

## Features

450W (8/20 $\mu$ s) peak pulse power handling capability  
 High ESD protection level:  $\pm 30$ kV (IEC 61000-4-2 Air/Contact Model),  
 $\pm 16$ kV (JESD22-A114-B Human Body Model),  $\pm 0.4$ kV (Machine Model)  
 Compact SOT-23 thin SMD package for space-saving designs  
 RoHS compliant and Pb-Free with matte tin lead finish  
 Protects two signal lines  
 Low reverse leakage current (max 1 $\mu$ A @ VRWM=24V)  
 Low junction capacitance (20-40pF @ VR=0V, f=1MHz)

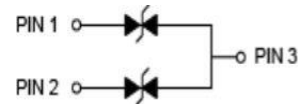
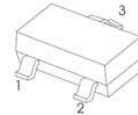
## Applications

DeviceNet communication systems  
 Low and High Speed S2BT interfaces  
 Smart Distribution Systems (SDS)  
 Controlled Area Network (CAN) - ESD 1.1

## Mechanical Data

Package: SOT-23  
 Lead Finish: Matte Tin  
 Case Material: "Green" Molding Compound.  
 UL Flammability Classification Rating 94V-0  
 Moisture Sensitivity: Level 3 per J-STD-020  
 Terminal Connections: See Diagram Below

SOT-23



Schematic & PIN Configuration

## Absolute Maximum Rating

Parameter	Symbol	Limit	Unit
IEC 61000-4-2 ESD Voltage	Air Model	$\pm 30$	kV
	Contact Model	$\pm 30$	
JESD22-A114-B ESD Voltage	Per Human Body Model	$\pm 16$	
ESD Voltage	Machine Model	$\pm 0.4$	
Peak Pulse Power	PP(2)	450	W
Peak Pulse Current	IP(2)	8	A
Lead Solder Temperature – Maximum (10 Second Duration)	T <sub>L</sub>	260	°C
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55 ~ +150	°C

(1). Device stressed with ten non-repetitive ESD pulses.

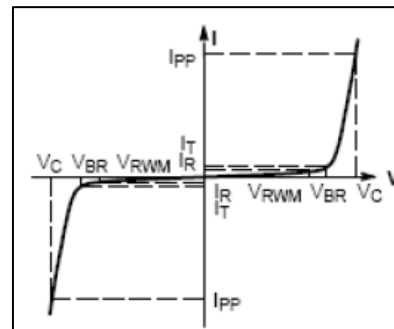
(2). Non-repetitive current pulse 8/20 $\mu$ s exponential decay waveform according to IEC61000-4-5.

**Electrical Characteristics** (TA=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VRWM	Reverse Working Peak Voltage				24	V
VBR	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	26.7	28	33	V
IR	Reverse Leakage Current	$V_{RWM} = 24\text{V}$			1	$\mu\text{A}$
VC	Clamping Voltage	$I_{PP} = 1\text{A} (8/20\mu\text{s})$		35		V
VC	Clamping Voltage	$I_{PP} = 8\text{A} (8/20\mu\text{s})$		40	55	V
Ipp	Peak Pulse Current	$t_p = 8/20\mu\text{s}$			8	A
CJ	Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$		20	40	pF

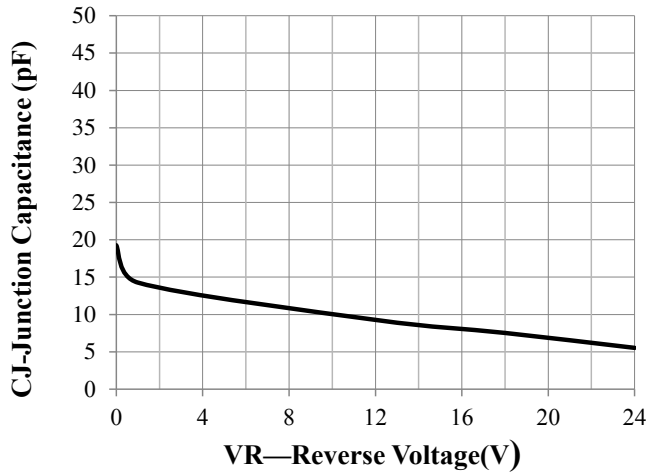
**Electrical Parameters** (TA = 25°C unless otherwise noted)

Symbol	Parameter
$V_C$	Clamping Voltage @ $I_{PP}$
$I_{PP}$	Peak Pulse Current
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{RWM}$	Reverse Standoff Voltage

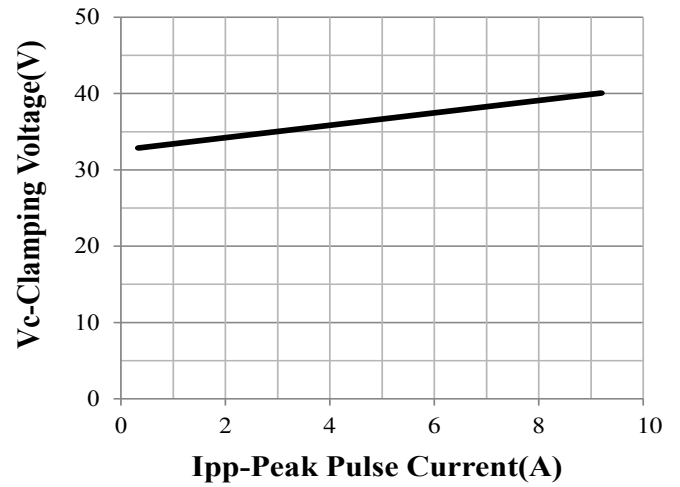


V-I characteristics for a Bi-directional TVS

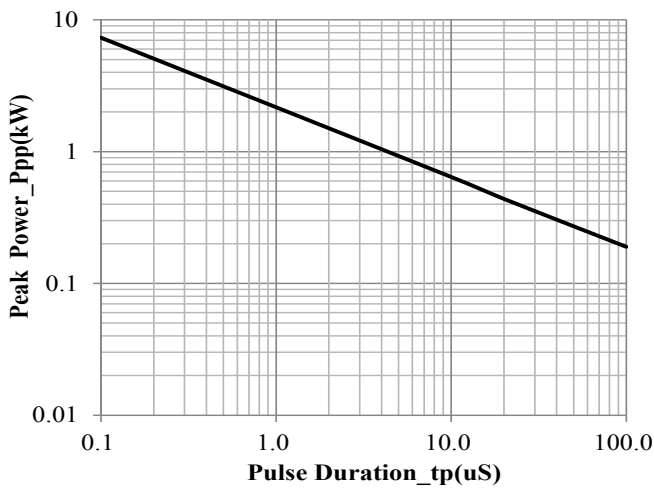
RATING AND CHARACTERISTIC CURVES



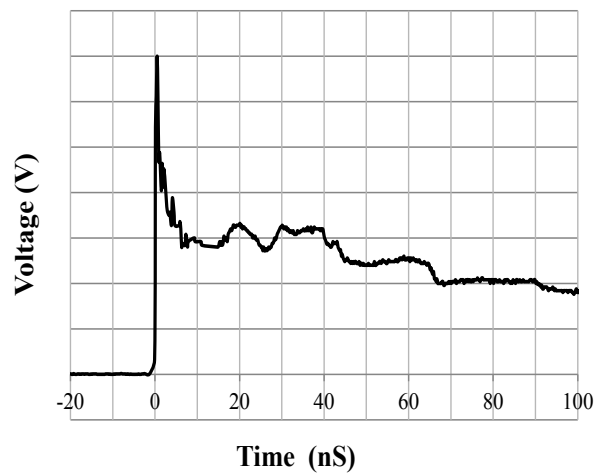
Junction Capacitance vs. Reverse Voltage



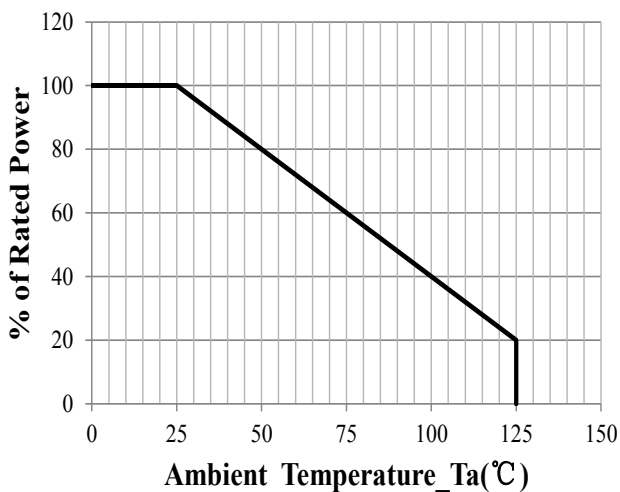
Clamping Voltage vs. Peak Pulse Current



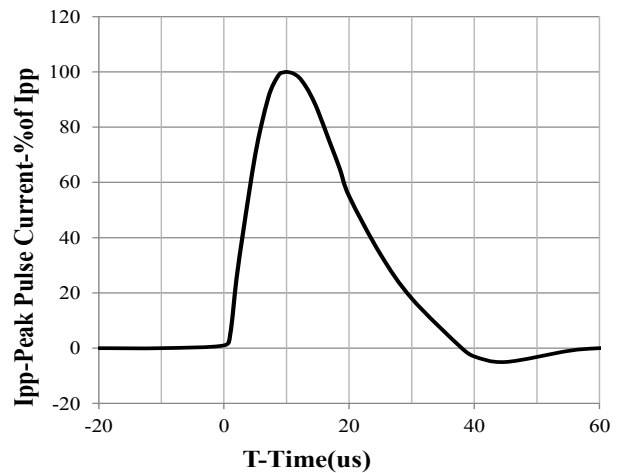
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



Power Derating Curve



8 X 20us Pulse Waveform

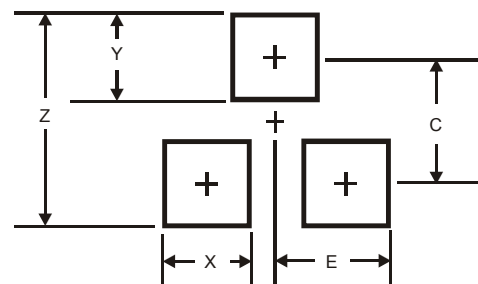
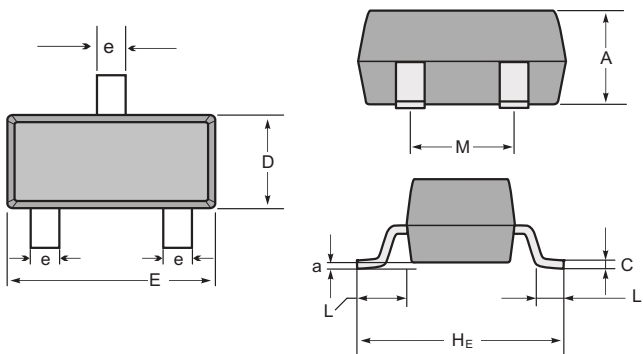
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) (ts)	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 Dimensions & Suggested Pad Layout

SOT23

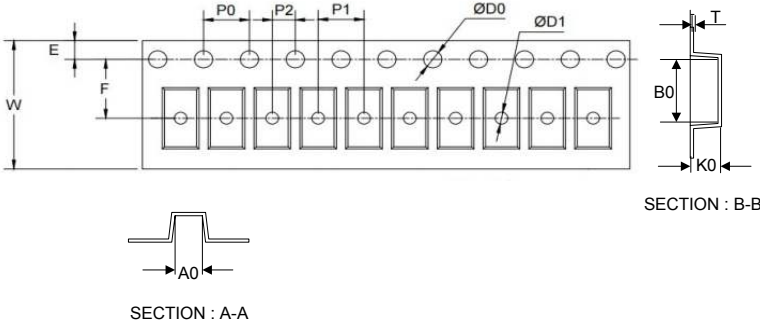
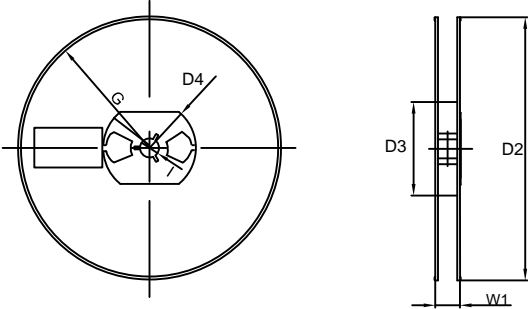


SOT-23 mechanical data

UNIT	A	C	D	E	He	e	M	L	L <sub>1</sub>	a	
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape & reel specification

Tape	Symbol	Dimension (mm)	
	P0	4.00±0.10	
	P1	4.00±0.10	
	P2	2.00±0.10	
	D0	1.55±0.10	
	D1	1.05±0.10	
	E	1.55±0.10	
	F	3.60±0.10	
	W	8.00±0.10	
	A0	3.80±0.20	
	B0	3.25±0.20	
	K0	1.45±0.10	
	T	0.25±0.05	
	<p>7" Reel</p> 	D2	178.0±3.0
		D3	55Min.
		D4	R24.0±3.0
		G	R82.0±3.0
I		13.0±2.0	
W1		11.0±3.0	
Quantity: 3000PCS			