

PTUC0584T – ESD Protection Diode

Feature

- 60 Watts peak pulse power (8/20 μs)
- Solid state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low capacitance (C_j = 0.3 pF typ. IO to IO)
- Protect one data/power line
- ESD capability according to AEC-Q101:
human body model: class H3B: >8 kV
- IEC61000-4-2 (ESD) ±25 kV (Air), ±25 kV (Contact)
- IEC61000-4-4 (EFT) 40 A (5/50 ns)
- IEC61000-4-5 (Lightning): 4 A (8/20 μs)



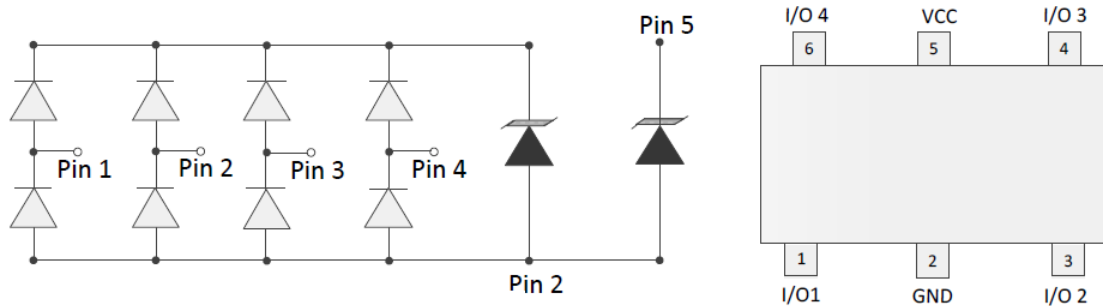
Applications

- Ethernet
- Digital Video Interface (DVI)
- USB2.0
- Notebooks and PC Computers

Mechanical Data

- SOT23-6 package
- Molding compound flammability rating: UL94 V-0
- Tape and Reel Packaging
- RoHS/WEEE Compliant

Schematic and PIN Configuration



Maximum Rating

Parameter	Symbol	Limit	Unit
IEC61000-4-2 ESD Voltage – Air Mode	V _{ESD} ⁽¹⁾	±25	kV
IEC61000-4-2 ESD Voltage – Contact Mode		±25	
Peak Pulse Power	P _{PP} ⁽²⁾	60	W
Peak Pulse Current	I _{PP} ⁽²⁾	4.0	A
Maximum Lead Solder Temperature (10 seconds duration)	T _L	260	°C
Junction Temperature	T _J	-55~125	°C
Storage Temperature Range	T _{stg}	-55~125	°C

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of TA = 25 °C unless otherwise noted.

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Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1 \text{ mA}$	6.0	8.0		V
Reverse Leakage Current	I_R	$V_{RWM} = 5 \text{ V}$			0.5	μA
Clamping Voltage	$V_C^{(2)}$	$I_{PP} = 4 \text{ A}$		10	15	V
Junction Capacitance	C_J	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, I/O \text{ to } I/O$		0.3	0.4	pF
		$V_R = 0 \text{ V}, f = 1 \text{ MHz}, I/O \text{ to } GND$		0.6	0.8	pF

VCC TVS

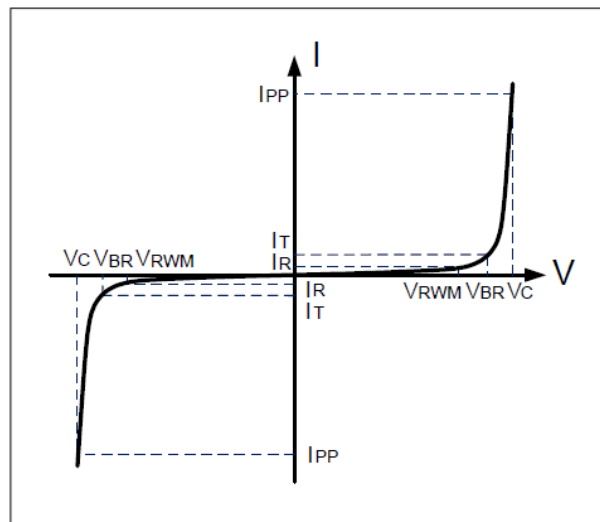
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1 \text{ mA}$	6.0			V
Reverse Leakage Current	I_R	$V_{RWM} = 5 \text{ V}$			1.0	μA
Clamping Voltage	$V_C^{(2)}$	$I_{PP} = 20 \text{ A}$		12	15	V
Junction Capacitance	C_J	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, VCC \text{ to } GND$		160	165	pF

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of $T_A = 25^\circ\text{C}$ unless otherwise noted.

Electrical Parameters

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Stand-off Voltage



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Typical Characteristics

Fig.1 Peak Pulse Power Rating Curve

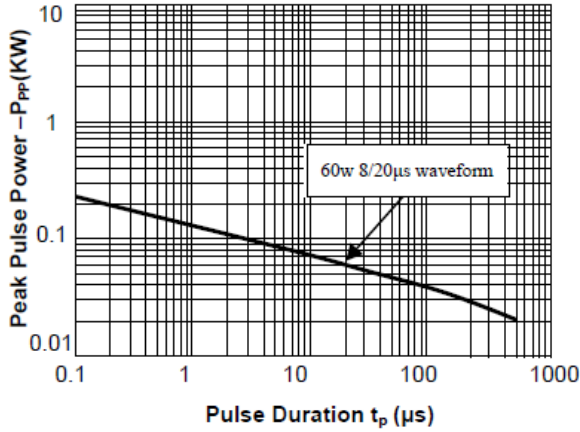


Fig.2 Pulse Derating Curve

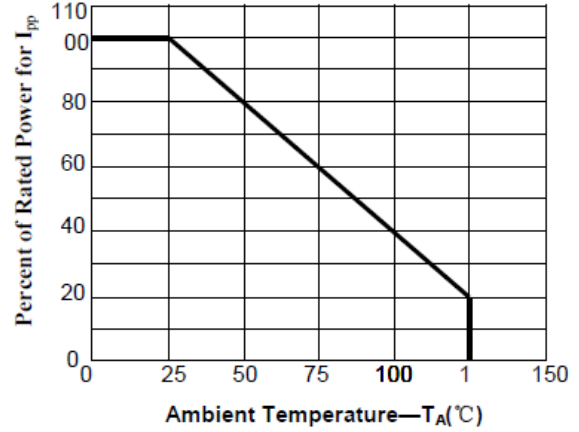


Figure3: Pulse Waveform

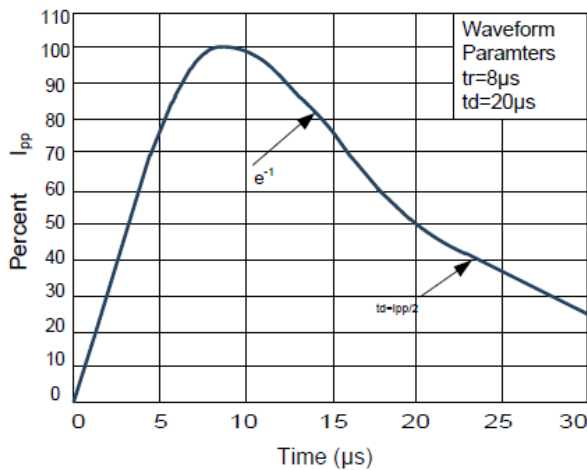


Figure 4: Clamping Voltage vs. I_{PP} (I/O to GND)

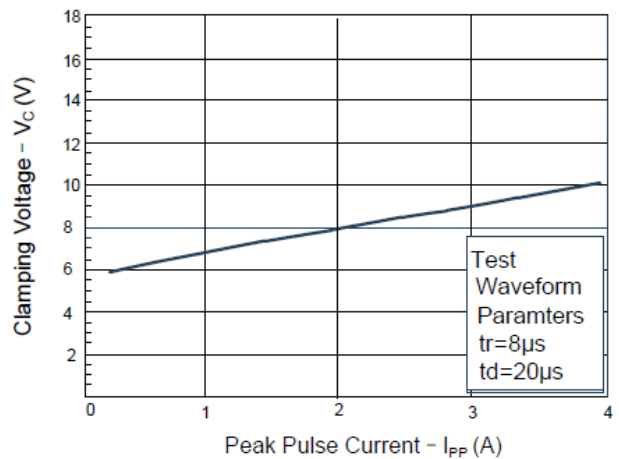


Figure 5: TLP Positive I-V Curve-Pin1 to Pin2

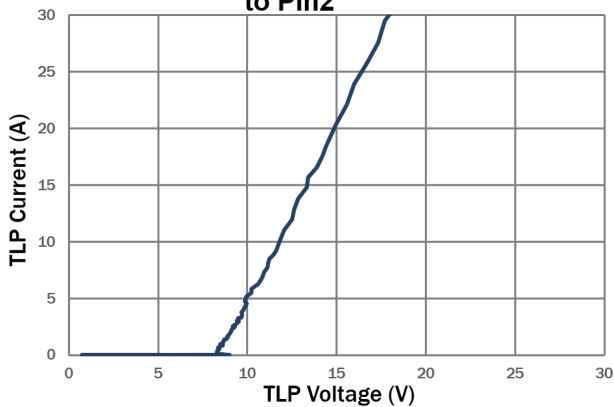
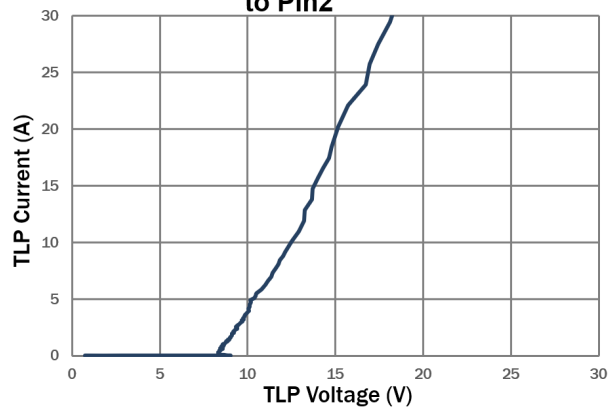
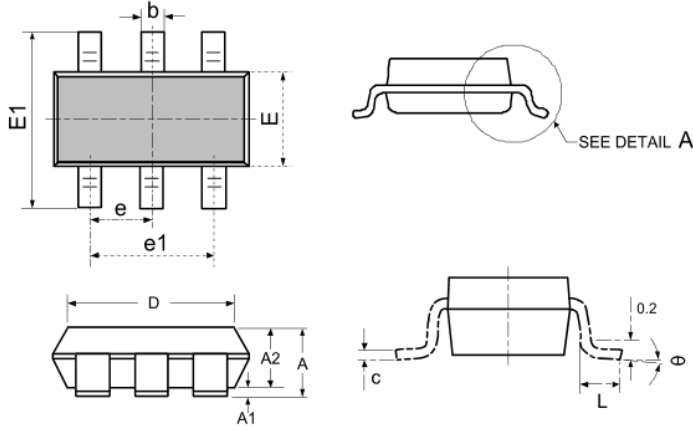


Figure 6: TLP Positive I-V Curve-Pin3 to Pin2



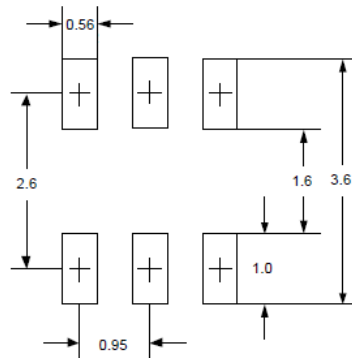
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SOT23-6 Package Outline Dimensions



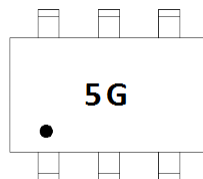
Symbol	Dimensions (mm)	
	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
b	0.300	0.500
e	0.950 (BSC)	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

SOT23-6 Recommended Pad Layout



Note:
Controlling dimensions in millimeters

Marking



Packaging Information

Order Code	Packaging	Reel Size	PCS/Reel
PTUC0584T	SOT23-6	7 inch	3,000