



SMAJ Series

400W,5.0V - 440V Surface Mount Transient Voltage Suppressor

1. Features

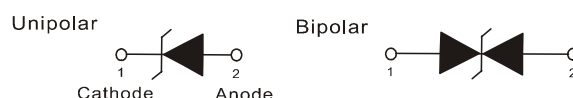
- For surface mounted applications in order to optimize board space.
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Fammability Classification 94V-0
- High temperature soldering : 260°C /10 seconds at terminals

Case: SMA(DO-214AC)



2. Mechanical Data

- Case:SMA(DO-214AC) molded plastic
- Terminals: plated leads solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end
- Mounting position: Any



3. Maximum Ratings and Electrical Characteristics

Rating at 25°C Ambient temperature unless otherwise specified. Resistive or inductive load,
For Capacitive load derate current by 20%.

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000 μ s waveform ⁽¹⁾ Fig.2	P_{PPM}	400	W
Peak pulse current with a waveform ⁽¹⁾	I_{PPM}	See next table	A
Power dissipation on infinite heatsink at $T_L=75^\circ\text{C}$	P_D	1.0	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}	-55 to +150	$^\circ\text{C}$

Note:

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

(2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.



4. Electrical Characteristics (TA=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Marking Code		Breakdown Voltage $V_{BR@I_T}$			Maximum Reverse Leakage $I_R@V_{RWM}(uA)$	Working Peak Reverse Voltage $V_{RWM}(v)$	Maximum Reverse Surge Current $I_{pp}(A)$	Maximum Clamping Voltage $V_c@ I_{pp}(V)$
		Uni	Bi	Min(V)	Max(V)	$I_T(mA)$				
SMAJ5.0A	SMAJ5.0CA	AE	WE	6.4	7.07	10	800	5	43.5	9.2
SMAJ6.0A	SMAJ6.0CA	AG	WG	6.67	7.37	10	800	6	38.8	10.3
SMAJ6.5A	SMAJ6.5CA	AK	WK	7.22	7.98	10	500	6.5	35.7	11.2
SMAJ7.0A	SMAJ7.0CA	AM	WM	7.78	8.6	10	200	7	33.3	12
SMAJ7.5A	SMAJ7.5CA	AP	WP	8.33	9.21	1	100	7.5	31.0	12.9
SMAJ8.0A	SMAJ8.0CA	AR	WR	8.89	9.83	1	50	8	29.4	13.6
SMAJ8.5A	SMAJ8.5CA	AT	WT	9.44	10.4	1	10	8.5	27.8	14.4
SMAJ9.0A	SMAJ9.0CA	AV	WV	10.0	11.1	1	5	9	26.0	15.4
SMAJ10A	SMAJ10CA	AX	WX	11.1	12.3	1	5	10	23.5	17
SMAJ11A	SMAJ11CA	AZ	WZ	12.2	13.5	1	1	11	22.0	18.2
SMAJ12A	SMAJ12CA	BE	XE	13.3	14.7	1	1	12	20.1	19.9
SMAJ13A	SMAJ13CA	BG	XG	14.4	15.9	1	1	13	18.6	21.5
SMAJ14A	SMAJ14CA	BK	XK	15.6	17.2	1	1	14	17.2	23.2
SMAJ15A	SMAJ15CA	BM	XM	16.7	18.5	1	1	15	16.4	24.4
SMAJ16A	SMAJ16CA	BP	XP	17.8	19.7	1	1	16	15.4	26
SMAJ17A	SMAJ17CA	BR	XR	18.9	20.9	1	1	17	14.5	27.6
SMAJ18A	SMAJ18CA	BT	XT	20.0	22.1	1	1	18	13.7	29.2
SMAJ20A	SMAJ20CA	BV	XV	22.2	24.5	1	1	20	12.4	32.4
SMAJ22A	SMAJ22CA	BX	XX	24.4	26.9	1	1	22	11.3	35.5
SMAJ24A	SMAJ24CA	BZ	XZ	26.7	29.5	1	1	24	10.3	38.9
SMAJ26A	SMAJ26CA	CE	YE	28.9	31.9	1	1	26	9.5	42.1
SMAJ28A	SMAJ28CA	CG	YG	31.1	34.4	1	1	28	8.8	45.4
SMAJ30A	SMAJ30CA	CK	YK	33.3	36.8	1	1	30	8.3	48.4
SMAJ33A	SMAJ33CA	CM	YM	36.7	40.6	1	1	33	7.5	53.3
SMAJ36A	SMAJ36CA	CP	YP	40.0	44.2	1	1	36	6.9	58.1
SMAJ40A	SMAJ40CA	CR	YR	44.4	49.1	1	1	40	6.2	64.5
SMAJ43A	SMAJ43CA	CT	YT	47.8	52.8	1	1	43	5.8	69.4
SMAJ45A	SMAJ45CA	CV	YV	50.0	55.3	1	1	45	5.5	72.7
SMAJ48A	SMAJ48CA	CX	YX	53.3	58.9	1	1	48	5.2	77.4
SMAJ51A	SMAJ51CA	CZ	YZ	56.7	62.7	1	1	51	4.9	82.4
SMAJ54A	SMAJ54CA	RE	ZE	60.0	66.3	1	1	54	4.6	87.1
SMAJ58A	SMAJ58CA	RG	ZG	64.4	71.2	1	1	58	4.3	93.6
SMAJ60A	SMAJ60CA	RK	ZK	66.7	73.7	1	1	60	4.1	96.8
SMAJ64A	SMAJ64CA	RM	ZM	71.1	78.6	1	1	64	3.9	103
SMAJ70A	SMAJ70CA	RP	ZP	77.8	86	1	1	70	3.6	113



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		Uni	Bi	Min(V)	Max(V)	$I_T(mA)$				
SMAJ75A	SMAJ75CA	RR	ZR	83.3	82.1	1	1	75	3.3	121
SMAJ78A	SMAJ78CA	RT	ZT	86.7	95.8	1	1	78	3.2	126
SMAJ85A	SMAJ85CA	RV	ZV	94.4	104	1	1	85	2.9	137
SMAJ90A	SMAJ90CA	RX	DX	100	111	1	1	90	2.8	146
SMAJ100A	SMAJ100CA	RZ	DZ	111	123	1	1	100	2.5	162
SMAJ110A	SMAJ110CA	SE	VE	122	135	1	1	110	2.3	177
SMAJ120A	SMAJ120CA	SG	VG	133	147	1	1	120	2.1	193
SMAJ130A	SMAJ130CA	SK	VK	144	159	1	1	130	1.9	209
SMAJ150A	SMAJ150CA	SM	VM	167	185	1	1	150	1.7	243
SMAJ160A	SMAJ160CA	SS	VP	178	197	1	1	160	1.6	259
SMAJ170A	SMAJ170CA	SR	VR	189	209	1	1	170	1.5	275
SMAJ180A	SMAJ180CA	ST	VT	200	220	1	1	180	1.4	292
SMAJ200A	SMAJ200CA	SV	VV	224	247	1	1	200	1.2	324
SMAJ220A	SMAJ220CA	SX	VX	246	272	1	1	220	1.1	356
SMAJ250A	SMAJ250CA	SZ	VZ	279	309	1	1	250	1.0	405
SMAJ300A	SMAJ300CA	TE	UE	335	371	1	1	300	0.8	486
SMAJ350A	SMAJ350CA	TG	UG	391	431	1	1	350	0.7	567
SMAJ400A	SMAJ400CA	TK	UK	447	494	1	1	400	0.6	648
SMAJ440A	SMAJ440CA	TM	UM	492	543	1	1	440	0.6	713

Note:

① Surge waveform: 10/1000μs

V_{RWM} : Stand-off voltage -- Maximum voltage that can be applied

V_{BR} : Breakdown voltage

V_C : Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse leakage current



5. Rating And Characteristic Curves

Fig.1 Derating Curve

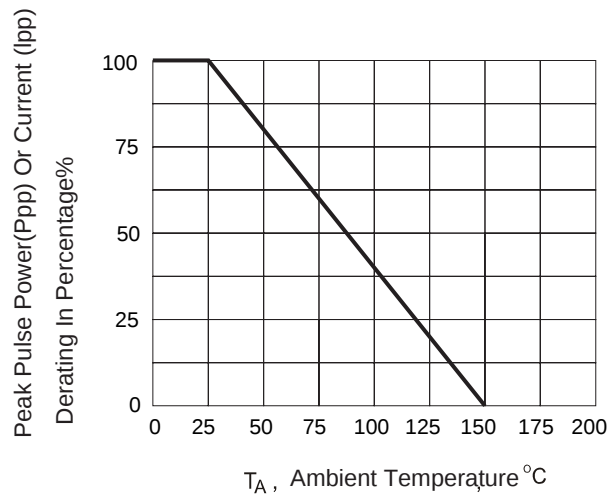


Fig. 2 Peak Pulse Power Rating Curve

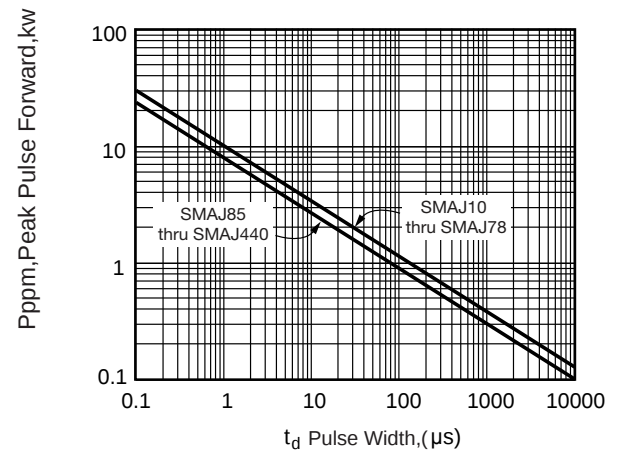


Fig.3 Clamping Power Pulse Waveform

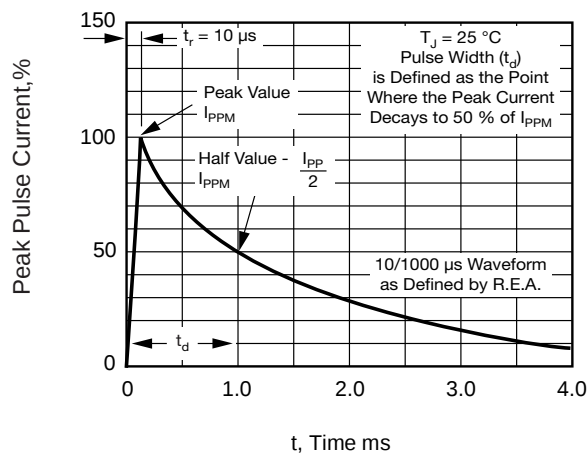
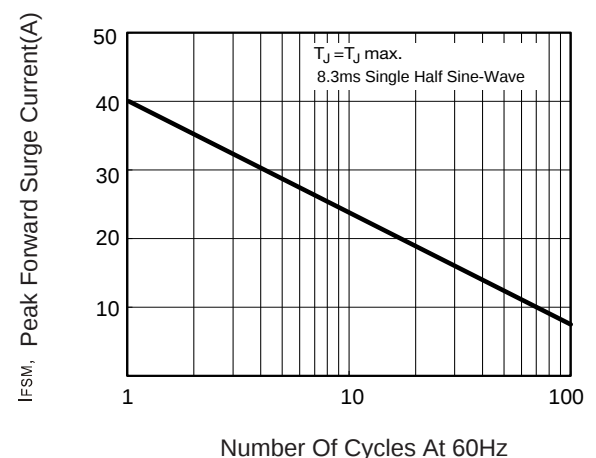


Fig.4 Maximum Non-repetitive Forward Surge Current Unidirectional only

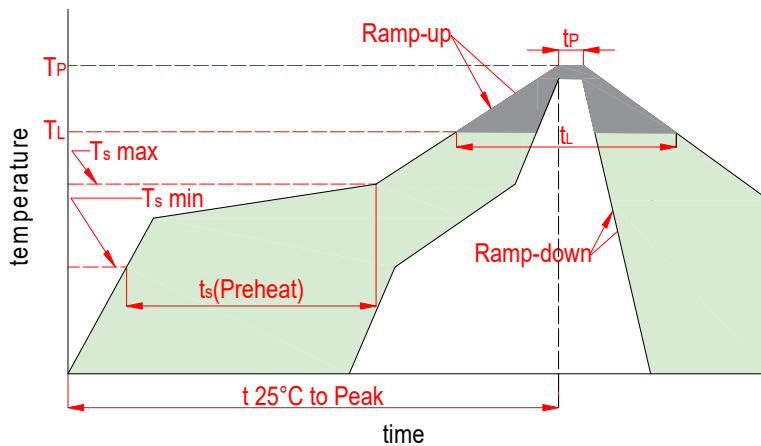




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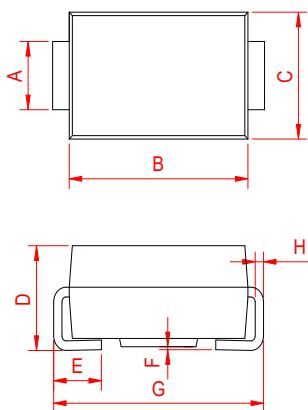
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6. Soldering Parameters



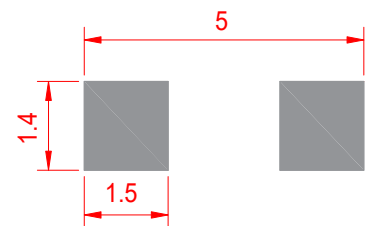
Reflow Condition		Lead-free
Pre Heat	Temp. min($T_s(\min)$)	150℃
	Temp. max($T_s(\min)$)	200℃
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L) to peak		3℃/s max
$T_s(\max)$ to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp.(T_L)(Liquidus)	217℃
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe.(T_P)		8 minutes max
Do not exceed		260℃

7. Dimensions



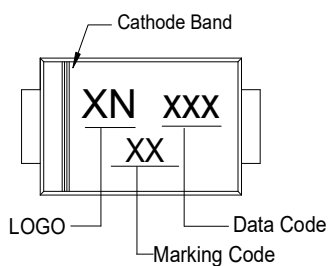
Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.051	0.059	1.30	1.50
B	0.157	0.181	4.00	4.60
C	0.094	0.110	2.40	2.80
D	0.079	0.103	2.00	2.62
E	0.030	0.060	0.76	1.52
F	0.002	0.008	0.05	0.20
G	0.189	0.208	4.80	5.28
H	0.006	0.012	0.15	0.31

Mounting PAD Layout

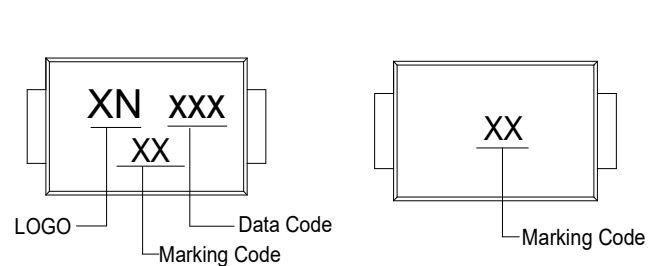


8.Part Marking System

Unipolar



Bipolar



9. Package Information

Package	Tape Width (mm)	Reel Size		Quantity(pcs)	LOGO
		mm	inch		
SMA	12	330	13	5000	XN
SMA	12	330	13	7500	XN



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