

DESCRIPTION

The ESD5B5CL is designed with Weipan Punch-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.

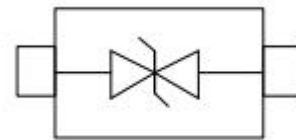
This series has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge), and EFT (electrical fast transients).

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.
- ✧ Low capacitance (<10pF) for high-speed interfaces.
- ✧ No insertion loss to 1.0GHz.
- ✧ Response Time is < 1 ns.
- ✧ Meets MSL 1 Requirements.
- ✧ ROHS compliant.
- ✧ Solid-state Punch-Through TVS Process technology.
- ✧ WeiPan technology.



SOD-523



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.

IEC COMPATIBILITY

- ✧ IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact).
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns).

MECHANICAL CHARACTERISTICS

- ✧ SOD-523 Package.
- ✧ Quantity Per Reel : 3,000pcs.
- ✧ Reel Size : 7 inch.
- ✧ Finish : Free.

DEVICE CHARACTERISTICS

Maximum ratings (Tamb=25°C Unless Otherwise Specified)			
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20 μ s waveform)	P _{PP}	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.

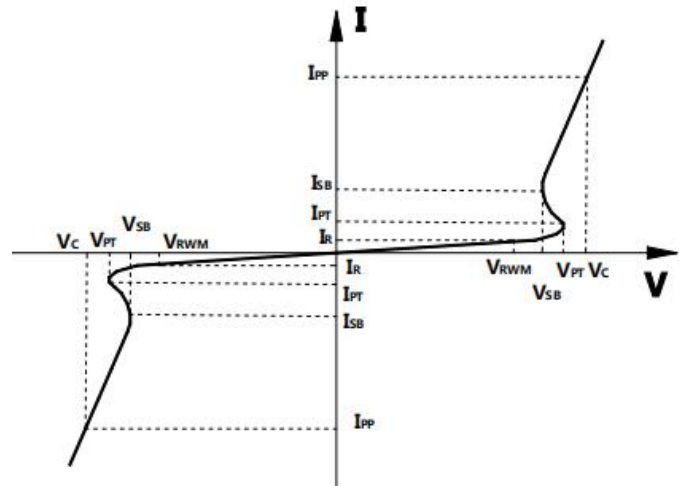
*Other voltages may be available upon request.

1. Nonrepetitive current pulse, per Figure 1.

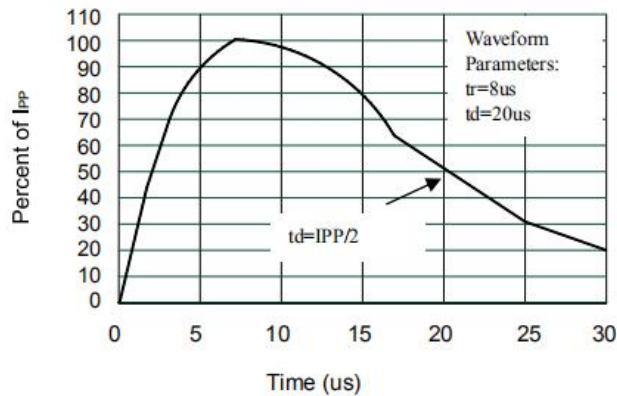
Electrical characteristics ($T_{amb}=25^{\circ}C$ Unless Otherwise Specified)							
Device	V_{RWM}	$I_R @ V_{RWM}$	$V_{PT} @ 1 mA$	$V_{SB} @ 50 mA$	V_C	Capacitance	
			(Volts)	(Volts)	@ 1 A	@ $V_R = 0 V, 1 MHz$ (pF)	
	(V)	(μA)	Min	Min	(V)	Typ	Max
JESD5B5CL	5.0	2	6.0	5.3	9	3	6

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

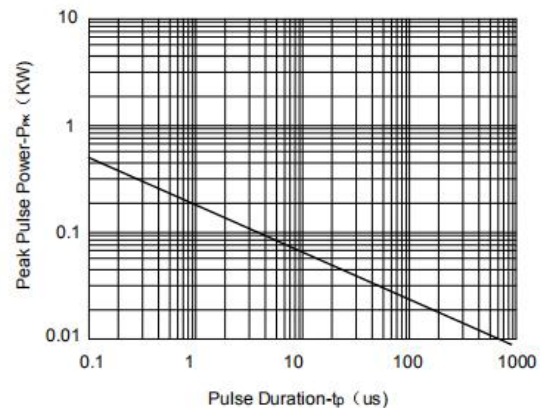
Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{PT}	Punch-Through Voltage@ I_{PT}
V_{SB}	Snap-Back Voltage@ I_{SB}
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_{RM}	Leakage current at V_{RWM}
I_{PP}	Peak pulse current
C_O	Off-state capacitance
C_J	Junction Capacitance



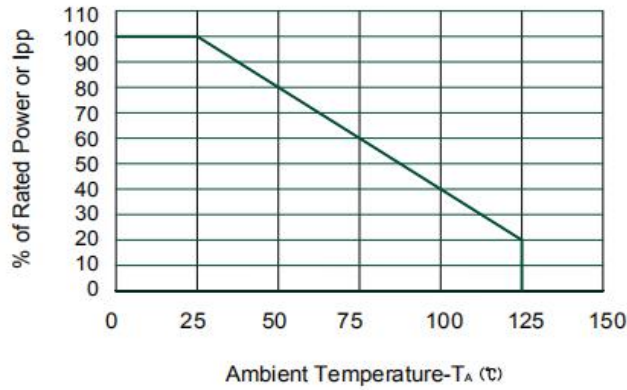
ELECTRICAL CHARACTERISTICS CURVE



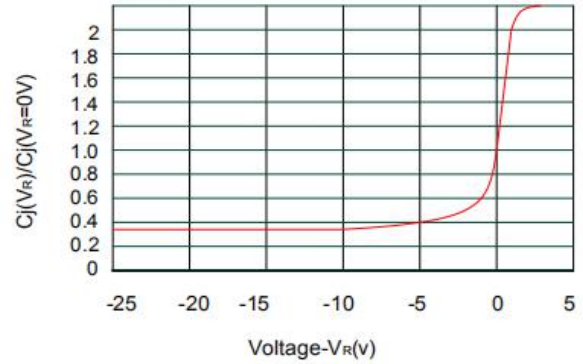
Pulse Waveform



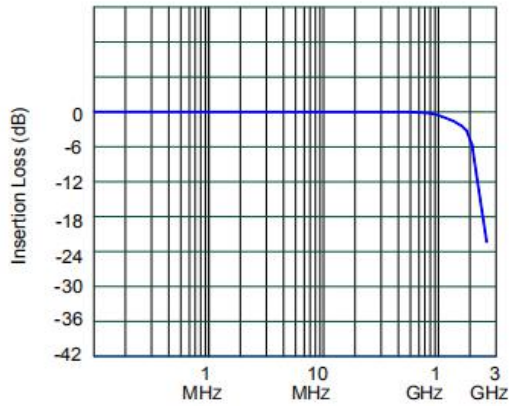
Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve

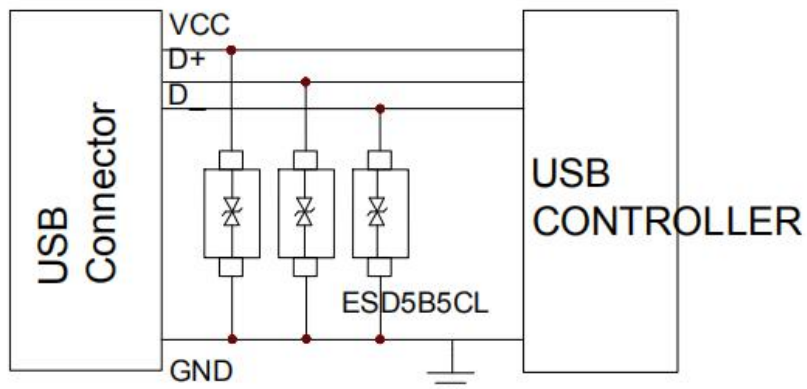


Junction Capacitance vs. Reverse Voltage

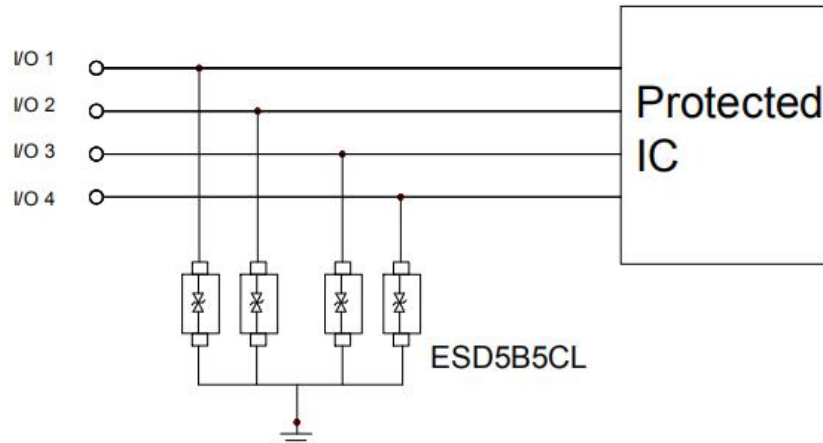


Insertion Loss S21

TYPICAL APPLICATIONS

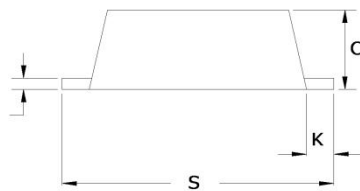
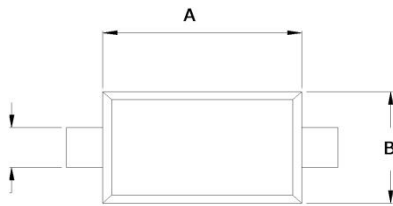


USB Protection For ESD

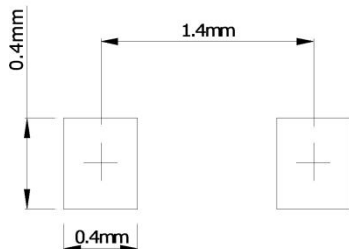


I/O Line Protection

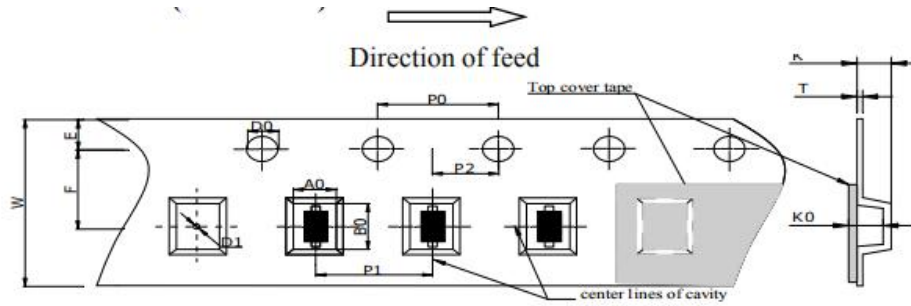
SOD-523 PACKAGE OUTLINE & DIMENSIONS



SOD-523



Dim	Millimeters		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

Product Orientation (continued)


Package	Chip Size	Pocket Size B0×A0×K0(mm)	Tape Width	Reel Diameter	Quantity Per Reel	P0	P1
SOD-523	1.60×0.8×0.6	1.75×0.95×0.75	8mm	178mm(7")	3000	4mm	4mm
D0	D1	E	F	K	T	W	
1.5mm	0.5mm	1.75mm	3.5mm	0.70mm	0.2mm	8mm	

The LEADER is a minimum of 100 components in length and it consists of empty cavities with sealed cover tape. The TRAILER is a minimum of 100 components in length and it consists of empty cavities with sealed cover tape.

Website: <http://www.jksemi.com>

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