SPECIFICATION SHEET

SMD TRANSIENT VOLTAGE SUPPRESSORS (TVS) SMF4L SERIES

SPECIFICATION SHEET NO.	S1016- SMF4L13CALS001	
ORIGINAL MFG/PART NO.	LGE Diodes/SMF4L13CA-L	
NEXTGEN PART CODE	SMF4L13CALS001	Indicate This Code For RFQ /Order
DATE	Oct. 16, 2025	
REVISION	A4	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	SMD Transient Voltage Suppressor (TVs) Diodes, SMF4L SERIES Case SMF/SOD-123FL, 2 Pads, Bidirectional Type, Reverse Stand-off Voltage 13V, Peak Pulse Power: 400 Watts, Peak Pulse Current: 18.6A Max. Junction Temp. Range: 150°C Package in Tape/Reel, 3000pcs/Reel REACH/RoHS/RoHS III/ Compliant 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: Oct. 16, 2025

CUSTOMER APPROVE
Date:

MAIN FEATURE

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

- 400W Peak Pulse Power Capability With A 10/1000 μs Waveform, Repetitive Rate (Duty Cycle): 0.01 %
- Uni-Directional and Bi-directional Polarity Option
- Low Inductance, Excellent Clamping Capability
- Typical Failure Mode is Short From Over-specific Voltage Or Current
- Whisker Test Is Conducted Based On JEDEC JESD201A Per Its Table 4a And 4c
- IEC-61000-4-2 ESD 30KV(Air), 30KV(Contact)
- ESD Protection Of Data Lines In Accordance With IEC61000-4-2
- EFT Protection Of Data Lines In Accordance With IEC-61000-4-4
- Fast Response Time: Typical less than 1.0ns from 0 volts to VBR min.
- High Temperature Soldering: 260℃/30seconds At Terminals
- Glass Passivated Junction
- Built-in Strain Relief
- Cross Competitors Parts and More.
- REACH/RoHS/RoHS III/ Compliant and Halogen Free (HF)

APPLICATION

- The protection of I/O interfaces, VCC bus and other Vulnerable circuit used in cellular phones, portable Vulnerable circuit used in cellular phones, portable consumer applications.
- For Surface Mounted Applications To Optimize Board Space

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 SMF4L13CALS001 For RFQ and Order.

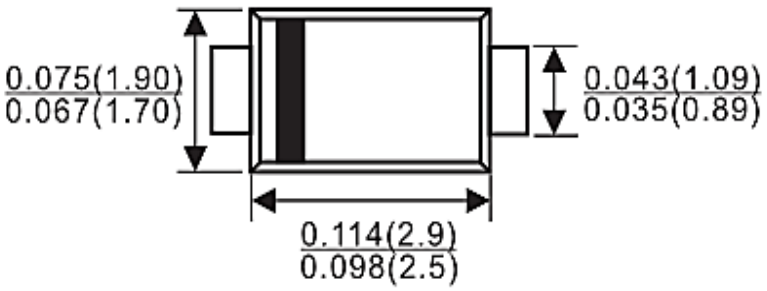
PART CODE GUIDE

RFQ
Request For Quotation

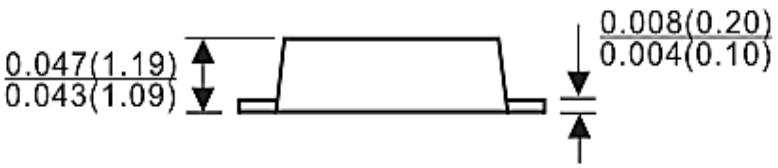
CODE	NAME	KEY SPECIFICATION OPTION
SMF4L	Product Series Code	SMD Transient Voltage Suppressors (TVs) Diodes, Case SMF/SOD-123FL, 2 Pads
13CA	Parameters Code	13CA: Reverse Stand off Voltage 13V, Bi-directional Polarity Type Peak Pulse Current: 18.6A Max.
LS001	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: Inch (mm), Case SMF/SOD-123FL Outline

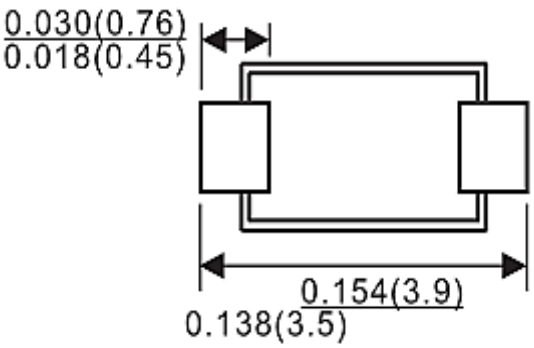
Top View



Side View



Bottom View



MECHANICAL DATA

CASE	MOISTURE SENSITIVITY	TERMINALS	CASE MATERIAL	MOUNTING POSITION	MARKING
JEDEC SMF/SOD-123FL Molded Plastic Body	MSL Level 1,per J-STD-020	:Matte Tin lead-free plated Finish. Solderable per MIL-STD-202 Method 208	Molded Plastic	Molding compound meet UL Flammability Classification Rating 94V-0	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 *1 and * 3	P_{pp}	400	W
Peak Power Dissipation With A 8/20μs Waveform * 1	P_{pp}	2000	W
Peak Pulse Current With A 10/1000μs Waveform * 1	I_{pp}	See Page 6~ Page 11	A
Peak Forward Surge Current 8.3ms Single Half Sine- Wave Unidirectional Only * 2	I_{FSM}	30	A
Maximum Instantaneous Forward Voltage At 25A Unidirectional Only	V_F	3.5	V
Thermal Resistance Junction To Ambient	$R_{\Theta JA}$	220	°C/W
Thermal Resistance Junction To Lead	$R_{\Theta JL}$	100	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Note *

1. Non-repetitive Current Pulse Per Fig.3 And Derated Above TA= 25 °C Per Fig.1
2. Measured On 8.3ms Single Half Sine-wave Or Equivalent Square Wave, Duty Cycle = 4 Pulses Per Minute Max.

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand off Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Peak Pulse Current	Max. Clamping Voltage	Marking Code
		V_{BR} @ I_T						
	V_R	Min.	Max.	I_T	I_R @ V_R	I_{PP}	V_C @ I_{PP}	
	V	V	V	mA	µA	A	V	
SMF4L033ALS001	3.3	4.20	6.10	10	800	44.45	9.0	4KD
SMF4L050ALS001	5.0	6.40	7.00	10	800	43.48	9.2	4KE
SMF4L060ALS001	6.0	6.67	7.37	10	800	38.83	10.3	4KG
SMF4L065ALS001	6.5	7.22	7.98	10	500	35.71	11.2	4KK
SMF4L070ALS001	7.0	7.78	8.60	10	200	33.33	12.0	4KM
SMF4L075ALS001	7.5	8.33	9.21	1	100	31.01	12.9	4KP
SMF4L080ALS001	8.0	8.89	9.83	1	50	29.41	13.6	4KR
SMF4L085ALS001	8.5	9.44	10.40	1	20	27.78	14.4	4KT
SMF4L090ALS001	9.0	10.00	11.10	1	10	25.97	15.4	4KV
SMF4L10AL0S001	10	11.10	12.30	1	5	23.53	17.0	4KX
SMF4L11AL0S001	11	12.20	13.50	1	1	21.98	18.2	4KZ
SMF4L12AL0S001	12	13.30	14.70	1	1	20.10	19.9	4LE
SMF4L13AL0S001	13	14.40	15.90	1	1	18.60	21.5	4LG
SMF4L14AL0S001	14	15.60	17.20	1	1	17.24	23.2	4LK
SMF4L15AL0S001	15	16.70	18.50	1	1	16.39	24.4	4LM
SMF4L16AL0S001	16	17.80	19.70	1	1	15.38	26.0	4LP
SMF4L17AL0S001	17	18.90	20.90	1	1	14.49	27.6	4LR
SMF4L18AL0S001	18	20.00	22.10	1	1	13.70	29.2	4LT
SMF4L20AL0S001	20	22,20	24.50	1	1	12.35	32.4	4LV
SMF4L22AL0S001	22	24.40	26.90	1	1	11.27	35.5	4LX

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand off Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Peak Pulse Current	Max. Clamping Voltage	Marking Code
		V_{BR} @ I_T						
	V_R	Min.	Max.	I_T	I_R @ V_R	I_{PP}	V_C @ I_{PP}	
	V	V	V	mA	µA	A	V	
SMF4L24AL0S001	24	26.70	29.50	1	1	10.28	38.9	4LZ
SMF4L26AL0S001	26	28.90	31.90	1	1	9.50	42.1	4ME
SMF4L28AL0S001	28	31.10	34.40	1	1	8.81	45.4	4MG
SMF4L30AL0S001	30	33.30	36.80	1	1	8.26	48.4	4MK
SMF4L33AL0S001	33	36.70	40.60	1	1	7.50	53.3	4MM
SMF4L36AL0S001	36	40.00	44.20	1	1	6.88	58.1	4MP
SMF4L40AL0S001	40	44.40	49.10	1	1	6.20	64.5	4MR
SMF4L43AL0S001	43	47.80	52.80	1	1	5.76	69.4	4MT
SMF4L45AL0S001	45	50.00	55.30	1	1	5.50	72.7	4MV
SMF4L48AL0S001	48	53.30	58.90	1	1	5.17	77.4	4MX
SMF4L51AL0S001	51	56.70	62.70	1	1	4.85	82.4	4MZ
SMF4L54AL0S001	54	60.00	66.30	1	1	4.59	87.1	4NE
SMF4L58AL0S001	58	64.40	71.20	1	1	4.27	93.6	4NG
SMF4L60AL0S001	60	66.70	73.70	1	1	4.13	96.8	4NK
SMF4L64AL0S001	64	71.10	78.60	1	1	3.88	103.0	4NM
SMF4L70AL0S001	70	77.80	86.00	1	1	3.54	113.0	4NP
SMF4L75AL0S001	75	83.30	92.10	1	1	3.31	121.0	4NR
SMF4L78AL0S001	78	86.70	95.80	1	1	3.17	126.0	4NT
SMF4L85AL0S001	85	94.40	104.00	1	1	2.92	137.0	4NV
SMF4L90AL0S001	90	100.00	111.00	1	1	2.74	146.0	4NX

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand off Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Peak Pulse Current	Max. Clamping Voltage	Marking Code
		V_{BR} @ I_T						
	V_R	Min.	Max.	I_T	I_R @ V_R	I_{PP}	V_C @ I_{PP}	
	V	V	V	mA	µA	A	V	
SMF4L100ALS001	100	111.00	123.00	1	1	2.47	162.0	4NZ
SMF4L110ALS001	110	122.00	135.00	1	1	2.26	177.0	4OE
SMF4L120ALS001	120	133.00	147.00	1	1	2.07	193.0	4OG
SMF4L130ALS001	130	144.00	159.00	1	1	1.91	209.0	4OK
SMF4L150ALS001	150	167.00	185.00	1	1	1.65	243.0	4OM
SMF4L160ALS001	160	178.00	197.00	1	1	1.54	259.0	4OP
SMF4L170ALS001	170	189.00	209.00	1	1	1.45	275.0	4OR
SMF4L180ALS001	180	201.00	222.00	1	1	1.37	291.6	4OT
SMF4L188ALS001	188	209.00	231.00	1	1	1.32	304.0	4OV
SMF4L200ALS001	200	224.00	247.00	1	1	1.23	324.0	4OX
SMF4L220ALS001	220	246.00	272.00	1	1	1.12	356.0	4OZ
SMF4L250ALS001	250	279.00	309.00	1	1	0.99	405.0	4PE

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand off Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Peak Pulse Current	Max. Clamping Voltage	Marking Code
		V_{BR} @ I_T						
	V_R	Min.	Max.	I_T	I_R @ V_R	I_{PP}	V_C @ I_{PP}	
	V	V	V	mA	µA	A	V	
SMF4L033CALS01	3.3	4.20	6.10	10	800	44.45	9.0	4AD
SMF4L050CALS01	5	6.40	7.00	10	800	43.48	9.2	4AE
SMF4L060CALS01	6	6.67	7.37	10	800	38.83	10.3	4AG
SMF4L065CALS01	6.5	7.22	7.98	10	500	35.71	11.2	4AK
SMF4L070CALS01	7	7.78	8.60	10	200	33.33	12.0	4AM
SMF4L075CALS01	7.5	8.33	9.21	1	100	31.01	12.9	4AP
SMF4L080CALS01	8	8.89	9.83	1	50	29.41	13.6	4AR
SMF4L085CALS01	8.5	9.44	10.40	1	20	27.78	14.4	4AT
SMF4L090CALS01	9	10.00	11.10	1	10	25.97	15.4	4AV
SMF4L10CALS001	10	11.10	12.30	1	5	23.53	17.0	4AX
SMF4L11CALS001	11	12.20	13.50	1	1	21.98	18.2	4AZ
SMF4L12CALS001	12	13.30	14.70	1	1	20.10	19.9	4BE
SMF4L13CALS001	13	14.40	15.90	1	1	18.60	21.5	4BG
SMF4L14CALS001	14	15.60	17.20	1	1	17.24	23.2	4BK
SMF4L15CALS001	15	16.70	18.50	1	1	16.39	24.4	4BM
SMF4L16CALS001	16	17.80	19.70	1	1	15.38	26.0	4BP
SMF4L17CALS001	17	18.90	20.90	1	1	14.49	27.6	4BR
SMF4L18CALS001	18	20.00	22.10	1	1	13.70	29.2	4BT
SMF4L20CALS001	20	22,20	24.50	1	1	12.35	32.4	4BV
SMF4L22CALS001	22	24.40	26.90	1	1	11.27	35.5	4BX

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Reverse Stand off Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Peak Pulse Current	Max. Clamping Voltage	Marking Code
		V_{BR} @ I_T						
	V_R	Min.	Max.	I_T	I_R @ V_R	I_{PP}	V_C @ I_{PP}	
	V	V	V	mA	µA	A	V	
SMF4L24CALS001	24	26.70	29.50	1	1	10.28	38.9	4BZ
SMF4L26CALS001	26	28.90	31.90	1	1	9.50	42.1	4CE
SMF4L28CALS001	28	31.10	34.40	1	1	8.81	45.4	4CG
SMF4L30CALS001	30	33.30	36.80	1	1	8.26	48.4	4CK
SMF4L33CALS001	33	36.70	40.60	1	1	7.50	53.3	4CM
SMF4L36CALS001	36	40.00	44.20	1	1	6.88	58.1	4CP
SMF4L40CALS001	40	44.40	49.10	1	1	6.20	64.5	4CR
SMF4L43CALS001	43	47.80	52.80	1	1	5.76	69.4	4CT
SMF4L45CALS001	45	50.00	55.30	1	1	5.50	72.7	4CV
SMF4L48CALS001	48	53.30	58.90	1	1	5.17	77.4	4CX
SMF4L51CALS001	51	56.70	62.70	1	1	4.85	82.4	4CZ
SMF4L54CALS001	54	60.00	66.30	1	1	4.59	87.1	4DE
SMF4L58CALS001	58	64.40	71.20	1	1	4.27	93.6	4DG
SMF4L60CALS001	60	66.70	73.70	1	1	4.13	96.8	4DK
SMF4L64CALS001	64	71.10	78.60	1	1	3.88	103.0	4DM
SMF4L70CALS001	70	77.80	86.00	1	1	3.54	113.0	4DP
SMF4L75CALS001	75	83.30	92.10	1	1	3.31	121.0	4DR
SMF4L78CALS001	78	86.70	95.80	1	1	3.17	126.0	4DT
SMF4L85CALS001	85	94.40	104.00	1	1	2.92	137.0	4DV
SMF4L90CALS001	90	100.00	111.00	1	1	2.74	146.0	4DX

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25℃

Part Code	Reverse Stand off Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Peak Pulse Current	Max. Clamping Voltage	Marking Code
		V_{BR} @ I_T						
	V_R	Min.	Max.	I_T	I_R @ V_R	I_{PP}	V_C @ I_{PP}	
	V	V	V	mA	μA	A	V	
SMF4L100CALS01	100	111.00	123.00	1	1	2.47	162.0	4DZ
SMF4L110CALS01	110	122.00	135.00	1	1	2.26	177.0	4EE
SMF4L120CALS01	120	133.00	147.00	1	1	2.07	193.0	4EG
SMF4L130CALS01	130	144.00	159.00	1	1	1.91	209.0	4EK
SMF4L150CALS01	150	167.00	185.00	1	1	1.65	243.0	4EM
SMF4L160CALS01	160	178.00	197.00	1	1	1.54	259.0	4EP
SMF4L170CALS01	170	189.00	209.00	1	1	1.45	275.0	4ER
SMF4L180CALS01	180	201.00	222.00	1	1	1.37	291.6	4ET
SMF4L188CALS01	188	209.00	231.00	1	1	1.32	304.0	4EV
SMF4L200CALS01	200	224.00	247.00	1	1	1.23	324.0	4EX
SMF4L220CALS01	220	246.00	272.00	1	1	1.12	356.0	4EZ
SMF4L250CALS01	250	279.00	309.00	1	1	0.99	405.0	4FE

Note *:

1. VBR measured after IT applied for 300μs, IT = square wave pulse or equivalent.
2. Surge current waveform per 10/1000μs exponential wave and derated per Fig.2.
3. All terms and symbols are consistent with ANSI/IEEE C62.35.

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

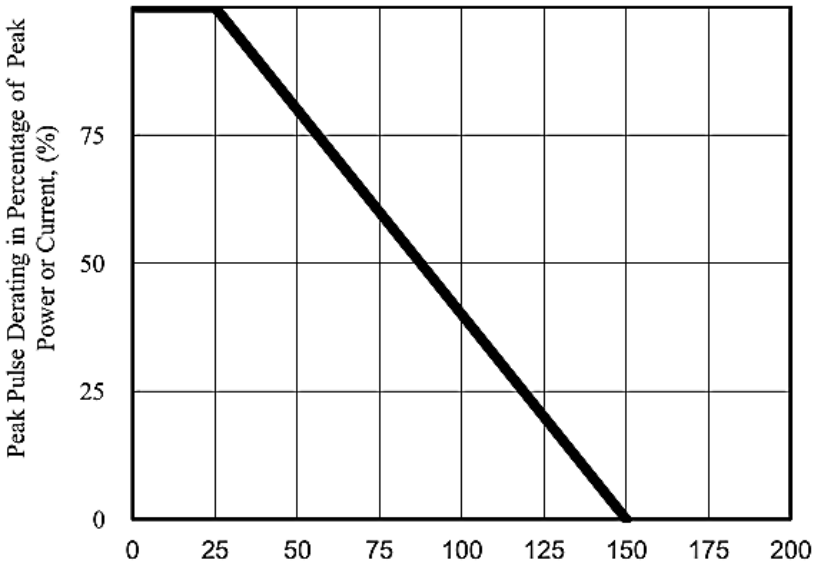


Fig. 1 - Pulse Derating Curve

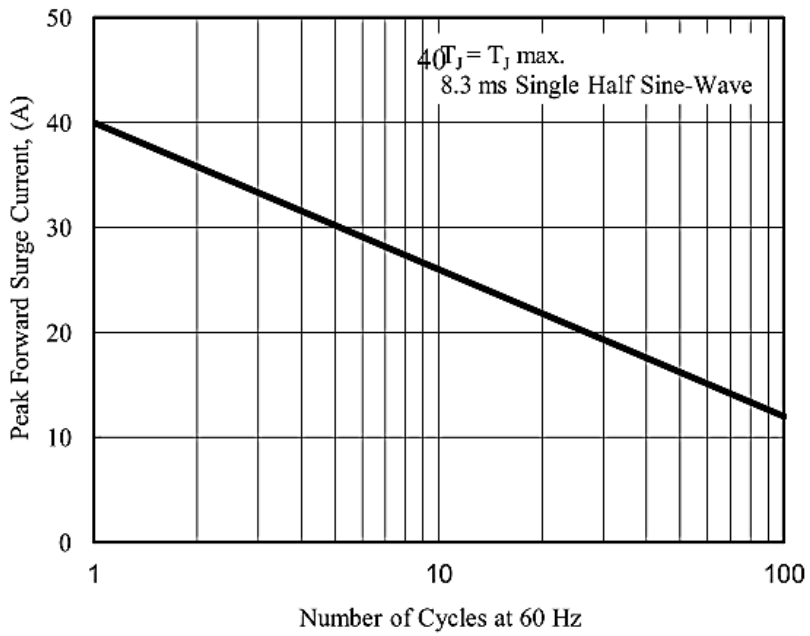


Fig. 2 - Maximum Non-Repetitive Surge Current

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

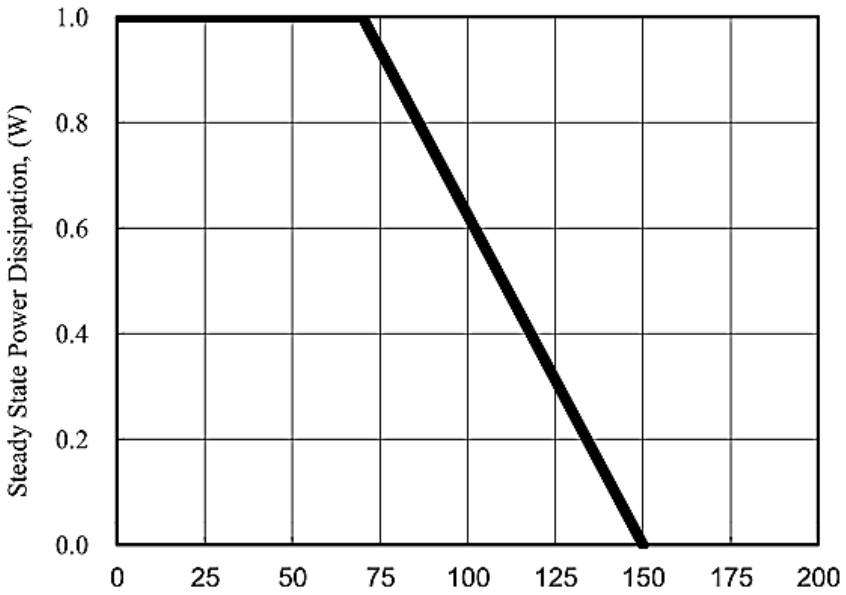


Fig. 3 - Steady State Power Derating Curve

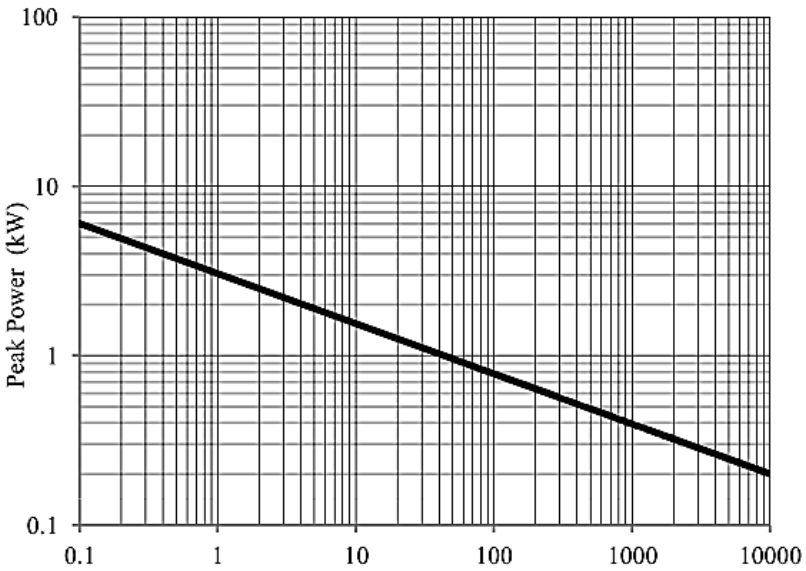


Fig. 4 - Peak Pulse Power Rating Curve

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

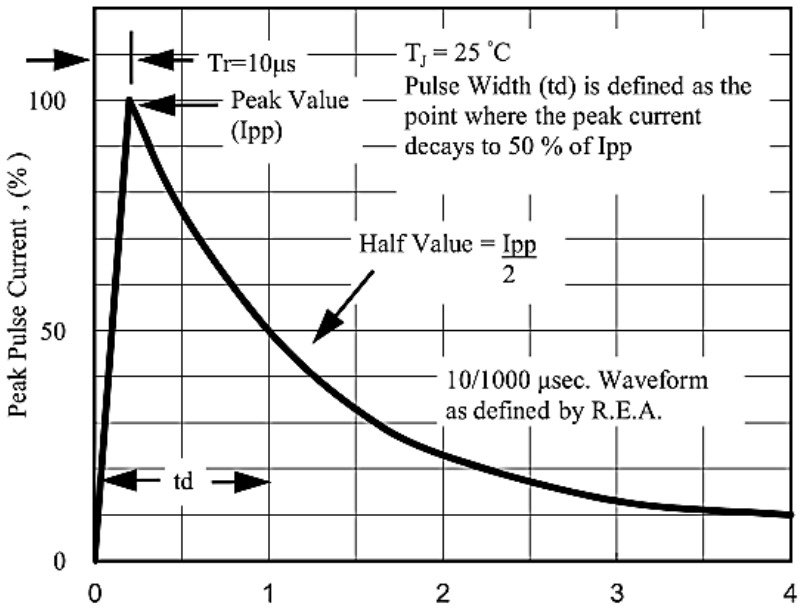


Fig. 5 - Pulse Waveform

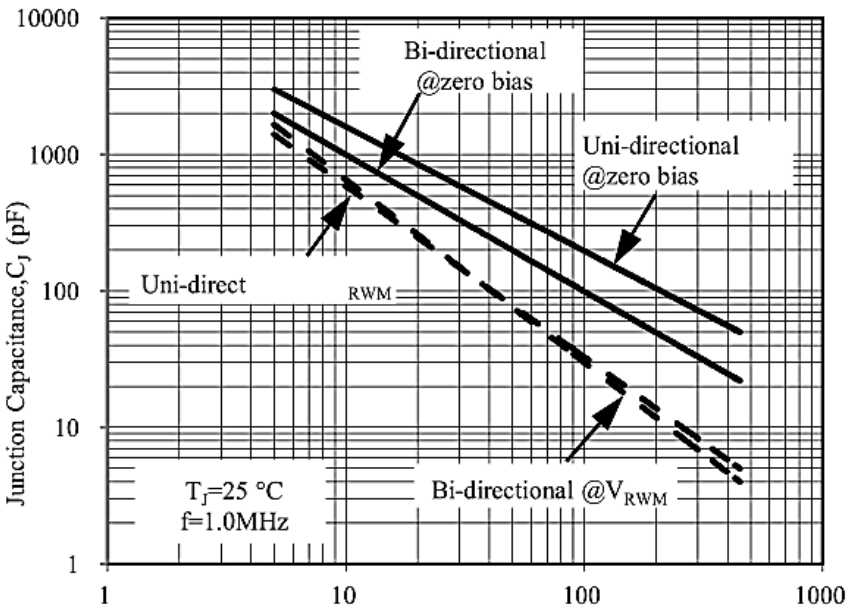
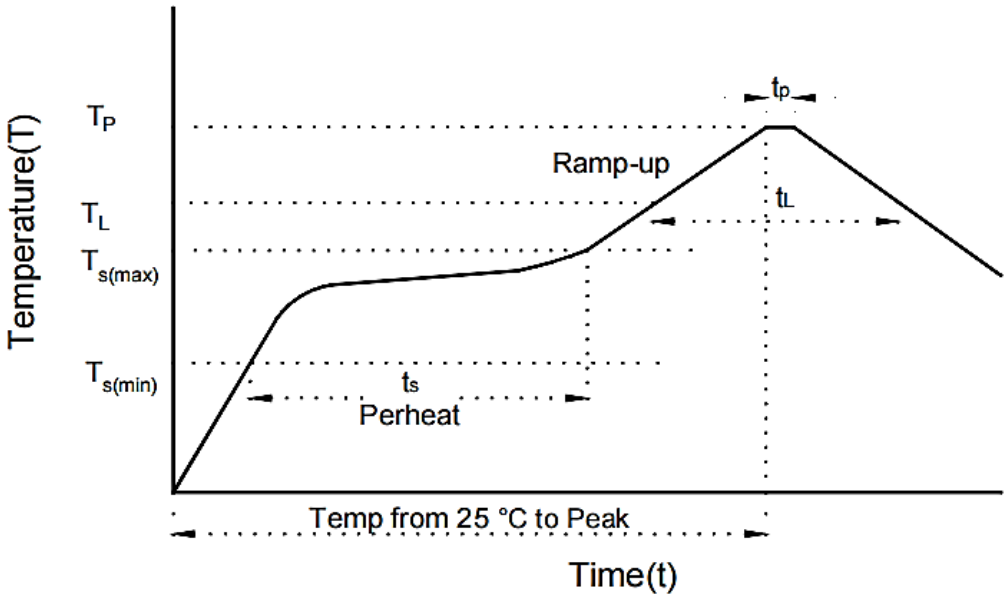


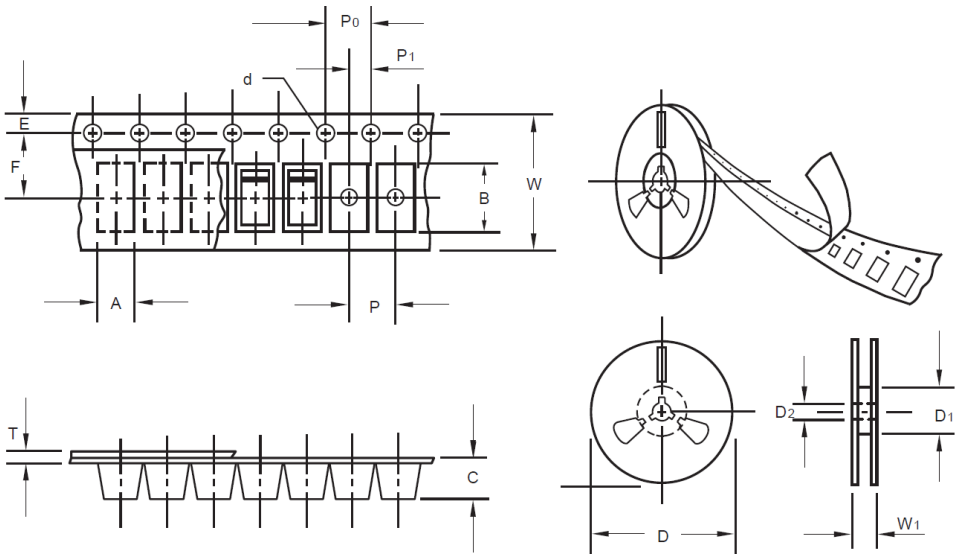
Fig. 6 - Typical Junction Capacitance

RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY



PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (Ts Max to Tp)		3°C/second Max
Preheat	Temperature Min (Ts Min.)	150°C
	Temperature Max (Ts Max.)	200°C
	Time (ts Min. to ts Max.)	60 ~ 180 seconds
Time maintained above	Temperature (T_L)	220°C
	Time (t_L)	60 ~ 150 seconds
Peak/Classification Temperature (Tp)		245 °C
Time within 5°C of actual Peak Temperature (tp)		10 ~ 30 seconds
Ramp-down Rate		5 °C /Second Max.
Time 25 °C to Peak Temperature		6 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	SMF/SOD-123FL
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	2.0	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	1.0	10.50
Qty. Per Reel (pcs)	3000		

IMPORTANT NOTES AND DISCLAIMER

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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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