SPECIFICATION SHEET

SMD ESD PROTECTION DIODES CASE SOD-523 ESD5Z SERIES

SPECIFICATION SHEET NO.	S0421- ESD5Z3V3C0S03C	
ORIGINAL MFG/PART NO.	MDD Diodes/ESD5Z3.3C/SOD5235Z3V3S3C	
NEXTGEN PART CODE	ESD5Z3V3C0S03C	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, ESD5Z Series Case SOD-523, 2 Pads, Bi-Directional Type Reverse Working Voltage: 3.3V Clamping Voltage 6.5VC Max.@1.0A Operating Junction Temp. Range -40°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 ESD5Z3.3C 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. 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), CDE (Cable Discharge Events),and EFT (electrical fast transients).

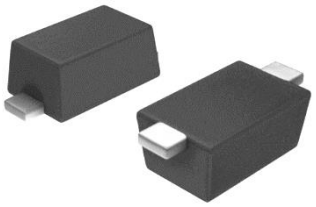


Image shown is a representation only. Exact specifications should be obtained from the product dimension.

MAIN FEATURE

- Peak Power Dissipation 60W (8/20μs)
- Transient Protection For High-Speed Data Lines
- IEC61000-4-2 (ESD) ±30kv (Air), ±30kv (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Protects one directional I/O line
- Low Clamping Voltage and Low Leakage Current
- Working voltages: 3.3V
- 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 Cellular
- Handsets And Accessories
- Portable Instrumentation
- Projection TV and Peripherals

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 ESD5Z3V3C0S03C For RFQ and Order.

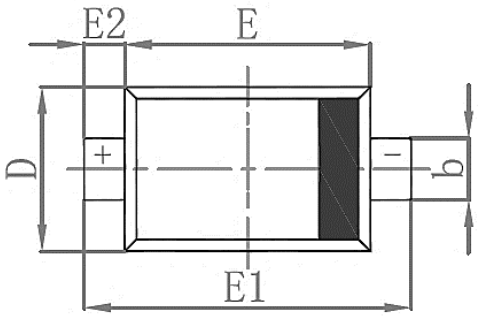
PART CODE GUIDE

RFQ
Request For Quotation

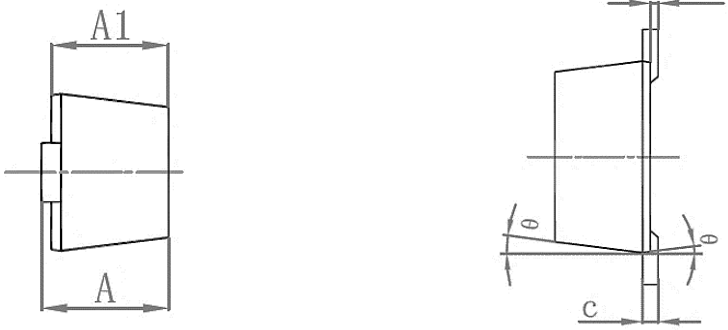
CODE	NAME	KEY SPECIFICATION OPTION
ESD5Z	Product Series Code	SMD Plastic-Encapsulate ESD Protection Diode, Case SOD-523, 2 Pads,
3V3	Parameters Code	Letter or Digits (A~Z, a~z or 1~9)
00S0	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
3C	Marking Code	Marking "3C"
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: mm, Case SOD-523 Outline

Top View

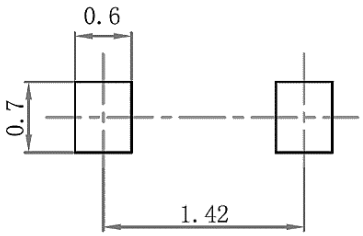


Side View

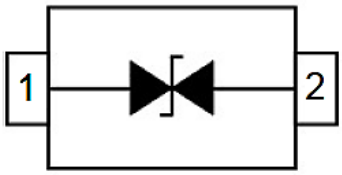


SYMBOL	DIMENSION (MM)		DIMENSION (INCH)	
	MIN.	MAX.	MIN.	MAX.
A	0.510	0.770	0.020	0.031
A1	0.500	0.770	0.020	0.031
b	0.250	0.400	0.010	0.016
c	0.080	0.150	0.003	0.006
D	0.750	1.000	0.030	0.040
E	1.100	1.300	0.043	0.051
E1	1.500	1.700	0.059	0.067
E2	0.150	0.250	0.006	0.010
L	0.000	0.070	0.000	0.003
K	0°	8°	0°	8°

Recommend Pad Layout - Tolerance: ±0.05mm



Circuit Diagram



MECHANICAL CHARACTERISTICS

CASE	FLAMMABILITY RATING	TERMINALS	MARKING
JEDEC SOD-523 molded plastic body	UL 94V-0	Gold plated, solderable per MIL-STD-750, method 2026	3C

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}	60	W
Operating Temperature Range	T_{OPT}	-40 ~+ 150	°C
Storage Temperature Range	T_{STG}	-40 ~ +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}			3.3	V
Reverse Breakdown Voltage	I_T = 1.0mA	V_{BR}	3.6			V
Reverse Leakage Current	V_{RWM} = 3.3V	I_R			1.0	µA
Clamping Voltage	I_{PP} = 1A, t_p = 8/20µs	V_C			6.5	V
	I_{PP} = 5A, t_p = 8/20µs				12	V
TLP Clamping Voltage	I_{PP} = 16A IEC61000-4-2 Level 4 equivalent (±8kV Contact, ±15kV Air)	V_{CTLP}		9		V
Junction Capacitance	V_R = 0V, f = 1MHz	Cj			16.5	pF

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

Fig 1 8/20μs Waveform per IEC61000-4-5

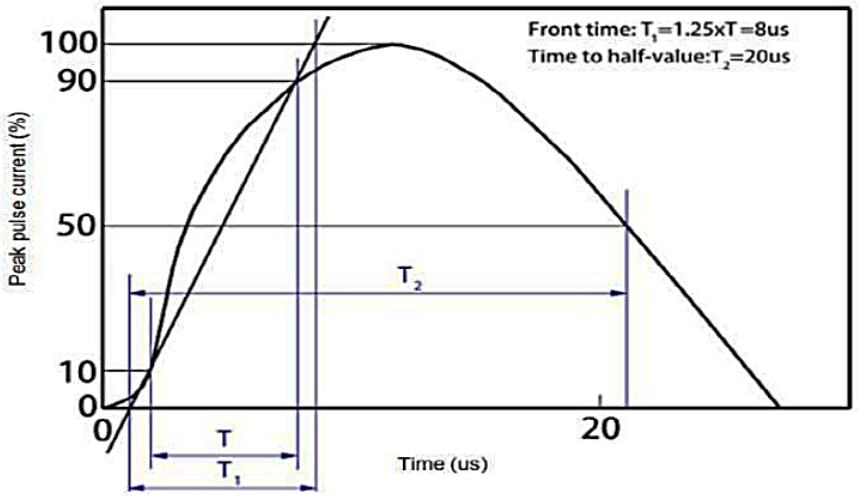


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

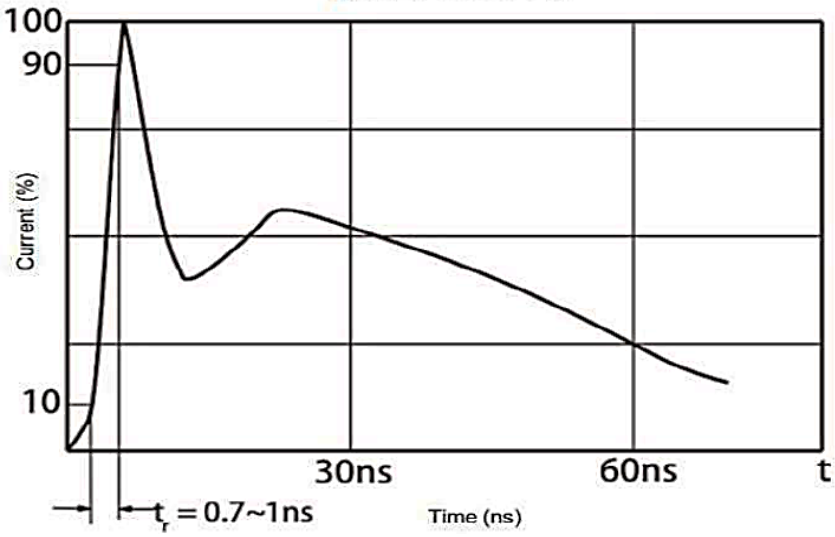


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Fig 3 Power Derating Curve

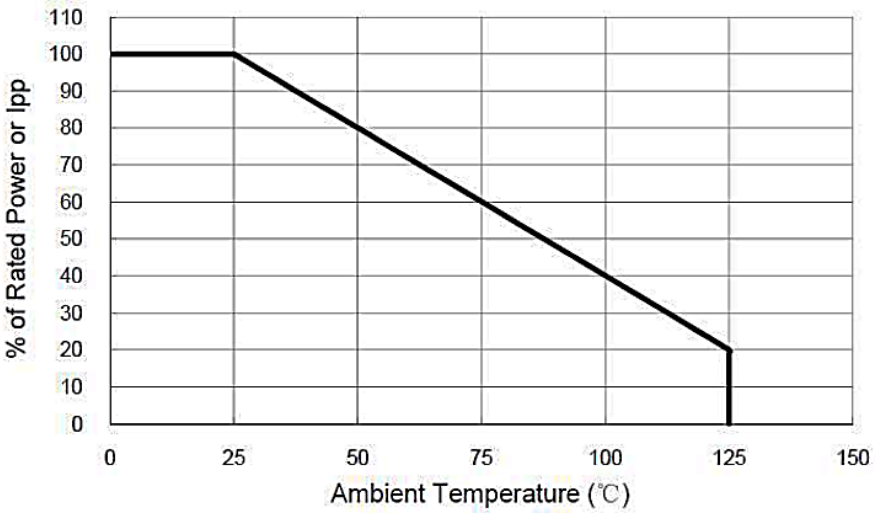
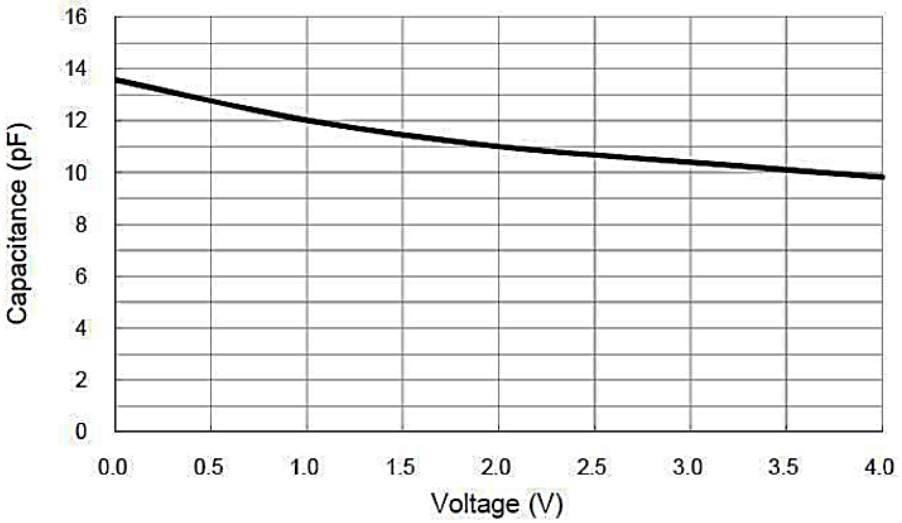


Fig 4 Voltage vs Capacitance



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

Fig 5 Transmission Line Pulsing (TLP) Measurement

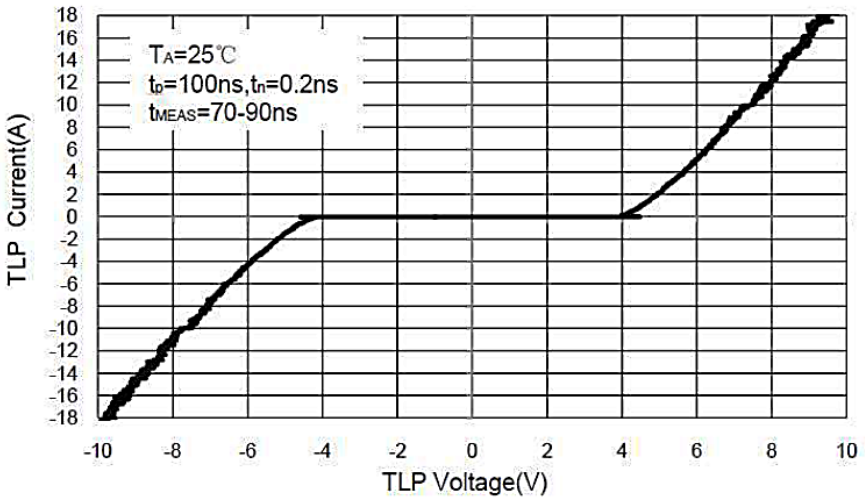
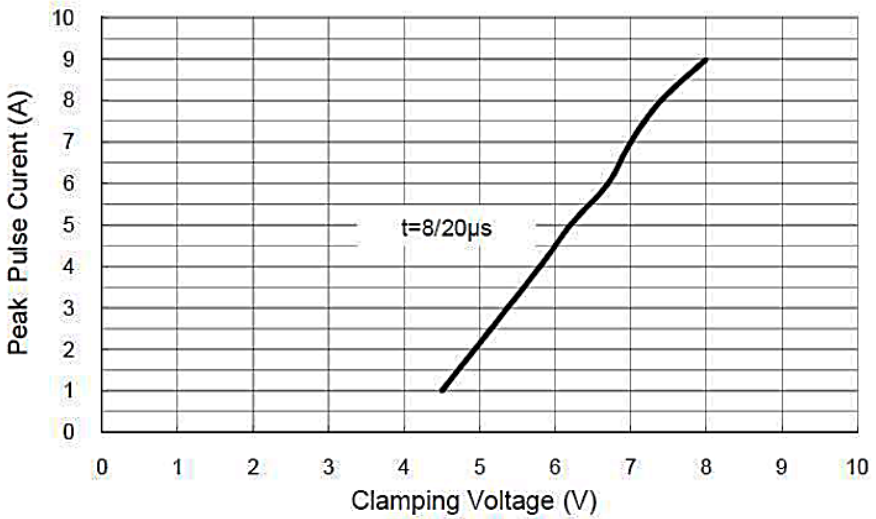
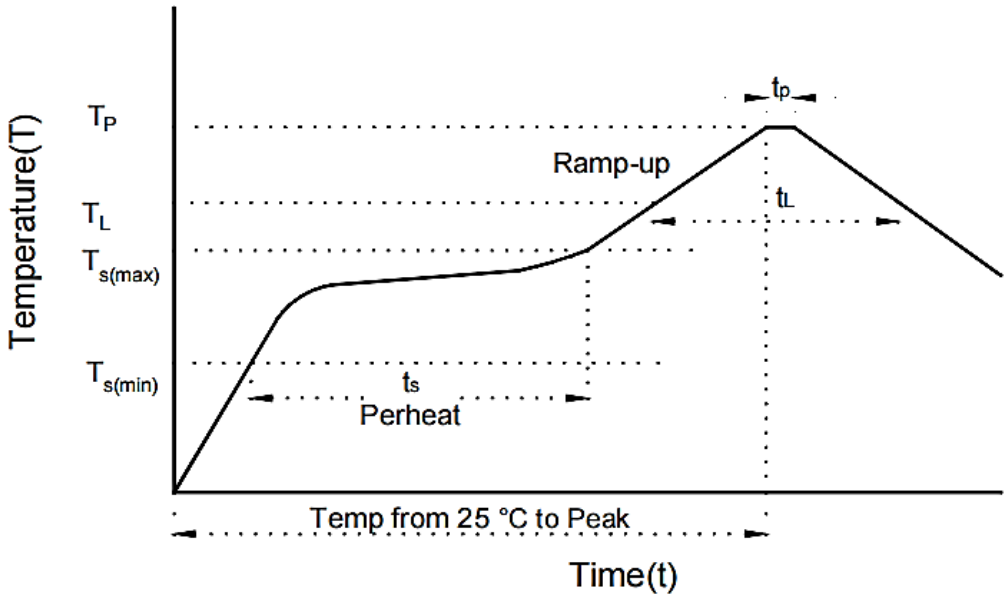


Fig 6 Clamping Voltage vs Peak Pulse Current

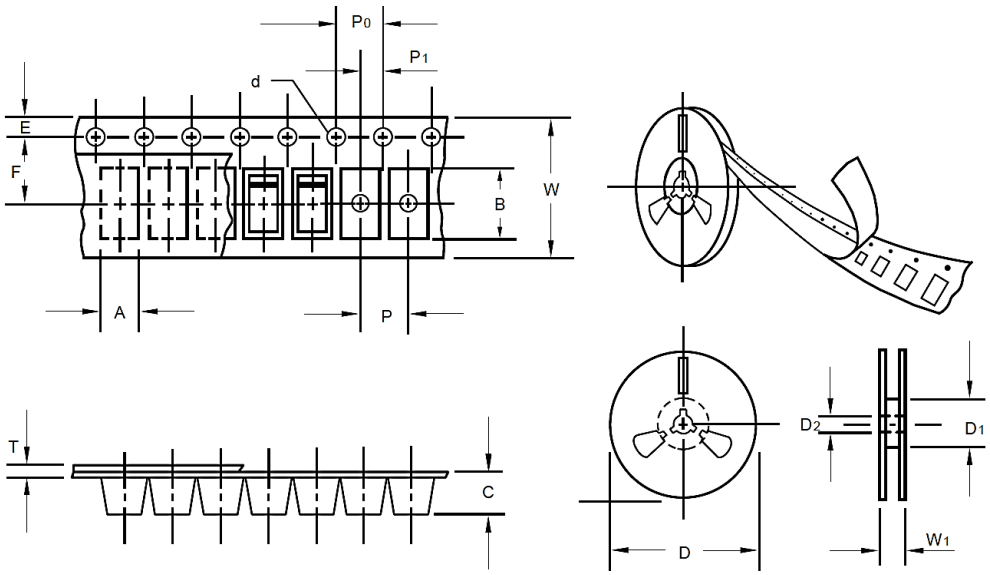


RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY



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-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	178
7”Reel inner diameter	D1	Min.	50.0
Feed hole diameter	D2	0.5	13.0
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	10.5
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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8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.