

Surface Mount TRANSZORB[®] Transient Voltage Suppressors



DO-214AC (SMA)



RoHS
COMPLIANT
HALOGEN
FREE

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional 400 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle): 0.01 % (300 W above 91 V)
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see

PRIMARY CHARACTERISTICS	
V_{WM}	5.8 V to 459 V
V_{BR} uni-directional	6.45 V to 567 V
V_{BR} bi-directional	6.45 V to 231 V
P_{PPM}	400 W, 300 W
P_D	3.3 W
I_{FSM} (uni-directional only)	40 A
T_J max.	150 °C
Polarity	Uni-directional, bi-directional
Package	DO-214AC (SMA)

MECHANICAL DATA

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional types

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional devices use CA suffix (e.g. P4SMA10CA). Electrical characteristics apply in both directions.

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial and telecommunication.

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation with a 10/1000 μ s waveform ⁽¹⁾⁽²⁾ (fig. 1)	P_{PPM}	400	W
Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾ (fig. 3)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink, $T_A = 50$ °C	P_D	3.3	W
Peak forward surge current 8.3 ms single half sine-wave uni-directional only ⁽²⁾	I_{FSM}	40	A
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +150	°C

Notes

⁽¹⁾ Non-repetitive current pulse, per fig. 3 and derated above $T_A = 25$ °C per fig. 2, rating is 300 W above 91 V

⁽²⁾ Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)											
PART NUMBER	DEVICE MARKING CODE		BREAKDOWN VOLTAGE V_{BR} AT I_T (1)		TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (4) (μA)	MAXIMUM PEAK PULSE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	MAXIMUM TEMPERATURE OF V_{BR} (%/ $^\circ\text{C}$)	
	UNI	BI	MIN.	MAX.							
SMAJ6.8A	6V8A	6V8C	6.45	7.14	10	5.80	1000	38.1	10.5	0.057	
SMAJ7.5A	7V5A	7V5C	7.13	7.88	10	6.40	500	35.4	11.3	0.061	
SMAJ8.2A	8V2A	8V2C	7.79	8.61	10	7.02	200	33.1	12.1	0.065	
SMAJ9.1A	9V1A	9V1C	8.65	9.55	1.0	7.78	50.0	29.9	13.4	0.068	
SMAJ10A	10A	10C	9.5	10.5	1.0	8.55	10.0	27.6	14.5	0.073	
SMAJ11A	11A	11C	10.5	11.6	1.0	9.40	5.0	25.6	15.6	0.075	
SMAJ12A	12A	12C	11.4	12.6	1.0	10.2	1.0	24.0	16.7	0.078	
SMAJ13A	13A	13C	12.4	13.7	1.0	11.1	1.0	22.0	18.2	0.081	
SMAJ15A	15A	15C	14.3	15.8	1.0	12.8	1.0	18.9	21.2	0.084	
SMAJ16A	16A	16C	15.2	16.8	1.0	13.6	1.0	17.8	22.5	0.086	
SMAJ18A	18A	18C	17.1	18.9	1.0	15.3	1.0	15.9	25.2	0.089	
SMAJ20A	20A	20C	19.0	21.0	1.0	17.1	1.0	14.4	27.7	0.090	
SMAJ22A	22A	22C	20.9	23.1	1.0	18.8	1.0	13.1	30.6	0.092	
SMAJ24A	24A	24C	22.8	25.2	1.0	20.5	1.0	12.0	33.2	0.090	
SMAJ27A	27A	27C	25.7	28.4	1.0	23.1	1.0	10.7	37.5	0.096	
SMAJ30A	30A	30C	28.5	31.5	1.0	25.6	1.0	9.7	41.4	0.097	
SMAJ33A	33A	33C	31.4	34.7	1.0	28.2	1.0	8.8	45.7	0.098	
SMAJ36A	36A	36C	34.2	37.8	1.0	30.8	1.0	8.0	49.9	0.099	
SMAJ39A	39A	39C	37.1	41.0	1.0	33.3	1.0	7.4	53.9	0.100	
SMAJ43A	43A	43C	40.9	45.2	1.0	36.8	1.0	6.7	59.3	0.101	
SMAJ47A	47A	47C	44.7	49.4	1.0	40.2	1.0	6.2	64.8	0.101	
SMAJ51A	51A	51C	48.5	53.6	1.0	43.6	1.0	5.7	70.1	0.102	
SMAJ56A	56A	56C	53.2	58.8	1.0	47.8	1.0	5.2	77.0	0.103	
SMAJ62A	62A	62C	58.9	65.1	1.0	53.0	1.0	4.7	85.0	0.104	
SMAJ68A	68A	68C	64.6	71.4	1.0	58.1	1.0	4.3	92.0	0.104	
SMAJ75A	75A	75C	71.3	78.8	1.0	64.1	1.0	3.9	104	0.105	
SMAJ82A	82A	82C	77.9	86.1	1.0	70.1	1.0	3.5	113	0.105	
SMAJ91A	91A	91C	86.5	95.5	1.0	77.8	1.0	3.2	125	0.106	
SMAJ100A	100A	100C	95.0	105	1.0	85.5	1.0	2.2	137	0.106	
SMAJ110A	110A	110C	105	116	1.0	94.0	1.0	2.0	152	0.107	
SMAJ120A	120A	120C	114	126	1.0	102	1.0	1.8	165	0.107	
SMAJ130A	130A	130C	124	137	1.0	111	1.0	1.7	179	0.107	
SMAJ150A	150A	150C	143	158	1.0	128	1.0	1.4	207	0.106	
SMAJ160A	160A	160C	152	168	1.0	136	1.0	1.4	219	0.108	
SMAJ170A	170A	170C	162	179	1.0	145	1.0	1.3	234	0.108	
SMAJ180A	180A	180C	171	189	1.0	154	1.0	1.2	246	0.108	
SMAJ200A	200A	200C	190	210	1.0	171	1.0	1.1	274	0.108	
SMAJ220A	220A	220C	209	231	1.0	185	1.0	0.90	328	0.108	
SMAJ250A	250A	-	237	263	1.0	214	1.0	0.87	344	0.110	
SMAJ300A	300A	-	285	315	1.0	256	1.0	0.73	414	0.110	
SMAJ350A	350A	-	333	368	1.0	300	1.0	0.62	482	0.110	
SMAJ400A	400A	-	380	420	1.0	342	1.0	0.55	548	0.110	
SMAJ440A	440A	-	418	462	1.0	376	1.0	0.50	602	0.110	
SMAJ480A	480A	-	456	504	1.0	408	1.0	0.46	658	0.110	
SMAJ510A	510A	-	485	535	1.0	434	1.0	0.43	698	0.110	
SMAJ540A	540A	-	513	567	1.0	459	1.0	0.41	740	0.110	

Notes

- (1) Pulse test: $t_p \leq 50\text{ ms}$
- (2) Surge current waveform per fig. 3 and derate per fig. 2
- (3) All terms and symbols are consistent with ANSI/IEEE CA62.35
- (4) For bi-directional types with V_R 10 V and less, the I_D limit is doubled
- (5) $V_F = 3.5\text{ V}$ at $I_F = 25\text{ A}$ (uni-directional only)

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Thermal resistance, junction to ambient air	$R_{\theta JA}^{(1)}$	120	$^\circ\text{C/W}$
Thermal resistance, junction to leads	$R_{\theta JL}$	30	$^\circ\text{C/W}$

Note

(1) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMAJ6.8A-M3/61	0.064	61T	1800	7" diameter plastic tape and reel
SMAJ6.8A-M3/5A	0.064	5AT	7500	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

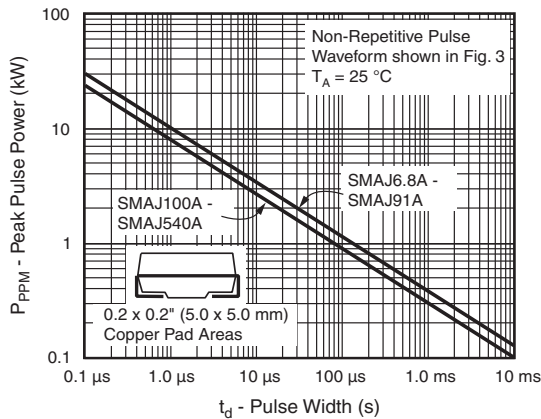


Fig. 1 - Peak Pulse Power Rating Curve

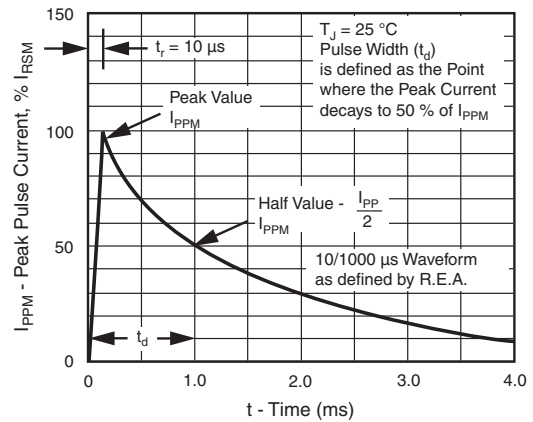


Fig. 3 - Pulse Waveform

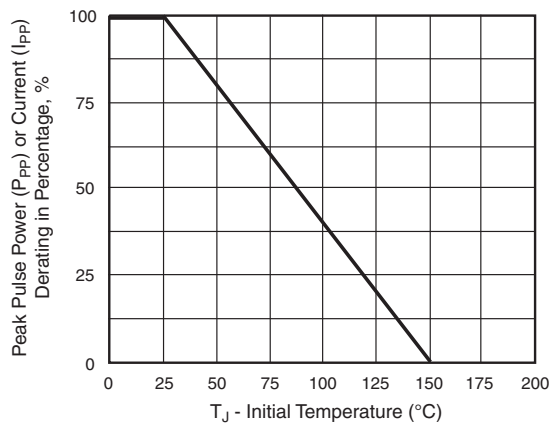


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

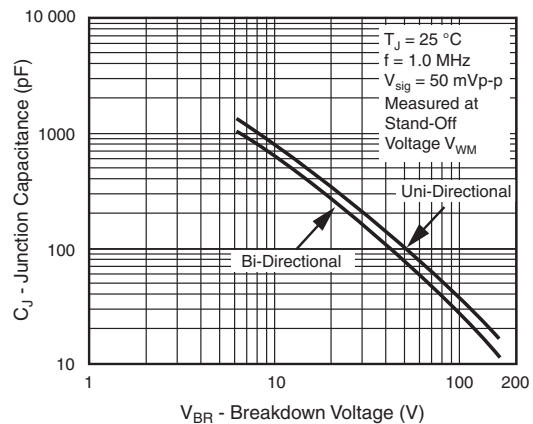


Fig. 4 - Typical Junction Capacitance

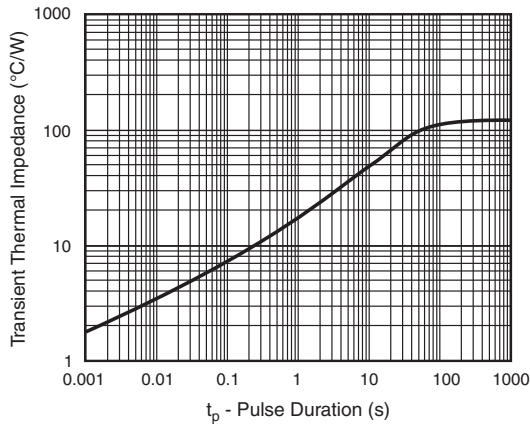


Fig. 5 - Typical Transient Thermal Impedance

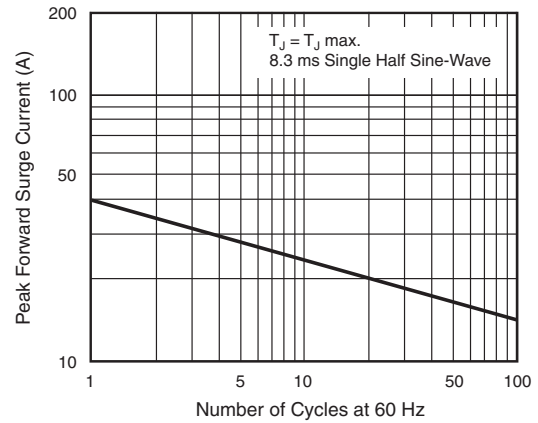
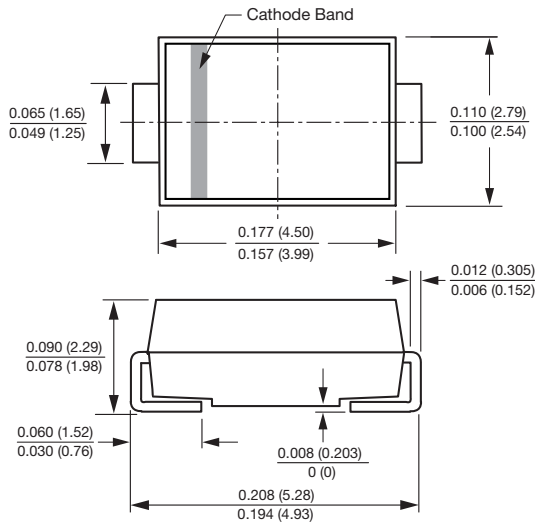


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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Mounting Pad Layout

