SPECIFICATION SHEET

SMD TRANSIENT VOLTAGE SUPPRESSORS SM8S SERIES

SPECIFICATION SHEET NO.	S0214- SM8S24CAL0S024	
ORIGINAL MFG/PART NO.	LGE Diodes/SM8S24CA-L	
NEXTGEN PART CODE	SM8S24CAL0S024	Indicate This Code For RFQ /Order
DATE	Feb. 14, 2025	
REVISION	A1	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	SMD Transient Voltage Suppressor (TVs) Diodes, Automotive Protection Case DO-218AB, 2 Pads, SM8S Series, SM8S24CA-L Type Bi-directional, Working Voltage 24V, Reverse Surge Current 170A Max. Operating Temp. Range -55°C ~+175°C Package in Tape/Reel, 750pcs/13" Reel REACH/RoHS/RoHS III/ Compliant and Halogen Free (HF)	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE
Issued/Checked/Approved NextGen Components, Inc. Mandy Xu NextGen Components, Inc. Ruby Zhang NextGen Components, Inc. Jack Zhang
Effective Date: Feb. 14, 2025

CUSTOMER APPROVE
Date:

MAIN FEATURE

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

- Optimized Glass Passivated Chip
- 6600W Peak Pulse Power Capability With A 10/1000μs Waveform, Repetitive Rate (Duty Cycle):0.01%
- Uni-Directional and Bi-directional Polarity Option
- T_J = 175 °C Capability Suitable For High Reliability And Automotive Requirement
- Meet ISO 7637-2 5a/5b And ISO 16750 Load Dump Test (Varied By Test Condition)
- Low Forward Voltage Drop
- Low Leakage Current
- High Fast Response Time
- AEC-Q101 Qualified
- Short Lead time
- Cross Competitors Parts and More.
- REACH/RoHS/RoHS III/ Compliant and Halogen Free (HF)

APPLICATION

- Use In Sensitive Electronics Protection Against Voltage Transients Included By Inductive Load Switching And Lighting, Especially For Automotive Load Dump Protection Application

ELECTRICAL CHARACTERISTICS

- See Page 5 ~Page 7 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 SM8S24CAL0S024 For RFQ and Order.

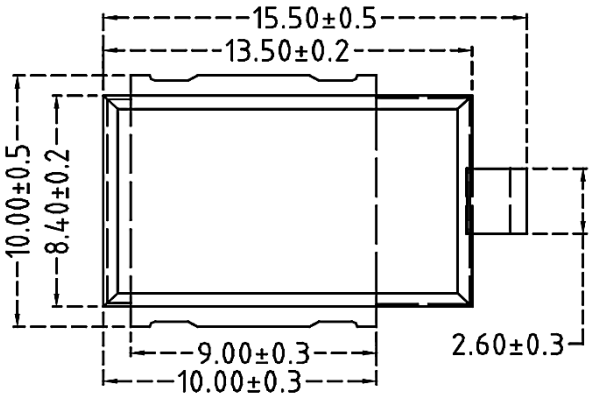
PART CODE GUIDE

RFQ
Request For Quotation

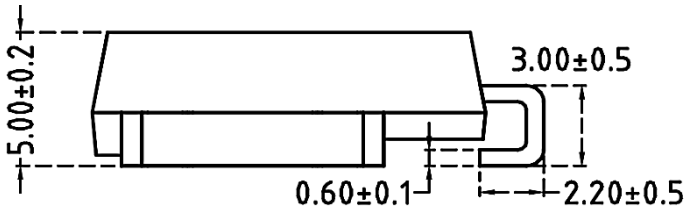
CODE	NAME	KEY SPECIFICATION OPTION
SM8S	Product Series Code	SMD Transient Voltage Suppressors (TVs) Diodes, Case DO-218AB, 2 Pads,
24CA	Mode code	24CA: Working Voltage 24V, Bi-directional Polarity
L0S	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
024	Working Voltage Code	010: 10V; 011: 11V; 012: 12V; 013: 13V; 014: 14V; 015: 15V; 016: 16V 017: 17V; 018: 18V; 020: 20V; 022: 22V; 024: 24V; 026: 26V; 028: 28V 030: 30V; 033: 33V; 036: 36V; 040: 40V; 043: 43V
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: mm, Case DO-218AB Outline

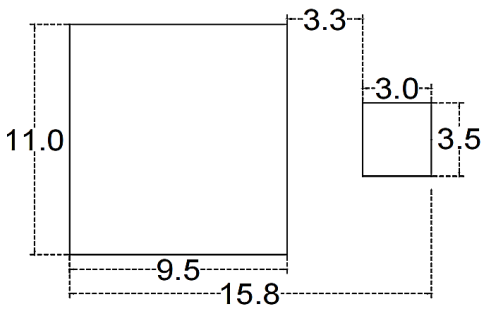
Top View



Side View



Recommend Pad Layout



MECHANICAL DATA

CASE	TERMINALS	POLARITY	MOUNTING POSITION	UNIT WEIGHT
JEDEC DO-218AB molded plastic	Matte Tin Plated Leads, Solderable Per J-STD-002 & JESD22-B102	Heatsink is Anode	Meets UL 94 V-0 Flammability Rating Base	-

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

PARAMETER	SYMBOLS	VALUE	UNITS
Peak Power Dissipation with 10/1000μs Waveform See Note 1	P_{pp}	6600	W
Peak Power Dissipation with 10/10000μs Waveform	P_{pp}	5200	W
Peak Pulse Current with a 10/1000μs waveform See Note 1	I_{pp}	See Page 6~ Page 7	A
Power Dissipation On Infinite Heatsink at TL = 25 °C	P_D	8.0	A
Peak Forward Surge Current 8.3 ms Single Half Sine- Wave	I_{FSM}	700	A
Operating Junction And Storage Temperature Range	T_J, T_{STG}	-55 ~ +175	°C

Note

1. Non-repetitive current pulse per Fig.2 and derated above TA= 25 °C per Fig.1
2. Surge current waveform is defined at 10/1000uS waveform
3. For all types maximum VF = 1.8 V at IF = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25℃

PART CODE	BREAKDOWN VOLTAGE V_{BR} @ I_T			MAX. REVERSE LEAKAGE I_R @V_{RWM}	MAX. I_R @V_{RWM} T_J=175	WORKING PEAK REVERSE VOLTAGE V_{RWM}	MAX. REVERSE SURGE CURRENT I_{PP}	MAX. CLAMPING VOLTAGE V_C@I_{PP}
	Min.	Max.	I_T					
	V	V	mA	μA	μA	V	A	V
SM8S10AL00S010	11.1	12.3	5.0	15	250	10	388	17.0
SM8S11AL00S011	12.2	13.5	5.0	10	150	11	363	18.2
SM8S12AL00S012	13.3	14.7	5.0	10	150	12	332	19.9
SM8S13AL00S013	14.4	15.9	5.0	10	150	13	307	21.5
SM8S14AL00S014	15.6	17.2	5.0	10	150	14	284	23.2
SM8S15AL00S015	16.7	18.5	5.0	10	150	15	270	24.4
SM8S16AL00S016	17.8	19.7	5.0	10	150	16	254	26.0
SM8S17AL00S017	18.9	20.9	5.0	10	150	17	239	27.6
SM8S18AL00S018	20.0	22.1	5.0	10	150	18	226	29.2
SM8S20AL00S020	22.2	24.5	5.0	10	150	20	204	32.4
SM8S22AL00S022	24.4	26.9	5.0	10	150	22	186	35.5
SM8S24AL00S024	26.7	29.5	5.0	10	150	24	170	38.9
SM8S26AL00S026	28.9	31.9	5.0	10	150	26	157	42.1
SM8S28AL00S028	31.1	34.4	5.0	10	150	28	145	45.4
SM8S30AL00S030	33.3	36.8	5.0	10	150	30	136	48.4
SM8S33AL00S033	36.7	40.6	5.0	10	150	33	124	53.3
SM8S36AL00S036	40.0	44.2	5.0	10	150	36	114	58.1
SM8S40AL00S040	44.4	19.1	5.0	10	150	40	102	64.5
SM8S43AL00S043	47.8	52.8	5.0	10	150	43	95.1	69.4

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25℃

PART CODE	BREAKDOWN VOLTAGE V_{BR} @ I_T			MAX. REVERSE LEAKAGE I_R @V_{RWM}	MAX. I_R @V_{RWM} T_J=175	WORKING PEAK REVERSE VOLTAGE V_{RWM}	MAX. REVERSE SURGE CURRENT I_{PP}	MAX. CLAMPING VOLTAGE V_C@I_{PP}
	Min.	Max.	I_T					
	V	V	mA	μA	μA	V	A	V
SM8S10CAL0S010	11.1	12.3	5.0	15	250	10	388	17.0
SM8S11CAL0S011	12.2	13.5	5.0	10	150	11	363	18.2
SM8S12CAL0S012	13.3	14.7	5.0	10	150	12	332	19.9
SM8S13CAL0S013	14.4	15.9	5.0	10	150	13	307	21.5
SM8S14CAL0S014	15.6	17.2	5.0	10	150	14	284	23.2
SM8S15CAL0S015	16.7	18.5	5.0	10	150	15	270	24.4
SM8S16CAL0S016	17.8	19.7	5.0	10	150	16	254	26.0
SM8S17CAL0S017	18.9	20.9	5.0	10	150	17	239	27.6
SM8S18CAL0S018	20.0	22.1	5.0	10	150	18	226	29.2
SM8S20CAL0S020	22.2	24.5	5.0	10	150	20	204	32.4
SM8S22CAL0S022	24.4	26.9	5.0	10	150	22	186	35.5
SM8S24CAL0S024	26.7	29.5	5.0	10	150	24	170	38.9
SM8S26CAL0S026	28.9	31.9	5.0	10	150	26	157	42.1
SM8S28CAL0S028	31.1	34.4	5.0	10	150	28	145	45.4
SM8S30CAL0S030	33.3	36.8	5.0	10	150	30	136	48.4
SM8S33CAL0S033	36.7	40.6	5.0	10	150	33	124	53.3
SM8S36CAL0S036	40.0	44.2	5.0	10	150	36	114	58.1
SM8S40CAL0S040	44.4	19.1	5.0	10	150	40	102	64.5
SM8S43CAL0S043	47.8	52.8	5.0	10	150	43	95.1	69.4

RATINGS AND CHARACTERISTICS CURVES- For Reference Only

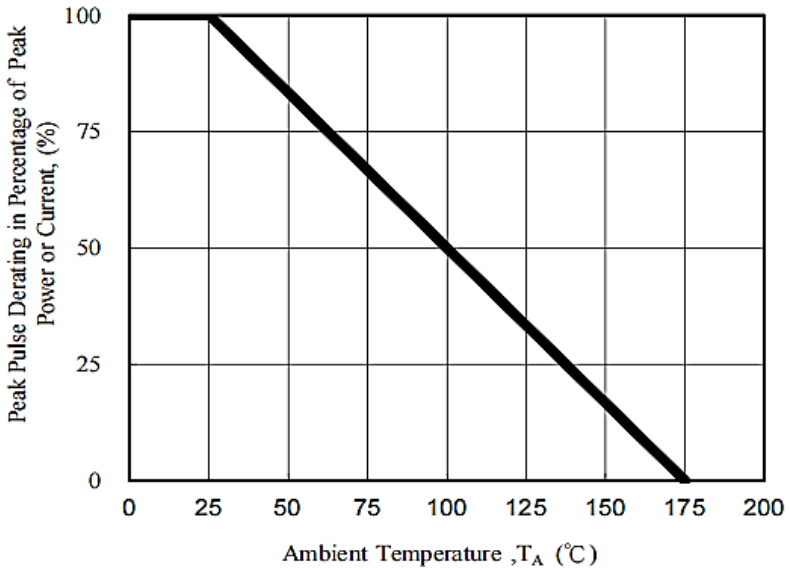


Fig. 1 - Pulse Derating Curve

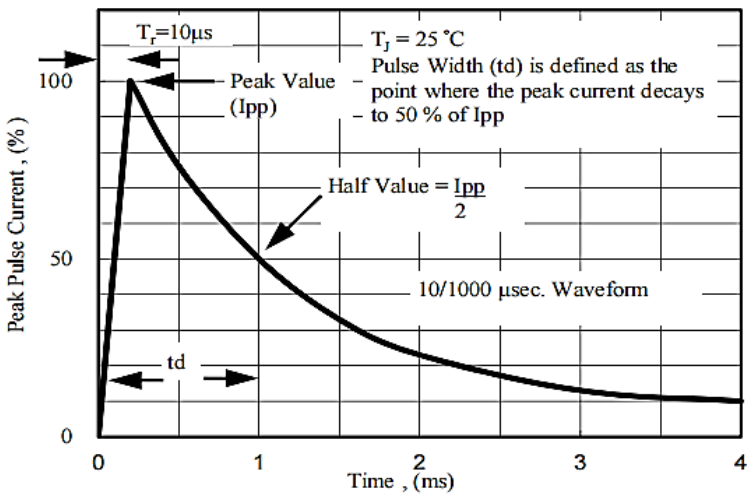


Fig. 2 - Pulse Waveform

RATINGS AND CHARACTERISTICS CURVES- For Reference Only

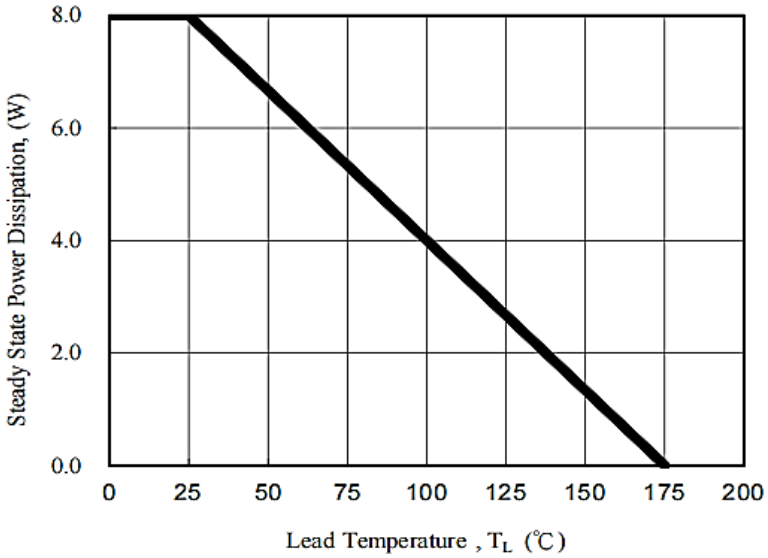


Fig. 3 - Steady State Power Derating Curve

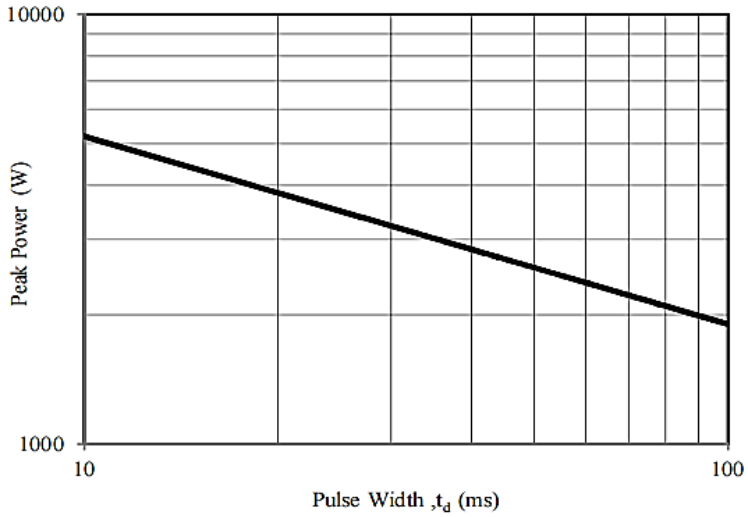


Fig. 4 - Peak Pulse Power Rating Curve

RATINGS AND CHARACTERISTICS CURVES- For Reference Only

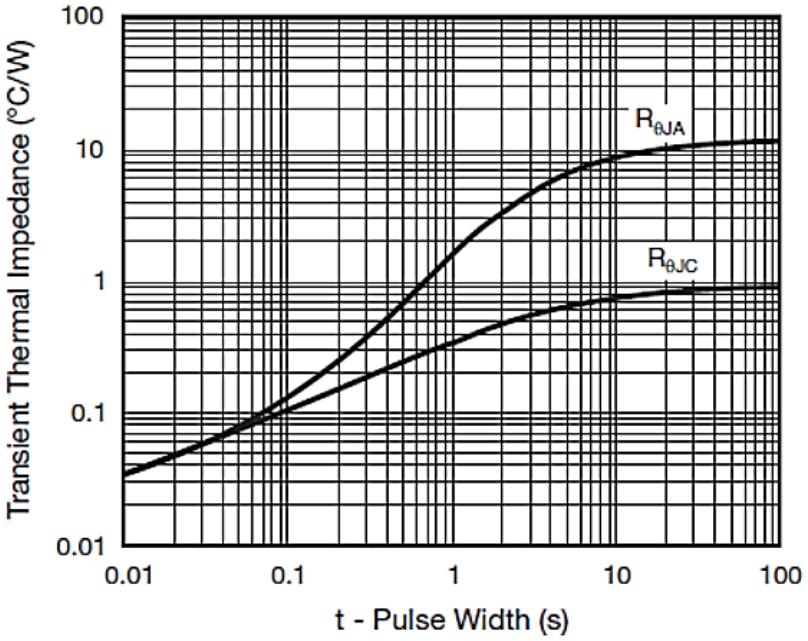


Fig. 5 - Typical Thermal Impedance

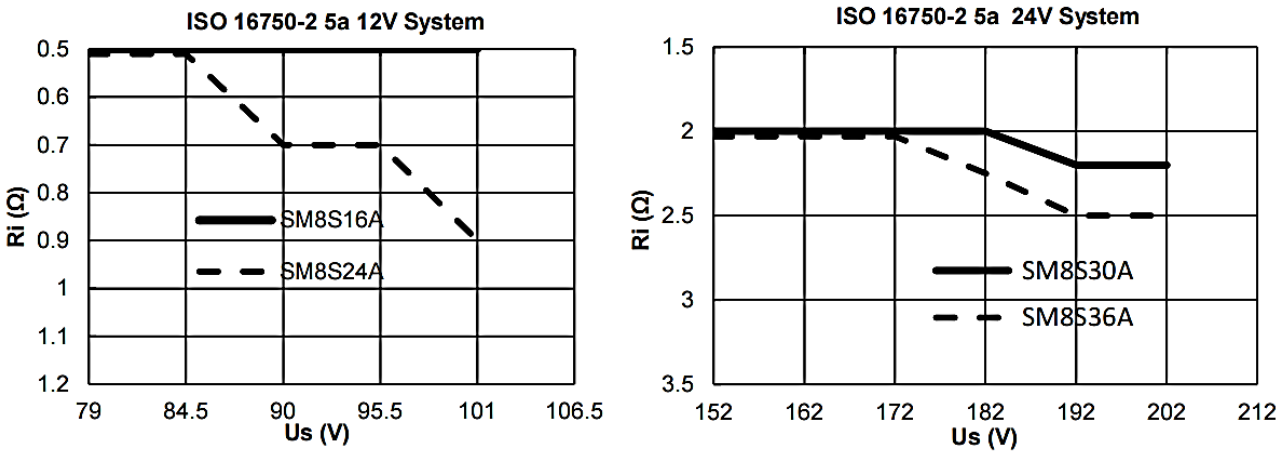
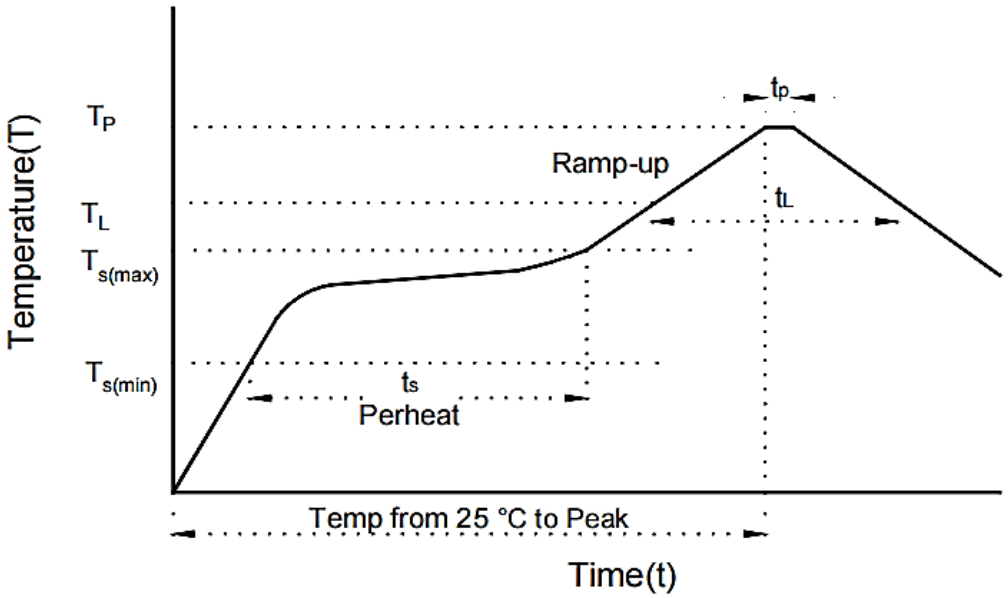


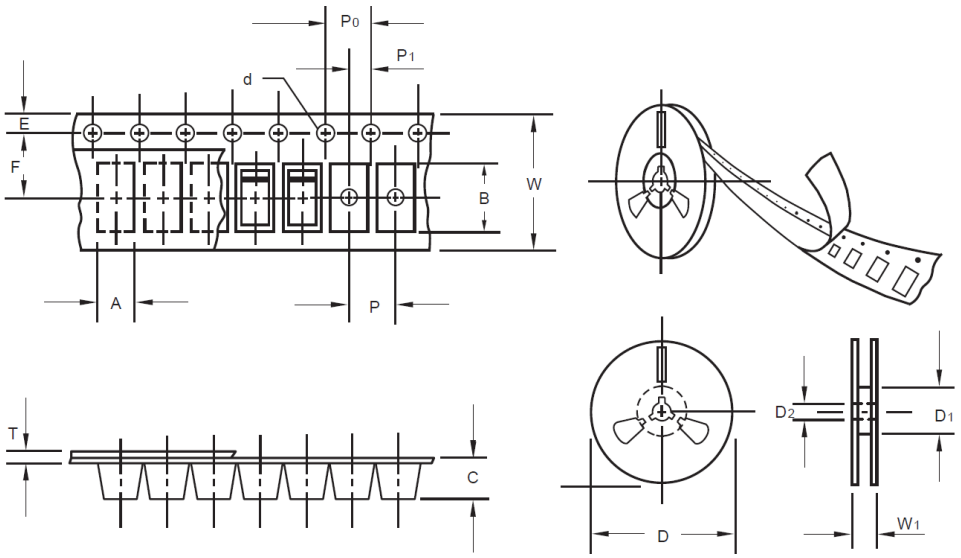
Fig. 6 - Typical SOA Chart

RECOMMENDED SOLDERING PARAMETERS



PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (Ts Max to Tp)		3℃/second Max
Preheat	Temperature Min (Ts Min.)	150℃
	Temperature Max (Ts Max.)	200℃
	Time (ts Min. to ts Max.)	60 ~ 180 seconds
Time maintained above	Temperature (T_L)	220℃
	Time (t_L)	60 ~ 150 seconds
Peak/Classification Temperature (Tp)		245 ℃
Time within 5℃ of actual Peak Temperature (tp)		10 ~ 30 seconds
Ramp-down Rate		5 ℃ /Second Max.
Time 25 ℃ 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	DO-218AB
Carrier Width	A	+/-0.30	10.80
Carrier Length	B	+/-0.30	16.13
Carrier Depth	C	+/-0.20	6.00
Sprocket Hole	d	+/-0.20	1.55
13”reel Outside Diameter	D	+/-0.30	330.00
13”reel Inner Diameter	D1	-	50.0 Min.
Feed Hole Diameter	D2	-	20.2 Min.
Sprocket Hole Position	E	+/-0.2	1.75
Punch Hole Position	F	+/-0.20	11.50
Punch Hole Pitch	P	+/-0.20	16.0
Sprocket Hole Pitch	P0	+/-0.20	4.00
Embossment Center	P1	+/-0.20	2.00
Overall Tape Thickness	T	-	-
Tape Width	W	+/-0.20	24.00
Reel Width	W1	-	30.40 Max.
Qty. Per Reel (pcs)	750		

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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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.