SPECIFICATION SHEET

SMD ESD PROTECTION DIODES CASE DFN1006 ESD08 SERIES

SPECIFICATION SHEET NO.	S0421- ESD0801PB0S0PB	
ORIGINAL MFG/PART NO.	MDD Diodes/ESD0801PB/DFN10060801SPB	
NEXTGEN PART CODE	ESD0801PB0S0PB	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, ESD08 Series, Case DFN1006, Ultra -Low Capacitance, Bidirectional Type Reverse Working Voltage: 5.0V Clamping Voltage 9.5VC Max.@1.0A Operating Junction Temp. Range -55°C ~+125°C Package in Tape/Reel, 10,000pcs/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

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

ESD0801PB is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With maximum capacitance of 15pF, ESD0801PB is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 (±15kV air, ±8kV contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.ESD0801PB uses ultra-small DFN1006 package. Each ESD0801PB device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern

MAIN FEATURE

- Peak Power Dissipation 60W (8/20μs)
- Transient Protection For High-Speed Data Lines
- IEC61000-4-2 (ESD) ±15kv (Air), ±8kv (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns) Cable Discharge Event (CDE)
- Package optimized for high-speed lines
- Low Clamping Voltage/Low Leakage Current
- Low Capacitance 10pF (Typical)
- Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge
- Meet MSL 3 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

- Portable Electronics
- Desktops, Servers and Notebooks
- Cellular Phone
- MP3 Ports / Display Port
- Subscriber identity Module (SIM) card
- Digital Ports

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 ESD0801PB0S0PB For RFQ and Order.

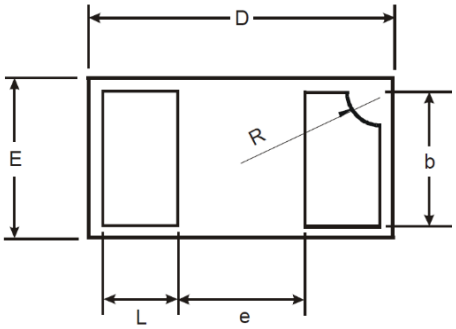
PART CODE GUIDE

RFQ
Request For Quotation

CODE	NAME	KEY SPECIFICATION OPTION
ESD08	Product Series Code	SMD Plastic-Encapsulate ESD Protection Diode, Case DFN1006, 2 Pads, Ultra Low Capacitance Type
01PB	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)
PB	Marking Code	Marking "PB"
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 DFN1006 Outline

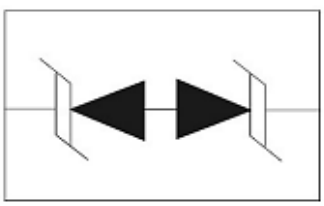
Top View



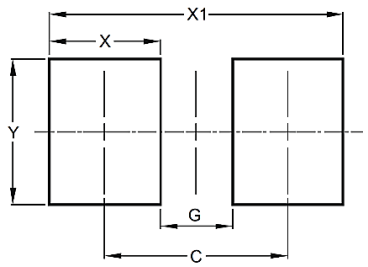
Side View

SYMBOL	DIMENSION (MM)		
	MIN.	Typ.	MAX.
A	0.45	0.50	0.550
b	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.650
e	-	0.40	-
L	0.20	0.25	0.30
R	0.07	0.12	0.17

Circuit Diagram



Recommend Pad Layout - Tolerance: ±0.05mm



SYMBOL	UNIT (MM)
C	0.90
G	0.40
X	0.50
X1	1.10
Y	0.50

MECHANICAL CHARACTERISTICS

CASE	FLAMMABILITY RATING	TERMINALS	MARKING
JEDEC DFN1006 molded plastic body	UL 94V-0	High temperature soldering 260℃/10s	PB

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}	±25	KV
ESD per IEC 61000-4-2 (Contact)	V_{ESD}	±20	KV
Peak Pulse Power @8/20μs	P_{PP}	60	W
Operating Temperature Range	T_{OPT}	-55~+ 125	°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}	5.6			V
Reverse Leakage Current	V_{RWM} = 5.0V	I_R			1.0	µA
Peak Pulse Current	tp = 8/20µs	Ipp			4.0	A
Clamping Voltage	I_{PP} = 1A, t_p = 8/20µs	V_C			9.5	V
	I_{PP} = 4A, t_p = 8/20µs				15	V
Junction Capacitance	V_R = 0V, f = 1MHz	Cj		8	15	pF

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

Figure 1: Peak Pulse Power Vs Pulse Time

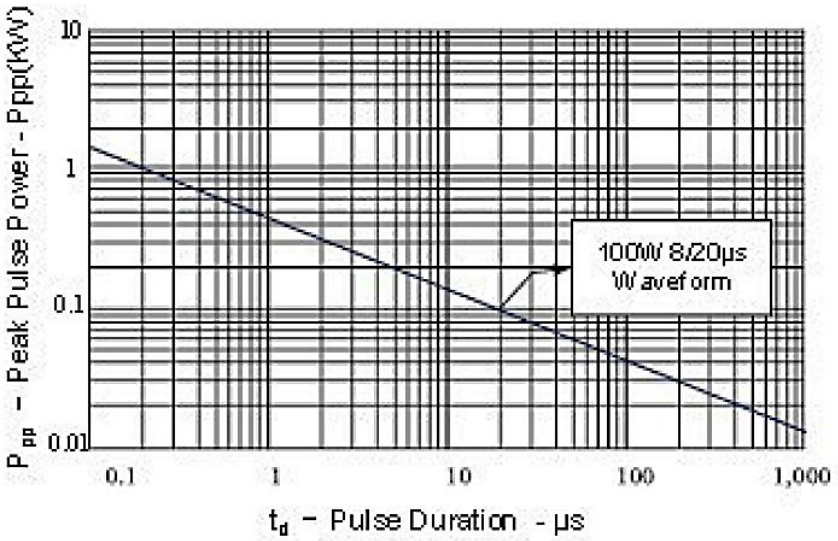
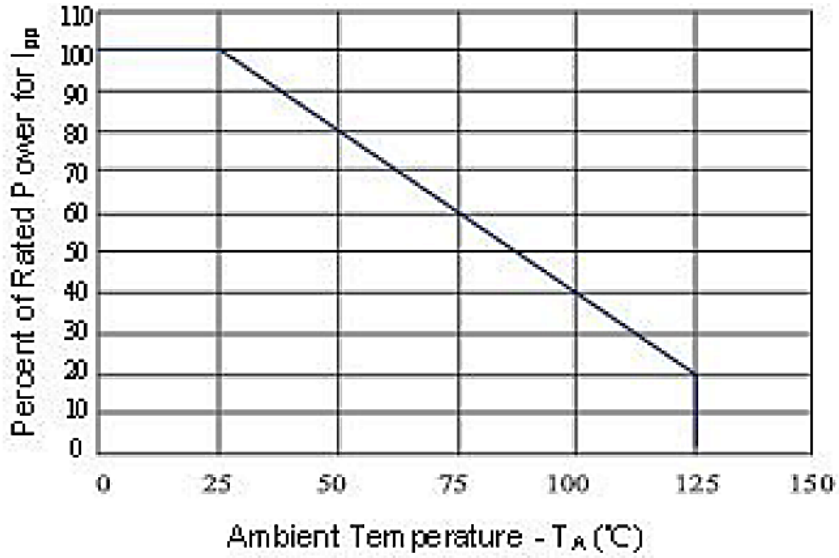


Figure 2: Power Derating Curve



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

Figure 3: Clamping Voltage vs. Peak Pulse Current

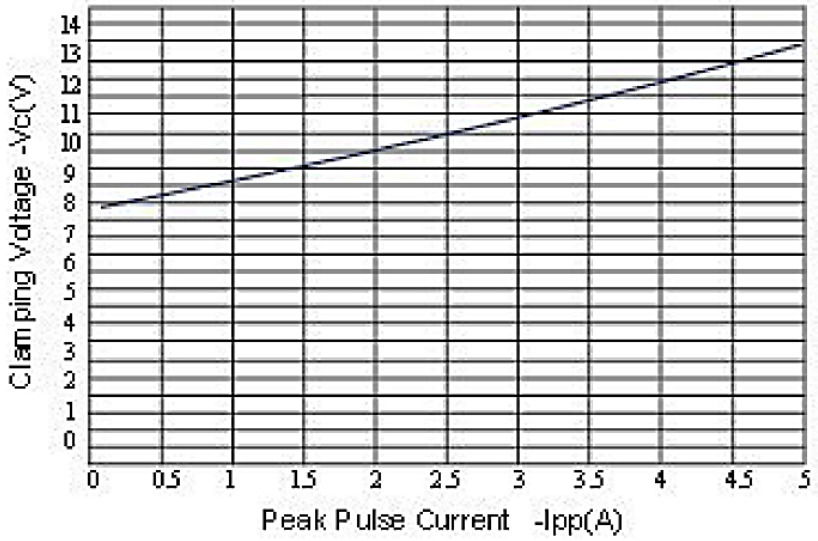
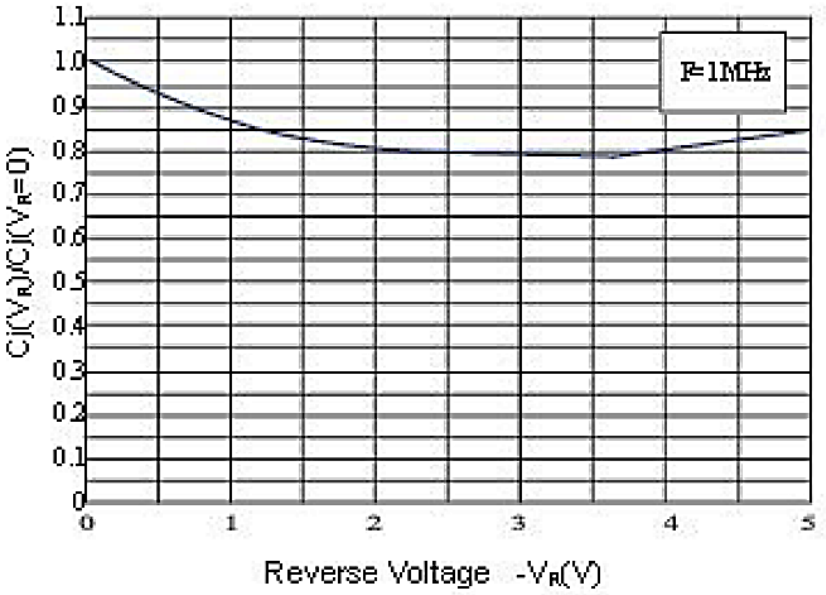


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage



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

Figure 5: Pulse Waveform

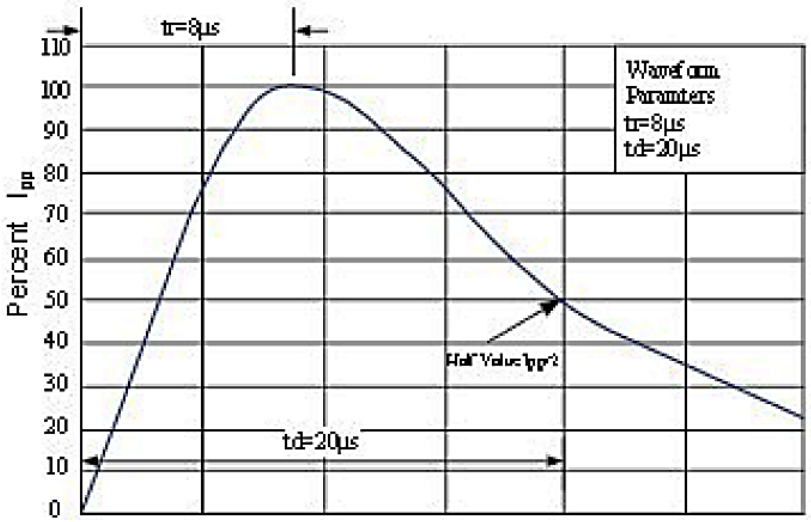
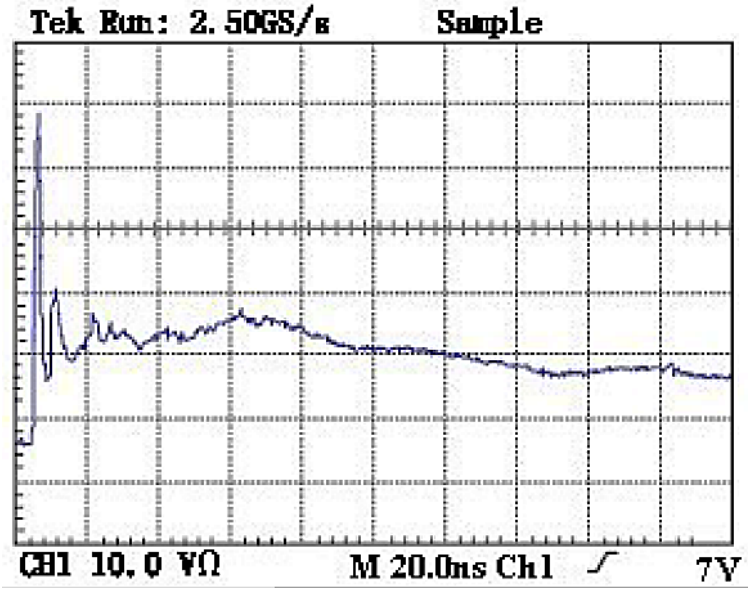
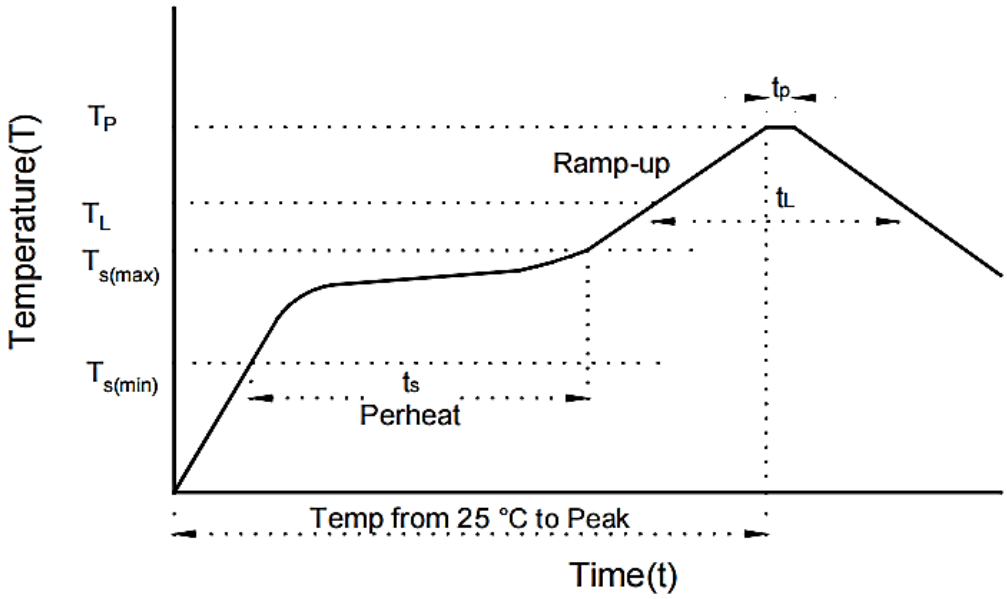


Figure 6: ESD Clamping(8kV Contact per IEC 61000-4-2)

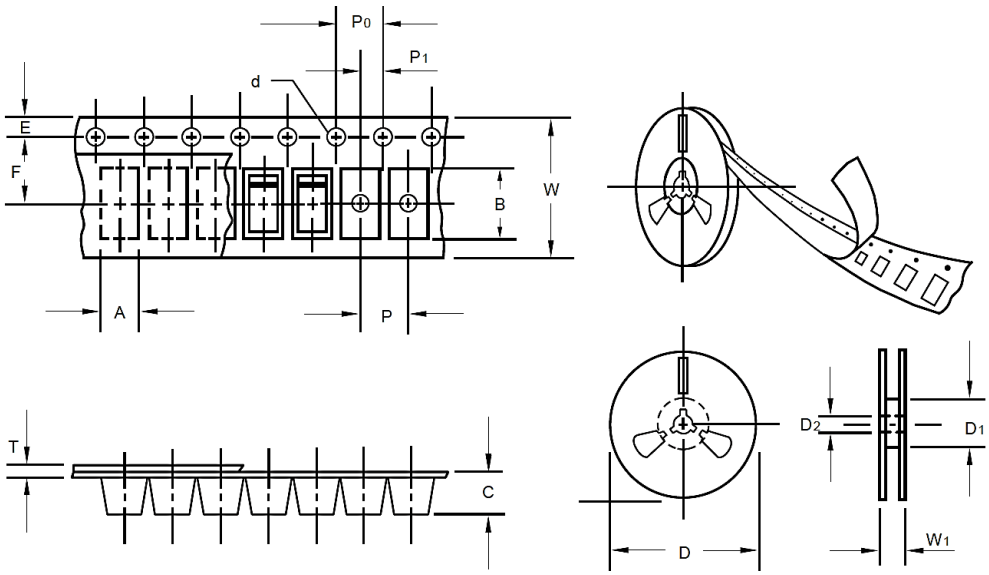


RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY



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	DFN1006
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	178.00
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	10.50
Qty. Per Reel (pcs)	10,000		

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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