

Low Capacitance Transient Voltage Suppression Diode Array



RoHS

Features

- Low Capacitance (1.5 pf Maximum Between I/O Lines)
- Protects four Data Lines
- Single Package Integration Design
- Low leakage current
- Fewer Components and Less Board Space
- Response Time is Typically < 1 ns

Description

PTR05 is a micro-integrated device designed to provide protection for sensitive components from possible harmful electrical transients; for example, ESD (electrostatic discharge).

Applications

- ADSL Lines
- Video Line Protection
- T1/E1 secondary IC Side Protection
- Microcontroller Input Protection
- WAN/LAN Equipment
- ISDN S/T Interface

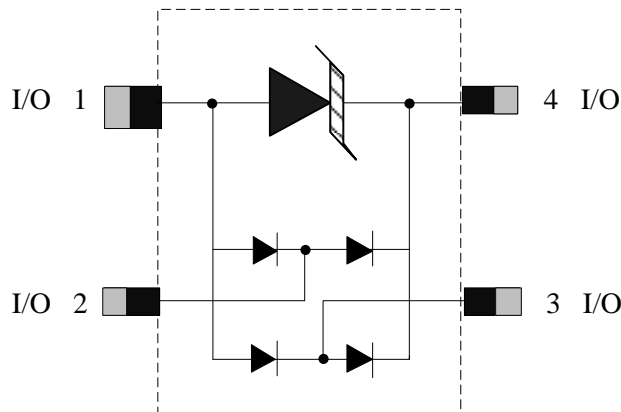
Complies with the following standards

- IEC 61000-4-2 level 4 30 kV (air) 15 kV (contact)
- IEC 61000-4-4 level 4 ±2 kV - 40 A (5/50 ns)

Mechanical Data

- JEDEC SOT-143 package
- Pb-Free, Halogen Free, RoHS/WEEE Compliant
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel

Schematic & PIN Configuration



Absolute Maximum Rating(Each Diode)($T_J=25^{\circ}\text{C}$ unless otherwise noted)

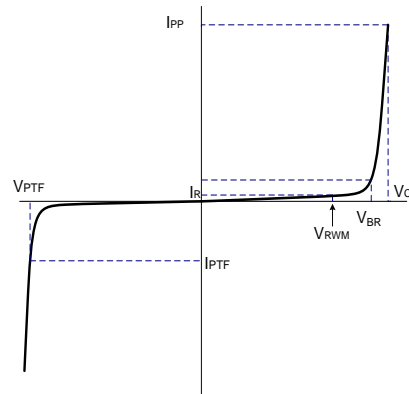
Rating	Symbol	Value	Units
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Peak Pulse Power ($t_p=8/20\mu\text{s}$)	P_{PP}	500	Watts
Peak Pulse Current ($t_p=8/20\mu\text{s}$)	I_{PP}	18	A
Lead Soldering Temperature	T_L	260(10sec)	$^{\circ}\text{C}$
Operating Temperature	T_J	-55 to + 125	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Note:Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 1.0 _ 0.75 _ 0.062 in.

Electrical Parameters

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_r



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

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				5.0	V
Punch-Through Voltage	V_{BR}	$I_r=50\mu\text{A}$	6.0			V
Reverse Leakage Current	I_R	$V_{RWM}=70\text{V}, T=25^{\circ}\text{C}$			1.0	μA
Clamping Voltage	V_C	$I_{pp}=1\text{A}, t_p=8/20\mu\text{s}$			9.8	V
Clamping Voltage	V_C	$I_{pp}=20\text{A}, t_p=8/20\mu\text{s}$			25	V
Junction Capacitance	C_j	Between I/O pins and Ground $V_R=0\text{V}, f=1\text{MHz}$		3	5	pF
		Between I/O pins $V_R=0\text{V}, f=1\text{MHz}$		2		pF

Typical Characteristics

Figure 1: Non-Repetitive Peak Pulse Power

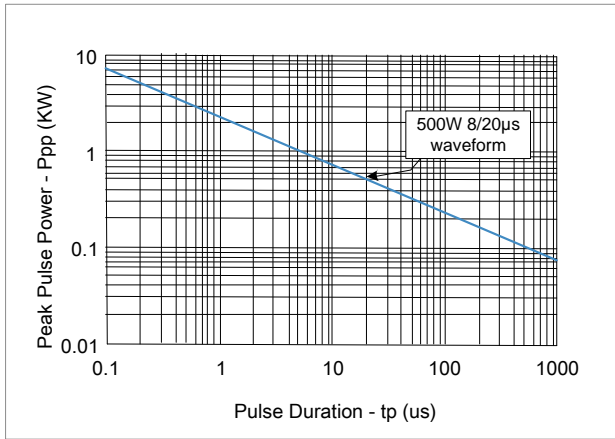


Figure 2: Power Derating curve

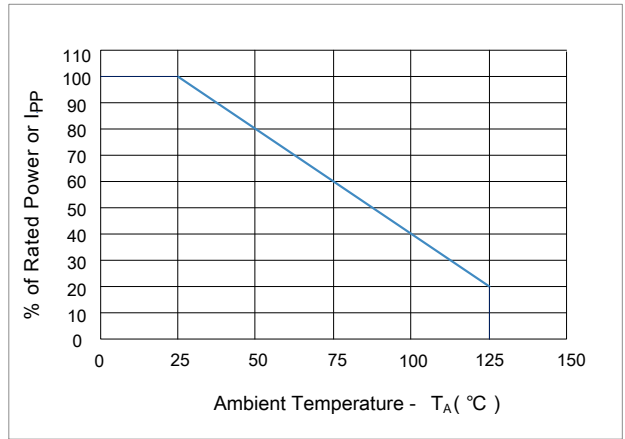


Figure 3: Forward Voltage vs. Forward Current

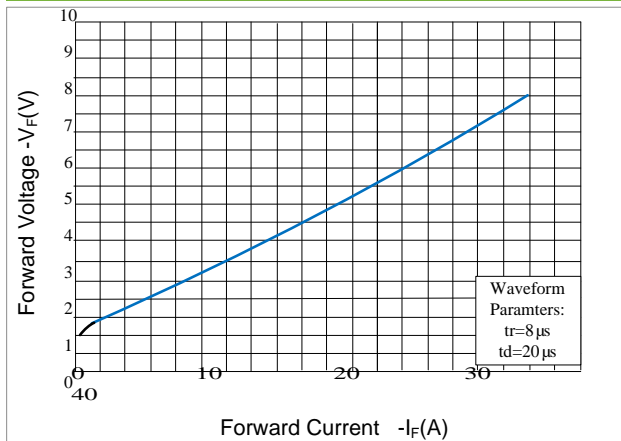


Figure 4: Clamping Voltage vs. Peak Pulse Current

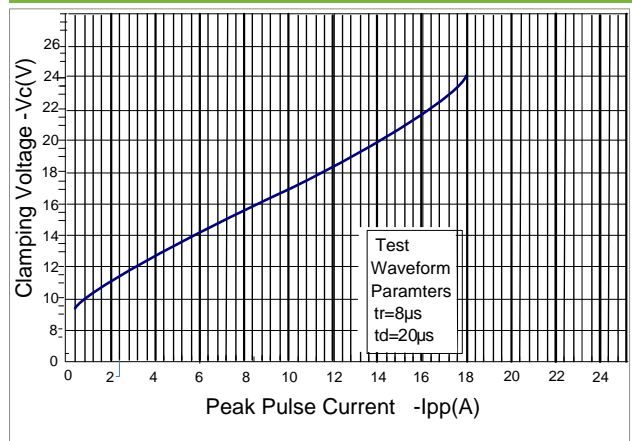


Figure 4: Pulse Waveform

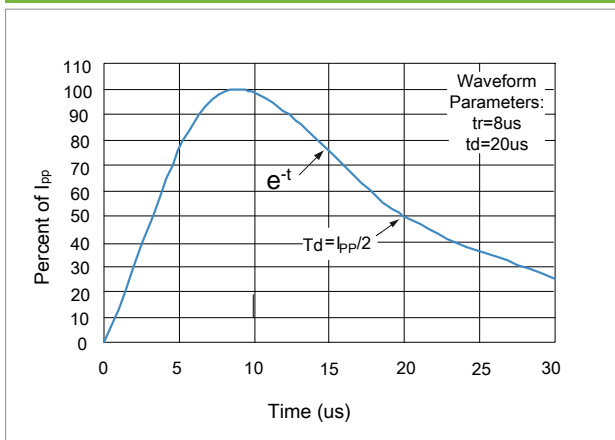
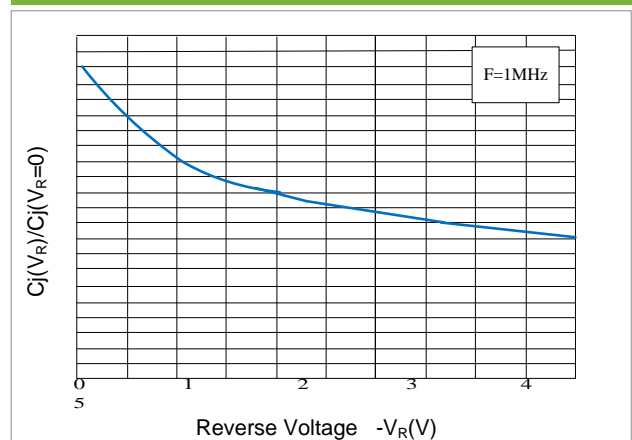
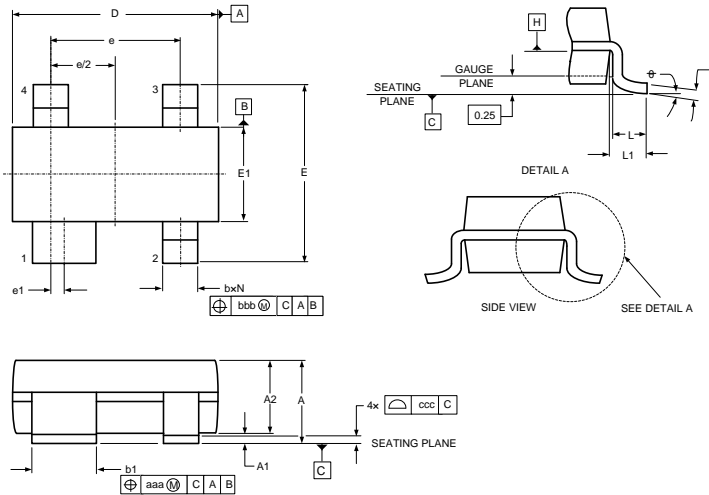


Figure 4: Capacitance vs. Reverse Voltage



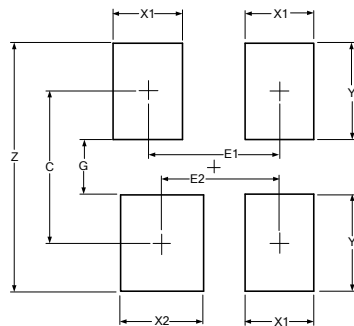
Outline Drawing – SOT-143

PACKAGE OUTLINE



DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
b1	0.750	0.900	0.030	0.035
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
e	1.800	2.000	0.071	0.079
e1	0.200TYP		0.008TYP	
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
L1	0.550REF		0.022REF	
L	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	.087	2.20
E1	.76	1.92
E2	.068	1.72
G	.031	0.80
X1	.039	1.00
X2	.047	1.20
y	.055	1.40
z	.141	3.60

Notes

- This land pattern is for reference purposes only consult your manufacturing group to ensure your company's manufacturing guidelines are met. Reference ipc-sm-782a..

Ordering information

Order code	Package	Base qty	Delivery mode
PTR05	SOT-143	3000	Tape and reel