

## 2-Line Ultra Low Capacitance TVS Diode Array

### Features

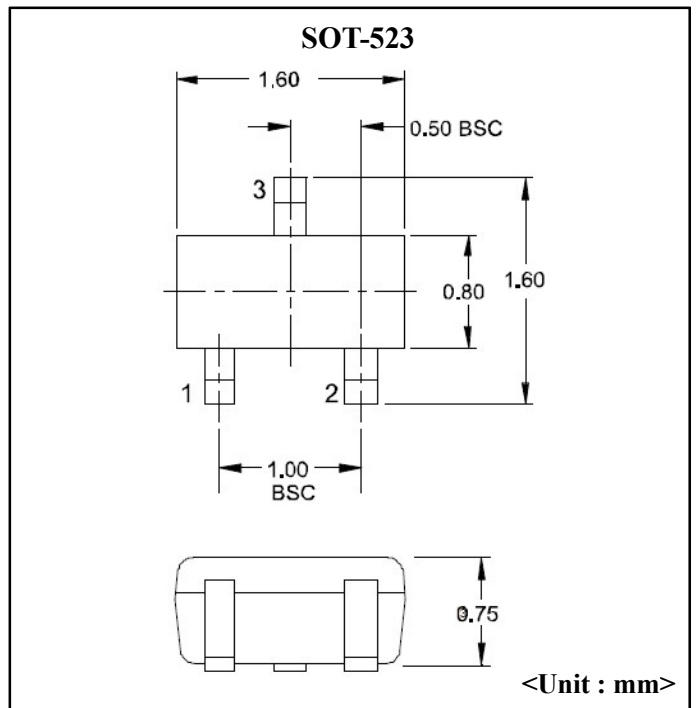
- Ultra Low capacitance : 0.3pF typical (I/O to I/O)
- Ultra low leakage : nA level
- Low operating voltage : 5V
- Low clamping voltage
- Up to 2 data lines protects
- JEDEC SOT-523 package
- Complies with following standards :
  - IEC 61000-4-2(ESD) immunity test  
Air discharge :  $\pm 15\text{kV}$ , Contact discharge :  $\pm 8\text{kV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 5A (8/20us)
- RoHS Compliant

### Mechanical Data

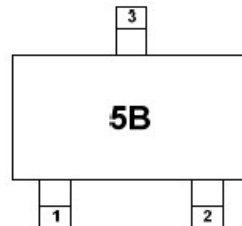
- Package : SOT-523
- Case Material : "Green" Molding Compound.
- Lead Finish : Matte Tin
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity : Level 3 per J-STD-020
- Terminal Connections : See Diagram Below
- Marking Information : See Below

### Applications

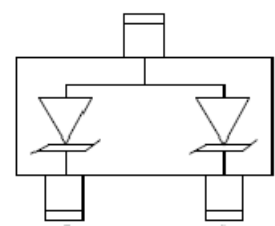
- Mobile Display Digital Interface (MDDI)
- USB 2.0
- Photodetector Protection
- HBT Power Amplifier Protection
- Infiniband Transceiver Protection
- Firewire Ports



### Marking



5B = Device Marking Code



Circuit and Pin Schematic

### Absolute Maximum Ratings (Ta= 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20us)	Ppk	90	W
Peak Pulse Current (8/20us)	Ipp	5	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	$\pm 15$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 8$	
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

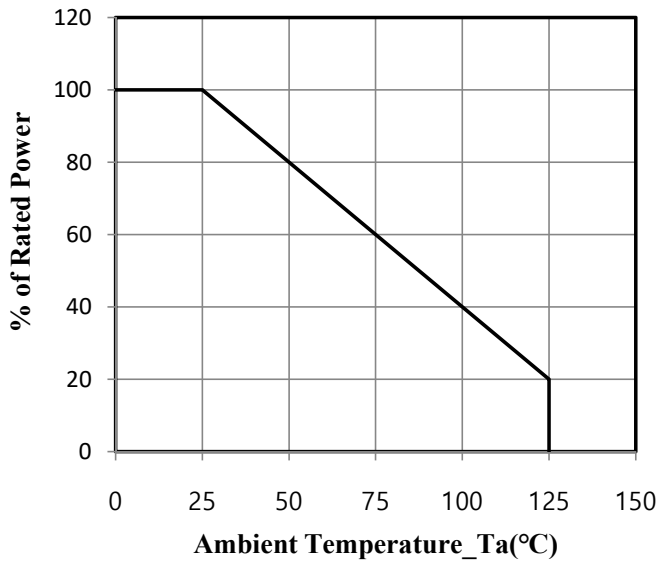
### Electrical Characteristics (Ta= 25°C unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>	-	-	5.0	V	
Breakdown Voltage	V <sub>BR</sub>	6.0	-	-	V	I <sub>T</sub> = 1mA,
Reverse Leakage Current	I <sub>R</sub>	-	-	0.5	uA	V <sub>RWM</sub> = 5V
Clamping Voltage	V <sub>C</sub>	-	-	10	V	I <sub>pp</sub> =1A(8×20us pulse)
Clamping Voltage	V <sub>C</sub>	-	-	18	V	I <sub>pp</sub> =5A(8×20us pulse)
Junction Capacitance	C <sub>J</sub>	-	0.3	-	pF	f=1MHz, V <sub>R</sub> =0V
Junction Capacitance	C <sub>J</sub>	-	0.6	0.8	pF	f=1MHz, V <sub>R</sub> =0V

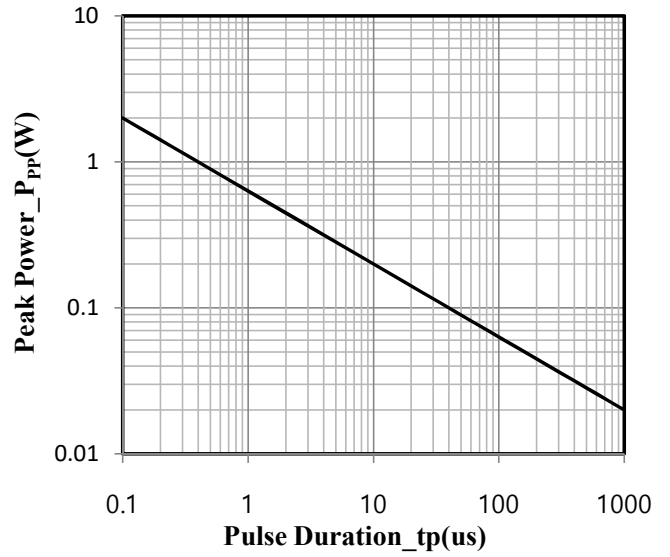
\* Test Pin : Pin 1 or pin 2 to pin 3 and between pin 1 and pin 2

**Ratings and Characteristics Curves (Ta=25°C unless otherwise noted)**

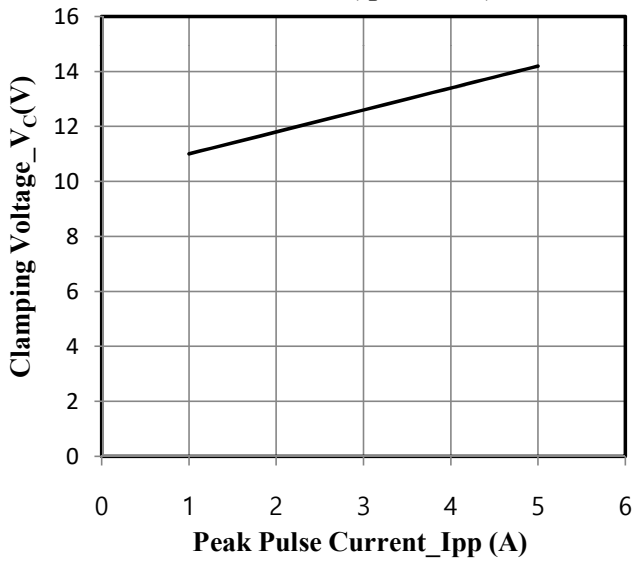
**Fig.1 Power Derating Curve**



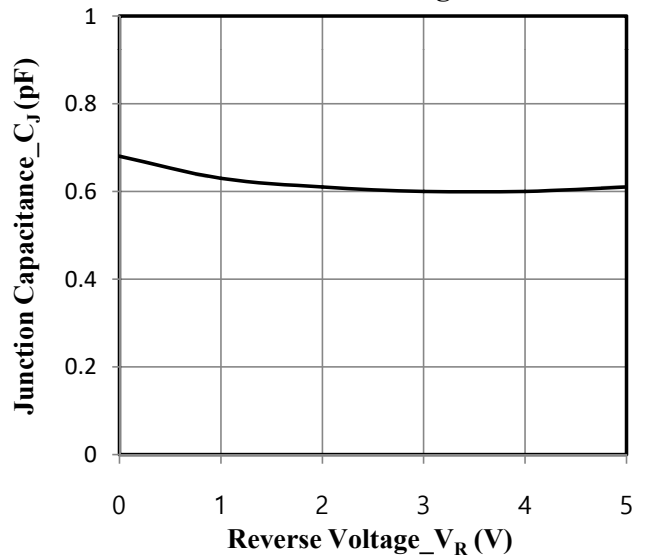
**Fig.2 Peak Pulse Power vs. Pulse Time**



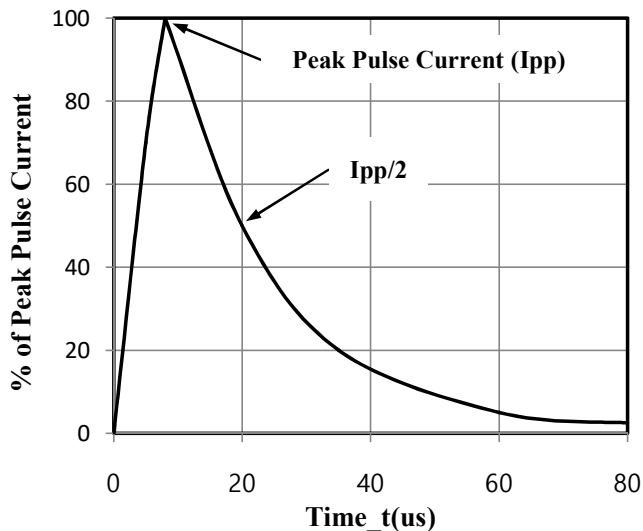
**Fig.3 Clamping Voltage vs. Peak Pulse Current (tp=8/20us)**



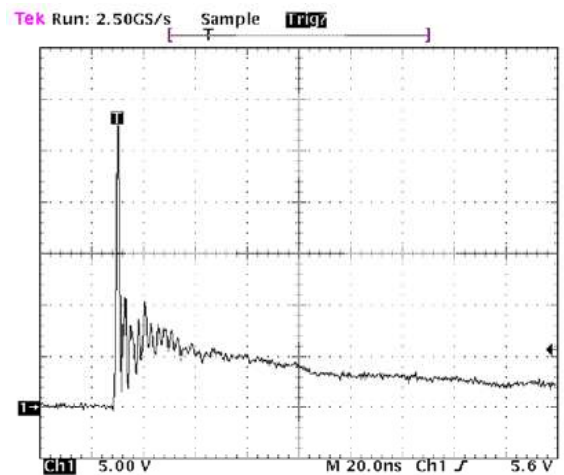
**Fig.4 Junction Capacitance vs. Reverse Voltage**



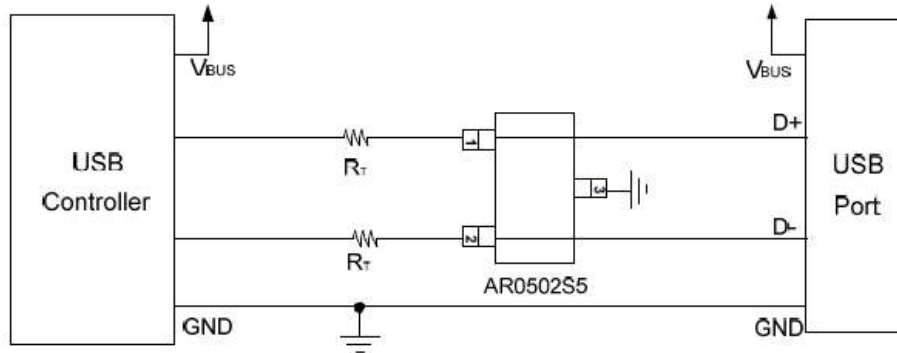
**Fig.5 8 × 20us Pulse Waveform**



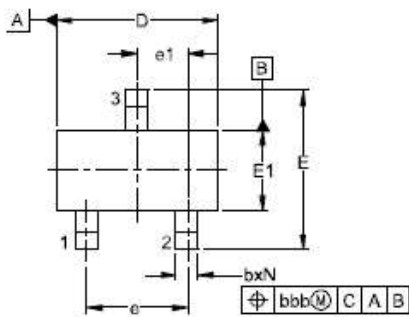
**Fig. 6 ESD Clamping Voltage 8kV Contact per IEC61000-4-2**



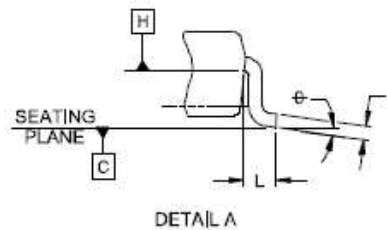
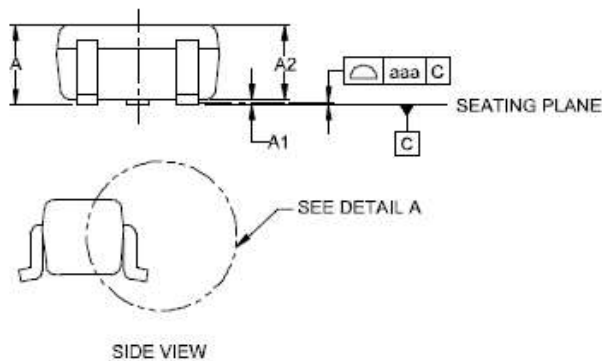
**AR0502S5 on USB Port Application**



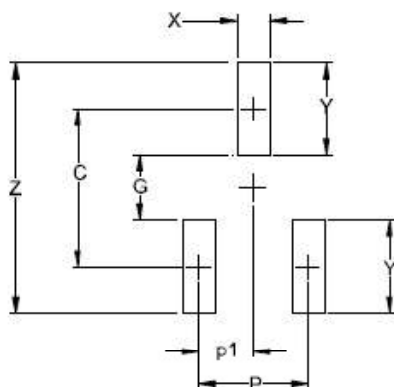
**SOT-523 Package Outline Drawing**



DIM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.023	-	.035	0.60	-	0.90
A1	.000	-	.004	0.00	-	0.10
A2	.023	.030	.031	0.60	0.75	0.80
b	.005	-	.012	0.15	-	0.30
c	.003	-	.008	0.10	-	0.20
D	.059	.063	.067	1.50	1.60	1.70
E	.057	.063	.069	1.45	1.60	1.75
E1	.029	.031	.033	0.75	0.80	0.85
e	.039 BSC			1.00 BSC		
e1	.020 BSC			0.50 BSC		
L	(0.009)			(0.22)		
N	3			3		
⊕	0°	-	8°	0°	-	8°
aaa	.004			0.10		
bbb	.008			0.20		



**Suggested Land Pattern**



DIM	DIMENSIONS	
	INCHES	MILLIMETERS
C	(.055)	(1.40)
P	.039	1.00
p1	.020	0.50
G	.024	0.60
X	.016	0.40
Y	.031	0.80
Z	.087	2.20