






# THE DATASHEET OF ESD5B5CU



**SPECIFICATION SHEET**

<b>SPECIFICATION SHEET NO.</b>	N1004- SOD5235B5CUSLB
<b>DATE</b>	Oct. 04, 2021
<b>REVISION</b>	A1
<b>DESCRIPTION</b>	<p>SMD Plastic-Encapsulate ESD Protection Diodes, SOD-523 series, 2 pads            ESD5B5CU Type, TVs for ESD protection, <b>Bidirectional Channels</b>  <b>Reverse Working Voltage : 5.0V, Clamping Voltage 10.5VC Max.@1.0A</b>            Operating Temp. Range -55°C ~+150°C,            Package in Tape/Reel, 3000pcs/Reel            RoHS/RoHS III compliant</p>
<b>CUSTOMER</b>	
<b>CUSTOMER PART NUMBER</b>	
<b>CROSS REF. PART NUMBER</b>	
<b>ORIGINAL PART NUMBER</b>	MDD ESD5B5CU
<b>PART CODE</b>	SOD5235B5CUSLB

<b>VENDOR APPROVE</b>			
Issued/Checked/Approved			
DATE: Oct. 04, 2021			

<b>CUSTOMER APPROVE</b>	
DATE:	

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**MAIN FEATURE**

- Peak power dissipation 35W (8/20μs)
- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Protects one directional I/O line
- Low clamping voltage
- Low leakage current
- Working voltages : 5V
- Meet MSL 1 requirement



**APPLICATION**

- High speed line: USB1.0/2.0, VGA, DVI SDI
- Serial and parallel pots
- Notebooks, Desktops, and Servers Cellular
- Projection TV
- Cellular handsets and accessories
- Portable Instrumentation
- Peripherals

**RFQ**  
Request For Quotation

**PART CODE GUIDE**

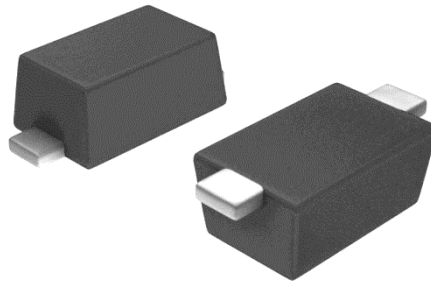
SOD523	5B5CU	S	LB
1	2	3	4

- 1) **SOD523**: SMD Plastic-Encapsulate ESD Protection Diodes, SOD-523 series, 2 pads
- 2) **5B5CU**: Type code for original part number ESD5B5CU
- 3) **S**: Package code, Package in Tape/Reel, 3000pcs/Reel
- 4) **LB**: Marking code for “LB” on the case surface, Different Marking for different specification.

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

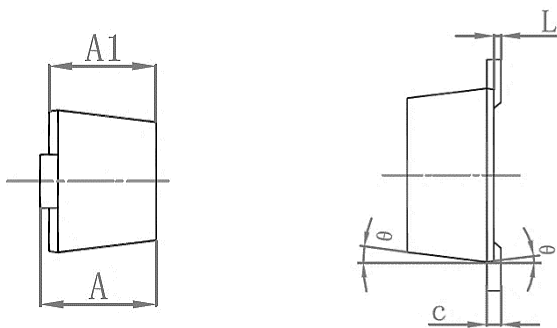
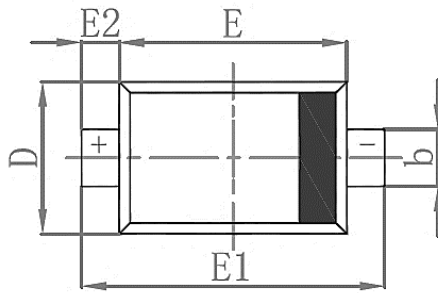
**DIMENSION (Unit: Inch/mm)**

Image for reference



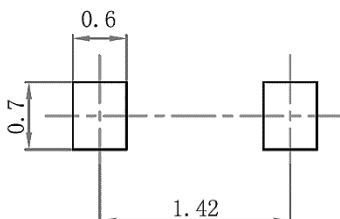
Marking: LB

SOD-523

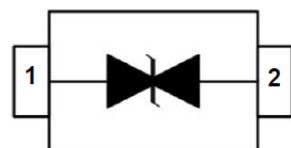


Symbol	Value ( mm )		
	Min.	Typ.	Max.
A	0.51		0.770
A1	0.50		0.70
b	0.250		0.350
c	0.080		0.150
D	0.750		0.850
E	1.10		1.30
E1	1.50		1.70
E2	0.20 Ref.		
L	0.010		0.070
K	7° Ref.		

**Recommend Pad Layout**



**Circuit Diagram**



**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**MECHANICAL DATA**

Case	Flammability Rating	Polarity	Mounting Position	Weight per piece
JEDEC SOT-523 molded plastic body	UL 94V-0	-	-	0.001 grams

**ABSOLUTE MAX. RATINGS AT Ta=25 °C (unless otherwise specified)**

Parameter	SYMBOLS	VALUE	UNITS
		LIMIT	
ESD per IEC 61000-4-2 (Air)	V ESD	+/-15	KV
ESD per IEC 61000-4-2 (Contact)	V ESD	+/-8	KV
Peak Pulse Power @8/20µs	P PP	35	W
Operating Temperature Range	T J	-55 ~+ 150	°C
Storage Temperature Range	T STG	-55 ~ +150	°C
Lead Solder Temperature- Max. (10 s Duration)	T L	260 /10s	°C

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**ELECTRICAL CHARACTERISTICS ( Ta=25 °C unless otherwise specified)**

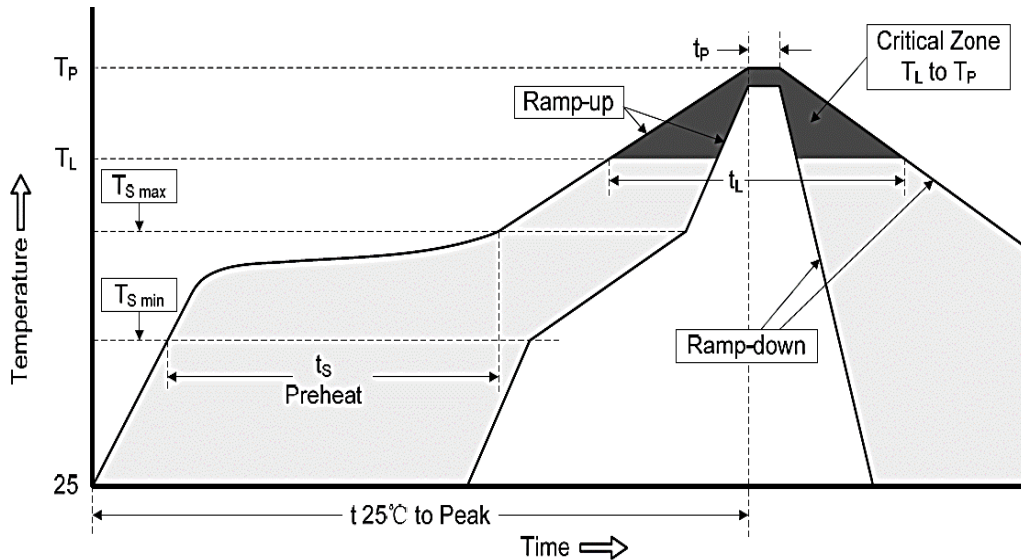
Parameter	SYMBOLS	VALUE			UNITS
		Min.	Typical	Max.	
Reverse Working Voltage	V <sub>RWM</sub>			5.0	V
Reverse Breakdown Voltage @ I <sub>T</sub> = 1.0mA	V <sub>BR</sub>	5.6		9.4	V
Reverse Leakage Current @ V <sub>RWM</sub> = 5V	I <sub>R</sub>			2.0	μA
Clamping Voltage @ I <sub>PP</sub> = 1.0A, t <sub>p</sub> = 8/20μs	V <sub>C</sub>			10.5	V
Clamping Voltage @ I <sub>PP</sub> = 2.0A, t <sub>p</sub> = 8/20μs	V <sub>C</sub>			14.0	V
Junction Capacitance @ V <sub>R</sub> = 0 V, f = 1MHz	C <sub>J</sub>		3.0	3.5	pF

**SMD ESD PROTECTION DIODES SOD-523 SERIES**
**RELIABILITY**

Number	Experiment Items	Experiment Method And Conditions	Reference Documents
1	Solder Resistance Test	Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031.2
2	Solderability Test	230°C ±5°C for 5 sec.	MIL-STD-750D METHOD-2026.1 0
3	Pull Test	1 kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036.4
4	Bend Test	0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times	MIL-STD-750D METHOD-2036.4
5	High Temperature Reverse Bias Test	TA=100°C for 1000 Hours at VR=80% Rated VR	MIL-STD-750D METHOD-1038.4
6	Forward Operation Life Test	TA=25°C Rated Average Rectified Current	MIL-STD-750D METHOD-1027.3
7	Intermittent Operation Life Test	On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles.	MIL-STD-750D METHOD-1036.3
8	Pressure Cooker Test	15 PSIG, TA=121°C, 4 hours	MIL-S-19500 APPENOIXC
9	Temperature Cycling Test	-55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles.	MIL-STD-750D METHOD-1051.7
10	Thermal Shock Test	0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles	MIL-STD-750D METHOD-1056.7
11	Forward Surge Test	8.3ms Single Sale Sine-wave One Surge.	MIL-STD-750D METHOD-4066.4
12	Humidity Test	TA=65°C, RH=98% for 1000 hours.	MIL-STD-750D METHOD-1021.3
13	High Temperature Storage life Test	150°C for 1000 Hours	MIL-STD-750D METHOD-1031.5

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

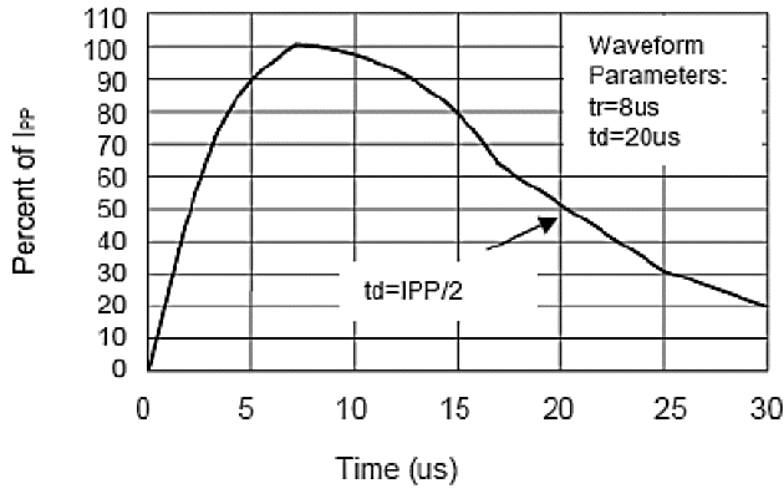
**SUGGESTED REFLOW PROFILE (For Reference Only)**



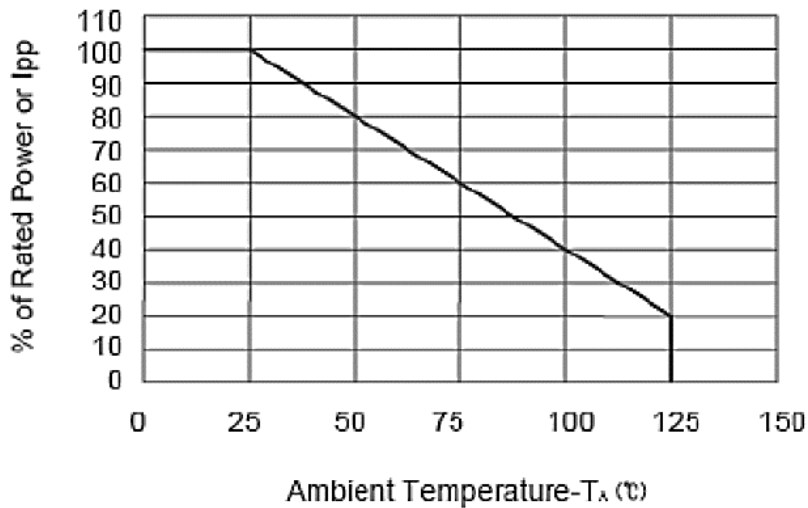
<b>Profile Feature</b>		Pb-Free Assembly
<b>Average Ramp-up Rate (Ts Max to Tp)</b>		3°C/second Max
<b>Preheat</b>	<b>Temperature Min (Ts Min.)</b>	150°C
	<b>Temperature Max (Ts Max.)</b>	200°C
	<b>Time (ts Min. to ts Max.)</b>	60 ~ 180 seconds
<b>Time maintained above</b>	<b>Temperature (Tl)</b>	217°C
	<b>Time (tl)</b>	60 ~ 150 seconds
<b>Peak/Classification Temperature (Tp)</b>		260 °C
<b>Time within 5°C of actual Peak Temperature (tp)</b>		20 ~ 40 seconds
<b>Ramp-down rate</b>		6 °C /Second Max.
<b>Time 25 °C to Peak Temperature</b>		8 minutes Max.
<b>Suggest reflow times</b>		3 Times Max.

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**RATINGS AND CHARACTERISTIC CURVES (For Reference Only)**



**Pulse Waveform**

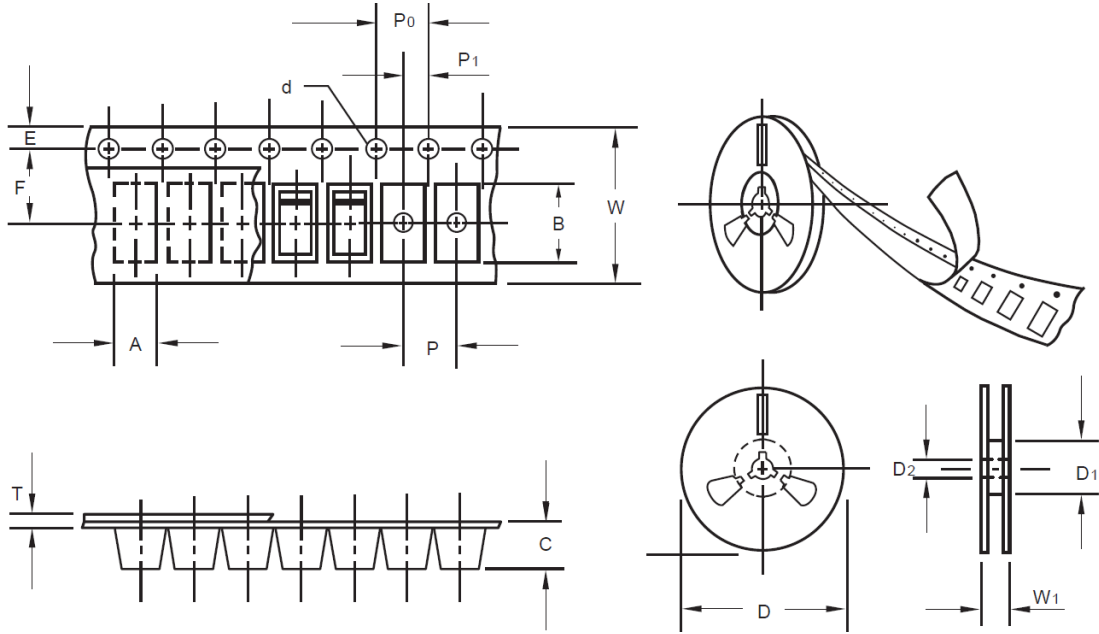


**Power Derating Curve**

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**TAPE/REEL (Unit: mm)**

All Devices are packed in accordance with EIA standard RS-481-A and specifications.



Item	Symbol	Tolerance	SOD-523
Carrier width	A	0.1	2.10
Carrier Length	B	0.1	4.00
Carrier Depth	C	0.1	1.60
Sprocket hole	d	0.05	1.55
7"Reel outside diameter	D	2.0	178.00
7"Reel inner diameter	D1	Min.	50.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	8.15
Reel width	W1	1.0	10.50

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**SPQ PACKAGE for Reference**

Item	Unit	Value
Case Code		SOD-523
Reel Size	Inch	7
Reel Size	mm	178
Tape Space	mm	/
SPQ /Reel	pcs	3000
Weigh /SPQ	LBS	
Weigh /SPQ	KGs	-
Qty. Per Box	pcs	6,000
Inner Box	Inch	L8.0*W8.0*H1.5

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