

ESD5B5CL

Low-Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

The ESD5B5CL is designed with LeiditechPunch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, VGA, DVI, SDI and other high speed line applications.

This series has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients).

Features

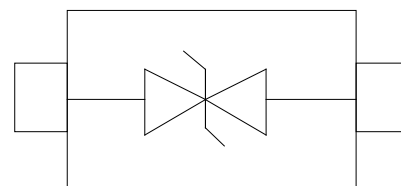
- Peak Power Dissipation – 80 W (8 x 20 us Waveform)
- Stand-off Voltage: 5.0 V
- Replacement for MLV (0603)
- Protects I/O Port
- Low Clamping Voltage
- Low Leakage
- Low Capacitance
- Low Body Height: 1.68mm
- Response Time is < 1 ns
- Meets MSL 1 Requirements
- ROHS compliant
- **Solid-state Punch-Through TVS Process technology**
- WeiPan technology



SOD-523

Main applications

- High Speed Line :USB1.0/2.0, VGA, DVI, SDI,
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV
- Cellular handsets and accessories
- Portable instrumentation
- Peripherals
-



Protection solution to meet

- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)

Ordering Information

Device	Qty per Reel	Reel Size
ESD5B5CL	3000	7 Inch

Maximum ratings (Tamb=25°C Unless Otherwise Specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20µs waveform)	P _{PPP}	80	Watts
ESD Rating per IEC61000-4-2:	Contact	8	KV
	Air	15	
Lead Soldering Temperature	T _L	260 (10 sec.)	°C
Operating Temperature Range	T _J	-55 ~ 150	°C
Storage Temperature Range	T _{STG}	-55 ~ 150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T _L	260	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

*Other voltages may be available upon request.

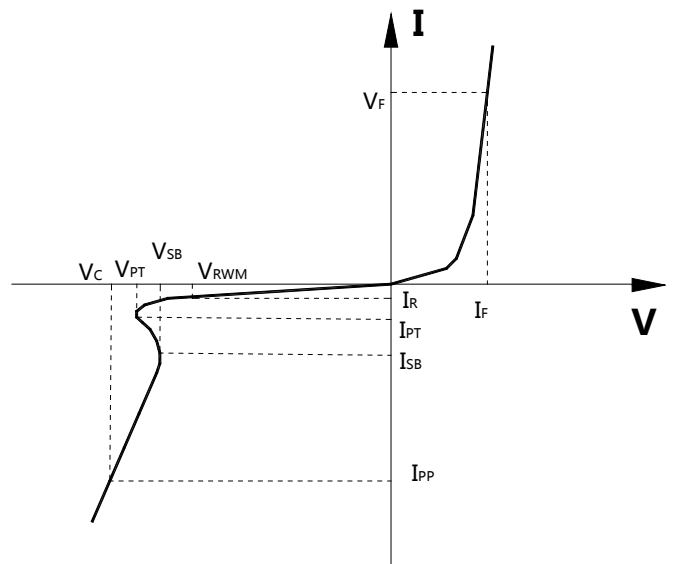
1. Nonrepetitive current pulse, per Figure 1.

Electrical characteristics (Tamb=25°C Unless Otherwise Specified)

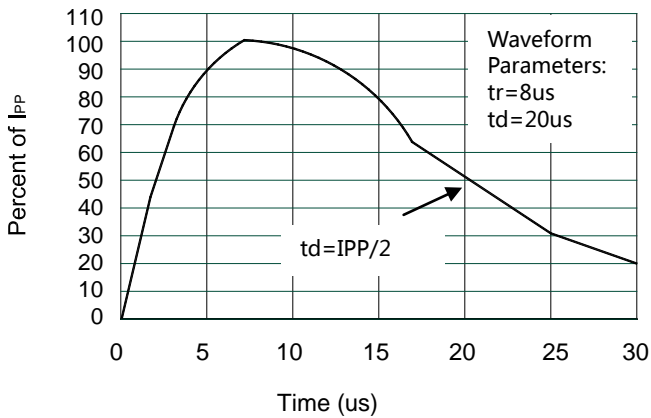
Device	V _{RWM}	I _R @ V _{RWM}	V _{PT} @ 1 mA	V _{SB} @ 50 mA	V _C	Capacitance	
			(Volts)	(Volts)		@ V _R = 0 V, 1 MHz (pF)	
	(V)	(µA)	Min	Min	(V)	Typ	Max
ESD5B5CL	5.0	2	6.0	5.3	9.0	4.5	6

Junction capacitance is measured in VR=0V, F=1MHz

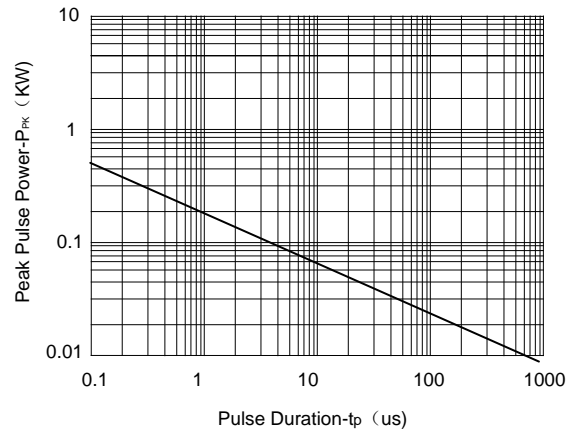
Symbol	Parameter
V _{RWM}	Working Peak Reverse Voltage
V _{PT}	Punch-Through Voltage @ I _{PT}
V _{SB}	Snap-Back Voltage @ I _{SB}
V _C	Clamping Voltage @ I _{PP}
I _T	Test Current
I _{RM}	Leakage current at V _{RWM}
I _{PP}	Peak pulse current
C _O	Off-state Capacitance
C _J	Junction Capacitance



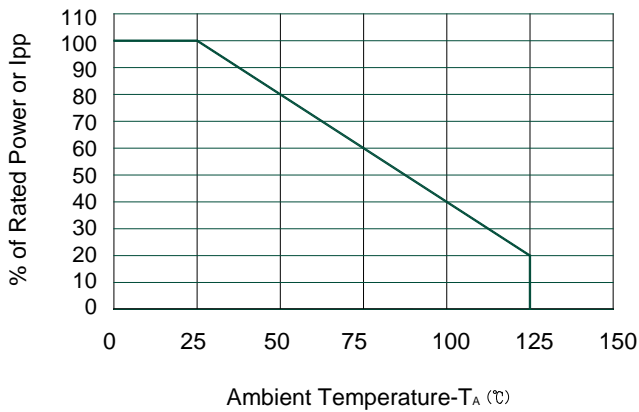
Typical electrical characterist applications



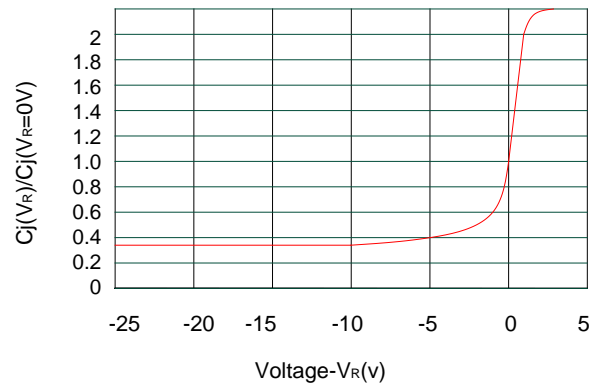
Pulse Waveform



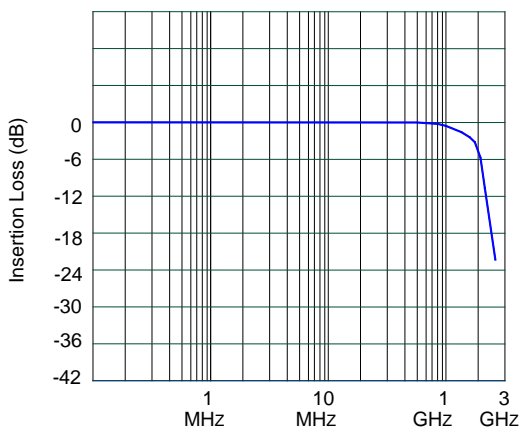
Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve

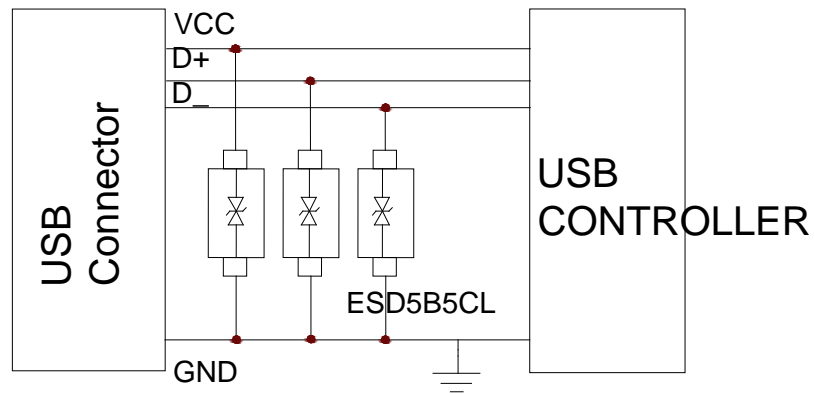


Junction Capacitance vs. Reverse Voltage

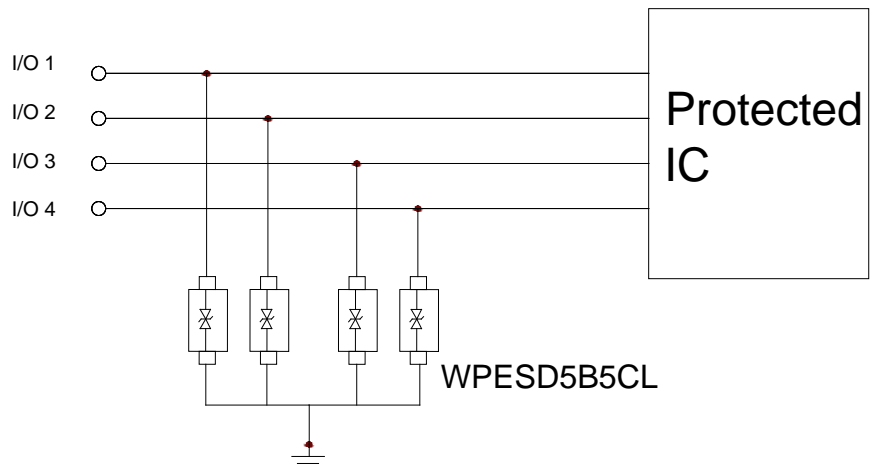


Insertion Loss S21

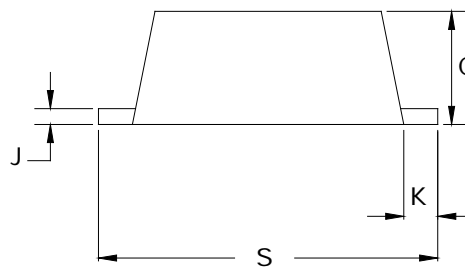
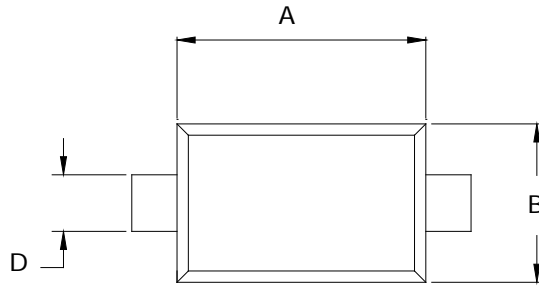
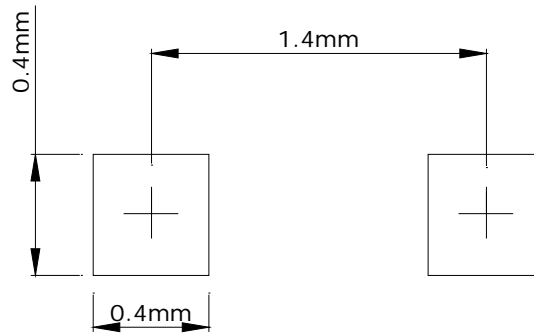
Typical applications



USB Protection For ESD



I/O Line Protection

Package information
SOD-523

Recommended Pad outline


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.10	1.30	0.043	0.051
B	0.70	0.90	0.045	0.053
C	0.50	0.70	0.031	0.043
D	0.25	0.35	0.004	0.012
J	0.07	0.20	0.0028	0.0079
K	0.15	0.25	0.006	0.010
S	1.50	1.70	0.059	0.067