

400W Surface Mount Transient Voltage Suppressors

Features

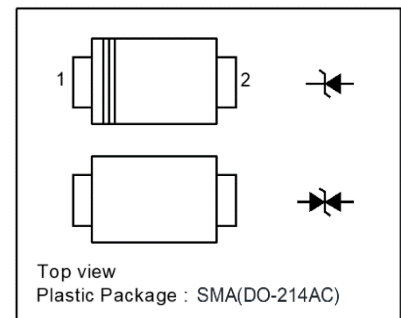
- AEC-Q101 Qualified
- 400 W peak pulse power capability with a 10/1000 μ s waveform
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals.
- Meets MSL level 1
- Component in accordance to RoHS



SMA (DO-214AC)

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode



PRIMARY CHARACTERISTICS	
VBR	6.4V to 247V
VWM	5.0V to 200V
PPPM (10 x 1000 μ s)	400 W
TJ max.	150 °C
Polarity	Uni & bidirectional
Package	SMA (DO-214AC)

Mechanical Data

- Case: DO-214AC (SMA) molded plastic
- Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional types
- Terminals: Matte tin-plated leads, solderable per J-STD-002B and JESD22-B102D

Typical Applications

Use is 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, telecommunication and automotive.

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 μ s waveform ^{1) 2)} (Fig.1)	P_{PPM}	400	W
Peak Pulse Current on 10/1000 μ s waveform ¹⁾	I_{PPM}	See Table 1	A
Power dissipation, on infinite heat sink at $T_L = 75^\circ\text{C}$	P_D	1.0	W
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC Method) ²⁾	I_{FSM}	40	A
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to + 150	$^\circ\text{C}$

1) Non-repetitive current pulse, per Fig. 3 and derated above $T_A = 25^\circ\text{C}$ per Fig.2.

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

Electrical Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Symbol	Value	Unit
Maximum instantaneous forward voltage @ at 25A for unidirectional only ³⁾	V _F	3.5/5.0	V
Maximum instantaneous forward voltage @ at 1A for unidirectional only	V _F	1.5	V

Thermal Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Symbol	Value	Unit
Typical Thermal Resistance Junction to Lead	R _{θJL}	30	°C/W
Typical Thermal Resistance Junction to Ambient	R _{θJA}	120	°C/W

3) V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

Electrical Characteristics (T_a = 25°C unless otherwise specified)

Uni-directional / Bi-directional Type ³⁾	Marking Code		Stand-off Voltage V _{WM} (V)	Breakdown Voltage ¹⁾		Test Current I _T (mA)	Maximum Clamping Voltage V _C (V) at I _{PPM}	Maximum Peak Pulse Current I _{PPM} (A)	Maximum Reverse Leakage ²⁾ I _D (μA) at V _{WM}
	Uni	Bi		V _{BR} (V) Min. at I _T	V _{BR} (V) Max. at I _T				
SMAJ5.0A / CA	AAE	AWE	5.0	6.4	07.00	10	9.2	43.5	800
SMAJ6.0A / CA	AAG	AWG	6.0	6.67	07.37	10	10.3	38.8	800
SMAJ6.5A / CA	AAK	AWK	6.5	7.22	7.98	10	11.2	35.7	500
SMAJ7.0A / CA	AAM	AWM	7.0	7.78	8.60	10	12.0	33.3	200
SMAJ7.5A / CA	AAP	AWP	7.5	8.33	9.21	1	12.9	31.0	100
SMAJ8.0A / CA	AAR	AWR	8.0	8.89	9.83	1	13.6	29.4	50
SMAJ8.5A / CA	AAT	AWT	8.5	9.44	10.40	1	14.4	27.8	20
SMAJ9.0A / CA	AAV	AWV	9.0	10.0	11.10	1	15.4	26.0	10
SMAJ10A / CA	AAX	AWX	10	11.1	12.30	1	17.0	23.5	5
SMAJ11A / CA	AAZ	AWZ	11	12.2	13.5	1	18.2	22	1
SMAJ12A / CA	ABE	AXE	12	13.3	14.7	1	19.9	20.1	1
SMAJ13A / CA	ABG	AXG	13	14.4	15.9	1	21.5	18.6	1
SMAJ14A / CA	ABK	AXK	14	15.6	17.2	1	23.2	17.2	1
SMAJ15A / CA	ABM	AXM	15	16.7	18.5	1	24.4	16.4	1
SMAJ16A / CA	ABP	AXP	16	17.8	19.7	1	26.0	15.4	1
SMAJ17A / CA	ABR	AXR	17	18.9	20.9	1	27.6	14.5	1
SMAJ18A / CA	ABT	AXT	18	20.0	22.1	1	29.2	13.7	1
SMAJ20A / CA	ABV	AXV	20	22.2	24.5	1	32.4	12.3	1
SMAJ22A / CA	ABX	AXX	22	24.4	26.9	1	35.5	11.3	1
SMAJ24A / CA	ABZ	AXZ	24	26.7	29.5	1	38.9	10.3	1
SMAJ26A / CA	ACE	AYE	26	28.9	31.9	1	42.1	9.5	1
SMAJ28A / CA	ACG	AYG	28	31.1	34.4	1	45.4	8.8	1
SMAJ30A / CA	ACK	AYK	30	33.3	36.8	1	48.4	8.3	1
SMAJ33A / CA	ACM	AYM	33	36.7	40.6	1	53.3	7.5	1
SMAJ36A / CA	ACP	AYP	36	40.0	44.2	1	58.1	6.9	1
SMAJ40A / CA	ACR	AYR	40	44.4	49.1	1	64.5	6.2	1
SMAJ43A / CA	ACT	AYT	43	47.8	52.8	1	69.4	5.8	1
SMAJ45A / CA	ACV	AYV	45	50.0	55.3	1	72.7	5.5	1
SMAJ48A / CA	ACX	AYX	48	53.3	58.9	1	77.4	5.2	1
SMAJ51A / CA	ACZ	AYZ	51	56.7	62.7	1	82.4	4.9	1
SMAJ54A / CA	ARE	AZE	54	60.0	66.3	1	87.1	4.6	1
SMAJ58A / CA	ARG	AZG	58	64.4	71.2	1	93.6	4.3	1
SMAJ60A / CA	ARK	AZK	60	66.7	73.7	1	96.8	4.1	1
SMAJ64A / CA	ARM	AZM	64	71.1	78.6	1	103	3.9	1
SMAJ70A / CA	ARP	AZP	70	77.8	86.0	1	113	3.5	1
SMAJ75A / CA	ARR	AZR	75	83.3	92.1	1	121	3.3	1
SMAJ78A / CA	ART	AZT	78	86.7	95.8	1	126	3.2	1
SMAJ85A / CA	ARV	AZV	85	94.4	104	1	137	2.2	1
SMAJ90A / CA	ARX	AZX	90	100	111	1	146	2.1	1
SMAJ100A / CA	ARZ	AZZ	100	111	123	1	162	1.9	1
SMAJ110A / CA	ASE	AVE	110	122	135	1	177	2.3	1
SMAJ120A / CA	ASG	AVG	120	133	147	1	193	2.1	1
SMAJ130A / CA	ASK	AVK	130	144	159	1	209	1.9	1
SMAJ150A / CA	ASM	AVM	150	167	185	1	243	1.6	1
SMAJ160A / CA	ASP	AVP	160	178	197	1	259	1.5	1
SMAJ170A / CA	ASR	AVR	170	189	209	1	275	1.5	1
SMAJ180A / CA	AST	AVT	180	201	222	1	292	1.4	1
SMAJ200A / CA	ASV	AVV	200	224	247	1	324	1.2	1

1)tp≤50ms Pulse test: tp≤50ms

2)Surge current waveform per Fig. 3 and derated per Fig.2.

3)For bi-directional types having VWM of 10 V and less, the IR limit is doubled

Electrical Characteristics Curves

FIG1: Peak Pulse Power Rating Curve

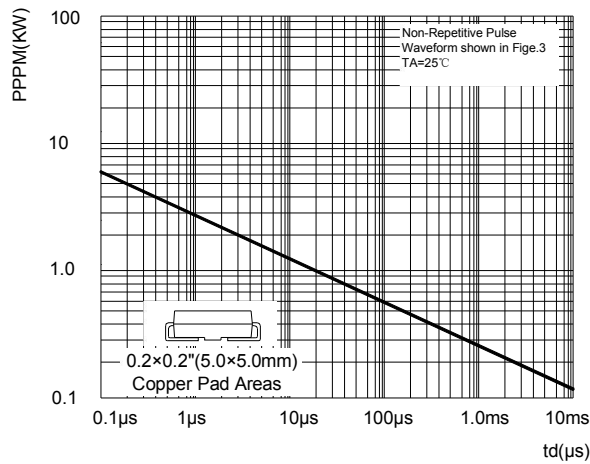


FIG2: Pulse Power or Current vs. Initial Junction Temperature

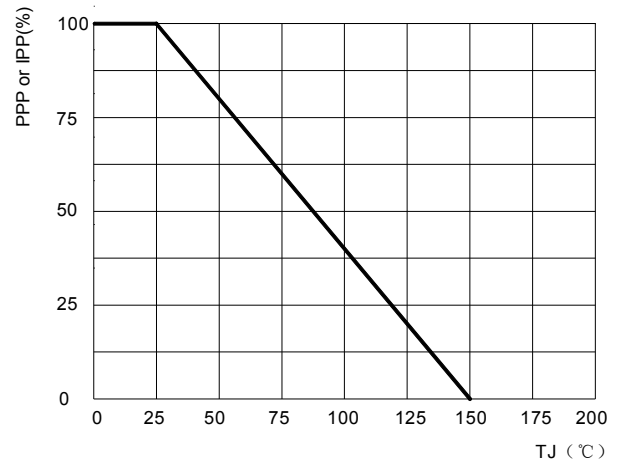


FIG3: Pulse Waveform

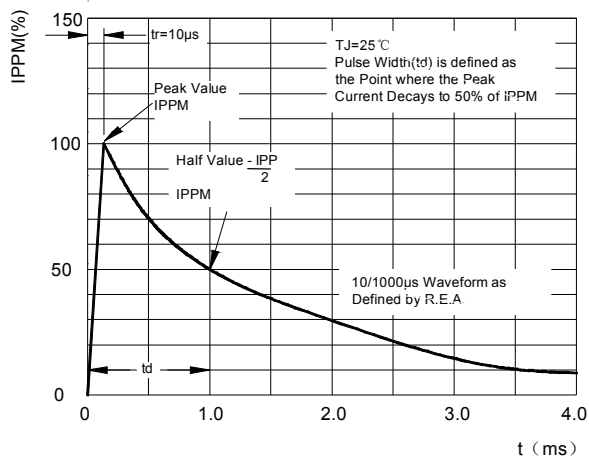


FIG4: Typical Transient Thermal Impedance

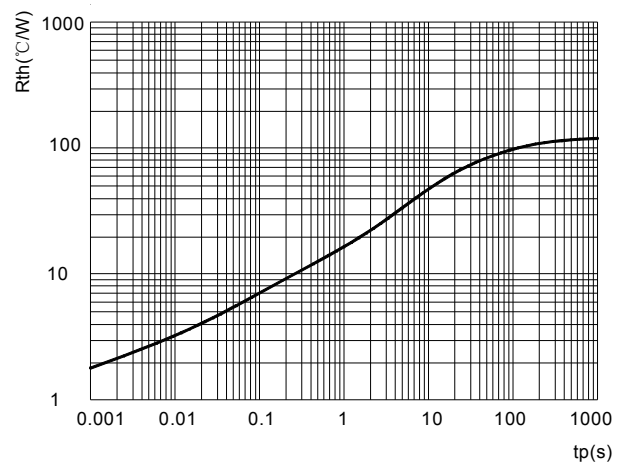


FIG5: Maximum Non-Repetitive Surge Current

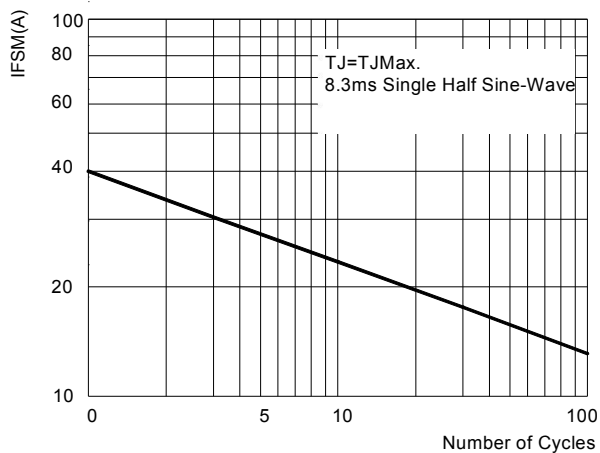
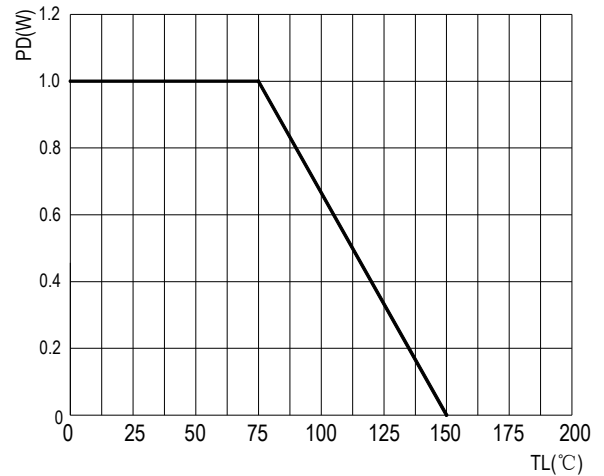
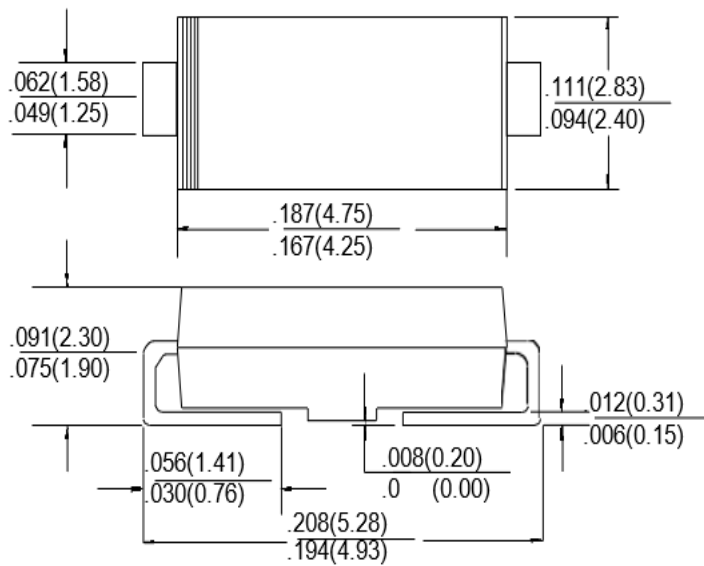


FIG6: Steady State Power Dissipation

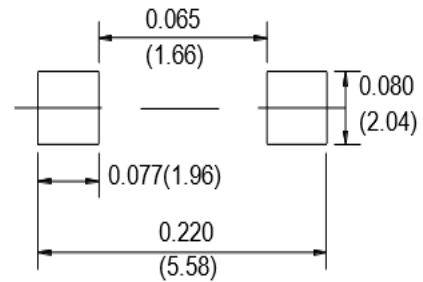


Package Outline Dimensions in inches (millimeters)

SMA(DO-214AC)



Mounting Pad Layout



Packing Information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SMA	12	4±0.1	0.1575±0.004	330	13	7,500

Marking information

"AAE" = Part No.

"YWW" = Date Code Marking

"Y" = Last digit of year (ex: 2 = 2022)

"WW" = Week Code (ex: 24 = the 24th week of the year)

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Cathode band for Uni-directional products only