

DESCRIPTION

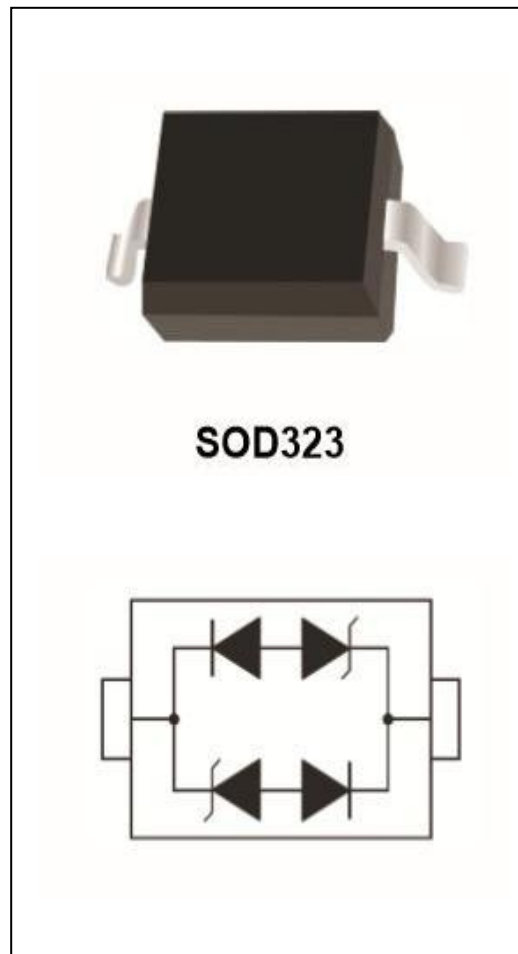
The GBLCXXC is bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The GBLCXXC has a low capacitance with a typical value at 2pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 15\text{kV}$ air and $\pm 8\text{kV}$ contact discharge. It is assembled into a lead-free SOD-323 package. The small size, low capacitance and high ESD surge protection make GBLCXXC an ideal choice to protect cell phone, wireless systems, and communication equipment.

APPLICATIONS

- ✧ Cellular Handsets and Accessories.
- ✧ USB Ports.
- ✧ Smart Phones.
- ✧ Wireless systems.
- ✧ Ethernet 10/100/1000 Base T.

FEATURES

- ✧ Protects one data line.
- ✧ 150W peak pulse power (8/20 μs).
- ✧ Ultra low capacitance: 2pF typical.
- ✧ Ultra low clamping voltage.
- ✧ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test Air discharge: $\pm 15\text{kV}$.
- ✧ Contact discharge: $\pm 8\text{kV}$
 - IEC61000-4-4 (EFT) 40A (5/50ns).
- ✧ RoHS Compliant.



MECHANICAL CHARACTERISTICS

- ✧ Package: SOD-323.
- ✧ Lead Finish: NiPdAu.
- ✧ Case Material: “Green” Molding Compound.
- ✧ UL Flammability Classification Rating 94V-0.
- ✧ Moisture Sensitivity: Level 3 per J-STD-020.
- ✧ Terminal Connections: See Diagram Below.
- ✧ Marking Information: See Below.
- ✧ Quantity Per Reel : 3,000pcs.
- ✧ Reel Size : 7 inch.

DEVICE CHARACTERISTICS

Absolute maximum ratings ($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	150	W
ESD per IEC 61000-4-2 (Air)	VESD	± 15	kV
ESD per IEC 61000-4-2 (Contact)		± 8	
Operating Temperature Range	Tj	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

Electrical characteristics ($T_A=25^{\circ}\text{C}$)

GBLC03C

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	4			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			20	μA	$V_{RWM} = 3.3\text{V}$
Clamping Voltage	V_C			5.15	V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	V_C			14	V	$I_{PP} = 12\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	C_J		2	3	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

GBLC05C

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			5	μA	$V_{RWM} = 5\text{V}$
Clamping Voltage	V_C			9.8	V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	V_C			16.3	V	$I_{PP} = 10\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	C_J		2	3	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

GBLC08C

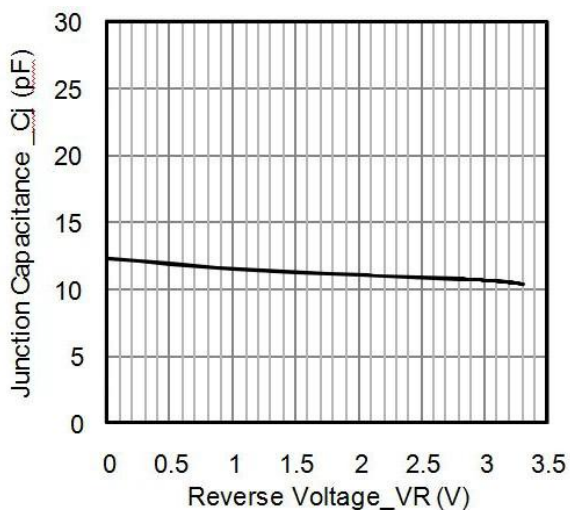
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			8	V	
Breakdown Voltage	V_{BR}	8.5			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_{RWM} = 8\text{V}$
Clamping Voltage	V_C			13.4	V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	V_C			18.5	V	$I_{PP} = 8\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	C_J		2	3	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

GBLC12C						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			12	V	
Breakdown Voltage	VBR	13.3			V	IT = 1mA
Reverse Leakage Current	IR			1	uA	VRWM = 12V
Clamping Voltage	VC			19	V	I _{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	VC			28.6	V	I _{PP} = 6A (8 x 20μs pulse)
Junction Capacitance	CJ		2	3	pF	VR = 0V, f = 1MHz

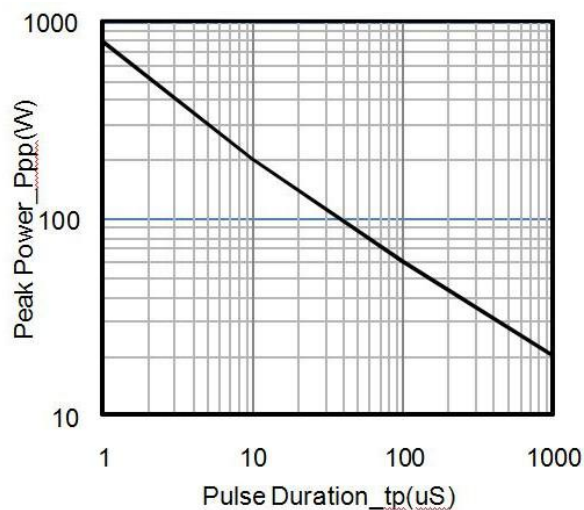
GBLC15C						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			15	V	
Breakdown Voltage	VBR	16.7			V	IT = 1mA
Reverse Leakage Current	IR			1	uA	VRWM = 15V
Clamping Voltage	VC			24	V	I _{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	VC			31.8	V	I _{PP} = 5A (8 x 20μs pulse)
Junction Capacitance	CJ		2	3	pF	VR = 0V, f = 1MHz

GBLC24C						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			24	V	
Breakdown Voltage	VBR	26.7			V	IT = 1mA
Reverse Leakage Current	IR			1	uA	VRWM = 24V
Clamping Voltage	VC			43	V	I _{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	VC			56	V	I _{PP} = 3A (8 x 20μs pulse)
Junction Capacitance	CJ		2	3	pF	VR = 0V, f = 1MHz

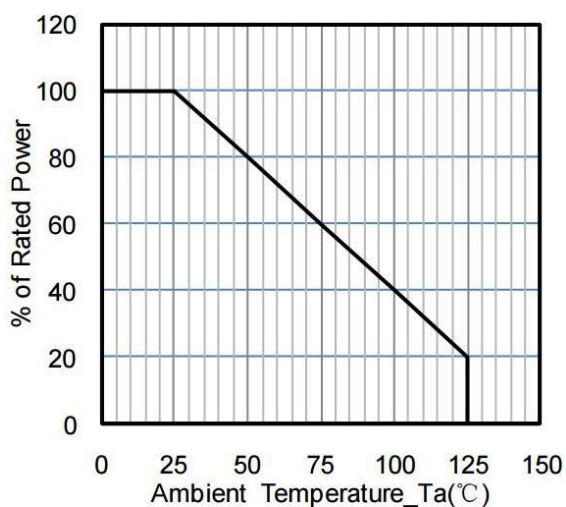
TYPICAL PERFORMANCE CHARACTERISTICS (TA=25°C unless otherwise Specified)



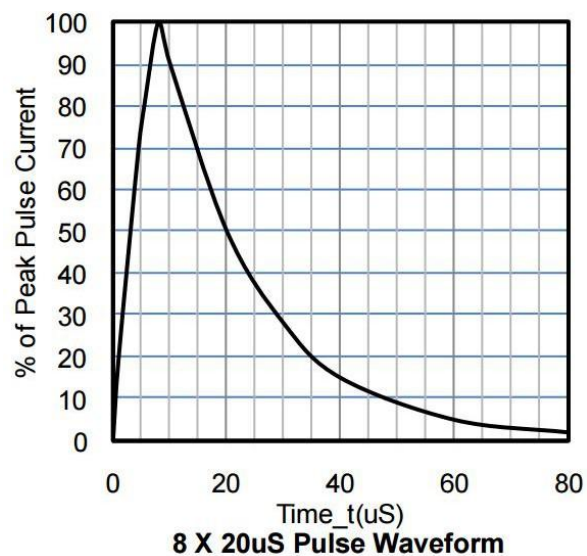
Junction Capacitance vs. Reverse Voltage



Peak Pulse Power vs. Pulse Time



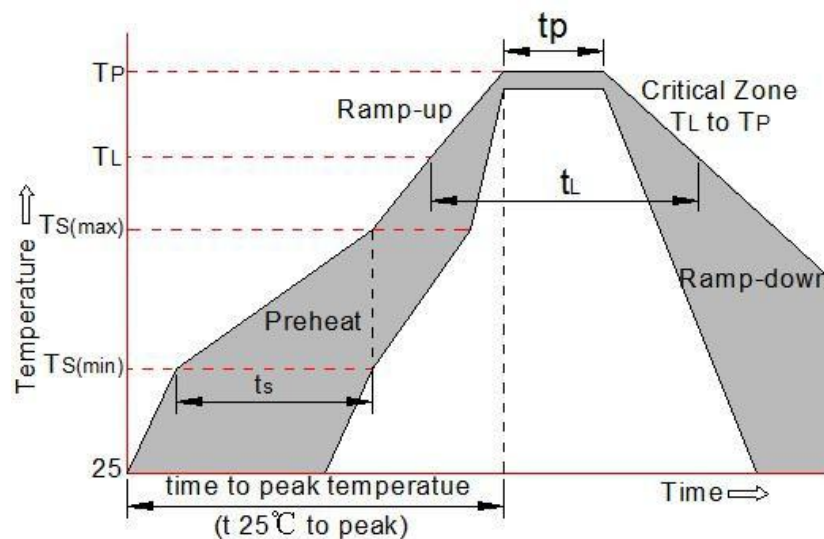
Power Derating Curve

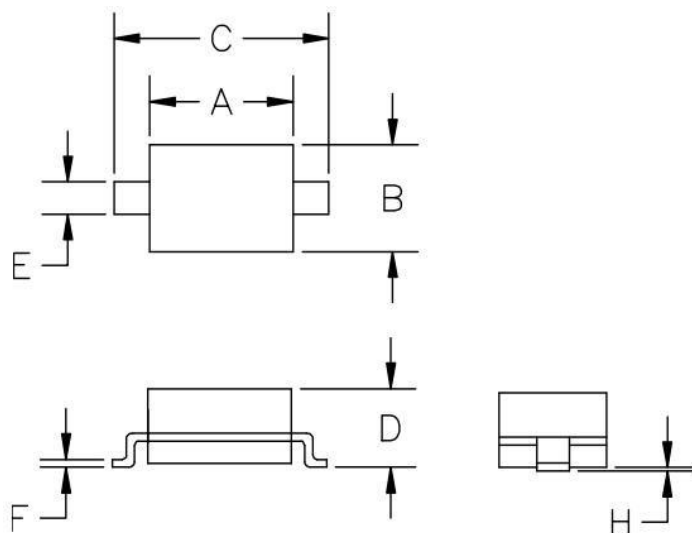


8 X 20uS Pulse Waveform

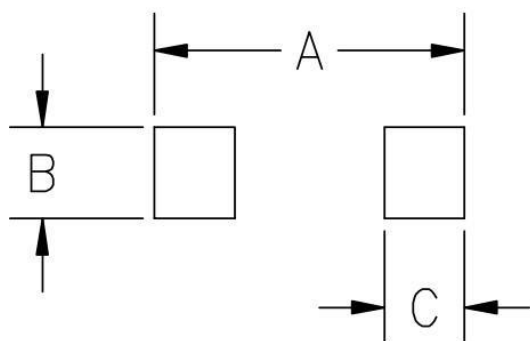
SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.2)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C



PACKAGE MECHANICAL DATA


SYM	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.80	0.060	0.071
B	1.20	1.40	0.045	0.054
C	2.30	2.70	0.090	0.107
D	-	1.10	-	0.043
E	0.30	0.40	0.012	0.016
F	0.10	0.25	0.004	0.010
H	-	0.10	-	0.004

SUGGESTED LAND PATTERN


SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	3.15	0.120
B	0.80	0.031
C	0.80	0.031

Website: <http://www.jksemi.com>

For additional information, please contact your local Sales Representative.

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