PTLC0514TS – ESD Protection Diode

Feature

- 100 Watts peak pulse power (8/20μs)
- SOT23-6 package
- Solid state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low capacitance (C_J = 0.5 pF typ.)
- Protect one data/power line
- IEC61000-4-2 (ESD) ±20kV (Air), ±15kV (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning): 6.0A (8/20μs)

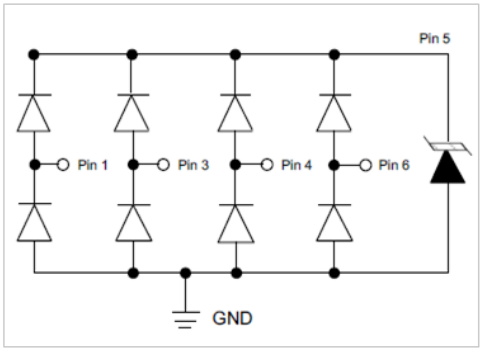
Applications

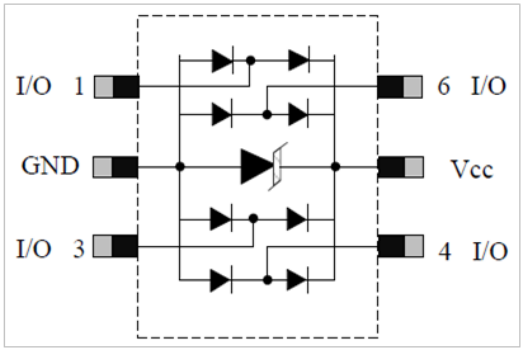
- Ethernet
- Digital Video Interface (DVI)
- USB2.0
- Notebooks and PC Computers

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)	±20	kV
IEC61000-4-2 ESD Voltage – Contact Mode		±15	
Peak Pulse Power	P_{PP}(2)	100	W
Peak Pulse Current	I_{PP}(2)	6.0	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

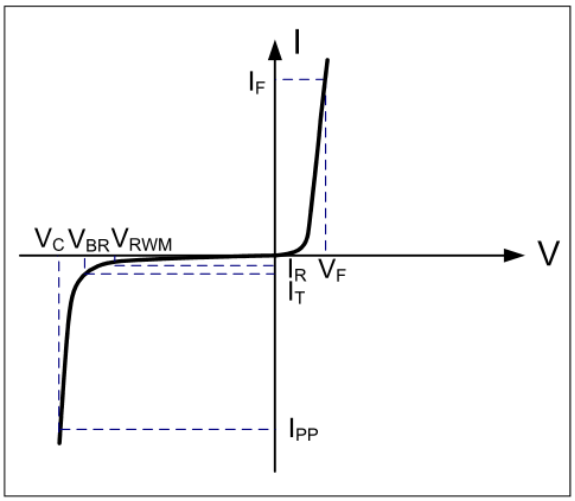
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	V_{RWM}(1)				5.0	V
Reverse Breakdown Voltage	V_{BR}	I_T = 1mA	6.0	6.8	8.5	V
Reverse Leakage Current	I_R	V_{RWM} = 5V		50	500	nA
Peak Pulse Current	I_{PP}				6.0	A
Clamping Voltage	V_C(2)	I_{PP} = 6.0A		14	16	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz, I/O to I/O		0.3	0.4	pF
		V_R = 0V, f = 1MHz, I/O to GND		0.6	0.8	pF

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of T_A = 25°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
V_F	Forward Voltage @ I_F



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Typical Characteristics

Fig.1 Peak Pulse Power Rating Curve

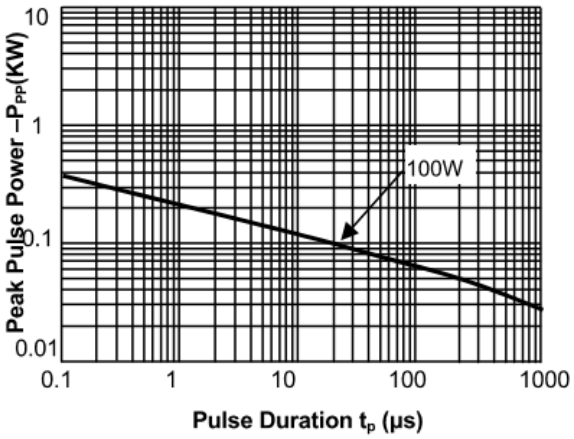


Fig.2 Pulse Derating Curve

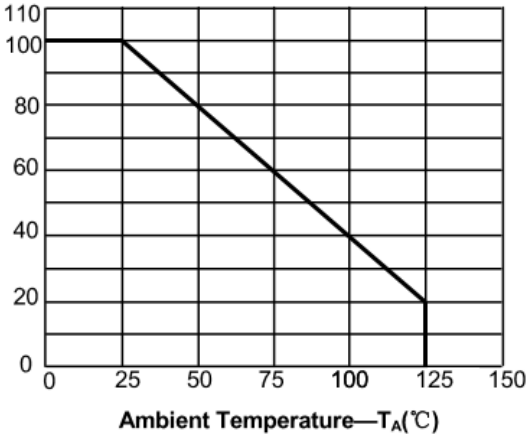


Fig.3 Pulse Waveform-8/20μs

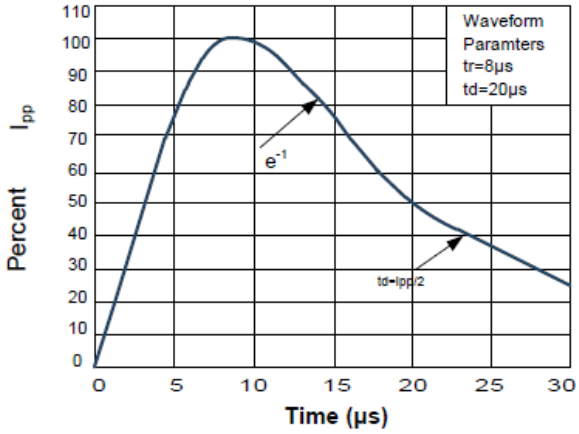


Fig.4 Clamping Voltage vs.Ipp

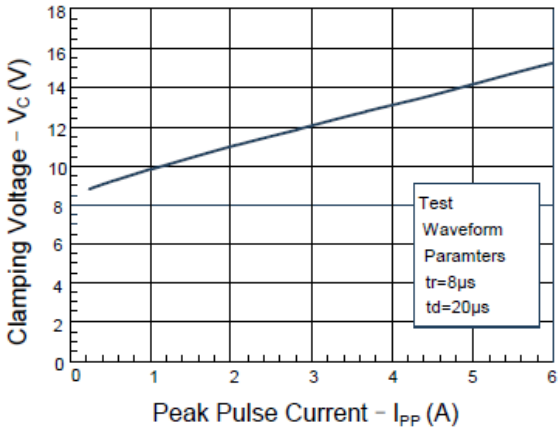


Fig.5 Pulse Waveform-ESD(IEC61000-4-2)

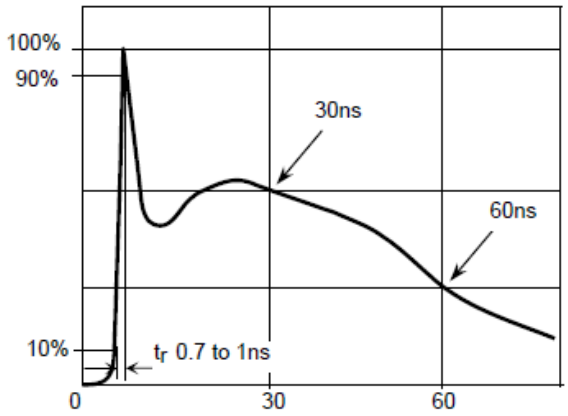
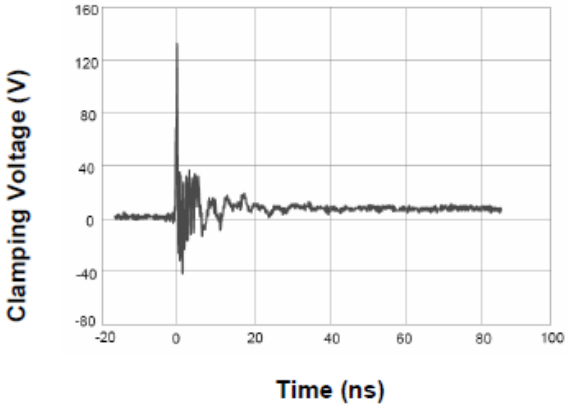


Fig.6 ESD Clamping(IEC61000-4-2:+8kV)



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Typical Characteristics

Fig.7 Eye Diagram - HDMI mask at 3.4Gbps per channel

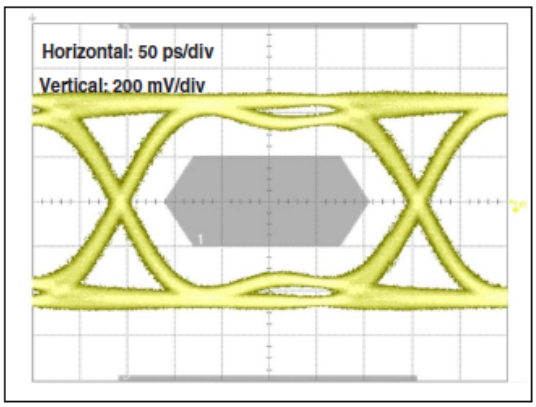
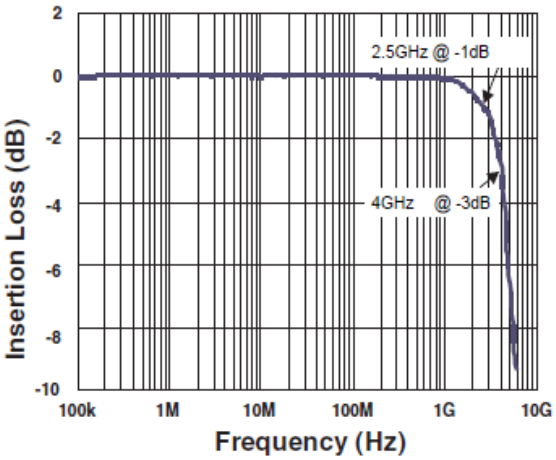
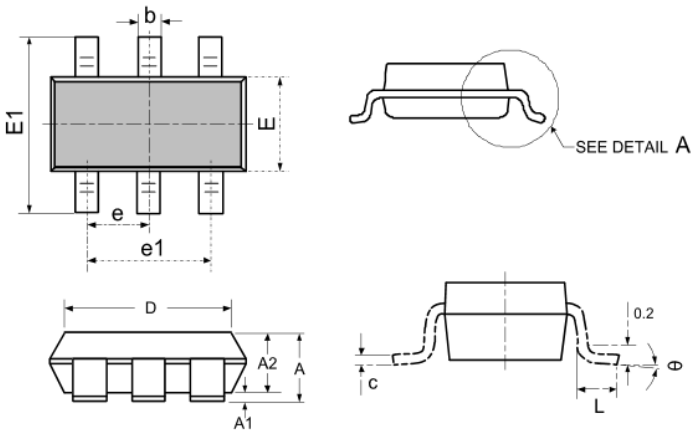


Fig.8 Insertion Loss S21 - I/O to GND

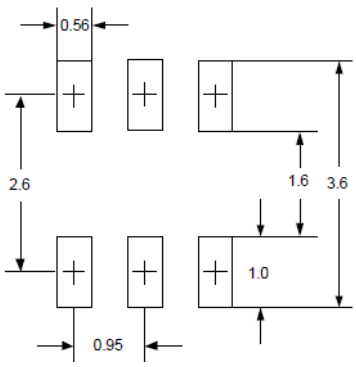


SOT23-6 Package Outline Dimensions



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

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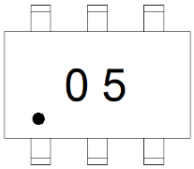
Marking



Packaging Information

Order Code	Packaging	Reel Size	PCS/Reel
PTLC0514TS	SOT23-6	7 inch	3,000