

ULTRA LOW CAPACITANCE TVS ARRAY



DESCRIPTION

The GBLCxx and GBLCxxC 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 bidirectional configurations and is rated at 350 Watts for an 8/20 μ s waveshape.

The GBLCxx and GBLCxxC 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

- IEC Compatibility IEC 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
Exceeds Level 4: Handles 10kV Contact & 25kV Air Discharge
- IEC Compatibility IEC 61000-4-4 (EFT): 40A - 5/50ns
- IEC Compatibility IEC 61000-4-5 (Surge)
- 350 Watts Peak Pulse Power per Line (tp = 8/20 μ s)
- Replacement for MLV (0805)
- Unidirectional & Bidirectional Configuration
- 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: 3pF (Typical)
- RoHS Compliant
- REACH Compliant

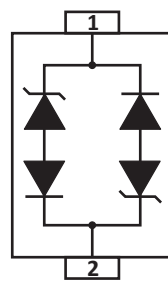
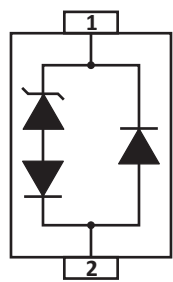
APPLICATIONS

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

MECHANICAL CHARACTERISTICS

- 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

PIN CONFIGURATIONS



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}	350	Watts
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)	DEVICE MARKING	RATED STAND-OFF VOLTAGE V _{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA V _(BR) VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ IP = 1A V _C VOLTS	MAXIMUM LEAKAGE CURRENT @V _{WM} I _D μA	TYPICAL CAPACITANCE @0V, 1MHz C pF
GBLC03	3	3.3	4.0	7.0	5	3
GBLC03C	3C	3.3	4.0	7.0	5	3
GBLC05	5	5.0	6.0	9.8	5	3
GBLC05C	5C	5.0	6.0	9.8	5	3
GBLC08	8	8.0	8.5	13.4	2	3
GBLC08C	8C	8.0	8.5	13.4	2	3
GBLC12	2	12.0	13.3	19.0	1	3
GBLC12C	2C	12.0	13.3	19.0	1	3
GBLC15	6	15.0	16.7	24.0	1	3
GBLC15C	6C	15.0	16.7	24.0	1	3
GBLC24	4	24.0	26.7	43.0	1	3
GBLC24C	4C	24.0	26.7	43.0	1	3

NOTES

- Part numbers with an additional "C" suffix are bidirectional devices, i.e., GBLC05C.
- Unidirectional Only: Positive potential is applied from pin 1 to 2.

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

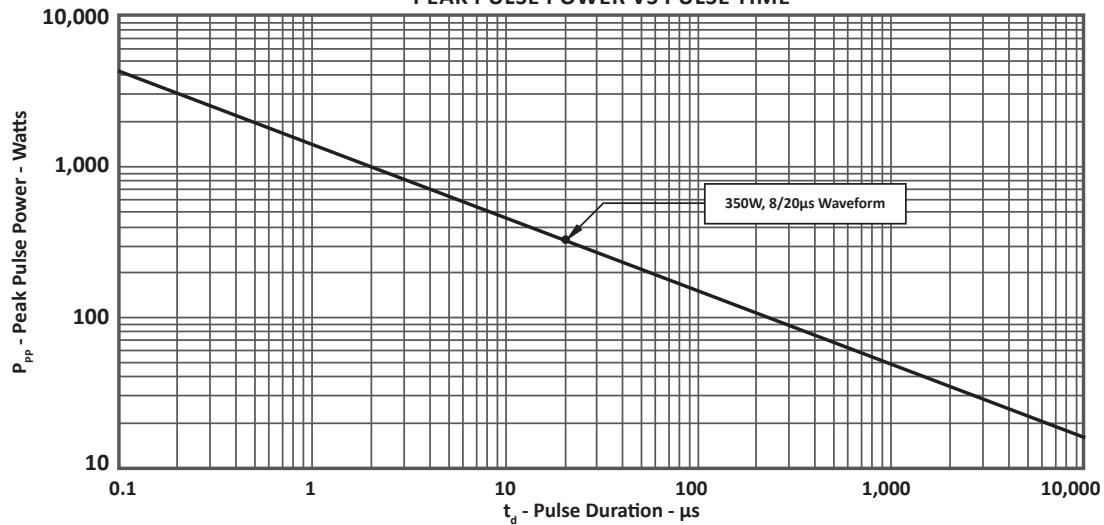
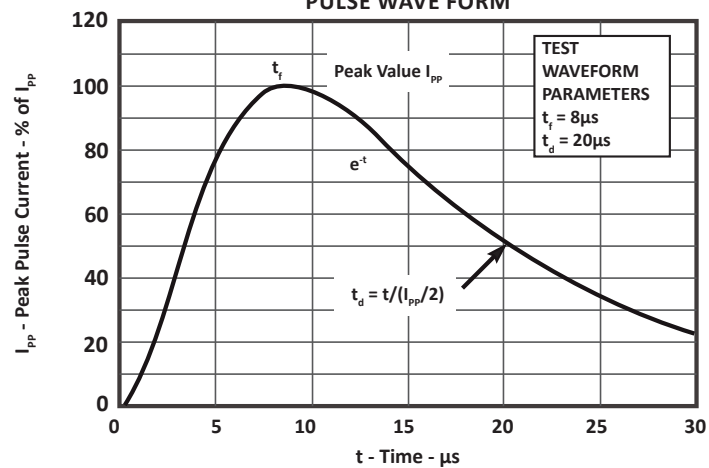
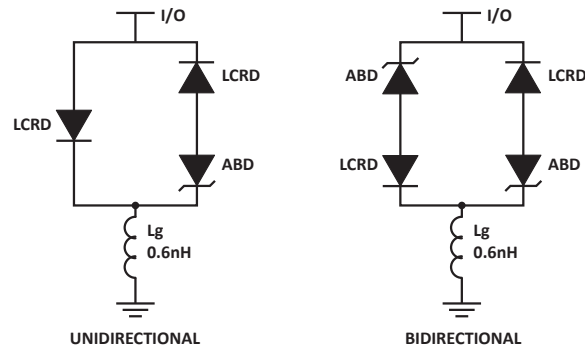


FIGURE 2
PULSE WAVE FORM



SPICE MODEL

FIGURE 1
SPICE MODEL


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

TABLE 1 - SPICE PARAMETERS

PARAMETER	UNIT	ABD(TVS)	LCRD
BV	V	See Table 2	200
IBV	μA	1	0.01
C_{jo}	pF	See Table 2	6
I_s	A	See Table 2	1E-11
Vj	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

TABLE 2 - ABD SPECIFIC SPICE PARAMETERS

PART NUMBER	B_v (VOLTS)	C_{jo} (pF)	I_s (AMPS)	R_s (OHMS)
GBLC05	6.0	230	1E-11	0.014
GBLC05C	6.0	230	1E-11	0.014

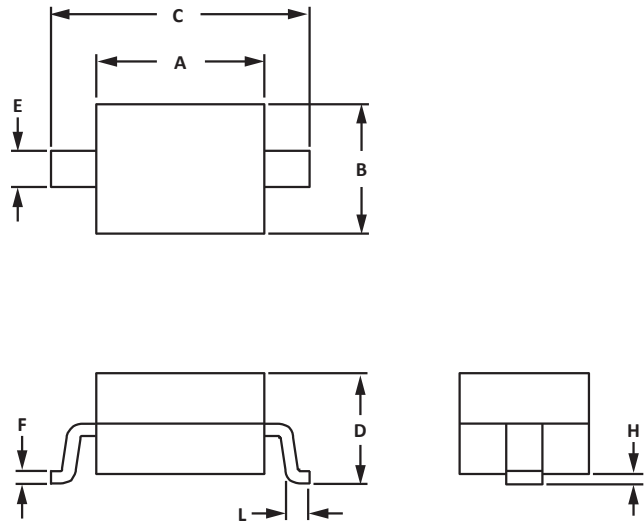
SOD-323 PACKAGE INFORMATION

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

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

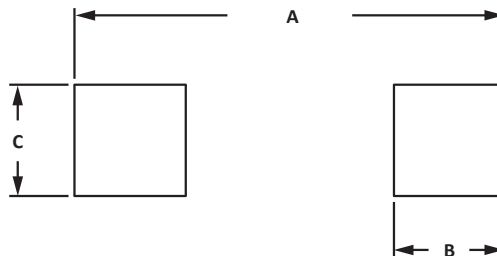


PAD LAYOUT DIMENSIONS

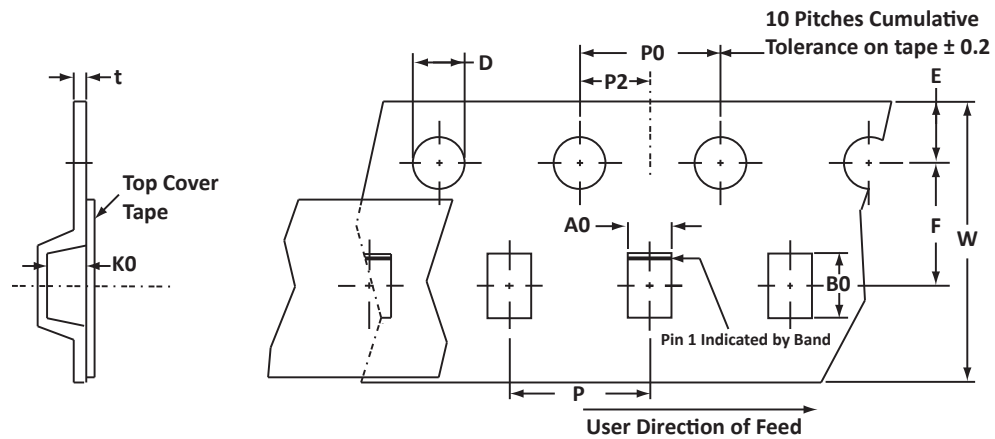
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.87	3.12	0.113	0.123
B	0.66	0.91	0.026	0.036
C	0.66	0.91	0.026	0.036

NOTES

- Controlling dimension: millimeters.



TAPE AND REEL



SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	1.55 ± 0.10	2.90 ± 0.10	1.35 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	0.25

NOTES

1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T7 = 7" Reel - 3,000 pieces per 8mm tape.
4. Marking on Part - marking code (see page 2), polarity band (Unidirectional Only).

Package outline, pad layout and tape specifications per document number 06010.R4 9/10.

ORDERING INFORMATION

BASE PART NUMBER (xx = Voltage)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
GBLCxx/GBLCxxC	-LF	-T7	3,000	7"	n/a

COMPANY INFORMATION

COMPANY PROFILE

ProTek Devices, based in Tempe, Arizona USA, is a manufacturer of Transient Voltage Suppression (TVS) products designed specifically for the protection of electronic systems from the effects of lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP), inductive switching and EMI/RFI. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for all electronic equipment/systems.

ProTek Devices Analog Products Division, also manufactures analog interface, control, RF and power management products.

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