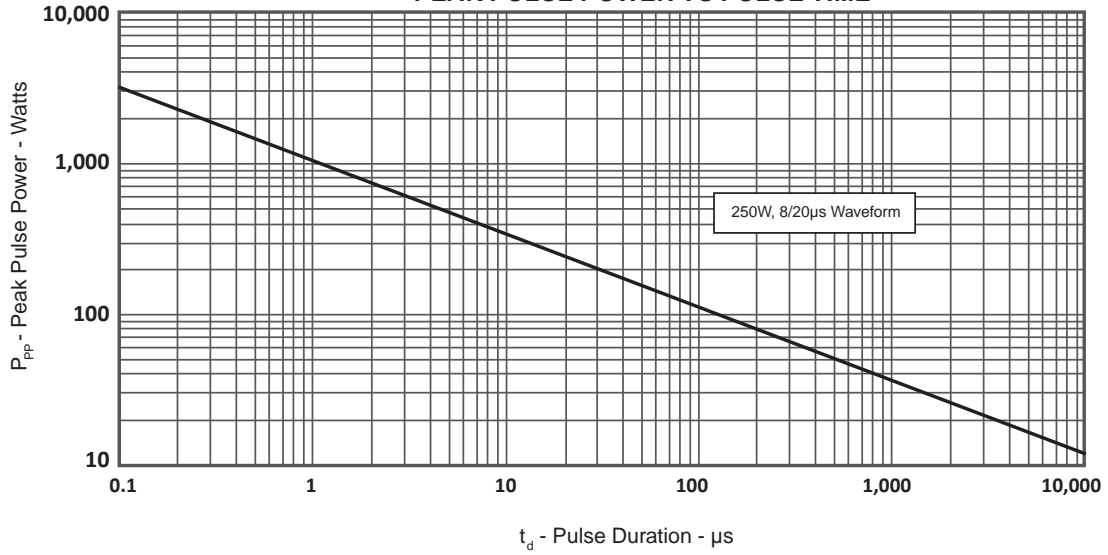
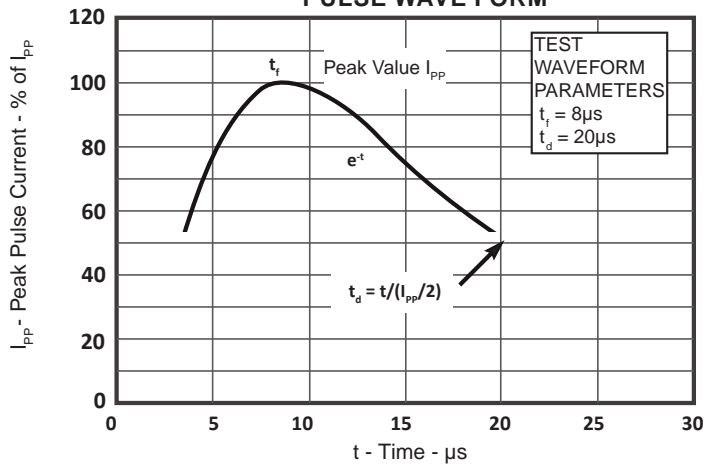
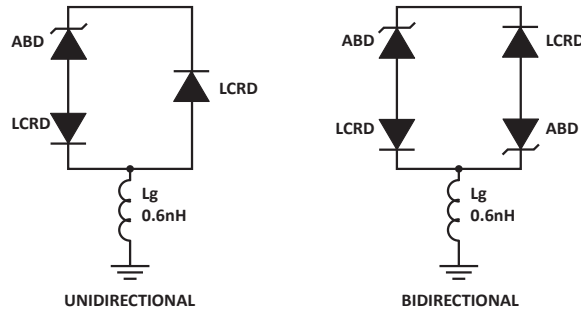


FIGURE 2  
PULSE WAVE FORM



SPICE MODEL

FIGURE 1  
SPICE MODEL

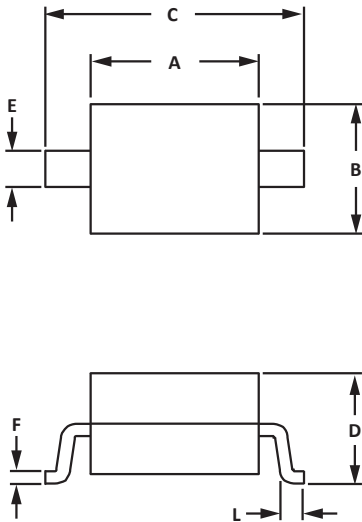


ABD - Avalanche Breakdown Diode (TVS)  
LCRD: Low Capacitance Rectifier Diode  
Lg - Lead Inductance

PARAMETER	UNIT	ABD(TVS)	LCRD
BV	V	See Table 2	100
IBV	μA	1	0.5
C <sub>j0</sub>	pF	See Table 2	0.3
I <sub>s</sub>	A	See Table 2	1E-11
V <sub>j</sub>	V	0.6	0.6
M	-	0.33	0.33
N	-	1	1
R <sub>s</sub>	Ohms	See Table 2	0.75
TT	s	1E-8	1E-9
EG	eV	1.11	1.11

PART NUMBER	B <sub>V</sub> (VOLTS)	C <sub>j0</sub> (pF)	I <sub>s</sub> (AMPS)	Rs(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

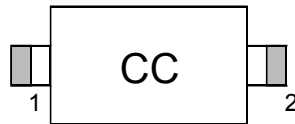
**SOD-323 PACKAGE OUTLINE DIMENSIONS**



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

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[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)