

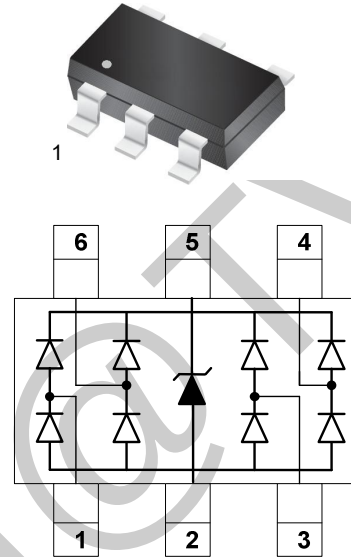
Features

- Ultra low capacitance: 0.3 pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Low operating voltage: 5 V
- Low clamping voltage
- Protects up to 4 data lines and one power line (V_BUS)
- IEC 61000-4-2 (ESD): Air discharge ± 30 kV, Contact discharge ± 25 kV
- IEC 61000-4-4 (EFT): 40 A (5/50 ns)
- IEC 61000-4-5 (Lightning): 3 A (8/20 μ s)
- RoHS Compliant

Mechanical Data

- Package: SOT23-6
- Lead Finish: Matte Tin
- UL Flammability Classification: 94V-0
- Case Material: "Green" Molding Compound
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking: V05 (Device Marking Code), Dot denotes Pin 1
- Terminal Connections: Pin 1,3,4,6 = I/O; Pin 2 = GND (REF1); Pin 5 = V_BUS (REF2)

SOT-23-6L



Circuit and Pin Schematic

Applications

- USB 2.0 and USB 3.0 Ports
- USB OTG
- Digital Video Interface (DVI)
- Monitor and Flat Panel Displays
- PCI Express and Serial SATA Ports
- Gigabit Ethernet
- IEEE 1394 FireWire Ports
- Consumer Products (STB, DVD, DSC, DVC...)

Absolute Maximum Ratings

Ratings at 25 °C, ambient temperature unless otherwise specified

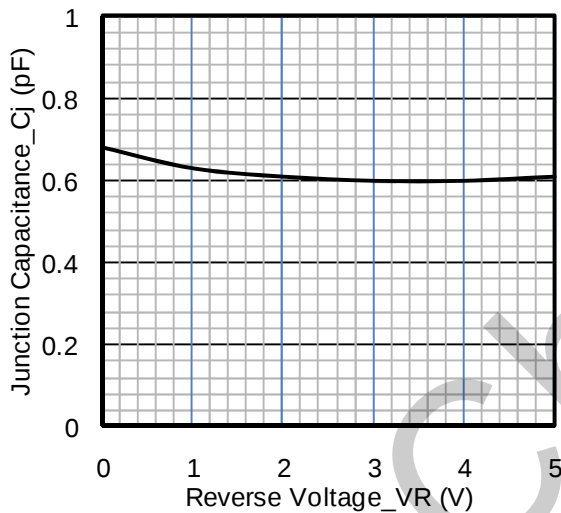
Parameter	Symbol	Value	Unit
Peak Pulse Power ($T_P=8/20\mu$ s)	P_{PP}	60	W
ESD contact/air discharge (IEC-61000-4-2)	V_{ESD}	25/30	kV
Peak Pulse Current ($T_P = 8/20\mu$ s)	I_{PP}	3	A
Junction Temperature	T_J	-55 to +125	°C
Storage temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics

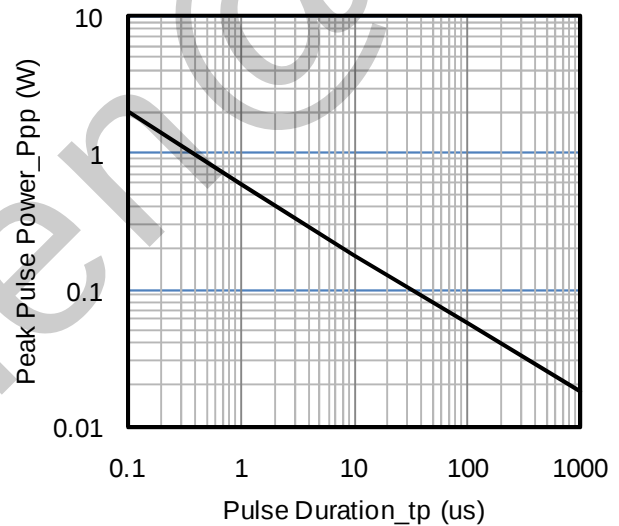
($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Reverse stand-off Voltage	V_{RWM}		-	5	-	V
Holding Voltage	V_{BR}	$I_T = 1\text{mA}$	6	-	-	V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$	-	-	0.5	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$	-	-	15	V
Clamping Voltage(TLP)	V_C	$I_{PP} = 3\text{A}, t_p = 8/20\mu\text{s}$	-	-	20	V
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$	-	0.3	0.4	pF
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$	-	-	0.8	pF

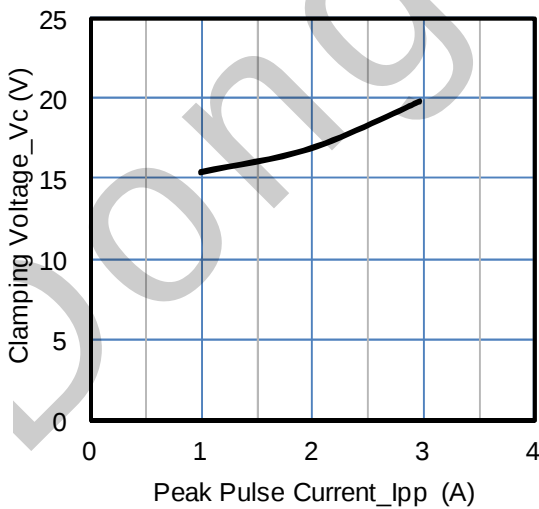
Typical Performance Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)



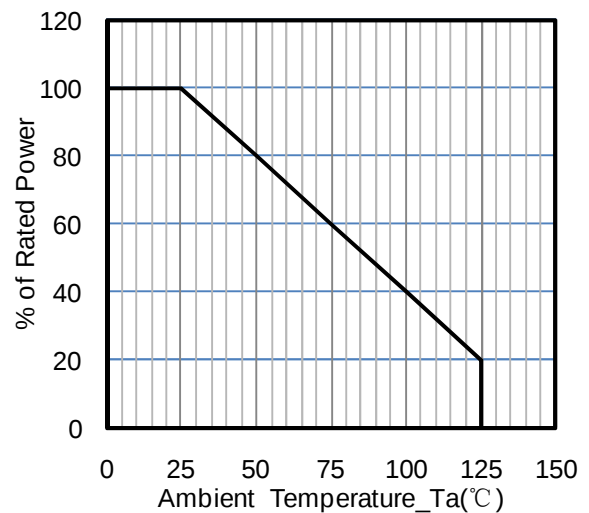
Junction Capacitance vs. Reverse Voltage



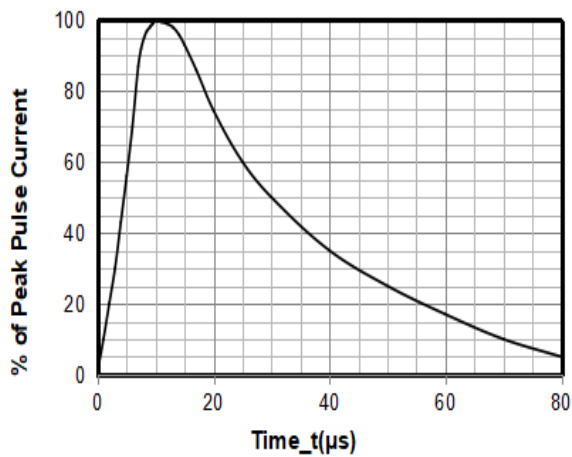
Peak Pulse Power vs. Pulse Time



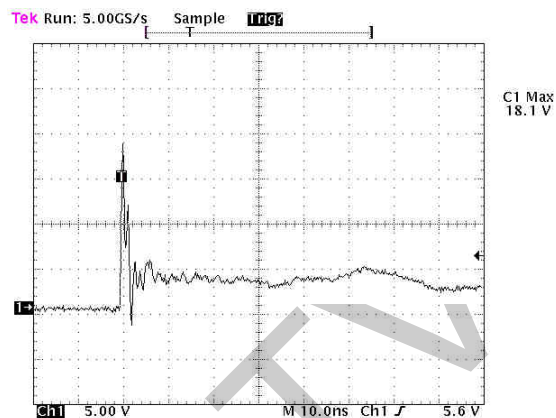
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20uS Pulse Waveform

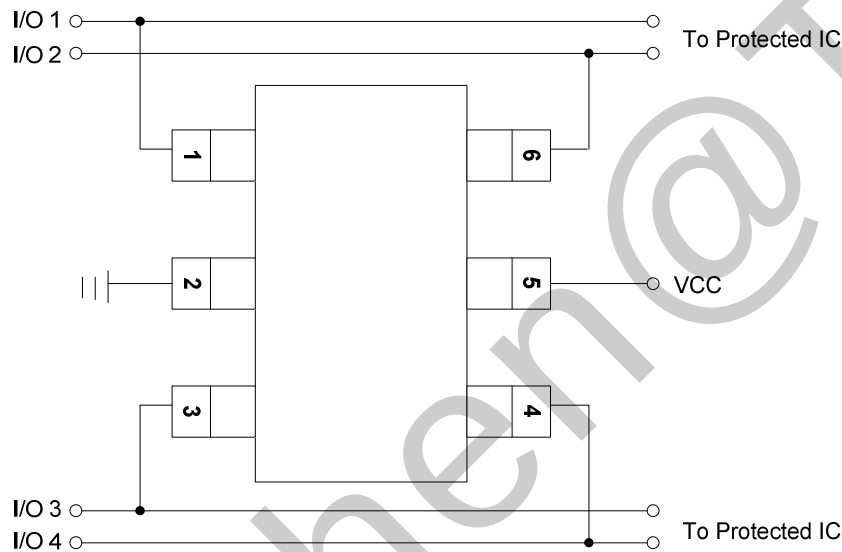


ESD Clamping Voltage

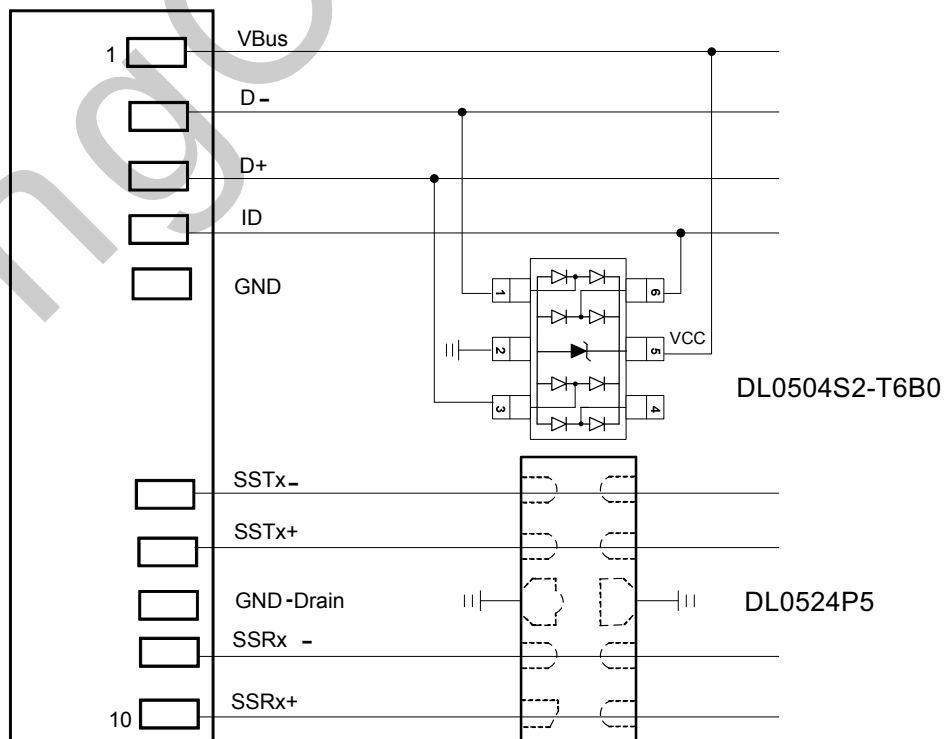
8 kV Contact per IEC61000-4-2

Typical Application

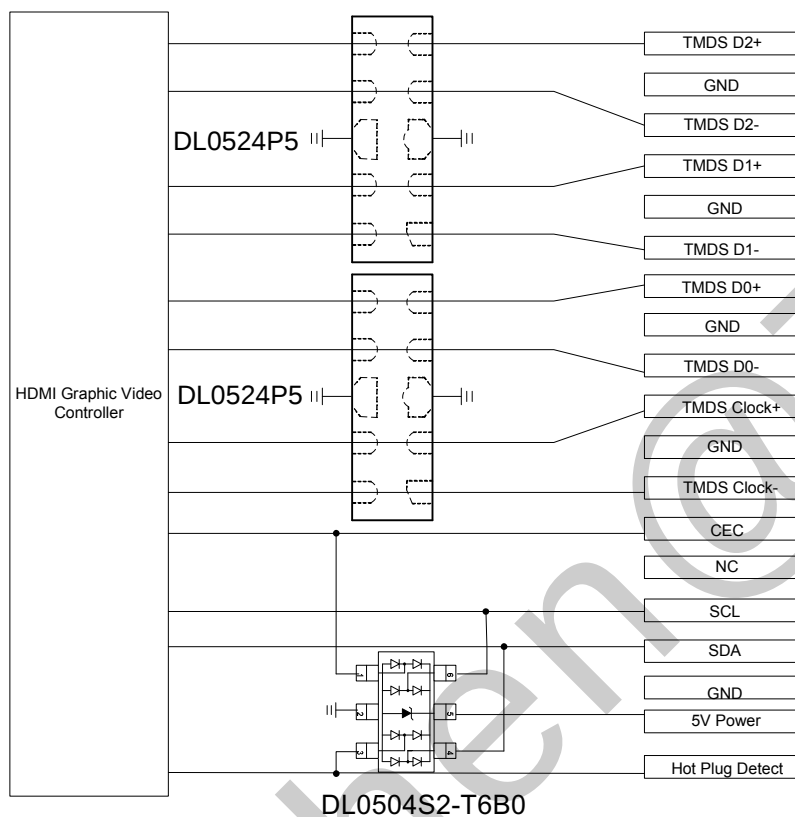
The DL0504S2-T6B0 is designed to protect four data lines from transient over-voltages by clamping them to fixed reference. When the voltage on the protected line exceeds the reference voltage (plus diode V_F) the steering diodes are forward biased, conducting the transient current away from the sensitive circuitry. Data lines are connected at pins 1, 3, 4 and 6. The negative reference (REF1) is connected at pin 2. This pin should be connected directly to a ground plane on the board for best results. The path length is kept as short as possible to minimize parasitic inductance. The positive reference (REF2) is connected at pin 5.



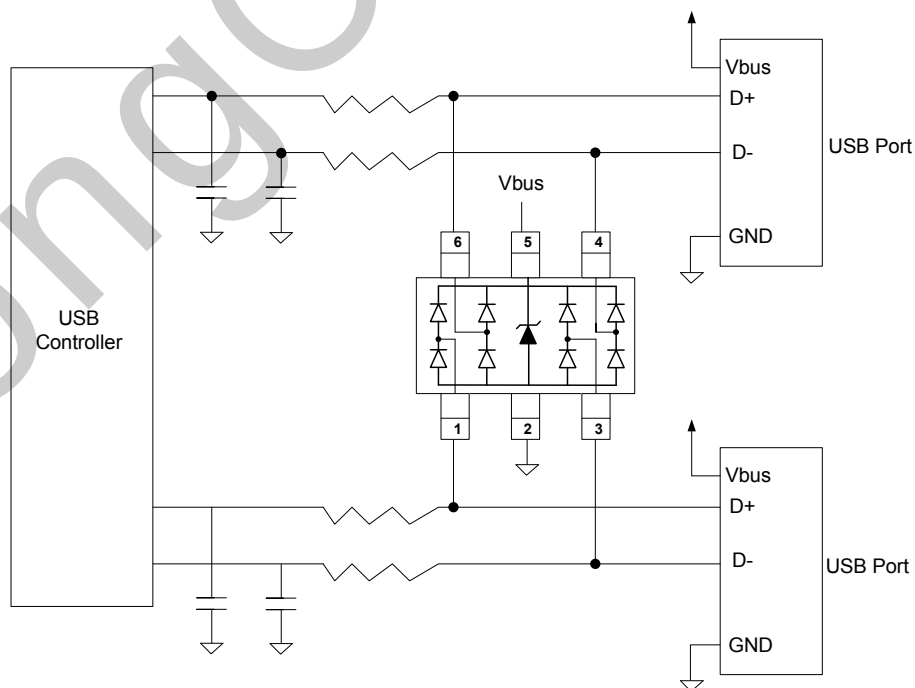
DL0504S2-T6B0 on USB 3.0 Port Application



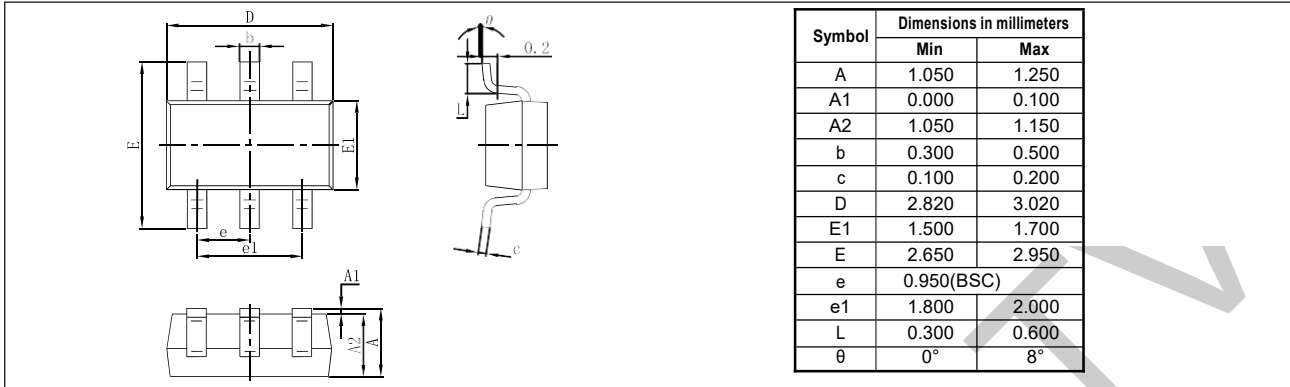
DL0504S2-T6B0 on HDMI Port Application



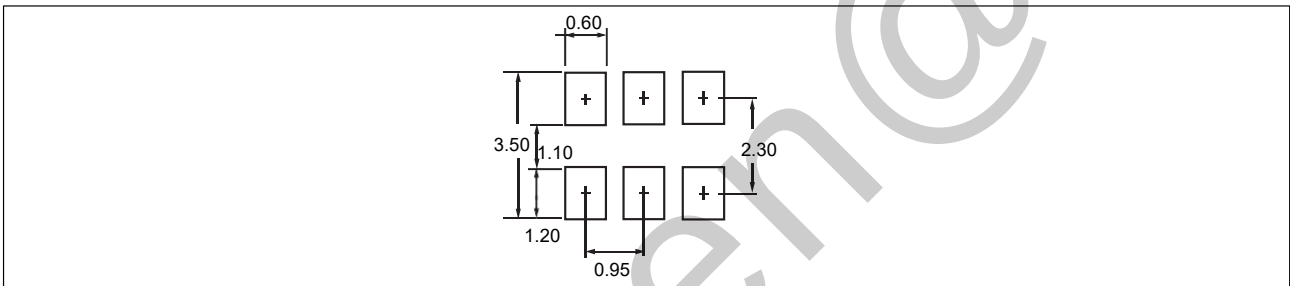
DL0504S2-T6B0 on USB Port Application



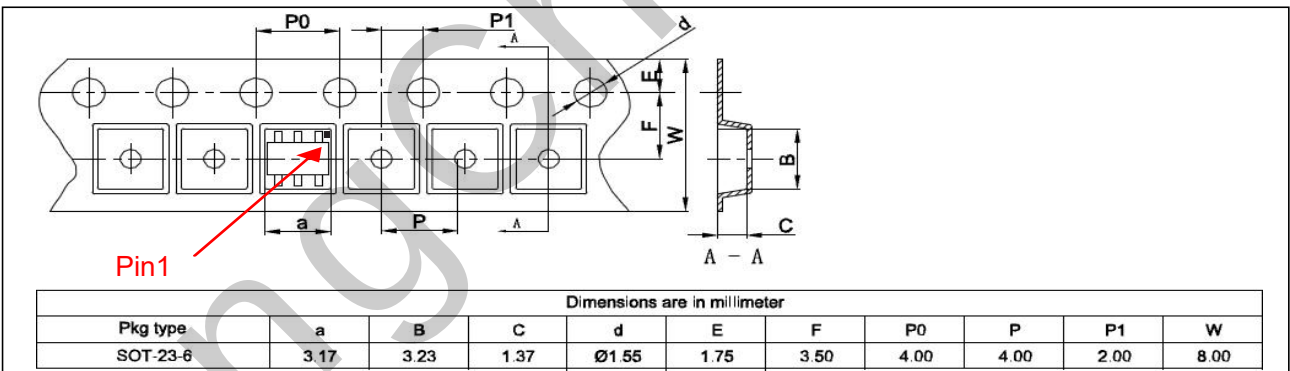
Package Dimensions



Pad dimensions



Package information



Ordering information

Order code	Marking	Package	Packaging option	Base quantity	Packaging specification
DL0504S2-T6B0	.V05	SOT23-6L	Tape and reel	3000pcs / reel	EIA STD RS-481

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