

Ultra Low Capacitance ESD Protection Diodes Array

DESCRIPTION

PSR05 provides a typical line to line capacitance of 0.6pF and low insertion loss up to 3GHz providing greater signal integrity making it ideally suited for USB 2.0 applications, such as Digital TVs, DVD players, Computing, set-top boxes and MDDI applications in mobile computing devices.

This device has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

FEATURES

- ✧ Protects two I/O lines and one Vcc line
- ✧ Low capacitance
- ✧ Low leakage current
- ✧ No insertion to 3.0 GHz
- ✧ 5V operating voltage
- ✧ Response time < 1ns
- ✧ Solid-state silicon avalanche technology
- ✧ Device meets MSL 1 requirements
- ✧ RoHS compliant

MACHANICAL DATA

- ✧ SOT-143 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Terminal: Matte tin plated.
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed: 260 °C / 10s
- ✧ Reel size: 7 inch

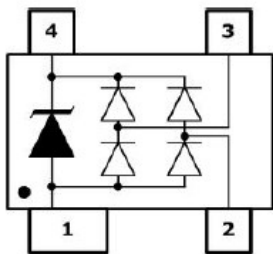
ORDERING INFORMATION

- ✧ Device: PSR05
- ✧ Package: SOT-143
- ✧ Marking: R05
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

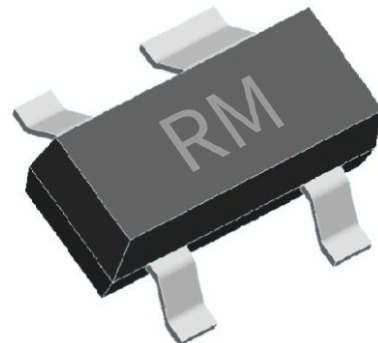
APPLICATIONS

- ✧ xDSL
- ✧ USB 1.1/2.0/OTG
- ✧ IEEE 1394 Firewire Ports
- ✧ Notebooks & Handhelds
- ✧ Projection TV & Monitors
- ✧ Set-top box
- ✧ Flat Panel Displays

PIN CONFIGURATION



PACKAGE OUTLINE



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ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	125	W
I_{PP}	Peak Pulse Current (8/20 μ s)	5	A
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	± 15 ± 8	kV
T_{OPT}	Operating Temperature	-55/+150	°C
T_{STG}	Storage Temperature	-55/+150	°C

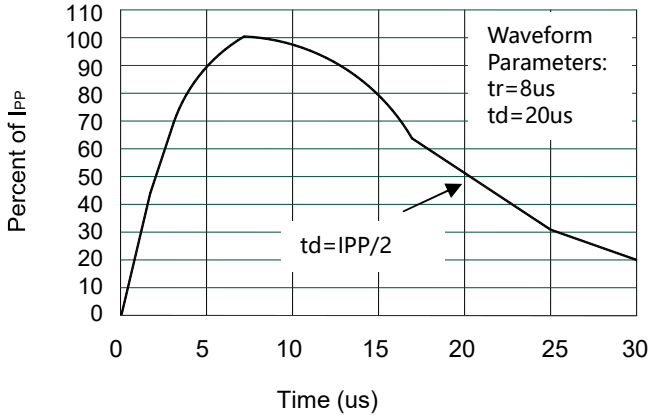
ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}C$)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Any I/O pin to GND			5.0	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1mA$ Any I/O pin to GND	6.0			V
I_R	Reverse Leakage Current	$V_{RWM} = 5V$ Any I/O pin to GND			1	μA
V_F	Diode Forward Voltage	$I_F = 15mA$		0.85	1.2	V
V_{C1}	Clamping Voltage 1	$I_{PP} = 1A, t_p = 8/20\mu s$ Any I/O pin to GND			15.5	V
V_{C2}	Clamping Voltage 2	$I_{PP} = 5A, t_p = 8/20\mu s$ Any I/O pin to GND			25	V
I_{PP}	Peak Pulse Current	$t_p = 8/20\mu s$ Any I/O pin to GND			5	A
C_{J1}	Junction Capacitance 1	$V_R = 0V, f = 1MHz$ Between I/O pins		0.45	0.6	pF
C_{J2}	Junction Capacitance 2	$V_R = 0V, f = 1MHz$ Any I/O pin to GND		0.9	1.2	pF

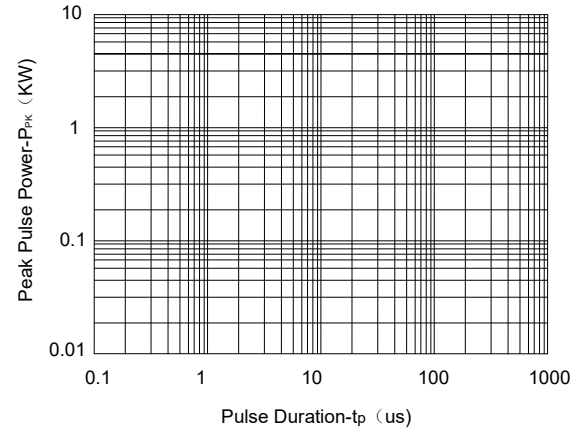
Note: I/O pins are pin2,3.

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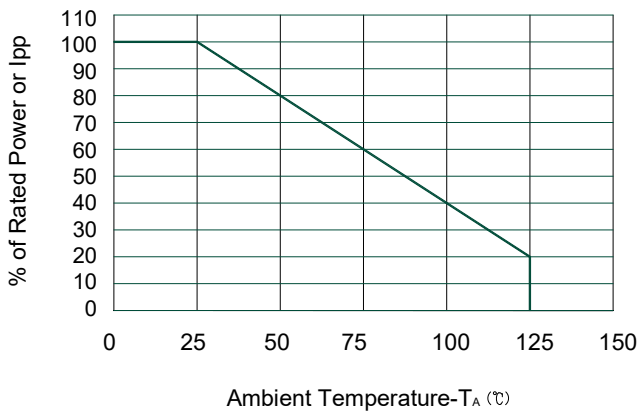
ELECTRICAL CHARACTERISTICS CURVE



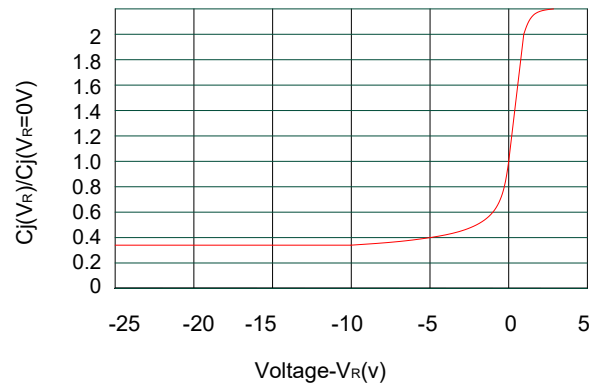
Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time



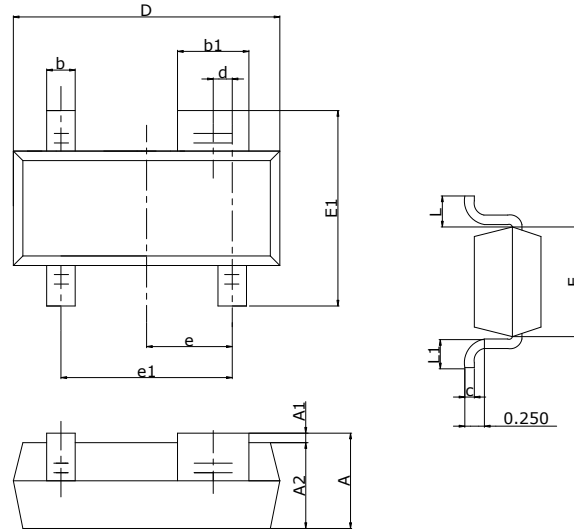
Power Derating Curve



Junction Capacitance vs. Reverse Voltage

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SOT-143 PACKAGE OUTLINE DIMENSIONS



SOT-143

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	MIN	MAX
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
b1	0.75	0.90	0.030	0.035
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
d	0.20TYP		0.008TYP	
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.10
e	0.95TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.55REF		0.022REF	
L1	0.30	0.50	0.012	0.020