

SPECIFICATION SHEET NO.	S0414- ESD03D6BU0S3BU	
ORIGINAL MFG/PART NO.	MDD Diodes/ESD03D6BU	
NEXTGEN PART CODE	ESD03D6BU0S3BU	Indicate This Code For RFQ /Order
DATE	Apr. 14, 2025	
REVISION	A3	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	SMD Plastic-Encapsulate ESD Protection Diodes, ESD03 Series, 2 Pads Case DFN0603, Ultra -Low Capacitance, Bidirectional Type Reverse Working Voltage: 3.3V, Clamping Voltage 12VC 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   
Effective Date: Apr. 14, 2025

CUSTOMER APPROVE
Date:

DESCRIPTION

ESD03D6BU is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.25pF, GESD03D6BU 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 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ 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. ESD03D6BU uses ultra-small DFN0603 package. Each ESD03D6BU device can protect one high speed data line. It offers system designers flexibility to protect single data line where space is a premium concern. The combined features of low capacitance, ultra-small size and high ESD robustness make ESD03D6BU ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.



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



MAIN FEATURE

- Peak Power Dissipation 96W (8/20 μs)
- Transient Protection For High-Speed Data Lines
- IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (Air), $\pm 8\text{kV}$ (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns) Cable Discharge Event (CDE)
- Protects one data, control line
- Low Clamping Voltage
- Low Leakage Current
- Low Capacitance 0.25pF Typical
- 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

- Serial ATA
- Desktops, Servers and Notebooks
- Cellular Phone
- MDDI Ports / USB Data Line Protection
- Display Port
- Digital Visual Interfaces (DVI)

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 ESD03D6BU0S3BU For RFQ and Order.

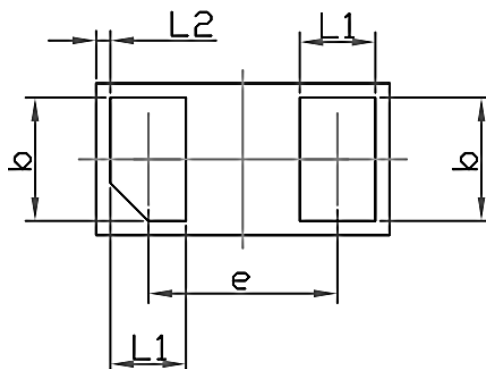
PART CODE GUIDE

RFQ
[Request For Quotation](#)

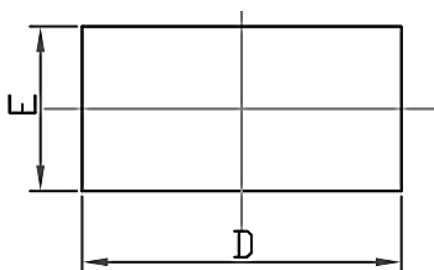
CODE	NAME	KEY SPECIFICATION OPTION
ESD03	Product Series Code	SMD Plastic-Encapsulate ESD Protection Diode, 3 Pads Case DFN0603, Ultra Low Capacitance
D6BU	Parameters Code	Letter or Digits (A~Z, a~z or 1~9)
0S	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
3BU	Marking Code	Marking "3BU"
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: mm (Inch), Case DFN0603 Outline

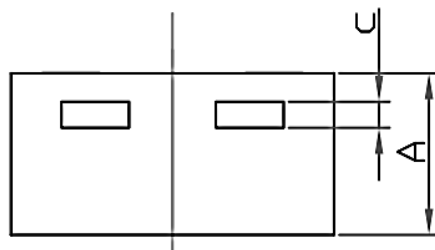
Bottom View



Top View

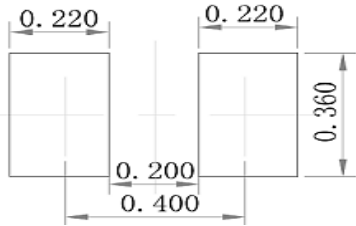


Side View



SYMBOL	DIMENSION (MM)		DIMENSION (INCH)	
	MIN.	MAX.	MIN.	MAX.
A	0.275	0.340	0.011	0.013
D	0.575	0.670	0.022	0.026
E	0.270	0.370	0.011	0.015
b	0.225	0.295	0.009	0.012
c	0.050 Ref.		0.002 Ref.	
e	0.365	0.435	0.014	0.017
L1	0.125	0.195	0.005	0.008
L2	0.030 Ref.		0.001 Ref.	

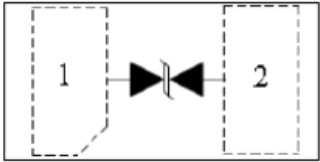
Recommend Pad Layout (unit : mm)



Circuit Diagram



Pin Configuration



MECHANICAL CHARACTERISTICS

CASE	FLAMMABILITY RATING	TERMINALS	MARKING
JEDEC DFN0603 molded plastic body	UL 94V-0	Gold plated, solderable per MIL-STD-750, method 2026	3BU

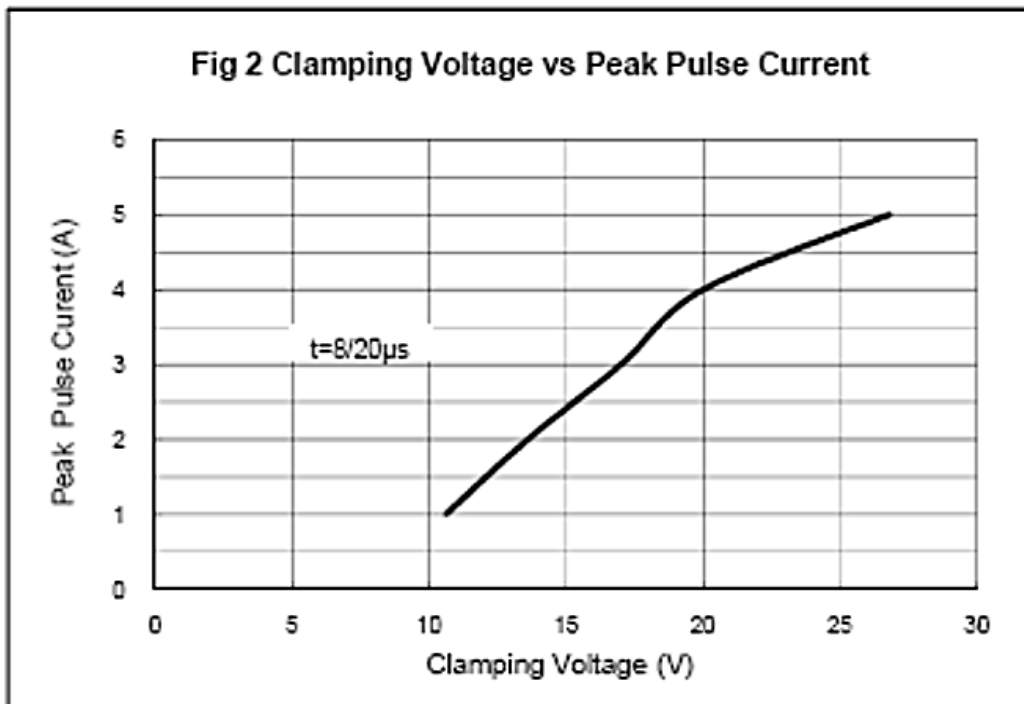
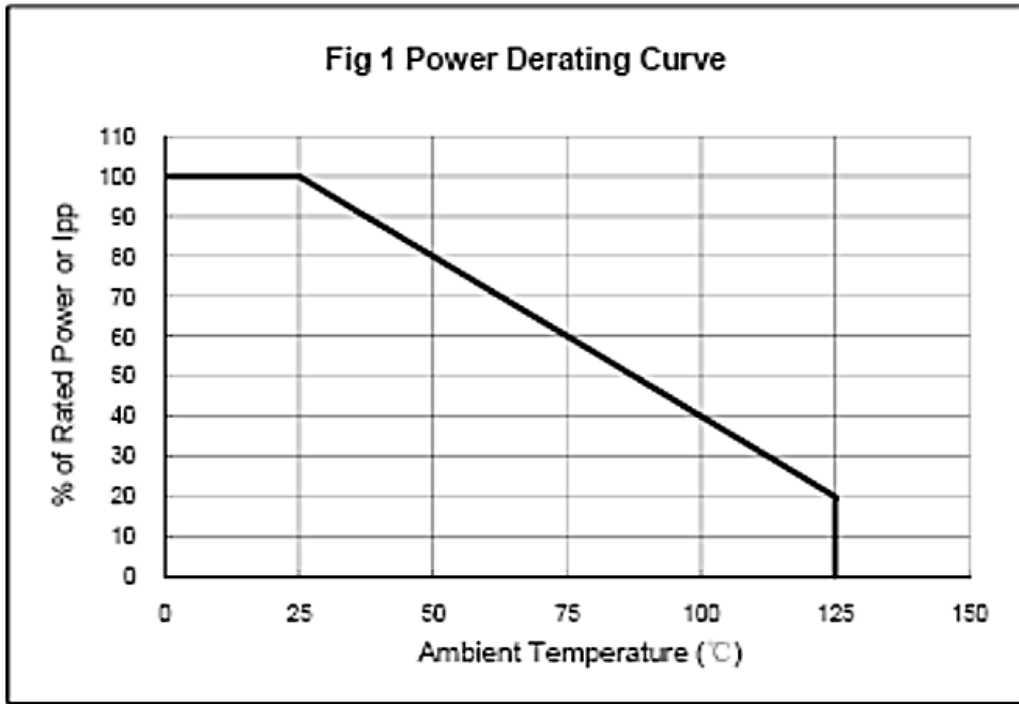
ABSOLUTE MAX. RATING & CHARACTERISTICS - TA=25°C unless otherwise specified, For Reference Only

PARAMETER	SYMBOLS	VALUE	UNITS
ESD per IEC 61000-4-2 (Air)	VESD	±20	KV
ESD per IEC 61000-4-2 (Contact)	VESD	±20	KV
Peak Pulse Power @8/20µs	PPP	96	W
Operating Temperature Range	TOPT	-55 ~+ 125	°C
Storage Temperature Range	TSTG	-55 ~ +150	°C
Lead Solder Temperature- Max. (10 s Duration)	TL	260 /10s	°C

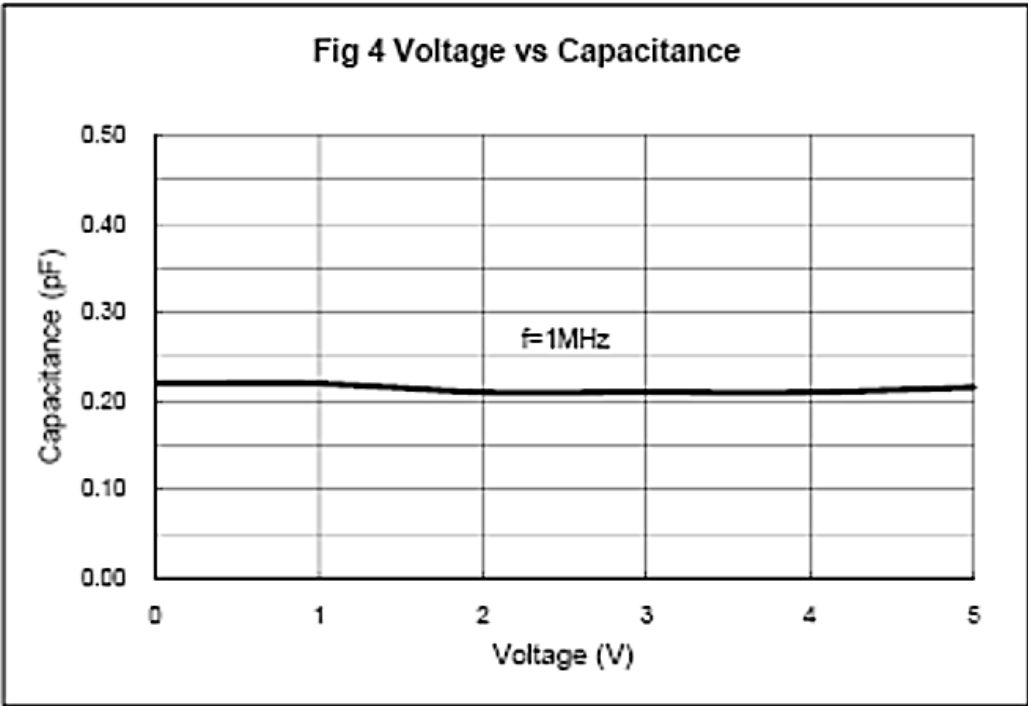
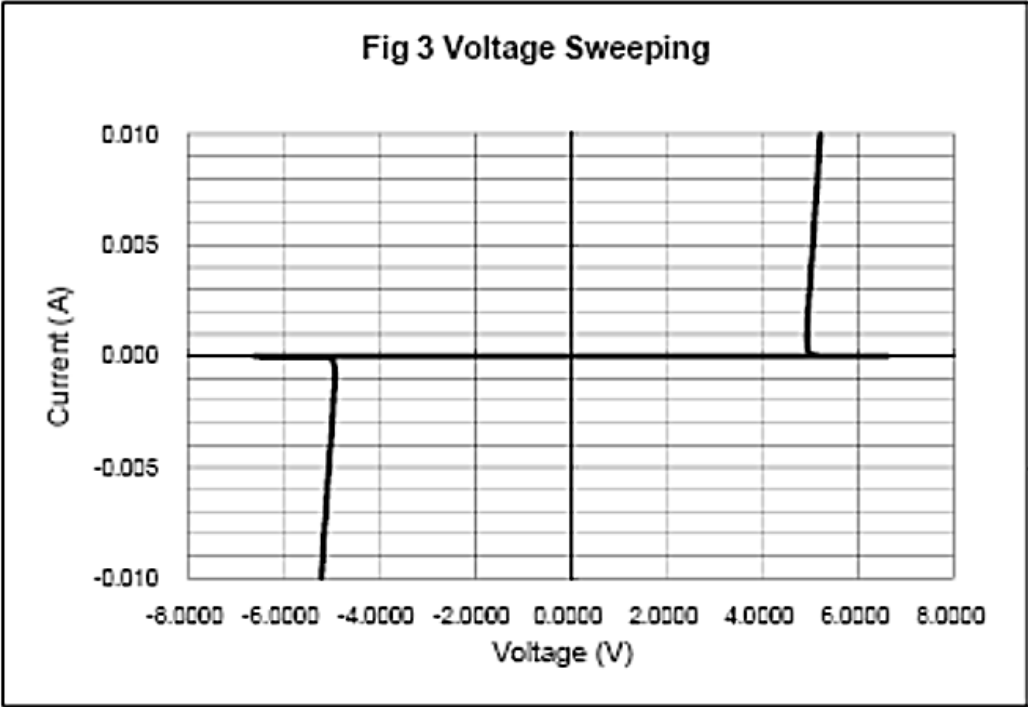
ELECTRICAL CHARACTERISTICS - TA=25°C unless otherwise specified, For Reference Only

PARAMETER	TEST CONDITION	SYMBOLS	VALUE			UNITS
			MIN.	TYP.	MAX.	
Reverse Working Voltage		VRWM			3.3	V
Reverse Breakdown Voltage	IT = 1.0mA	VBR	4.2			V
Reverse Leakage Current	VRWM = 3.3V	IR			100	nA
Clamping Voltage	IPP = 1A, tp = 8/20μs	VC			12	V
	IPP = 4A, tp = 8/20μs				24	V
Junction Capacitance	VR = 0V, f = 1MHz	Cj		0.25		pF

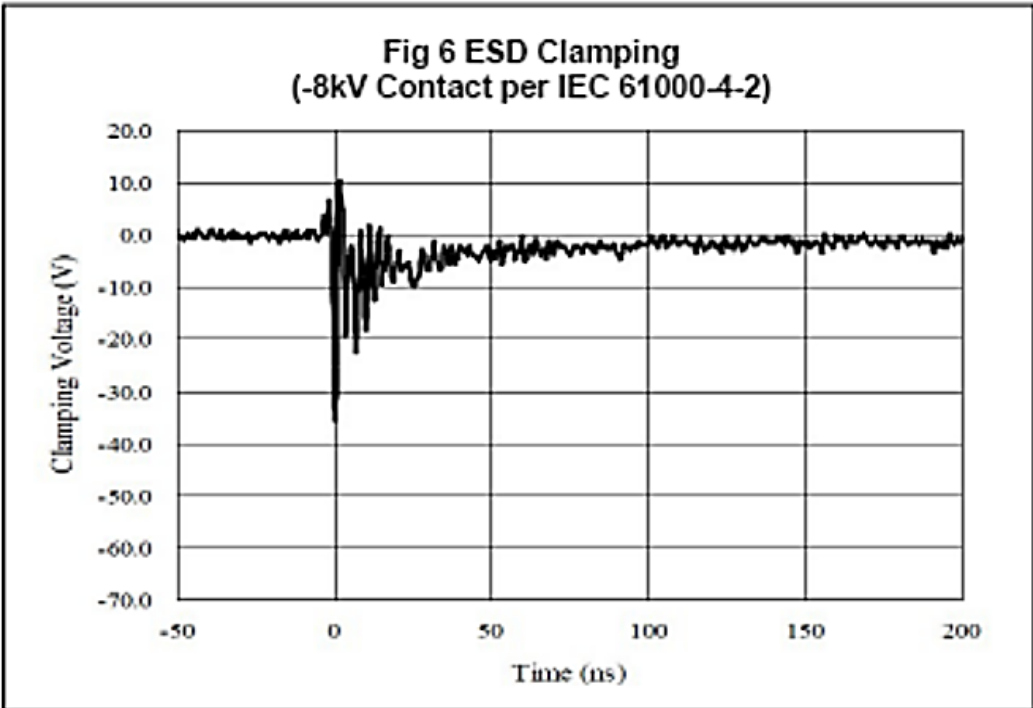
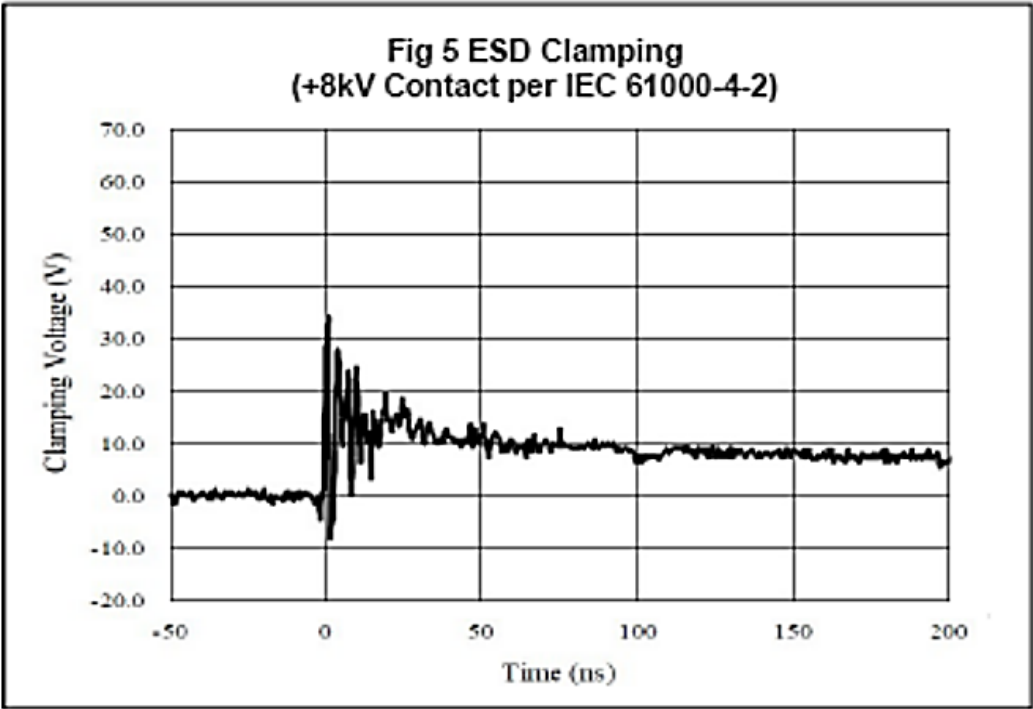
RATINGS AND CHARACTERISTICS CURVES- For Reference Only, Ta=25°C Unless Otherwise Specified.



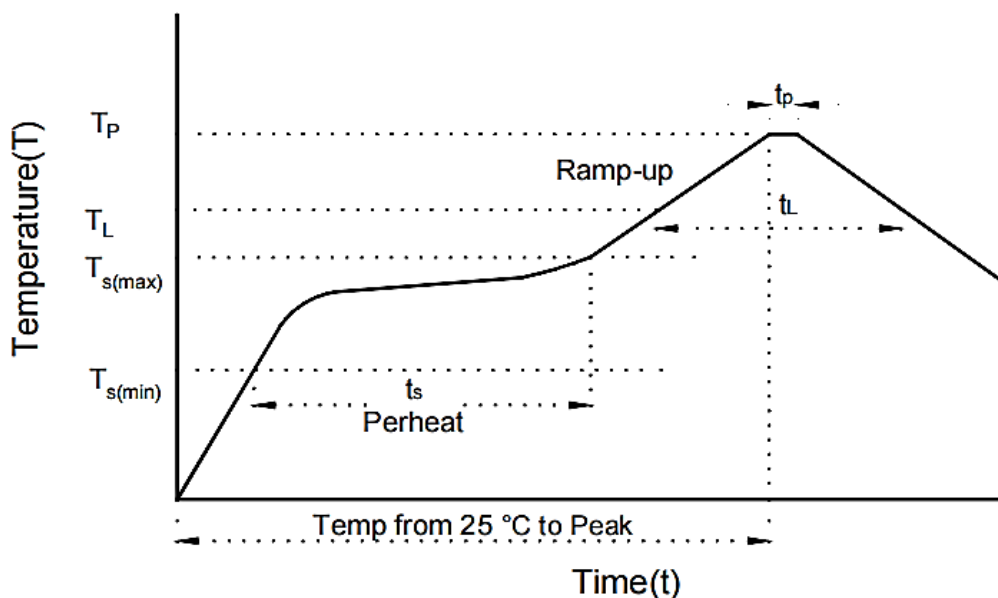
RATINGS AND CHARACTERISTICS CURVES- For Reference Only, Ta=25°C Unless Otherwise Specified.



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

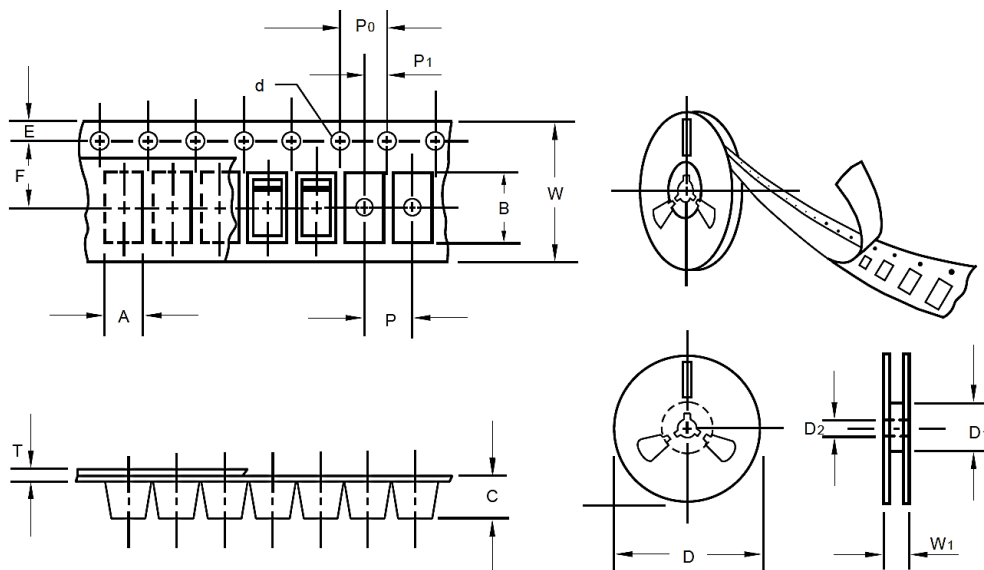


RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY



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	DFN0603
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 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 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.
4. NextGen Component, Inc (*NextGen*) reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.
5. *NextGen* makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does *NextGen* assume any liability for application assistance or customer product design.
6. *NextGen* does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application. No license is granted by implication or otherwise under any intellectual property rights of NextGen.
7. *NextGen* products are not authorized for use as critical components in life support devices or systems without express written approval by *NextGen*.
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.