

SPECIFICATION SHEET NO.	T0626- P4SMA12CALS12C	
ORIGINAL MFG/PART NO.	 LGE Diodes/P4SMA12CA-L	
NEXTGEN PART CODE	P4SMA12CALS12C	Indicate This Code For RFQ /Order
DATE	Jun. 26, 2026	
REVISION	A4	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	SMD Transient Voltage Suppressor (TVs) Diodes, P4SMA Series Case SMA/DO-214AC, 2 Pads, Bidirectional Type, Breakdown Voltage 12V, Peak Pulse Power: 400 Watts, Reverse Surge Current: 23.95A Max. Operating Junction Temp. Range -55°C ~+150°C Package in Tape/Reel, 5000pcs/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: Jun. 26, 2026			

CUSTOMER APPROVE	
Date:	

MAIN FEATURE

- Glass Passivated Chip
- 400W Peak Pulse Power Capability With a 10/1000 μ s Waveform, Repetitive Rate (Duty Cycle):0.01 %
- Uni-Directional and Bi-directional Polarity Option
- Low Leakage
- Excellent Clamping Capability
- Very Fast Response Time
- Short Lead Time
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)



*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 P4SMA12CALS12C For RFQ and Order.

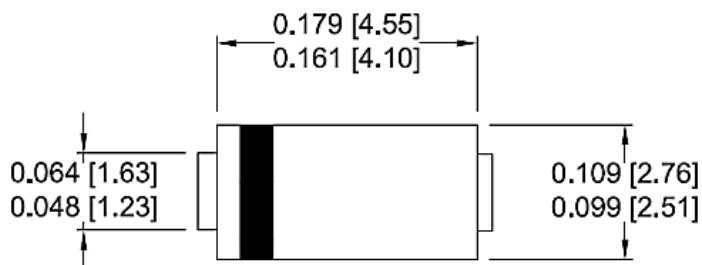
PART CODE GUIDE

RFQ
[Request For Quotation](#)

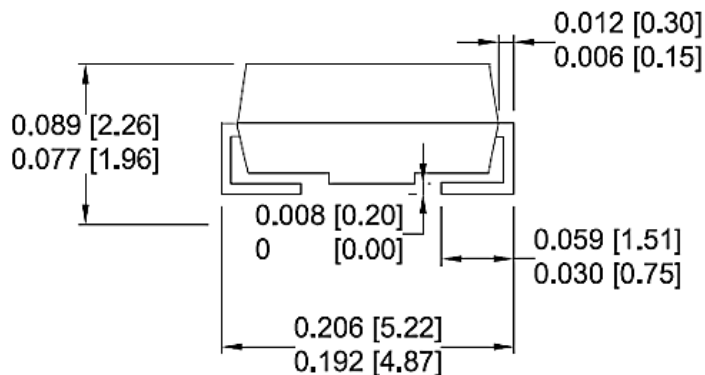
CODE	NAME	KEY SPECIFICATION OPTION
P4SMA	Product Series Code	SMD Transient Voltage Suppressors (TVs) Diodes, Case SMA/DO-214AC, 2 Pads
12CA	Mode code	12CA: Breakdown Voltage 12V, Bidirectional Polarity Type, Reverse Surge Current: 23.95A Max.
LS	Internal Control Code	Letter or Digits (A~Z, a~z or 0~9)
12C	Marking Code	Marking "12C"
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 0~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: Inch [mm], Case SMA/DO-214AC Outline

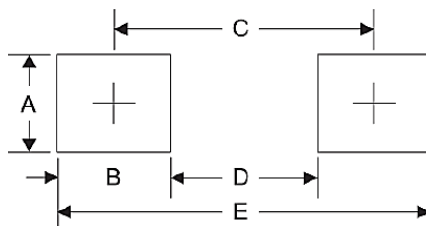
Top View



Side View



Recommend Pad Layout



SYMBOL	A	B	C	D	E
Unit (Inch)	0.066	0.060	0.155	0.095	0.215
Unit (mm)	1.680	1.520	3.930	2.41	5.45

MECHANICAL DATA

CASE	EXPOXY	LEAD	POLARITY	MOUNTING POSITION	MARKING
JEDEC SMA/DO-214AC Molded Plastic Body	UL 94V-0 Rate Flame Retardant	Solderable per MIL-STD 750, Method 2026	Color Band Denotes Cathode End Except Bipolar	Any	See Marking Code List

MAX. RATING & CHARACTERISTICS - Ratings at 25°C ambient temperature unless otherwise specified.

PARAMETER	SYMBOLS	VALUE	UNITS
Peak Power Dissipation with 10/1000μs Waveform See Note 1	P _{pp}	400	W
Peak Pulse Current with a 10/1000μs waveform See Note 1	I _{pp}	See Page 6~ Page 11	A
Power Dissipation On Infinite Heatsink at T _L = 75 °C	P _D	1.0	W
Peak Forward Surge Current 8.3ms Single Half Sine- Wave Unidirectional Type Only See Note 2	I _{FSM}	40	A
Maximum instantaneous forward voltage at 25A for Unidirectional Type Only See Note 3	V _F	3.5/5.0	V
Operating Junction And Storage Temperature Range	T _J , T _{STG}	-55 ~ +150	°C

Note

1. Non-repetitive Current Pulse Per Fig.5 And Derated Above T_A= 25 °C Per Fig.1
2. Measured On 8.3 ms Single Half Sine-wave Or Equivalent Square Wave, Duty Cycle = 4 Pulses Per Minute Max.
3. V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
P4SMA6V8AL6V8A	5.8	6.46	7.14	10	1000	38.10	10.5	6V8A
P4SMA7V5AL7V5A	6.4	7.13	7.88	10	500	35.40	11.3	7V5A
P4SMA8V2AL8V2A	7.0	7.79	8.61	10	200	33.06	12.1	8V2A
P4SMA9V1AL9V1A	7.8	8.65	9.56	1	50	29.85	13.4	9V1A
P4SMA10AL0S10A	8.6	9.50	10.50	1	10	27.59	14.5	10A
P4SMA11AL0S11A	9.4	10.45	11.55	1	5	25.64	15.6	11A
P4SMA12AL0S12A	10.2	11.40	12.60	1	5	23.95	16.7	12A
P4SMA13AL0S13A	11.1	12.35	13.65	1	1	21.98	18.2	13A
P4SMA15AL0S15A	12.8	14.25	15.75	1	1	18.87	21.2	15A
P4SMA16AL0S16A	13.6	15.20	16.80	1	1	17.78	22.5	16A
P4SMA18AL0S18A	15.3	17.10	18.90	1	1	15.87	25.2	18A
P4SMA20AL0S20A	17.1	19.00	21.00	1	1	14.44	27.7	20A
P4SMA22AL0S22A	18.8	20.90	23.10	1	1	13.07	30.6	22A
P4SMA24AL0S24A	20.5	22.80	25.20	1	1	12.05	33.2	24A
P4SMA27AL0S27A	23.1	25.65	28.35	1	1	10.67	37.5	27A
P4SMA30AL0S30A	25.6	28.50	31.50	1	1	9.66	41.4	30A
P4SMA33AL0S33A	28.2	31.35	34.65	1	1	8.75	45.7	33A
P4SMA36AL0S36A	30.8	34.20	37.80	1	1	8.02	49.9	36A
P4SMA39AL0S39A	33.3	37.05	40.95	1	1	7.42	53.9	39A
P4SMA43AL0S43A	36.8	40.85	45.15	1	1	6.75	59.3	43A

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
P4SMA47AL0S47A	40.2	44.65	49.35	1	1	6.17	64.8	47A
P4SMA51AL0S51A	43.6	48.45	53.55	1	1	5.71	70.1	51A
P4SMA56AL0S56A	47.8	53.20	58.80	1	1	5.19	77.0	56A
P4SMA62AL0S62A	53.0	58.90	65.10	1	1	4.71	85.0	62A
P4SMA68AL0S68A	58.1	64.60	71.40	1	1	4.35	92.0	68A
P4SMA75AL0S75A	64.1	71.25	78.75	1	1	3.88	103.0	75A
P4SMA82AL0S82A	70.1	77.90	86.10	1	1	3.54	113.0	82A
P4SMA91AL0S91A	77.8	86.45	95.55	1	1	3.20	125.0	91A
P4SMA100AL100A	85.5	95.00	105.00	1	1	2.92	137.0	100A
P4SMA110AL110A	94.0	104.50	115.50	1	1	2.63	152.0	110A
P4SMA120AL120A	102.0	114.00	126.00	1	1	2.42	165.0	120A
P4SMA130AL130A	111.0	123.50	136.50	1	1	2.23	179.0	130A
P4SMA150AL150A	128.0	142.50	157.50	1	1	1.93	207.0	150A
P4SMA160AL160A	136.0	152.00	168.00	1	1	1.83	219.0	160A
P4SMA170AL170A	145.0	161.50	178.50	1	1	1.71	234.0	170A
P4SMA180AL180A	154.0	171.00	189.00	1	1	1.63	246.0	180A
P4SMA200AL200A	171.0	190.00	210.00	1	1	1.46	274.0	200A
P4SMA220AL220A	185.0	209.00	231.00	1	1	1.22	328.0	220A
P4SMA250AL250A	214.0	237.50	262.50	1	1	1.16	344.0	250A
P4SMA300AL300A	256.0	285.00	315.00	1	1	0.97	414.0	300A

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
P4SMA350AL350A	299.3	332.50	367.50	1	1	0.83	482.0	350A
P4SMA380AL380A	324.9	361.00	399.00	1	1	0.76	524.4	380A
P4SMA400AL400A	342.0	380.00	420.00	1	1	0.72	552.0	400A
P4SMA440AL440A	376.2	418.00	462.00	1	1	0.66	607.2	440A
P4SMA500AL500A	427.5	475.00	525.00	1	1	0.58	690.0	500A
P4SMA520AL520A	444.6	494.00	546.00	1	1	0.56	717.6	520A
P4SMA550AL550A	470.3	522.50	577.50	1	1	0.53	759.0	550A
P4SMA600AL600A	513.0	570.00	630.00	1	1	0.48	828.0	600A

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
P4SMA6V8CL6V8C	5.8	6.46	7.14	10	1000	38.10	10.5	6V8C
P4SMA7V5CL7V5C	6.4	7.13	7.88	10	500	35.40	11.3	7V5C
P4SMA8V2CL8V2C	7.0	7.79	8.61	10	200	33.06	12.1	8V2C
P4SMA9V1CL9V1C	7.8	8.65	9.56	1	50	29.85	13.4	9V1C
P4SMA10CALS10C	8.6	9.50	10.50	1	10	27.59	14.5	10C
P4SMA11CALS11C	9.4	10.45	11.55	1	5	25.64	15.6	11C
P4SMA12CALS12C	10.2	11.40	12.60	1	5	23.95	16.7	12C
P4SMA13CALS13C	11.1	12.35	13.65	1	1	21.98	18.2	13C
P4SMA15CALS15C	12.8	14.25	15.75	1	1	18.87	21.2	15C
P4SMA16CALS16C	13.6	15.20	16.80	1	1	17.78	22.5	16C
P4SMA18CALS18C	15.3	17.10	18.90	1	1	15.87	25.2	18C
P4SMA20CALS20C	17.1	19.00	21.00	1	1	14.44	27.7	20C
P4SMA22CALS22C	18.8	20.90	23.10	1	1	13.07	30.6	22C
P4SMA24CALS24C	20.5	22.80	25.20	1	1	12.05	33.2	24C
P4SMA27CALS27C	23.1	25.65	28.35	1	1	10.67	37.5	27C
P4SMA30CALS30C	25.6	28.50	31.50	1	1	9.66	41.4	30C
P4SMA33CALS33C	28.2	31.35	34.65	1	1	8.75	45.7	33C
P4SMA36CALS36C	30.8	34.20	37.80	1	1	8.02	49.9	36C
P4SMA39CALS39C	33.3	37.05	40.95	1	1	7.42	53.9	39C
P4SMA43CALS43C	36.8	40.85	45.15	1	1	6.75	59.3	43C

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
P4SMA47CALS47C	40.2	44.65	49.35	1	1	6.17	64.8	47C
P4SMA51CALS51C	43.6	48.45	53.55	1	1	5.71	70.1	51C
P4SMA56CALS56C	47.8	53.20	58.80	1	1	5.19	77.0	56C
P4SMA62CALS62C	53.0	58.90	65.10	1	1	4.71	85.0	62C
P4SMA68CALS68C	58.1	64.60	71.40	1	1	4.35	92.0	68C
P4SMA75CALS75C	64.1	71.25	78.75	1	1	3.88	103.0	75C
P4SMA82CALS82C	70.1	77.90	86.10	1	1	3.54	113.0	82C
P4SMA91CALS91C	77.8	86.45	95.55	1	1	3.20	125.0	91C
P4SMA100CL100C	85.5	95.00	105.00	1	1	2.92	137.0	100C
P4SMA110CL110C	94.0	104.50	115.50	1	1	2.63	152.0	110C
P4SMA120CL120C	102.0	114.00	126.00	1	1	2.42	165.0	120C
P4SMA130CL130C	111.0	123.50	136.50	1	1	2.23	179.0	130C
P4SMA150CL150C	128.0	142.50	157.50	1	1	1.93	207.0	150C
P4SMA160CL160C	136.0	152.00	168.00	1	1	1.83	219.0	160C
P4SMA170CL170C	145.0	161.50	178.50	1	1	1.71	234.0	170C
P4SMA180CL180C	154.0	171.00	189.00	1	1	1.63	246.0	180C
P4SMA200CL200C	171.0	190.00	210.00	1	1	1.46	274.0	200C
P4SMA220CL220C	185.0	209.00	231.00	1	1	1.22	328.0	220C
P4SMA250CL250C	214.0	237.50	262.50	1	1	1.16	344.0	250C
P4SMA300CL300C	256.0	285.00	315.00	1	1	0.97	414.0	300C

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	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
P4SMA350CL350C	299.3	332.50	367.50	1	1	0.83	482.0	350C
P4SMA380CL380C	324.9	361.00	399.00	1	1	0.76	524.4	380C
P4SMA400CL400C	342.0	380.00	420.00	1	1	0.72	552.0	400C
P4SMA440CL440C	376.2	418.00	462.00	1	1	0.66	607.2	440C
P4SMA500CL500C	427.5	475.00	525.00	1	1	0.58	690.0	500C
P4SMA520CL520C	444.6	494.00	546.00	1	1	0.56	717.6	520C
P4SMA550CL550C	470.3	522.50	577.50	1	1	0.53	759.0	550C
P4SMA600CL600C	513.0	570.00	630.00	1	1	0.48	828.0	600C

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

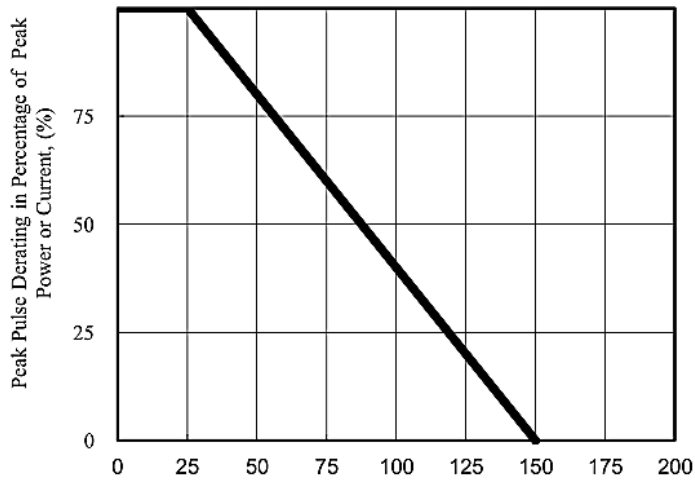


Fig. 1 - Pulse Derating Curve

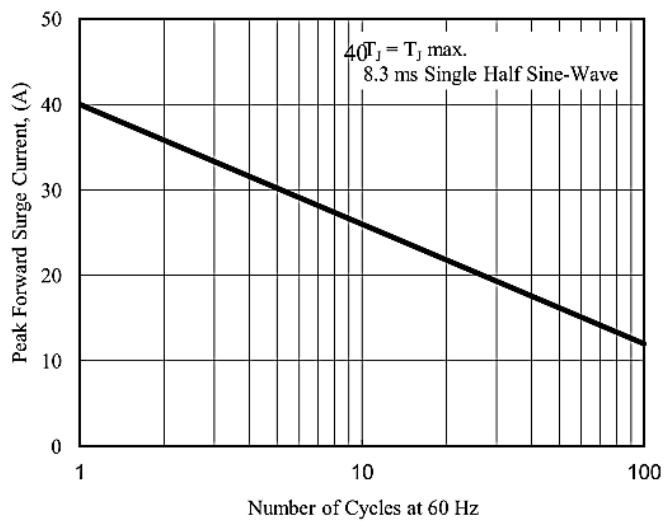


Fig. 2 - Maximum Non-Repetitive Surge Current

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

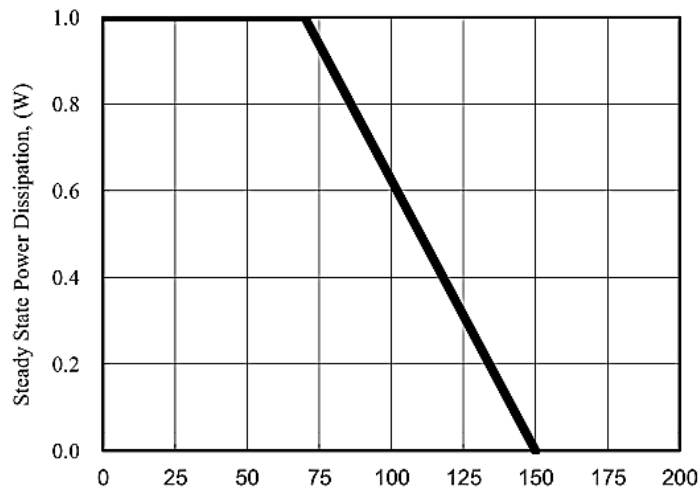


Fig. 3 - Steady State Power Derating Curve

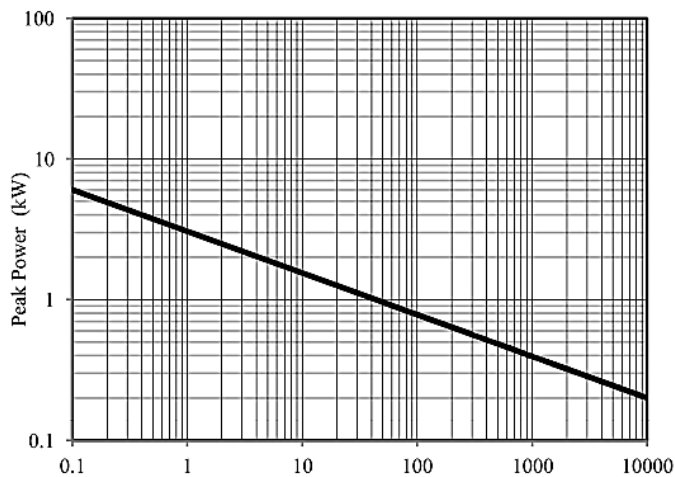


Fig. 4 - Peak Pulse Power Rating Curve

RATINGS AND CHARACTERISTICS CURVES- For Reference Only, $T_a=25^{\circ}\text{C}$ Unless Otherwise Specified.

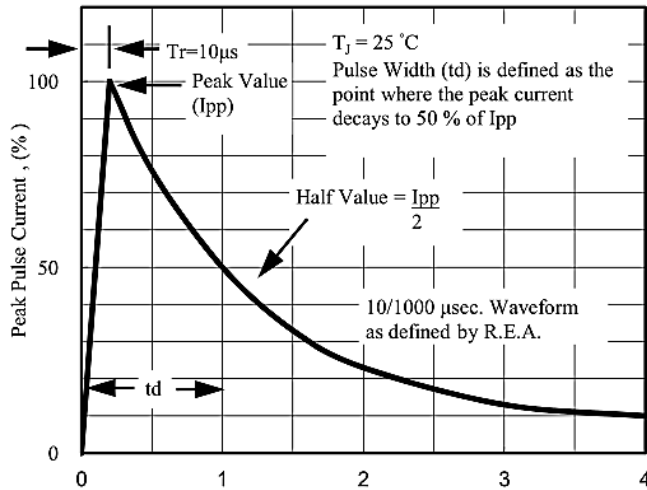


Fig. 5 - Pulse Waveform

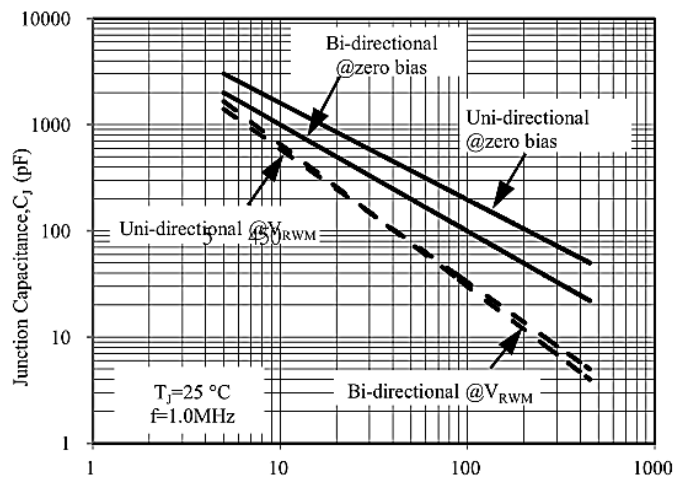
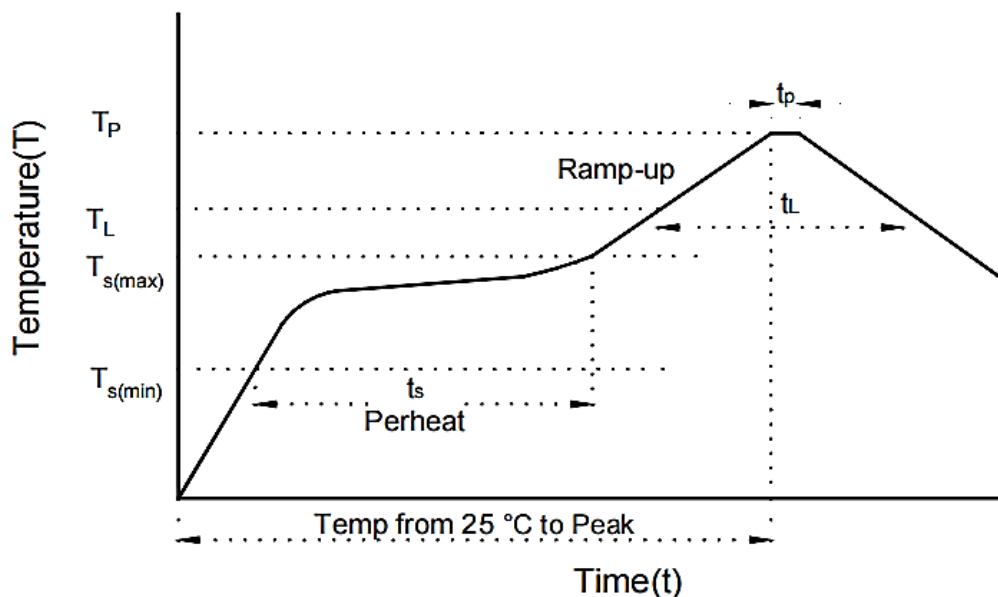


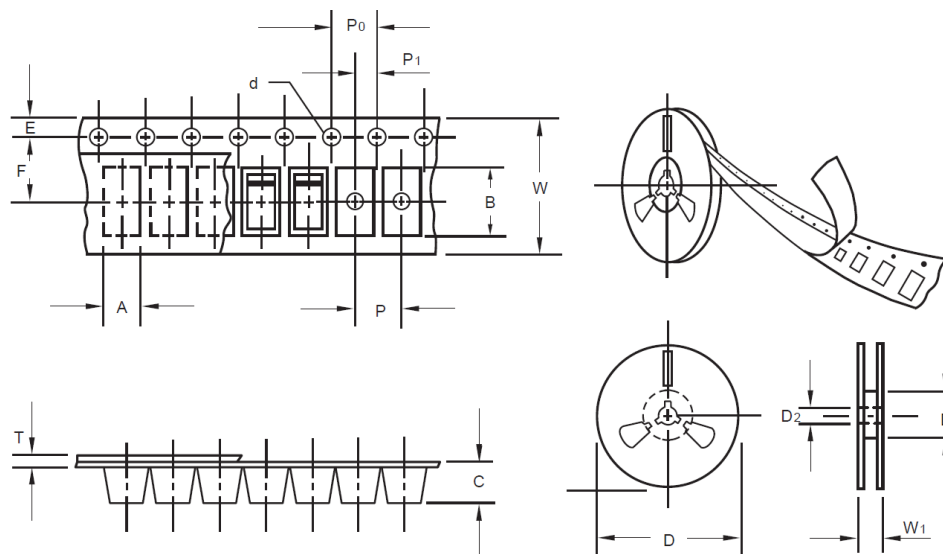
Fig. 6 - Typical Junction Capacitance

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)		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	SMA/DO-214AC
Carrier width	A	0.1	2.80
Carrier Length	B	0.1	5.33
Carrier Depth	C	0.1	2.36
Sprocket hole	d	0.05	1.50
13"Reel outside diameter	D	2.0	330.0
13"Reel inner diameter	D1	Min.	50.0Min.
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.0
Overall tape thickness	T	0.1	0.28
Tape width	W	0.3	12.00
Reel width	W1	1.0	18.0
Qty./Reel (pcs)	5000		

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.
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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.