

SPECIFICATION SHEET NO.	S0327- SMBJ220CA0S0EX	
ORIGINAL MFG/PART NO.	MDD Diodes/SMBJ220CA	
NEXTGEN PART CODE	SMBJ220CA0S0EX	Indicate This Code For RFQ /Order
DATE	Mar. 27, 2025	
REVISION	A3	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	SMD Transient Voltage Suppressor (TVs) Diodes, SMBJ Series Case SMB/DO-214AA, 2 Pads, Bidirectional Type, Reverse Stand-off Voltage 220V, Peak Pulse Power: 600 Watts, Peak Pulse Current: 1.7A Max. Operating Junction Temp. Range -65°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			
Effective Date: Mar. 27, 2025			

CUSTOMER APPROVE
Date:

MAIN FEATURE

- The Plastic Package Carries Underwriters Laboratory Flammability Classification 94V-0
- Low Profile Package
- Built-in Strain Relief
- High Temperature Soldering Guaranteed: 260°C/ 10 Seconds At Terminals
- Glass Passivated Chip Junction
- Low Inductance
- 5% VBR Voltage Tolerance
- Excellent Clamping Capability
- 600W Peak Pulse Power Capability At 10/1000µs Waveform
- Repetition Rate (Duty Cycle): 0.01%
- Fast Response Time
- Typical I_R Less Than 1µA Above 10V
- Cross Competitors Parts and More.
- RoHS/RoHS III Compliant, RoHS Annex III Lead Exemption (Exempt per RoHS EU 2015/863)



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



APPLICATION

- I/O Interface
- AC/DC Power Supply
- Low Frequency Signal Transmission Line (RS232, RS485, etc.)

ELECTRICAL CHARACTERISTICS

- See Page 5 ~Page 11 For Different Part Code
- All Parameters are Subject To NextGen Components' Final Confirmation

HOW TO ORDER

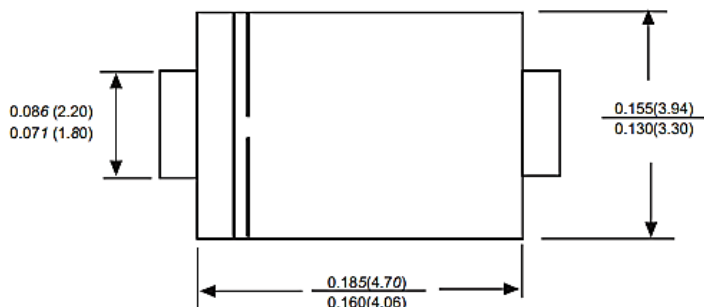
- Please Follow Up Part Code Guide And Indicate NextGen Part Code SMBJ220CA0S0EX For RFQ and Order.

PART CODE GUIDE

RFQ
[Request For Quotation](#)

CODE	NAME	KEY SPECIFICATION OPTION
SMBJ	Product Series Code	SMD Transient Voltage Suppressors (TVs) Diodes, Case SMB/DO-214AA, 2 Pads,
220CA	Mode code	220CA: Reverse Stand-Off Voltage 220V, Bidirectional Polarity Type
0S0	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
EX	Marking Code	Marking “EX”
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

Top View



Technical drawing of a 12-pin D-sub connector. The drawing shows the side profile of the connector with the following dimensions:

- Overall height: $0.096(2.44)$ inches / $0.084(2.13)$ inches
- Pin height (from base): $0.012(0.305)$ inches / $0.006(0.152)$ inches
- Pin pitch (center-to-center): $0.060(1.52)$ inches / $0.030(0.76)$ inches
- Pin width: $0.008(0.203)$ MAX.
- Overall width: $0.220(5.59)$ inches / $0.200(5.08)$ inches

The drawing includes a standard D-sub connector symbol at the bottom, consisting of a circle with a triangle pointing to it and a horizontal line passing through the triangle.

SYMBOL	A	B	C	D	E
Unit (Inch)	0.11	0.094	0.181	0.086	0.276
Unit (mm)	2.80	2.40	4.60	2.20	7.00

MECHANICAL DATA

CASE	TERMINALS	POLARITY	MOUNTING POSITION	MARKING	WEIGHT PER PIECE
JEDEC SMB/DO-214AA Molded Plastic Body	Solderable per MIL-STD- 750, Method 2026	Polarity Symbol Marking On Body	Any	See Marking Code List	0.003 Ounce, 0.095 Grams

MAX. RATING & CHARACTERISTICS - Ratings At 25°C Ambient Temperature Unless Otherwise Specified.

PARAMETER	SYMBOLS	VALUE	UNITS
Peak Pulse Power Dissipation At 10/1000 μ s Waveform (Note 1, Note 2, Fig. 1)	PPPM	600 Min.	W
Peak Pulse Current On 10/1000 μ s Waveform (Note 1, Fig. 3)	I _{PPM}	See Page 6~page 11	A
Steady State Power Dissipation At T _A =50°C (Fig. 5)	P _{M(AV)}	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed On Rated Load (JEDEC Method) (Note 3, Fig. 6)	I _{FSM}	100	A
Operating Junction And Storage Temperature Range.	T _J , T _{stg}	-65 ~ +150	°C
Typical Thermal Resistance Junction To Lead	R _{θJL}	20	°C/W
Typical Thermal Resistance Junction To Ambient	R _{θJA}	100	°C/W

Note

1. Non-repetitive current pulse, per Fig 3 and derated above T_A=25 °C per Fig 2
2. Mounted on 5.0*5.0mm (0.03mm Thickness) copper pads to each terminal
3. 8.3ms single half sinewave or equivalent square wave, duty cycle=4 pulsed per minute Max.

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage Max.	Max. Clamp Voltage	Peak Pulse Current	Marking Code
		VBR @ IT						
	VRWM	Min	Max	IT	IR @ VRWM	VC @ IPP	IPP	
	V	V	V	mA	µA	V	A	
SMBJ050A00S0KE	5	6.4	7	10	800	9.2	65.3	KE
SMBJ060A00S0KG	6	6.67	7.37	10	800	10.3	58.3	KG
SMBJ065A00S0KK	6.5	7.22	7.98	10	500	11.2	53.6	KK
SMBJ070A00S0KM	7	7.78	8.6	10	200	12	50	KM
SMBJ075A00S0KP	7.5	8.33	9.21	1	100	12.9	46.6	KP
SMBJ080A00S0KR	8	8.89	9.83	1	50	13.6	44.2	KR
SMBJ085A00S0KT	8.5	9.44	10.4	1	20	14.4	41.7	KT
SMBJ090A00S0KV	9	10	11.1	1	10	15.4	39	KV
SMBJ10A000S0KX	10	11.1	12.3	1	5	17	35.3	KX
SMBJ11A000S0KZ	11	12.2	13.5	1	1	18.2	33	KZ
SMBJ12A000S0LE	12	13.3	14.7	1	1	19.9	30.2	LE
SMBJ13A000S0LG	13	14.4	15.9	1	1	21.5	28	LG
SMBJ14A000S0LK	14	15.6	17.2	1	1	23.2	25.9	LK
SMBJ15A000S0LM	15	16.7	18.5	1	1	24.4	24.6	LM
SMBJ16A000S0LP	16	17.8	19.7	1	1	26	23.1	LP
SMBJ17A000S0LR	17	18.9	20.9	1	1	27.6	21.8	LR
SMBJ18A000S0LT	18	20	22.1	1	1	29.2	20.6	LT
SMBJ20A000S0LV	20	22.2	24.5	1	1	32.4	18.6	LV
SMBJ22A000S0LX	22	24.4	26.9	1	1	35.5	16.9	LX
SMBJ24A000S0LZ	24	26.7	29.5	1	1	38.9	15.5	LZ

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Part Code	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage Max.	Max. Clamp Voltage	Peak Pulse Current	Marking Code
		VBR @ IT						
	VRWM	Min	Max	IT	IR @ VRWM	VC @ IPP	IPP	
	V	V	V	mA	µA	V	A	
SMBJ26A000S0ME	26	28.9	31.9	1	1	42.1	14.3	ME
SMBJ28A000S0MG	28	31.1	34.4	1	1	45.4	13.3	MG
SMBJ30A000S0MK	30	33.3	36.8	1	1	48.4	12.4	MK
SMBJ33A000S0MM	33	36.7	40.6	1	1	53.3	11.3	MM
SMBJ36A000S0MP	36	40	44.2	1	1	58.1	10.4	MP
SMBJ40A000S0MR	40	44.4	49.1	1	1	64.5	9.3	MR
SMBJ43A000S0MT	43	47.8	52.8	1	1	69.4	8.7	MT
SMBJ45A000S0MV	45	50	55.3	1	1	72.7	8.3	MV
SMBJ48A000S0MX	48	53.3	58.9	1	1	77.4	7.8	MX
SMBJ51A000S0MZ	51	56.7	62.7	1	1	82.4	7.3	MZ
SMBJ54A000S0NE	54	60	66.3	1	1	87.1	6.9	NE
SMBJ58A000S0NG	58	64.4	71.2	1	1	93.6	6.5	NG
SMBJ60A000S0NK	60	66.7	73.7	1	1	96.8	6.2	NK
SMBJ64A000S0NM	64	71.1	78.6	1	1	103	5.9	NM
SMBJ70A000S0NP	70	77.8	86	1	1	113	5.3	NP
SMBJ75A000S0NR	75	83.3	92.1	1	1	121	5	NR
SMBJ78A000S0NT	78	86.7	95.8	1	1	126	4.8	NT
SMBJ85A000S0NV	85	94.4	104	1	1	137	4.4	NV
SMBJ90A000S0NX	90	100	111	1	1	146	4.1	NX
SMBJ100A00S0NZ	100	111	123	1	1	162	3.7	NZ

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage Max.	Max. Clamp Voltage	Peak Pulse Current	Marking Code
		VBR @ IT						
	VRWM	Min	Max	IT	IR @ VRWM	VC @ IPP	IPP	
	V	V	V	mA	µA	V	A	
SMBJ110A00S0PE	110	122	135	1	1	177	3.4	PE
SMBJ120A00S0PG	120	133	147	1	1	193	3.1	PG
SMBJ130A00S0PK	130	144	159	1	1	209	2.9	PK
SMBJ150A00S0PM	150	167	185	1	1	243	2.5	PM
SMBJ160A00S0PP	160	178	197	1	1	259	2.3	PP
SMBJ170A00S0PR	170	189	209	1	1	275	2.2	PR
SMBJ180A00S0PT	180	201	222	1	1	292	2.1	PT
SMBJ190A00S0PA	190	211	233	1	1	308	2.0	PA
SMBJ200A00S0PV	200	224	247	1	1	324	1.9	PV
SMBJ210A00S0PB	210	237	263	1	1	340	1.8	PB
SMBJ220A00S0PX	220	246	272	1	1	356	1.7	PX
SMBJ250A00S0PZ	250	279	309	1	1	405	1.5	PZ
SMBJ300A00S0QE	300	335	371	1	1	486	1.3	QE
SMBJ350A00S0QG	350	391	432	1	1	567	1.1	QG
SMBJ400A00S0QK	400	447	494	1	1	648	0.9	QK
SMBJ440A00S0QM	440	492	543	1	1	713	0.9	QM

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage Max.	Max. Clamp Voltage	Peak Pulse Current	Marking Code
		VBR @ IT						
	VRWM	Min	Max	IT	IR @ VRWM	VC @ IPP	IPP	
	V	V	V	mA	µA	V	A	
SMBJ050CA0S0AE	5	6.4	7	10	800	9.2	65.3	AE
SMBJ060CA0S0AG	6	6.67	7.37	10	800	10.3	58.3	AG
SMBJ065CA0S0AK	6.5	7.22	7.98	10	500	11.2	53.6	AK
SMBJ070CA0S0AM	7	7.78	8.6	10	200	12	50	AM
SMBJ075CA0S0AP	7.5	8.33	9.2	1	100	12.9	46.6	AP
SMBJ080CA0S0AR	8	8.89	9.83	1	50	13.6	44.2	AR
SMBJ085CA0S0AT	8.5	9.44	10.4	1	20	14.4	41.7	AT
SMBJ090CA0S0AV	9	10	11.1	1	10	15.4	39	AV
SMBJ10CA00S0AX	10	11.1	12.3	1	5	17	35.3	AX
SMBJ11CA00S0AZ	11	12.2	13.5	1	1	18.2	33	AZ
SMBJ12CA00S0BE	12	13.3	14.7	1	1	19.9	30.2	BE
SMBJ13CA00S0BG	13	14.4	15.9	1	1	21.5	28	BG
SMBJ14CA00S0BK	14	15.6	17.2	1	1	23.2	25.9	BK
SMBJ15CA00S0BM	15	16.7	18.5	1	1	24.4	24.6	BM
SMBJ16CA00S0BP	16	17.8	19.7	1	1	26	23.1	BP
SMBJ17CA00S0BR	17	18.9	20.9	1	1	27.6	21.8	BR
SMBJ18CA00S0BT	18	20	22.1	1	1	29.2	20.6	BT
SMBJ20CA00S0BV	20	22.2	24.5	1	1	32.4	18.6	BV
SMBJ22CA00S0BX	22	24.4	26.9	1	1	35.5	16.9	BX
SMBJ24CA00S0BZ	24	26.7	29.5	1	1	38.9	15.5	BZ

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage Max.	Max. Clamp Voltage	Peak Pulse Current	Marking Code
		VBR @ IT						
	VRWM	Min	Max	IT	IR @ VRWM	VC @ IPP	IPP	
	V	V	V	mA	µA	V	A	
SMBJ26CA00S0CE	26	28.9	31.9	1	1	42.1	14.3	CE
SMBJ28CA00S0CG	28	31.1	34.4	1	1	45.4	13.3	CG
SMBJ30CA00S0CK	30	33.3	36.8	1	1	48.4	12.4	CK
SMBJ33CA00S0CM	33	36.7	40.6	1	1	53.3	11.3	CM
SMBJ36CA00S0CP	36	40	44.2	1	1	58.1	10.4	CP
SMBJ40CA00S0CR	40	44.4	49.1	1	1	64.5	9.3	CR
SMBJ43CA00S0CT	43	47.8	52.8	1	1	69.4	8.7	CT
SMBJ45CA00S0CV	45	50	55.3	1	1	72.7	8.3	CV
SMBJ48CA00S0CX	48	53.3	58.9	1	1	77.4	7.8	CX
SMBJ51CA00S0CZ	51	56.7	62.7	1	1	82.4	7.3	CZ
SMBJ54CA00S0DE	54	60	66.3	1	1	87.1	6.9	DE
SMBJ58CA00S0DG	58	64.4	71.2	1	1	93.6	6.5	DG
SMBJ60CA00S0DK	60	66.7	73.7	1	1	96.8	6.2	DK
SMBJ64CA00S0DM	64	71.1	78.6	1	1	103	5.9	DM
SMBJ70CA00S0DP	70	77.8	86	1	1	113	5.3	DP
SMBJ75CA00S0DR	75	83.3	92.1	1	1	121	5	DR
SMBJ78CA00S0DT	78	86.7	95.8	1	1	126	4.8	DT
SMBJ85CA00S0DV	85	94.4	104	1	1	137	4.4	DV
SMBJ90CA00S0DX	90	100	111	1	1	146	4.1	DX
SMBJ100CA00S0DZ	100	111	123	1	1	162	3.7	DZ

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

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		VBR @ IT						
	VRWM	Min	Max	IT	IR @ VRWM	VC @ IPP	IPP	
	V	V	V	mA	μA	V	A	
SMBJ110CA0S0EE	110	122	135	1	1	177	3.4	EE
SMBJ120CA0S0EG	120	133	147	1	1	193	3.1	EG
SMBJ130CA0S0EK	130	144	159	1	1	209	2.9	EK
SMBJ150CA0S0EM	150	167	185	1	1	243	2.5	EM
SMBJ160CA0S0EP	160	178	197	1	1	259	2.3	EP
SMBJ170CA0S0ER	170	189	209	1	1	275	2.2	ER
SMBJ180CA0S0ET	180	201	222	1	1	292	2.1	ET
SMBJ190CA0S0EC	190	211	233	1	1	308	2.0	EC
SMBJ200CA0S0EV	200	224	247	1	1	324	1.9	EV
SMBJ210CA0S0ED	210	237	263	1	1	340	1.8	ED
SMBJ220CA0S0EX	220	246	272	1	1	356	1.7	EX
SMBJ250CA0S0EZ	250	279	309	1	1	405	1.5	EZ
SMBJ300CA0S0FE	300	335	371	1	1	486	1.3	FE
SMBJ350CA0S0FG	350	391	432	1	1	567	1.1	FG
SMBJ400CA0S0FK	400	447	494	1	1	648	0.9	FK
SMBJ440CA0S0FM	440	492	543	1	1	713	0.9	FM

Note: For Bidirectional Type Having VRWM Of 10V And Less, The IR Limit Is Double.

RATINGS AND CHARACTERISTICS CURVES- FOR REFERENCE ONLY, $T_A=25^{\circ}\text{C}$ UNLESS OTHERWISE SPECIFIED.

Figure 1. Peak Pulse Power Rating Curve

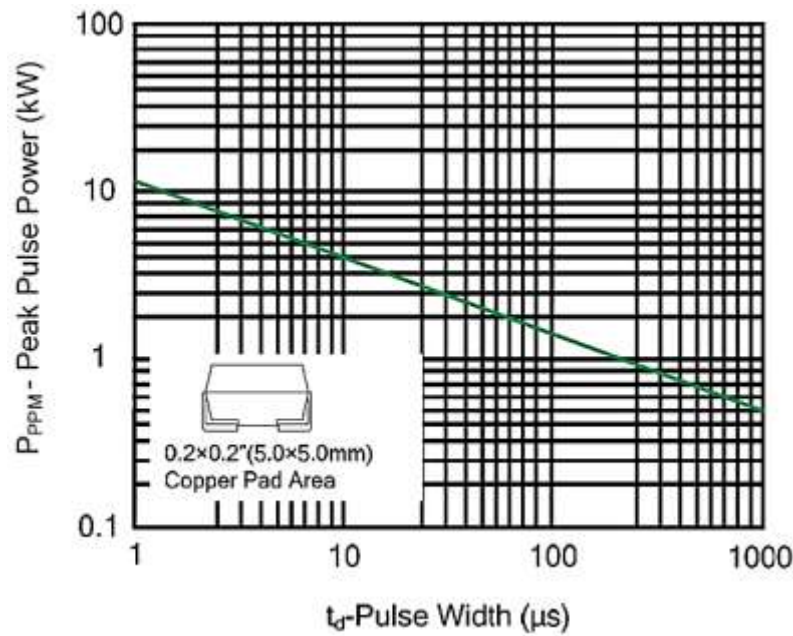
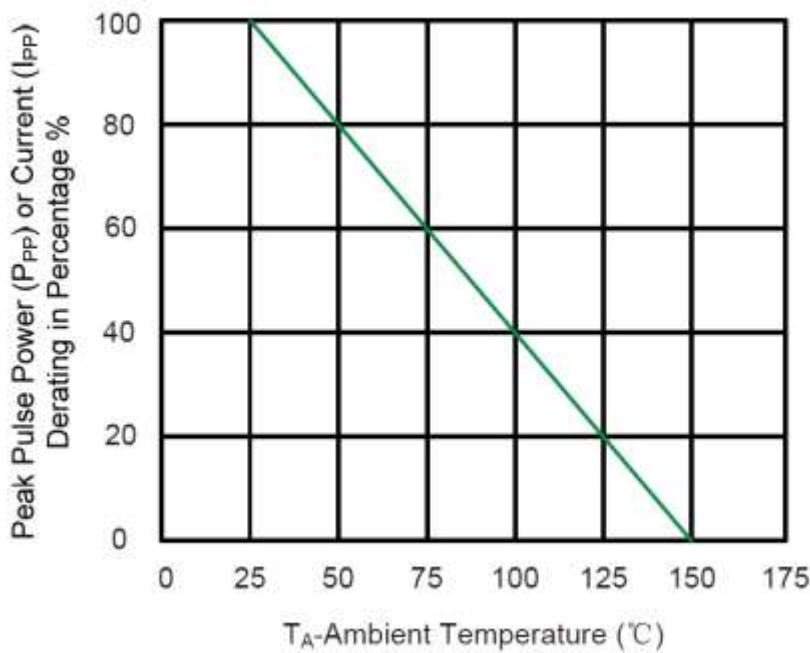


Figure 2. Pulse Derating Curve



RATINGS AND CHARACTERISTICS CURVES- FOR REFERENCE ONLY, $T_A=25^{\circ}\text{C}$ UNLESS OTHERWISE SPECIFIED.

Figure 3. Pulse Waveform

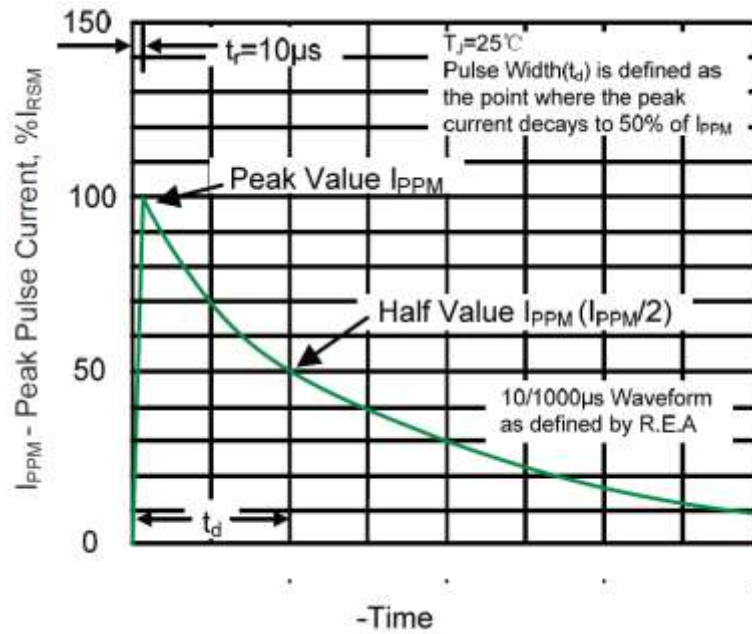
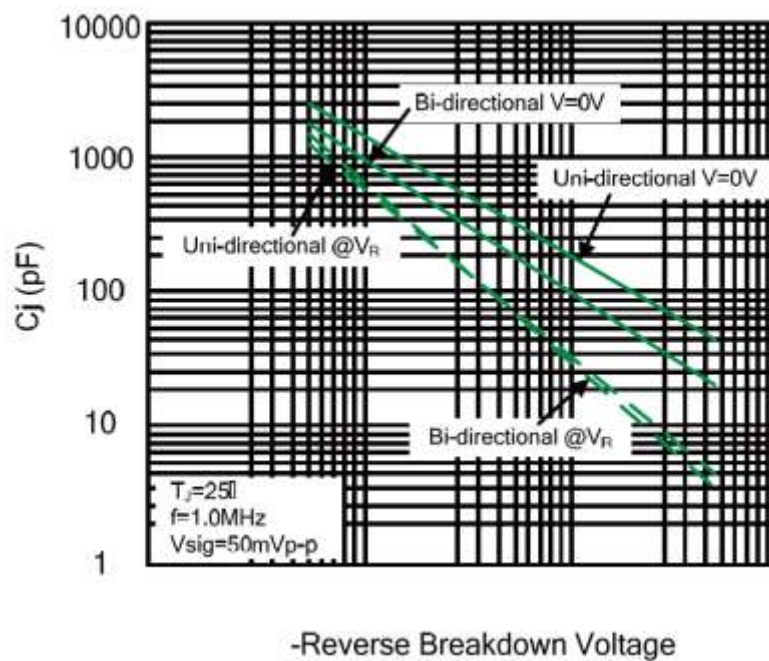


Figure 4. Typical Junction Capacitance



RATINGS AND CHARACTERISTICS CURVES- FOR REFERENCE ONLY, $T_A=25^{\circ}\text{C}$ UNLESS OTHERWISE SPECIFIED.

Figure 5. Steady State Power Dissipation Derating curve

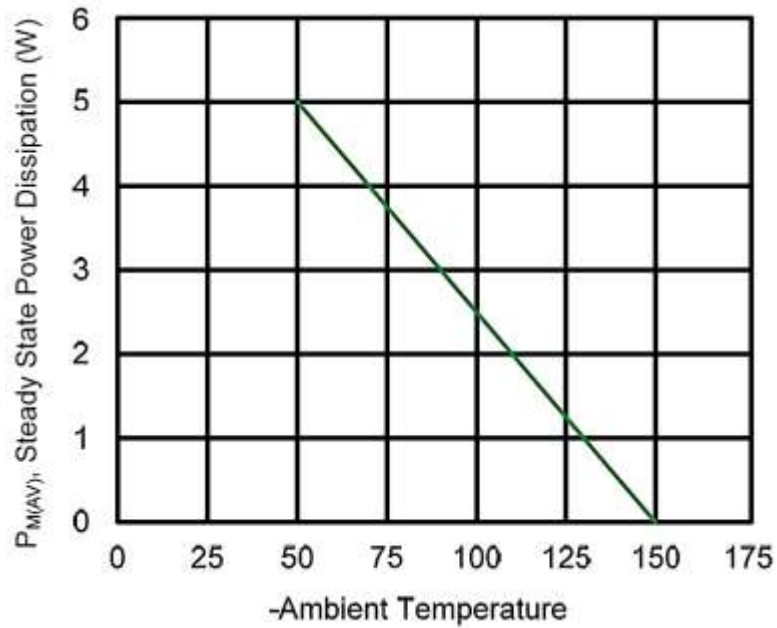
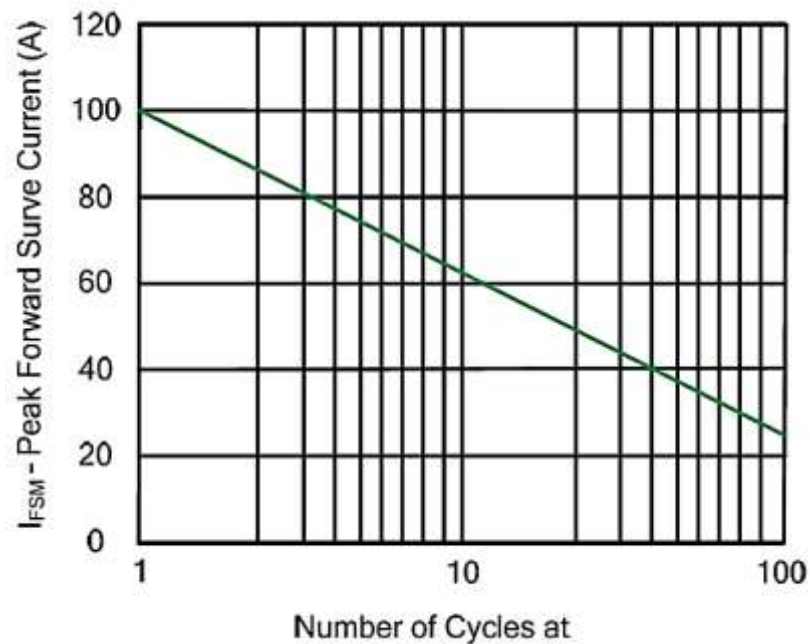
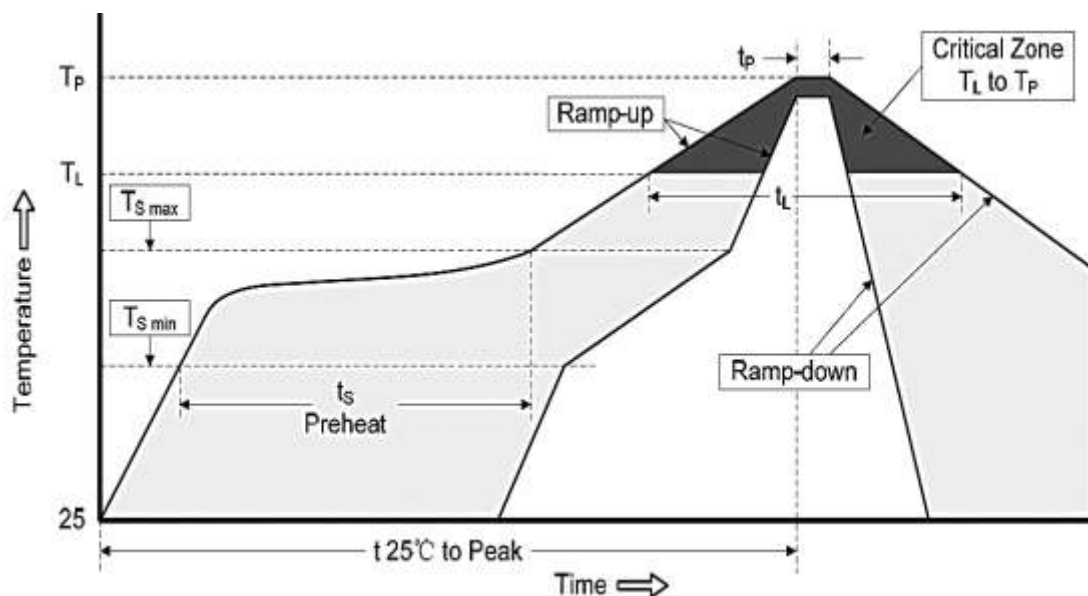


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

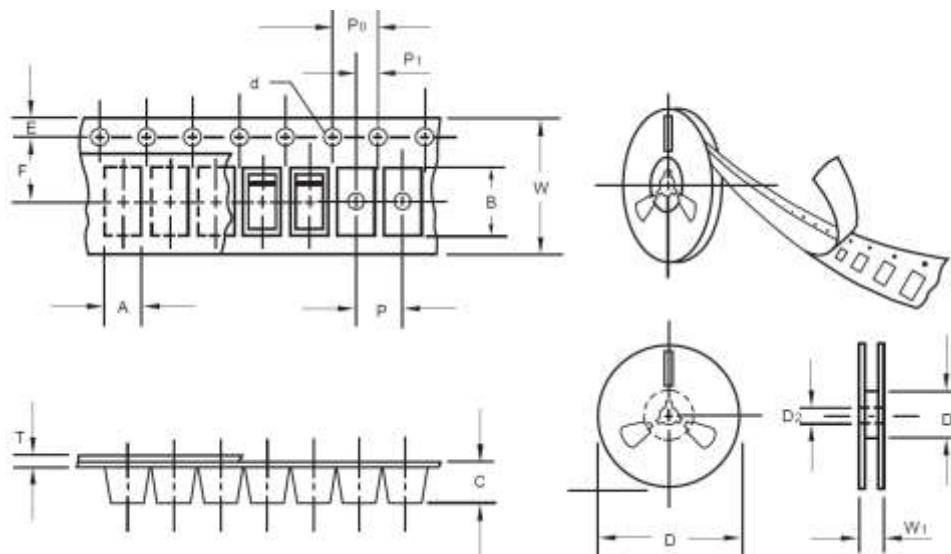


RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY



PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (T_L 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
T_s max to T_L Ramp-up Rate		3°C/second Max
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)		20 ~ 40 seconds
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	SMB/DO-214AA
Carrier width	A	0.1	3.81
Carrier Length	B	0.1	5.41
Carrier Depth	C	0.1	2.42
Sprocket hole	d	0.05	1.50
13"Reel outside diameter	D	2.0	330.00
13"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	5.55
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	12.00
Reel width	W1	1.0	12.30
Qty./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 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.
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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.