SPECIFICATION SHEET

SMD ESD PROTECTION DIODES CASE SOD-323 ESD3B SERIES

SPECIFICATION SHEET NO.	S0421- ESD3B5CM0S05S	
ORIGINAL MFG/PART NO.	MDD Diodes/ESD3B5CM/SOD3233B5CMS55	
NEXTGEN PART CODE	ESD3B5CM0S05S	Indicate This Code For RFQ /Order
DATE	Apr. 21, 2025	
REVISION	A3	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	SMD Plastic-Encapsulate ESD Protection Diodes, ESD3B Series Case SOD-323, 2 Pads, Low Capacitance, Bi-Directional Type Reverse Working Voltage : 5.0V, Clamping Voltage 9.8VC Max.@1.0A Operating Junction Temp. Range -55°C ~+150°C Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE
Issued/Checked/Approved Mandy Xu — Ruby Zhang — Jack Zhang
Effective Date: Apr. 21, 2025

CUSTOMER APPROVE
Date:

DESCRIPTION

The ESD3B5CM is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies 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 device 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).

Image shown is a representation only. Exact specifications should be obtained from the product dimension.

MAIN FEATURE

- Peak Power Dissipation 500W (8/20μs)
- IEC61000-4-2 (ESD) ±30kv (Air), ±30kv (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Ultra-small package, Case SOD 323
- Protects one directional I/O line
- Low Clamping Voltage
- Low Leakage Current
- Low Capacitance
- Working voltages: 5V
- Meet MSL 1 Requirement
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)

APPLICATION

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

• ELECTRICAL CHARACTERISTICS

- See Page 5 ~Page 6.
- All Parameters are Subject To NextGen Components' Final Confirmation

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code ESD3B5CM0S05S For RFQ and Order.

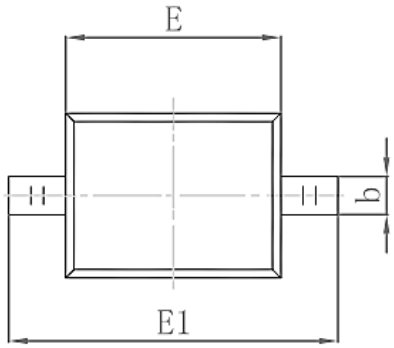
PART CODE GUIDE

RFQ
Request For Quotation

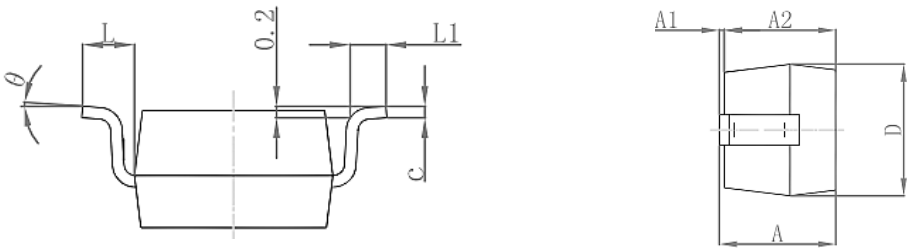
CODE	NAME	KEY SPECIFICATION OPTION
ESD3B	Product Series Code	SMD Plastic-Encapsulate ESD Protection Diodes, Case SOD-323, 2 pads, -Low Capacitance, Bi-Directional Type
5CM	Parameters Code	Letter or Digits (A~Z, a~z or 0~9)
0S0	Internal Control Code	Letter or Digits (A~Z, a~z or 0~9)
5S	Marking Code	Marking "5/S"
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 0~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: mm, Case SOD-323 Outline

Top View

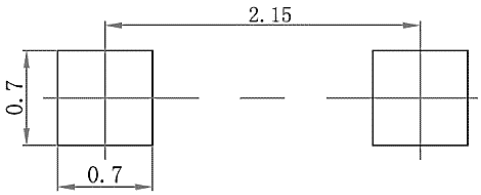


Side View

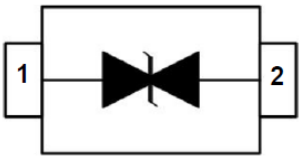


SYMBOL	DIMENSION (MM)		DIMENSION (INCH)	
	MIN.	MAX.	MIN.	MAX.
A	-	1.000	-	0.039
A1	-	0.1000	0.000	0.004
A2	0.800	0.900	0.031	0.035
b	0.250	0.350	0.010	0.014
c	0.080	0.150	0.003	0.006
D	1.200	1.400	0.047	0.055
E	1.600	1.800	0.063	0.071
E1	2.550	2.750	0.100	0.108
L	0.475 REF.		0.019 REF.	
L1	0.250	0.400	0.010	0.016
θ	0	8 °	0 °	8 °

Recommend Pad Layout - Tolerance: ±0.05mm



Circuit Diagram



MECHANICAL CHARACTERISTICS

CASE	FLAMMABILITY RATING	TERMINALS	MARKING
JEDEC SOD-323 molded plastic body	UL 94V-0	Gold plated, solderable per MIL-STD-750, method 2026	5/S

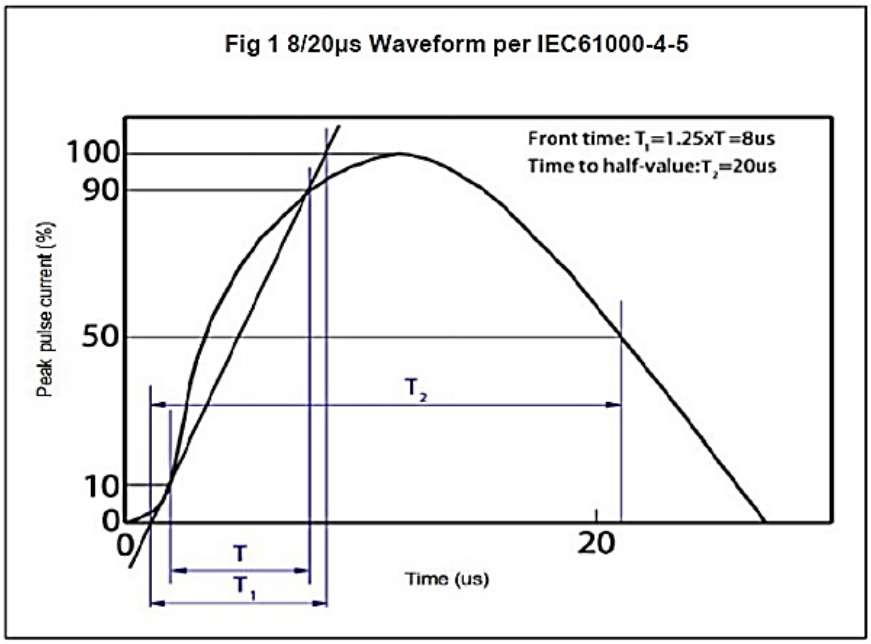
ABSOLUTE MAX. RATING & CHARACTERISTICS - T_A=25°C unless otherwise specified, For Reference Only

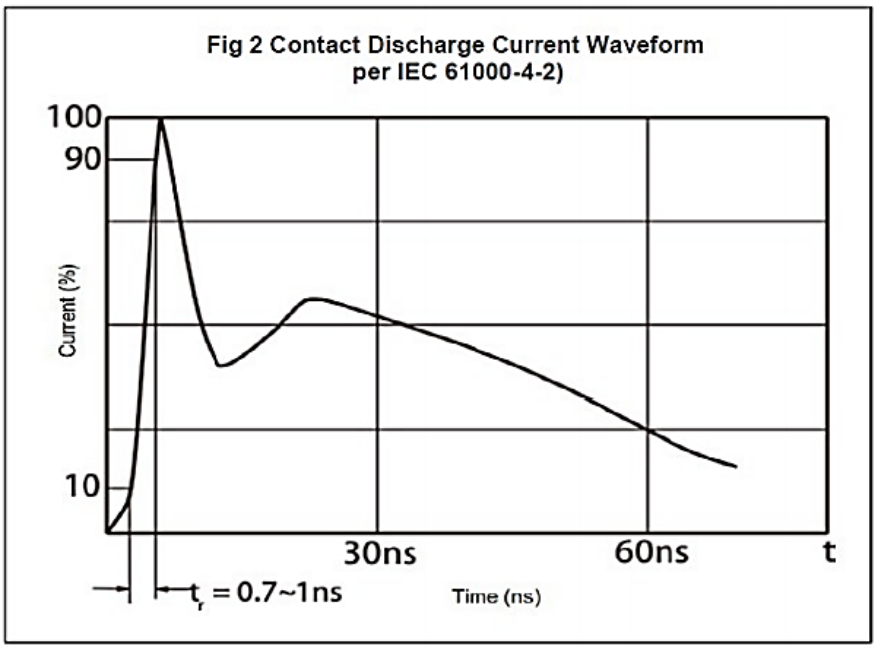
PARAMETER	SYMBOLS	VALUE	UNITS
ESD per IEC 61000-4-2 (Air)	V_{ESD}	±30	KV
ESD per IEC 61000-4-2 (Contact)	V_{ESD}	±30	KV
Peak Pulse Power @8/20μs	P_{PP}	500	W
Operating Temperature Range	T_{OPT}	-55 ~+ 150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C
Lead Solder Temperature- Max. (10 s Duration)	T_L	260 /10s	°C

ELECTRICAL CHARACTERISTICS - T_A=25°C unless otherwise specified, For Reference Only

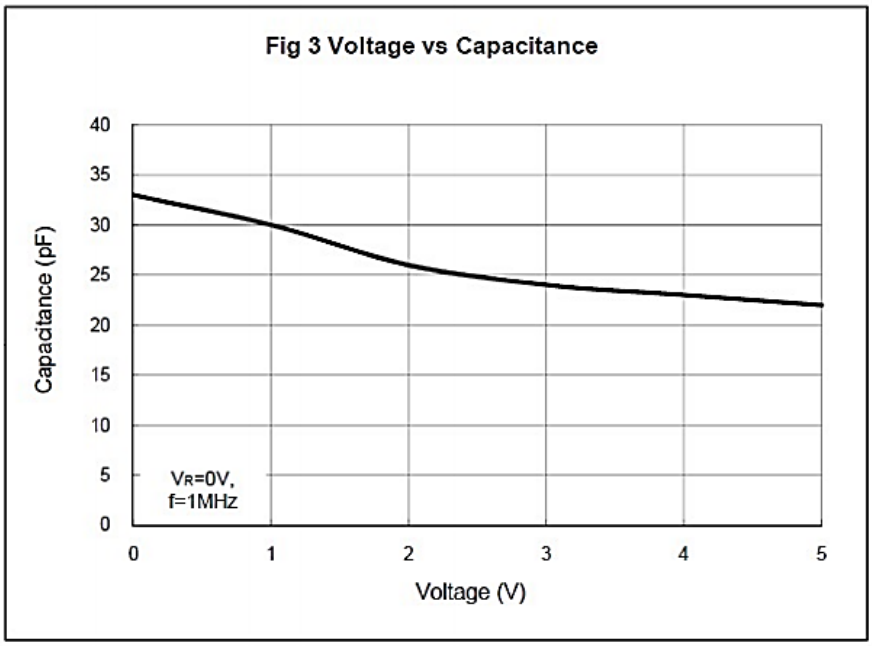
PARAMETER	TEST CONDITION	SYMBOLS	VALUE			UNITS
			MIN.	TYP.	MAX.	
Reverse Working Voltage		V_{RWM}			5.0	V
Reverse Breakdown Voltage	I_T = 1.0mA	V_{BR}	5.8		7.8	V
Reverse Leakage Current	V_{RWM} = 5.0V	I_R			1.0	µA
Clamping Voltage	I_{PP} = 1A, t_p = 8/20µs	V_C			9.8	V
	I_{PP} = 25A, t_p = 8/20µs			15	20	V
Junction Capacitance	V_R = 0V, f = 1MHz	Cj		33	40	pF

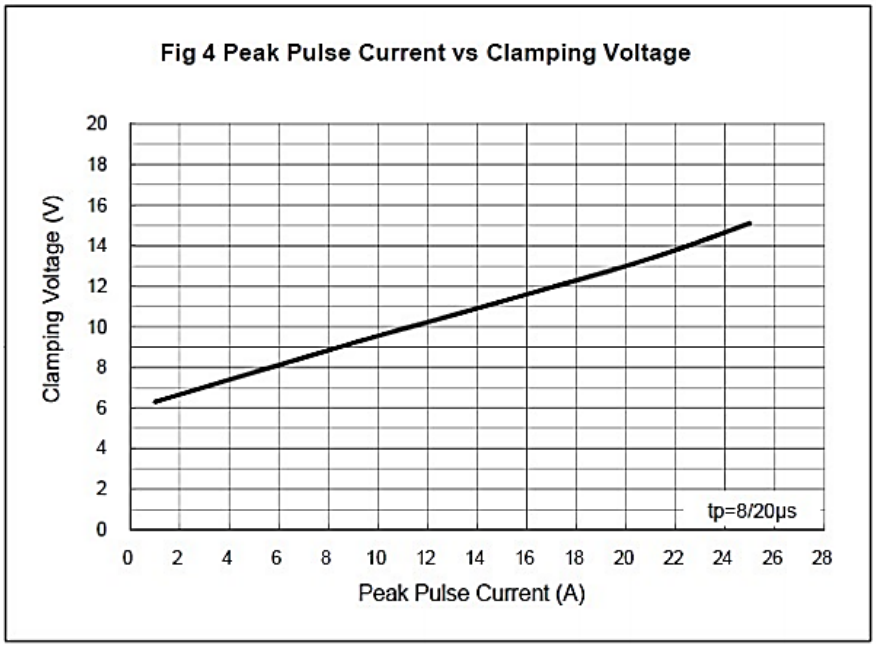
RATINGS AND CHARACTERISTICS CURVES- For Reference Only, Ta=25℃ Unless Otherwise Specified.



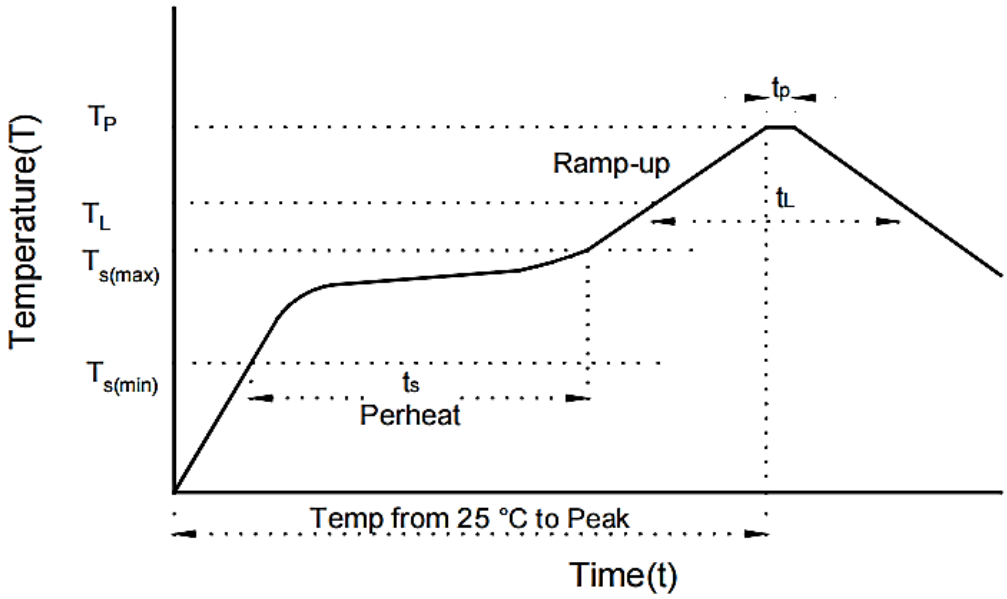


RATINGS AND CHARACTERISTICS CURVES- For Reference Only, Ta=25℃ Unless Otherwise Specified.



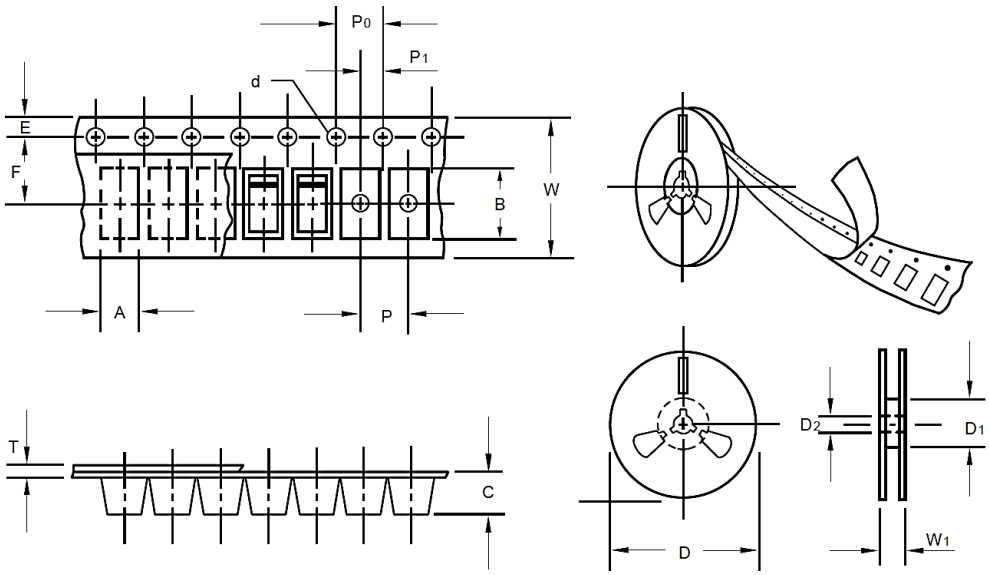


RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY



PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (T_L Max to T_p)		3°C/second Max
Preheat	Temperature Min (T_s Min.)	150°C
	Temperature Max (T_s Max.)	200°C
	Time (t_s Min. to t_s Max.)	60 ~ 180 seconds
Time maintained above	Temperature (T_L)	217°C
	Time (t_L)	60 ~ 150 seconds
Peak/Classification Temperature (T_p)		260 °C
Time within 5°C of actual Peak Temperature (t_p)		10 seconds Max.
Ramp-down Rate		6 °C /Second Max.
Time 25 °C to Peak Temperature		8 Minutes Max.
Suggest reflow times		3 Times Max.

TAPE/REEL - Unit: mm, All Devices are packed in accordance with EIA standard RS-481-A and specifications



ITEM	SYMBOL	TOLERANCE	SOD-323
Carrier width	A	0.1	1.46
Carrier Length	B	0.1	2.9
Carrier Depth	C	0.1	1.25
Sprocket hole	d	0.05	1.55
7”Reel outside diameter	D	2	178
7”Reel inner diameter	D1	Min.	50
Feed hole diameter	D2	0.5	13
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.5
Punch hole pitch	P	0.1	4
Sprocket hole pitch	P0	0.1	4
Embossment center	P1	0.1	2
Overall tape thickness	T	0.1	0.06
Tape width	W	0.3	8
Reel width	W1	1	12.3
Qty. Per Reel (pcs)	3000		

IMPORTANT NOTES AND DISCLAIMER

1. ROHS COMPLIANCE: The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained can be obtained at Download Center.
2. REACH COMPLIANCE: REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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