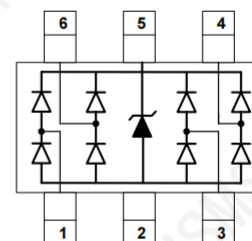
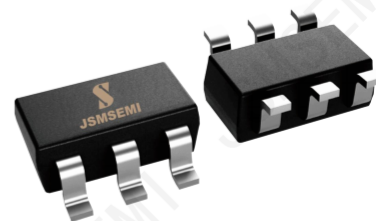


Description

The PRTR5V0U4D,125-JSM is an ultra low capacitance TVS array, 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 PRTR5V0U4D,125-JSM has an ultra-low capacitance with a typical value at 0.6 pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 17\text{kV}$ air and $\pm 15\text{kV}$ contact discharge. It is assembled into a 6-pin lead-free SOT23-6 package.

The combination of small size, ultra low capacitance, and high ESD surge capability make it ideal for use in application such as multimedia, and other high speed ports.



Circuit Diagram

Features

- ◆ Ultra low capacitance: 0.6pF typical (I/O-GND)
- ◆ Ultra low leakage: nA level
- ◆ Low operating voltage: 5.0V
- ◆ Up to 4 data lines and one power line protects
- ◆ Low clamping voltage
- ◆ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air : $\pm 17\text{kV}$; discharge: $\pm 15\text{kV}$
 - IEC61000-4-5 (Lightning) 3.5A (8/20 μs)
- ◆ SOT23-6 Package
- ◆ RoHS Compliant

Applications

- ◆ Monitors and flat panel displays
- ◆ Set-top box and Digital TV
- ◆ Video graphics cards
- ◆ Digital Video Interface (DVI)
- ◆ Notebook Computers
- ◆ PCI Express and Serial SATA Ports

Ordering information

Device	Package	ReelSize	Qty/Reel
PRTR5V0U4D,125-JSM	SOT-23-6L	7inch	3000

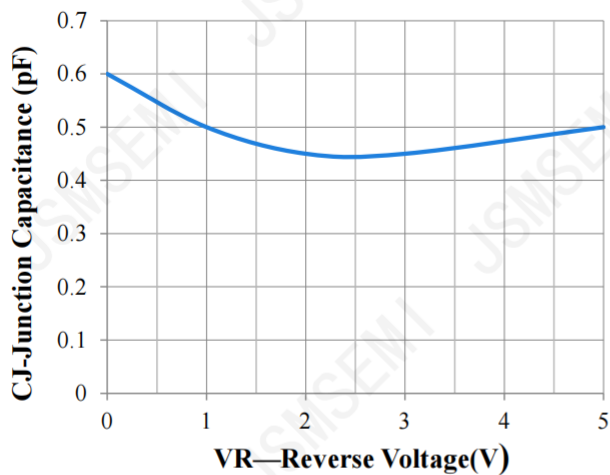
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs , I/O-GND)	Ppk	54	W
Peak Pulse Power (8/20 μs , Vcc-GND)	Ppk	200	W
Peak Pulse Current (8/20 μs , I/O-GND)	IPP	3.5	A
Peak Pulse Current (8/20 μs , Vcc-GND)	IPP	11	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	VESD, VDD VESD, I/O	$\pm 17\pm 15$	kV
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

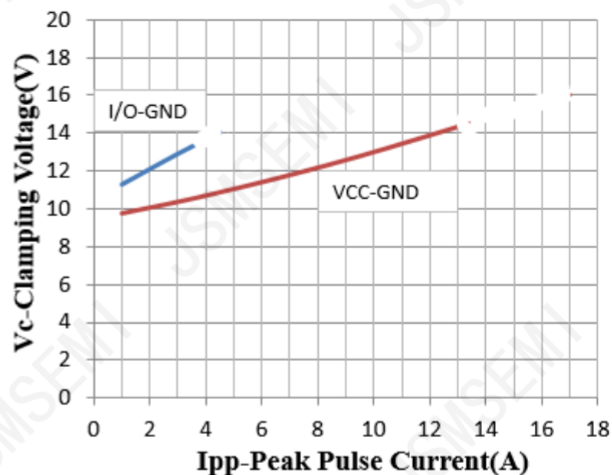
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	VRWM	Pin 5 to GND, I/O-GND			5.0	V
Breakdown Voltage	VBR	$I_T = 1\text{mA}$ (Pin 5 to GND, I/O-GND)	6.0	7.5	8.5	V
Reverse Leakage Current	I_R	VRWM = 5.0V			0.5	μA
Forward Breakdown Voltage	VF	$I_F = 15\text{mA}$, GND to Pin 5/I/O		0.8	1.0	V
Clamping Voltage	VC	IPP = 3.5A (8 x 20 μs pulse, I/O to GND)		13.0	18.0	V
Clamping Voltage	VC	IPP = 11A (8 x 20 μs pulse, Pin 5 to GND)		14.0	18.5	V
Junction Capacitance	CJ	Vpin5 = 5V, I/O = 0V, f = 1MHz, I/O-GND		0.6	0.7	pF
Junction Capacitance	CJ	Vpin5 = 5V, I/O = 0V, f = 1MHz, I/O-I/O pins		0.3	0.4	pF

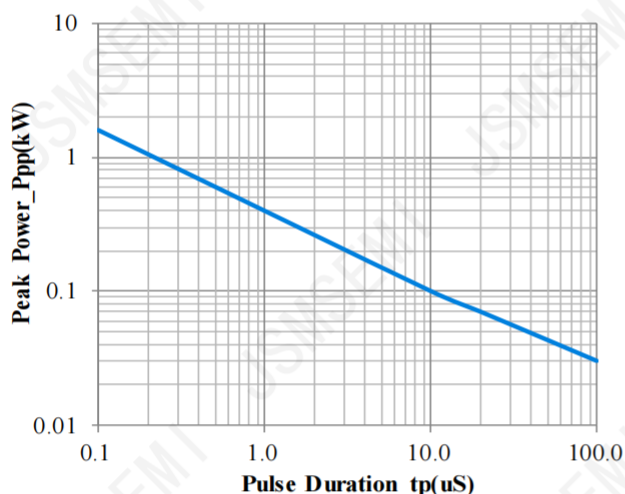
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



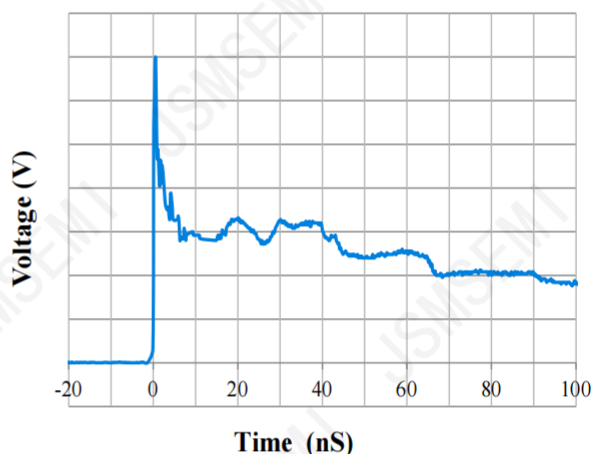
Junction Capacitance vs. Reverse Voltage



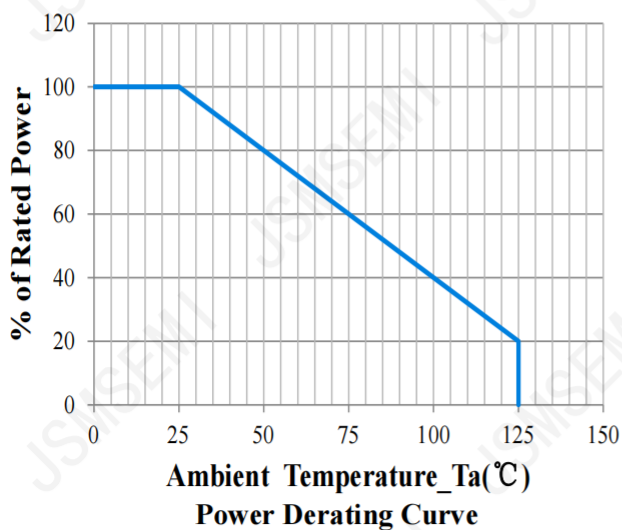
Clamping Voltage vs. Peak Pulse Current



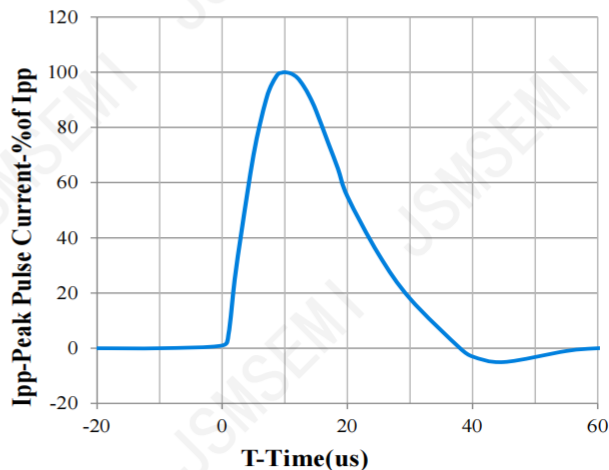
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform

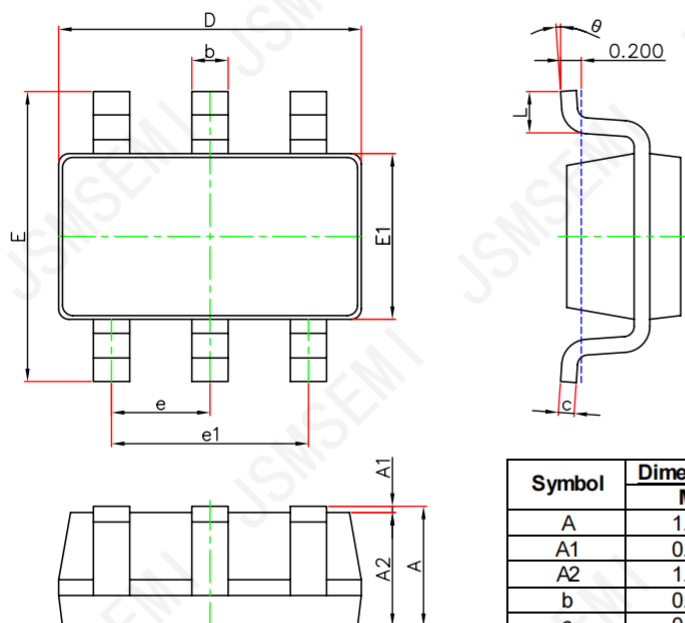


Power Derating Curve



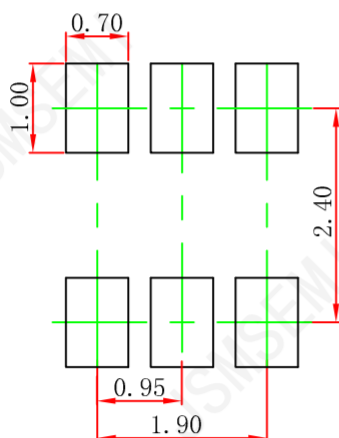
8 X 20us Pulse Waveform

SOT23-6 Package Outline Drawing



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Suggested Land Pattern



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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