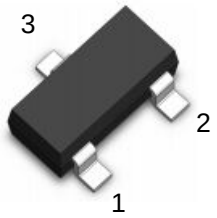
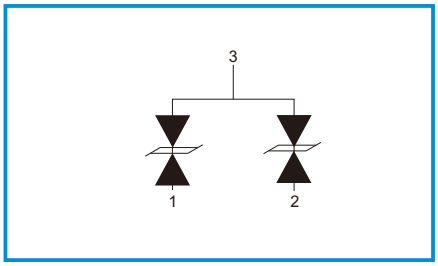
2-Line Bi-directional Low Capacitance TVS Diode Array

Features



- Very low capacitance: 3pF typical
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Small SOT-23 package
- Up to 2-line protects
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±15kV
    Contact discharge: ±8kV
  - – IEC61000-4-5 (Lightning) 2A (8/20μs)
- RoHS Compliant

Functional Diagram



Mechanical Data

- Package: SOT-23
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking : U0522

Applications

- Cellular Handsets and Accessories
- Notebooks and Handhelds
- Personal Digital Assistants
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players, Keypads, Side Keys, LCD
- USB 2.0

Absolute Maximum Ratings

(Ta=25℃ unless otherwise noted)

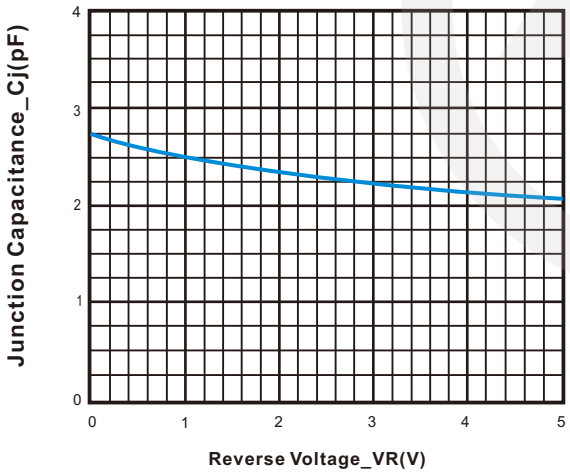
Parameter	Symbol	Value	Unit
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±15 ±8	kV
Peak Pulse Power (8/20μs)	P_{PK}	25	W
Peak Pulse Current	I_{PP}	2	A
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics (Ta=25℃ unless otherwise specified)

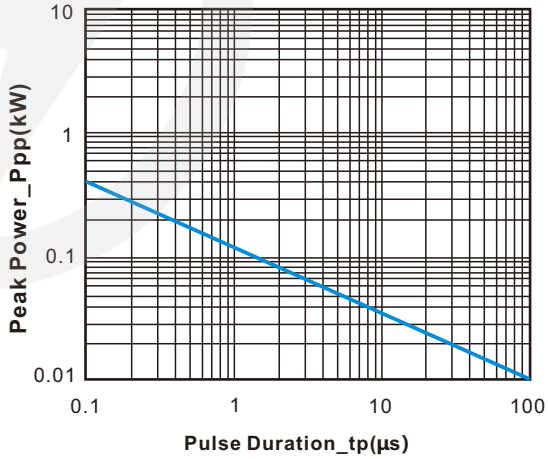
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 5V
Clamping Voltage	V_C			10	V	I_{PP} = 1A (8 x 20μs pulse),
Clamping Voltage	V_C			12.5	V	I_{PP} = 2A (8 x 20μs pulse)
Junction Capacitance	C_J		3.0		pF	VR = 0V, f = 1MHz, any I/O pin to pin 3

Note 1: I/O pins are Pin 1, 2

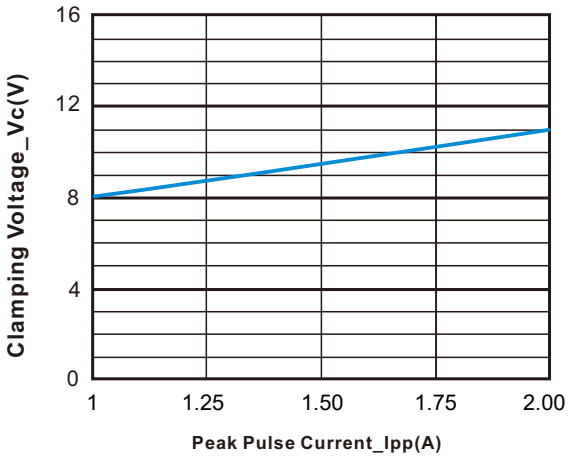
Typical Characteristics



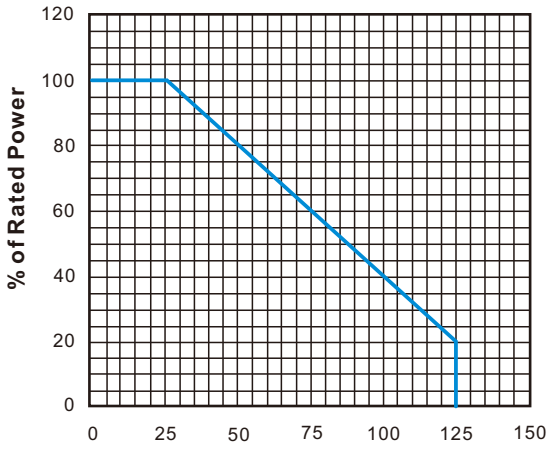
Junction Capacitance vs. Reverse Volatage



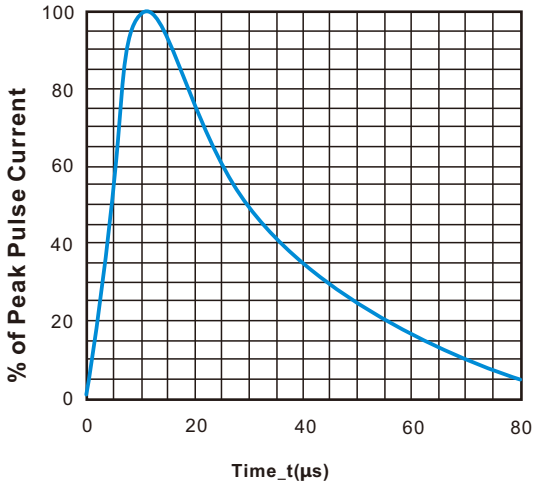
Peak Pulse Power vs. Pulse Time



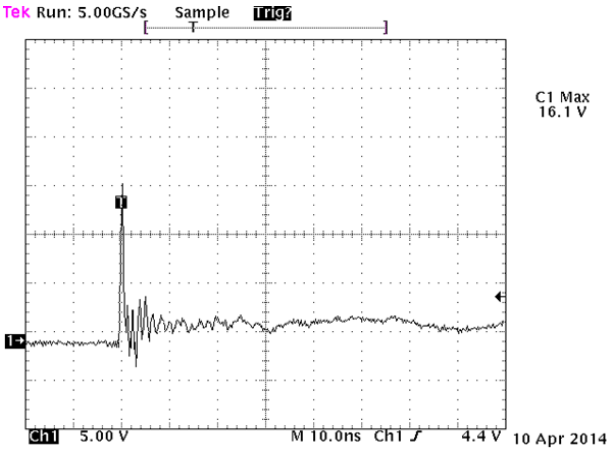
Clamping Voltage vs. Peak Pulse Current(tp=8/20μs)



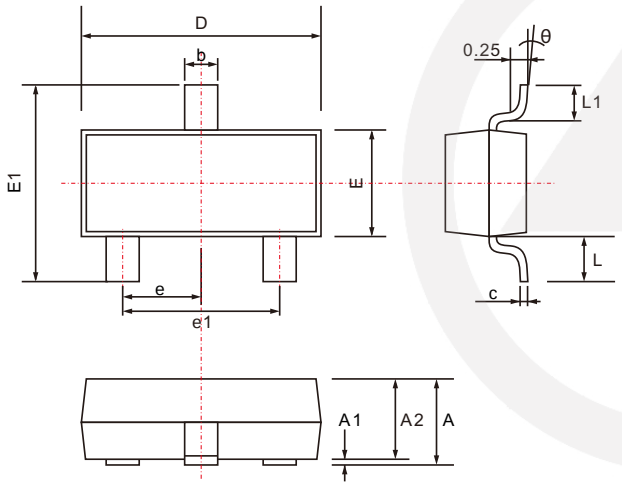
Power Derating Curve



8x20μs Pulse Waveform



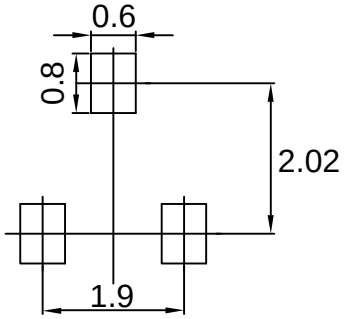
SOT-23 Package Outline



Unit: mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.200
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.200
D	2.700	3.100
E	1.200	1.400
E1	2.200	3.000
e	0.950 TYP.	
e1	1.750	2.050
L	0.550 TYP.	
L1	0.300	0.500
θ	0°	8°

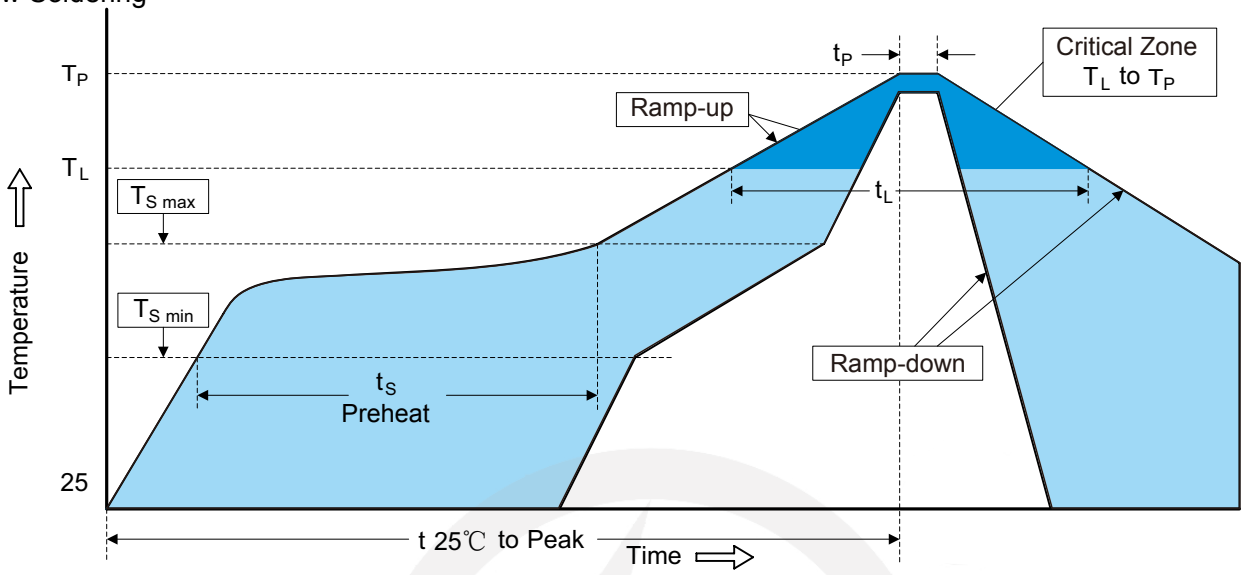
SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm
3.The pad layout is for reference purpose only.

Recommended Soldering Conditions

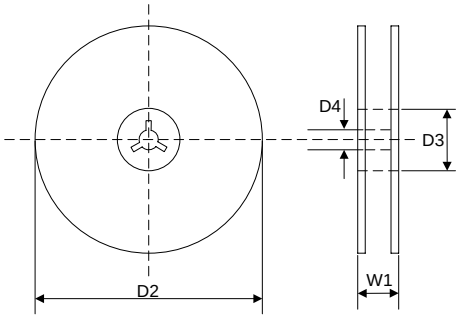
Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

7” Reel



D2	Φ178.0±2.0
D3	Φ50.0Min.
D4	Φ13.0±0.5
W1	16.0±2.0
Quantity: 3000PCS	