SMAJ SERIES

TRANSIENT VOLTAGE SUPPRESSORS

康 比 電 子
HORNBY ELECTRONIC

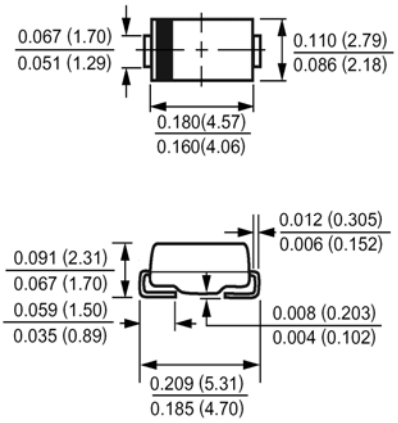
STAND OFF VOLTAGE: **5.0 to 188 VOLTS**

PEAK PULSE POWER: **400 WATTS**

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- 400W peak pulse power capability on 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time: typically less than 1.0 ps from 0 volts to BV min
- Low profile package with built-in strain relief for surface mounted applications

DO-214AC(SMA)



Dimensions in inches and (millimeters)

MECHANICAL DATA

Case: Molded plastic, DO-214AC(SMA)

Terminals: Axial leads, solderable per MIL-STD-750, method 2026 guaranteed

Polarity: Color band denotes cathode except bipolar

Packaging: 12mm tape per EIA STD RS-481

Weight: 0.002 ounce, 0.064 gram

Maximum Ratings and Electrical Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified.

	Symbols	Limit	Units
Peak power dissipation with a 10/1000μs waveform (Note 1 , 2) (Fig. 1)	P_{PPM}	Minimum 400	**Watts**
Peak pulse current with a 10/1000μs waveform (Note 1)	I_{PPM}	See Next Table	**Amp**
Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 2)	I_{FSM}	40	**Amp**
Maximum instantaneous forward voltage at 25A for unidirectional only	V_F	3.5	**Volts**
Typical thermal resistance junction-to-lead	$R_{\theta JL}$	30	**℃/W**
Thermal resistance junction to ambient air (Note 3)	$R_{\theta JA}$	120	**℃/W**
Operating junction and storage temperature range	T_J, Tstg	–55 to +150	**℃**

NOTES:

1- Non-repetitive current pulse, per Fig. 3 and derated above TA = 25℃ per Fig. 2. Rating is 300W above 78V

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

3- Mounted on minimum recommended pad layout

Devices for Bidirectional Applications:

1- For bi-directional, use C or CA suffix for types SMAJ5.0 thru types SMAJ188A(e.g. SMAJ5.0C, SMAJ188CA).

2- Electrical characteristics apply in both directions.

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Device Type	Breakdown Voltage		Test Current	Reverse Stand off Voltage	Maximum Reverse Leakage at V_{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage at I_{PPM}
	V_{BR} at I_T (Note 1)		I_T	V_{WM}	I_D (Note 3)	I_{PPM} (Note 2)	V_C
	Volts (min.)	Volts (max.)	mAmps	Volts	uAmps	Amps	Volts
SMAJ5.0	6.40	7.30	10	5.0	800	41.7	9.6
SMAJ5.0A(Note 4)	6.40	7.00	10	5.0	800	43.5	9.2
SMAJ6.0	6.67	8.15	10	6.0	800	35.1	11.4
SMAJ6.0A	6.67	7.37	10	6.0	800	38.8	10.3
SMAJ6.5	7.22	8.82	10	6.5	500	32.5	12.3
SMAJ6.5A	7.22	7.98	10	6.5	500	35.7	11.2
SMAJ7.0	7.78	9.51	10	7.0	200	30.1	13.3
SMAJ7.0A	7.78	8.60	10	7.0	200	33.3	12.0
SMAJ7.5	8.33	10.2	1.0	7.5	100	28.0	14.3
SMAJ7.5A	8.33	9.21	1.0	7.5	100	31.0	12.9
SMAJ8.0	8.89	10.9	1.0	8.0	50	26.7	15.0
SMAJ8.0A	8.89	9.83	1.0	8.0	50	29.4	13.6
SMAJ8.5	9.44	11.5	1.0	8.5	10	25.2	15.9
SMAJ8.5A	9.44	10.4	1.0	8.5	10	27.8	14.4
SMAJ9.0	10.0	12.2	1.0	9.0	5.0	23.7	16.9
SMAJ9.0A	10.0	11.1	1.0	9.0	5.0	26.0	15.4
SMAJ10	11.1	13.6	1.0	10.0	1.0	21.3	18.8
SMAJ10A	11.1	12.3	1.0	10.0	1.0	23.5	17.0
SMAJ11	12.2	14.9	1.0	11.0	1.0	19.9	20.1
SMAJ11A	12.2	13.5	1.0	11.0	1.0	22.0	18.2
SMAJ12	13.3	16.3	1.0	12.0	1.0	18.2	22.0
SMAJ12A	13.3	14.7	1.0	12.0	1.0	20.1	19.9
SMAJ13	14.4	17.6	1.0	13.0	1.0	16.8	23.8
SMAJ13A	14.4	15.9	1.0	13.0	1.0	18.6	21.5
SMAJ14	15.6	19.1	1.0	14.0	1.0	15.5	25.8
SMAJ14A	15.6	17.2	1.0	14.0	1.0	17.2	23.2
SMAJ15	16.7	20.4	1.0	15.0	1.0	14.9	26.9
SMAJ15A	16.7	18.5	1.0	15.0	1.0	16.4	24.4
SMAJ16	17.8	21.8	1.0	16.0	1.0	13.9	28.8
SMAJ16A	17.8	19.7	1.0	16.0	1.0	15.4	26.0
SMAJ17	18.9	23.1	1.0	17.0	1.0	13.1	30.5
SMAJ17A	18.9	20.9	1.0	17.0	1.0	14.5	27.6
SMAJ18	20.0	24.4	1.0	18.0	1.0	12.4	32.2
SMAJ18A	20.0	22.1	1.0	18.0	1.0	13.7	29.2
SMAJ20	22.2	27.1	1.0	20.0	1.0	11.2	35.8
SMAJ20A	22.2	24.5	1.0	20.0	1.0	12.3	32.4
SMAJ22	24.4	29.8	1.0	22.0	1.0	10.2	39.4
SMAJ22A	24.4	26.9	1.0	22.0	1.0	11.3	35.5
SMAJ24	26.7	32.6	1.0	24.0	1.0	9.3	43.0
SMAJ24A	26.7	29.5	1.0	24.0	1.0	10.3	38.9
SMAJ26	28.9	35.3	1.0	26.0	1.0	8.6	46.6
SMAJ26A	28.9	31.9	1.0	26.0	1.0	9.5	42.1
SMAJ28	31.1	38.0	1.0	28.0	1.0	8.0	50.1
SMAJ28A	31.1	34.4	1.0	28.0	1.0	8.8	45.4
SMAJ30	33.3	40.7	1.0	30.0	1.0	7.5	53.5
SMAJ30A	33.3	36.8	1.0	30.0	1.0	8.3	48.4
SMAJ33	36.7	44.9	1.0	33.0	1.0	6.8	59.0
SMAJ33A	36.7	40.6	1.0	33.0	1.0	7.5	53.3
SMAJ36	40.0	48.9	1.0	36.0	1.0	6.2	64.3
SMAJ36A	40.0	44.2	1.0	36.0	1.0	6.9	58.1

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Device Type	Breakdown Voltage		Test Current	Reverse Stand off Voltage	Maximum Reverse Leakage at V_{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage at I_{PPM}
	V_{BR} at I_T (Note 1)		I_T	V_{WM}	I_D (Note 3)	I_{PPM} (Note 2)	V_C
	Volts (min.)	Volts (max.)	mAmps	Volts	uAmps	Amps	Volts
SMAJ40	44.4	54.3	1.0	40	1.0	5.6	71.4
SMAJ40A	44.4	49.1	1.0	40	1.0	6.2	64.5
SMAJ43	47.8	58.4	1.0	43	1.0	5.2	76.7
SMAJ43A	47.8	52.8	1.0	43	1.0	5.8	69.4
SMAJ45	50.0	61.1	1.0	45	1.0	5.0	80.3
SMAJ45A	50.0	55.3	1.0	45	1.0	5.5	72.7
SMAJ48	53.3	65.2	1.0	48	1.0	4.7	85.5
SMAJ48A	53.3	58.9	1.0	48	1.0	5.2	77.4
SMAJ51	56.7	69.3	1.0	51	1.0	4.4	91.1
SMAJ51A	56.7	62.7	1.0	51	1.0	4.9	82.4
SMAJ54	60.0	73.3	1.0	54	1.0	4.2	96.3
SMAJ54A	60.0	66.3	1.0	54	1.0	4.6	87.1
SMAJ58	64.4	78.7	1.0	58	1.0	3.9	103
SMAJ58A	64.4	71.2	1.0	58	1.0	4.3	93.6
SMAJ60	66.7	81.5	1.0	60	1.0	3.7	107
SMAJ60A	66.7	73.7	1.0	60	1.0	4.1	96.8
SMAJ64	71.1	86.9	1.0	64	1.0	3.5	114
SMAJ64A	71.1	78.6	1.0	64	1.0	3.9	103
SMAJ70	77.8	95.1	1.0	70	1.0	3.2	125
SMAJ70A	77.8	86.0	1.0	70	1.0	3.5	113
SMAJ75	83.3	102	1.0	75	1.0	3.0	134
SMAJ75A	83.3	92.1	1.0	75	1.0	3.3	121
SMAJ78	86.7	106	1.0	78	1.0	2.9	139
SMAJ78A	86.7	95.8	1.0	78	1.0	3.2	126
SMAJ85	94.4	115	1.0	85	1.0	2.0	151
SMAJ85A	94.4	104	1.0	85	1.0	2.2	137
SMAJ90	100	122	1.0	90	1.0	1.9	160
SMAJ90A	100	111	1.0	90	1.0	2.1	146
SMAJ100	111	136	1.0	100	1.0	1.7	179
SMAJ100A	111	123	1.0	100	1.0	1.9	162
SMAJ110	122	149	1.0	110	1.0	1.5	196
SMAJ110A	122	135	1.0	110	1.0	1.7	177
SMAJ120	133	163	1.0	120	1.0	1.4	214
SMAJ120A	133	147	1.0	120	1.0	1.6	193
SMAJ130	144	176	1.0	130	1.0	1.3	230
SMAJ130A	144	159	1.0	130	1.0	1.4	209
SMAJ150	167	204	1.0	150	1.0	1.1	268
SMAJ150A	167	185	1.0	150	1.0	1.2	243
SMAJ160	178	218	1.0	160	1.0	1.0	287
SMAJ160A	178	197	1.0	160	1.0	1.2	259
SMAJ170	189	231	1.0	170	1.0	0.99	304
SMAJ170A	189	209	1.0	170	1.0	1.09	275
SMAJ188	209	255	1.0	188	1.0	0.90	344
SMAJ188A	209	231	1.0	188	1.0	0.91	328

NOTES:

1- Pulse test: tp ⩽ 50ms

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

3- For bidirectional types having V_{WM} of 10 volts and less, the I_D limit is doubled

4- For the bidirectional SMAJ5.0CA, the maximum V_{BR} is 7.25V

5- All terms and symbols are consistent with ANSI/IEEE C62.35

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RATINGS AND CHARACTERISTIC CURVES

Fig. 1 – Peak Pulse Power Rating Curve

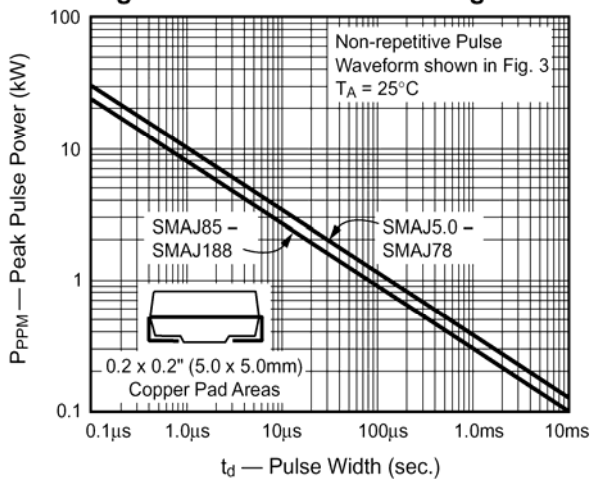

Fig. 2 – Pulse Derating Curve

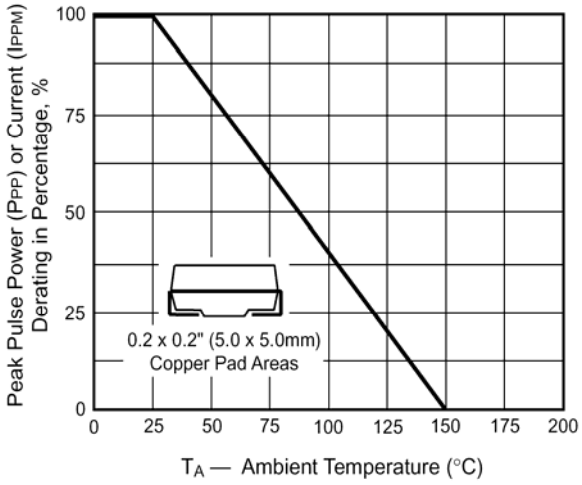

Fig. 3 – Pulse Waveform

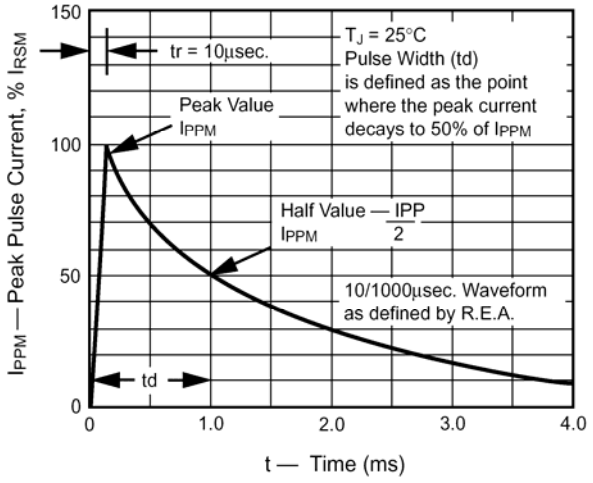

Fig. 4 – Typical Junction Capacitance

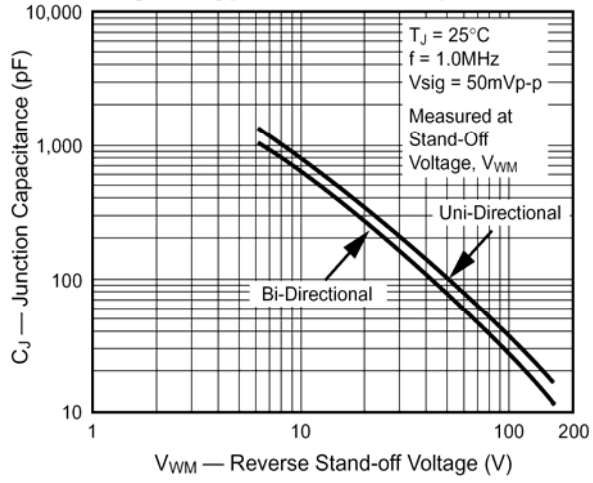

Fig. 5 – Typical Transient Thermal Impedance

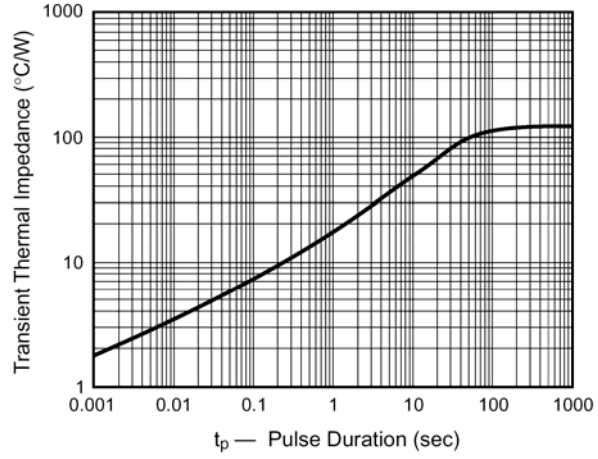

Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only