400W Surface Mount Transient Voltage Suppressor

Features

SMA

- Stand-off voltage from 5.0 to 440 volts
- 400W peak pulse power capability on 10/1000 μs waveform repetition rate(duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0v to V_{BR} Min.
- Low inductance, excellent clamping capability
- Typical I_R less than 1μA above 12V
- High temperature soldering guaranteed: 250°C/10 seconds at terminals
- This series (SMAJ5.0A/CA to SMAJ170A/CA) is UL recognized under component index. File number E315008

Mechanical Data

Case:	JEDEC DO-214AC (SMA) molded plastic over glass passivated junction
Epoxy:	Plastic package has UL flammability classification 94V-0
Terminals:	Plated axial leads, solderable per MIL-STD-750, Method 2026
Polarity:	Cathode indicated by color band
Mounting position:	Any
Weight:	Approx. 0.063 gram

Maximum Ratings *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description	Value	Unit	Conditions
P_{PPM}	Peak Pulse Power Dissipation on 10/1000μs Waveform	400	W	Non-repetitive current pulse, per FIG.3 and derated above T_A=25° C per FIG.2 (Note 1)
$P_{M(AV)}$	Power Dissipation on infinite heat sink	3.3	W	T_A=50° C
I_{PPM}	Peak Pulse current on 10/1000μs Waveform	See Table	A	
I_{FSM}	Peak Forward Surge Current	40	A	8.3ms Single Half Sine Wave (Note 2)
V_F	Maximum Instantaneous Forward Voltage at 25A for Unidirectional Only	3.5/6.5	V	Note 3

SMAJ5.0A – SMAJ440CA

Symbol	Description	Value	Unit	Conditions
$R_{\theta JL}$	Typical Thermal Resistance Junction to Lead	30	° C/W	
$R_{\theta JA}$	Typical Thermal Resistance Junction to Ambient	120	° C/W	
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-65 to 150	° C	

Note: 1. Mounted on 0.2x0.2" (5.0 x 5.0mm) copper pad to each terminal.
2. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only.
3. V_F<3.5V for V_{BR} ≤ 200V and V_F<6.5V for V_{BR} ≥ 201V.

Electrical Characteristics *($T_{Ambient}$=25ºC unless noted otherwise)*

P/N		Device Marking Code		Stand-Off Voltage	Breakdown Voltage @ Test Current			Max. Clamping Voltage @ I_{PPM}	Max. Peak Pulse Current	Max. Reverse Leakage Current @ V_{WM}
					V_{BR}		I_T (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	V_{WM} (V)	Min.	Max.		V_C (V)	I_{PPM} (A)	I_D (μA)
SMAJ5.0A	SMAJ5.0CA	AE	WE	5.0	6.4	7.08	10	9.2	43.5	800
SMAJ6.0A	SMAJ6.0CA	AG	WG	6.0	6.67	7.37	10	10.3	38.8	800
SMAJ6.5A	SMAJ6.5CA	AK	WK	6.5	7.22	7.98	10	11.2	35.7	500
SMAJ7.0A	SMAJ7.0CA	AM	WM	7.0	7.78	8.6	10	12.0	33.3	200
SMAJ7.5A	SMAJ7.5CA	AP	WP	7.5	8.33	9.21	1.0	12.9	31.0	100
SMAJ8.0A	SMAJ8.0CA	AR	WR	8.0	8.89	9.83	1.0	13.6	29.4	50
SMAJ8.5A	SMAJ8.5CA	AT	WT	8.5	9.44	10.4	1.0	14.4	27.8	20
SMAJ9.0A	SMAJ9.0CA	AV	WV	9.0	10.0	11.1	1.0	15.4	26.0	10
SMAJ10A	SMAJ10CA	AX	WX	10	11.1	12.3	1.0	17.0	23.5	5
SMAJ11A	SMAJ11CA	AZ	WZ	11	12.2	13.5	1.0	18.2	22.0	1.0
SMAJ12A	SMAJ12CA	BE	XE	12	13.3	14.7	1.0	19.9	20.1	1.0
SMAJ13A	SMAJ13CA	BG	XG	13	14.4	15.9	1.0	21.5	18.6	1.0
SMAJ14A	SMAJ14CA	BK	XK	14	15.6	17.2	1.0	23.2	17.2	1.0
SMAJ15A	SMAJ15CA	BM	XM	15	16.7	18.5	1.0	24.4	16.4	1.0
SMAJ16A	SMAJ16CA	BP	XP	16	17.8	19.7	1.0	26.0	15.4	1.0
SMAJ17A	SMAJ17CA	BR	XR	17	18.9	20.9	1.0	27.6	14.5	1.0
SMAJ18A	SMAJ18CA	BT	XT	18	20.0	22.1	1.0	29.2	13.7	1.0
SMAJ20A	SMAJ20CA	BV	XV	20	22.2	24.5	1.0	32.4	12.3	1.0

SMAJ5.0A – SMAJ440CA

Electrical Characteristics *($T_{Ambient}$=25ºC unless noted otherwise)*

P/N		Device Marking Code		Stand-Off Voltage	Breakdown Voltage @ Test Current			Max. Clamping Voltage @ I_{PPM}	Max. Peak Pulse Current	Max. Reverse Leakage Current @ V_{WM}
					V_{BR}		I_T (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	V_{WM} (V)	Min.	Max.		V_C (V)	I_{PPM} (A)	I_D (μA)
SMAJ22A	SMAJ22CA	BX	XX	22	24.4	26.9	1.0	35.5	11.3	1.0
SMAJ24A	SMAJ24CA	BZ	XZ	24	26.7	29.5	1.0	38.9	10.3	1.0
SMAJ26A	SMAJ26CA	CE	YE	26	28.9	31.9	1.0	42.1	9.5	1.0
SMAJ28A	SMAJ28CA	CG	YG	28	31.1	34.4	1.0	45.4	8.8	1.0
SMAJ30A	SMAJ30CA	CK	YK	30	33.3	36.8	1.0	48.4	8.3	1.0
SMAJ33A	SMAJ33CA	CM	YM	33	36.7	40.6	1.0	53.3	7.5	1.0
SMAJ36A	SMAJ36CA	CP	YP	36	40.0	44.2	1.0	58.1	6.9	1.0
SMAJ40A	SMAJ40CA	CR	YR	40	44.4	49.1	1.0	64.5	6.2	1.0
SMAJ43A	SMAJ43CA	CT	YT	43	47.8	52.8	1.0	69.4	5.8	1.0
SMAJ45A	SMAJ45CA	CV	YV	45	50.0	55.3	1.0	72.7	5.5	1.0
SMAJ48A	SMAJ48CA	CX	YX	48	53.3	58.9	1.0	77.4	5.2	1.0
SMAJ51A	SMAJ51CA	CZ	YZ	51	56.7	62.7	1.0	82.4	4.9	1.0
SMAJ54A	SMAJ54CA	RE	ZE	54	60.0	66.3	1.0	87.1	4.6	1.0
SMAJ58A	SMAJ58CA	RG	ZG	58	64.4	71.2	1.0	93.6	4.3	1.0
SMAJ60A	SMAJ60CA	RK	ZK	60	66.7	73.7	1.0	96.8	4.1	1.0
SMAJ64A	SMAJ64CA	RM	ZM	64	71.1	78.6	1.0	103.0	3.9	1.0
SMAJ70A	SMAJ70CA	RP	ZP	70	77.8	86.0	1.0	113.0	3.5	1.0
SMAJ75A	SMAJ75CA	RR	ZR	75	83.3	92.1	1.0	121.0	3.3	1.0
SMAJ78A	SMAJ78CA	RT	ZT	78	86.7	95.8	1.0	126.0	3.2	1.0
SMAJ85A	SMAJ85CA	RV	ZV	85	94.4	104	1.0	137.0	2.9	1.0
SMAJ90A	SMAJ90CA	RX	ZX	90	100	111	1.0	146.0	2.7	1.0
SMAJ100A	SMAJ100CA	RZ	ZZ	100	111	123	1.0	162.0	2.5	1.0
SMAJ110A	SMAJ110CA	SE	VE	110	122	135	1.0	177.0	2.3	1.0
SMAJ120A	SMAJ120CA	SG	VG	120	133	147	1.0	193.0	2.1	1.0
SMAJ130A	SMAJ130CA	SK	VK	130	144	159	1.0	209.0	1.9	1.0

SMAJ5.0A – SMAJ440CA

Electrical Characteristics *($T_{Ambient}$=25ºC unless noted otherwise)*

P/N		Device Marking Code		Stand-Off Voltage	Breakdown Voltage @ Test Current			Max. Clamping Voltage @ I_{PPM}	Max. Peak Pulse Current	Max. Reverse Leakage Current @ V_{WM}
					V_{BR}		I_T (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	V_{WM} (V)	Min.	Max.		V_C (V)	I_{PPM} (A)	I_D (μA)
SMAJ150A	SMAJ150CA	SM	VM	150	167	185	1.0	243.0	1.6	1.0
SMAJ160A	SMAJ160CA	SP	VP	160	178	197	1.0	259.0	1.5	1.0
SMAJ170A	SMAJ170CA	SR	VR	170	189	209	1.0	275.0	1.5	1.0
SMAJ180A	SMAJ180CA	ST	VT	180	201	222	1.0	292.0	1.4	1.0
SMAJ200A	SMAJ200CA	SV	VV	200	224	247	1.0	324.0	1.2	1.0
SMAJ220A	SMAJ220CA	SX	VX	220	246	272	1.0	356.0	1.1	1.0
SMAJ250A	SMAJ250CA	SZ	VZ	250	279	309	1.0	405.0	1.0	1.0
SMAJ300A	SMAJ300CA	TE	UE	300	335	371	1.0	486.0	0.8	1.0
SMAJ350A	SMAJ350CA	TG	UG	350	391	432	1.0	567.0	0.7	1.0
SMAJ400A	SMAJ400CA	TK	UK	400	447	494	1.0	648.0	0.6	1.0
SMAJ440A	SMAJ440CA	TM	UM	440	492	543	1.0	713.0	0.6	1.0

Note: 1. For bi-directional type having V_R of 10V and less, the I_R limit is double.

Typical Characteristics Curves

Fig.1- Peak Pulse Power Rating Curve

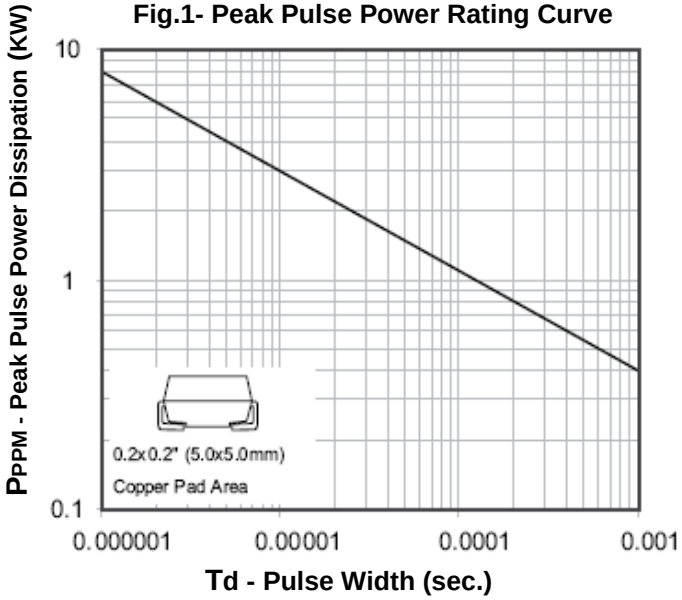


Fig.2- Pulse Derating Curve

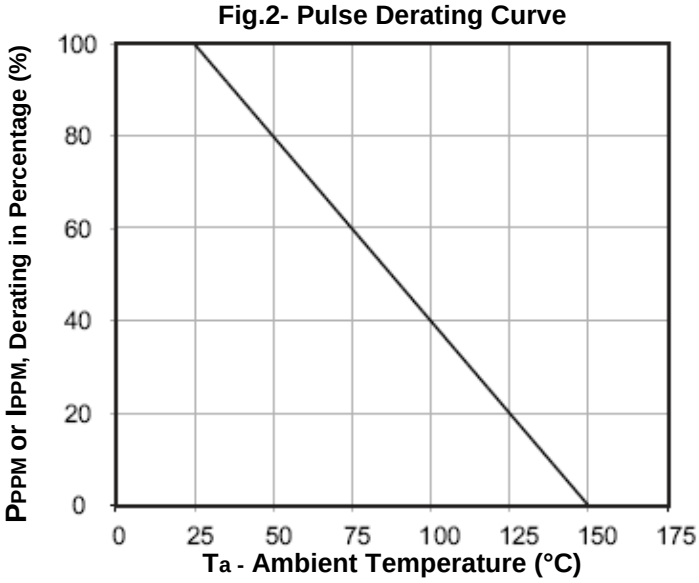


Fig.3- Pulse Waveform

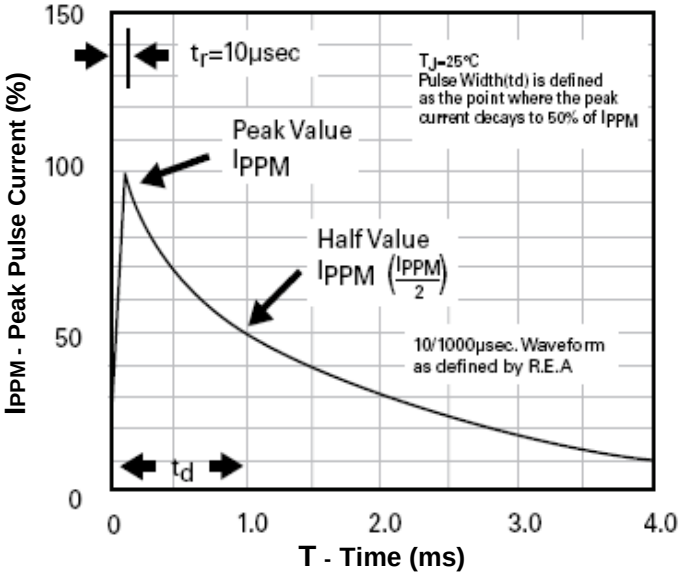


Fig.4 - Max. Non-Repetitive Peak Forward Surge Current Uni-directional only

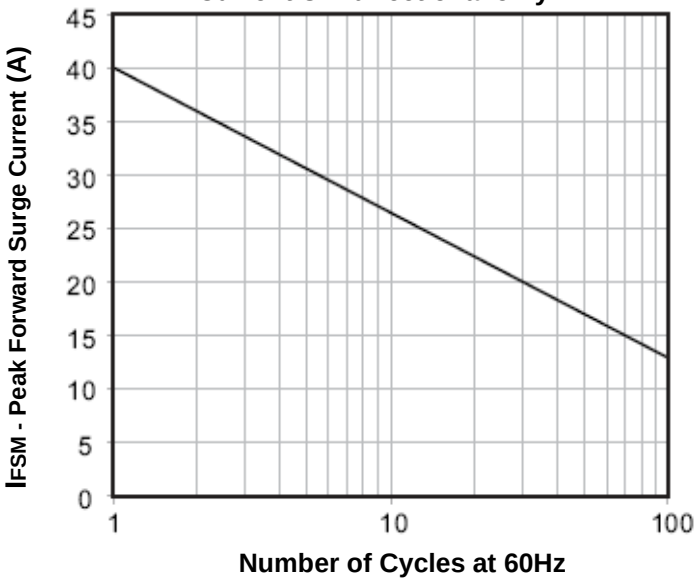


Fig.5- Steady State Power Derating Curve

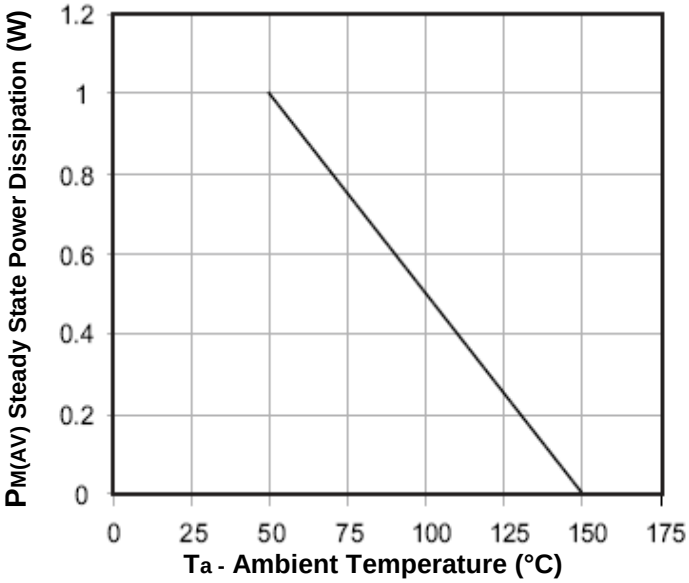
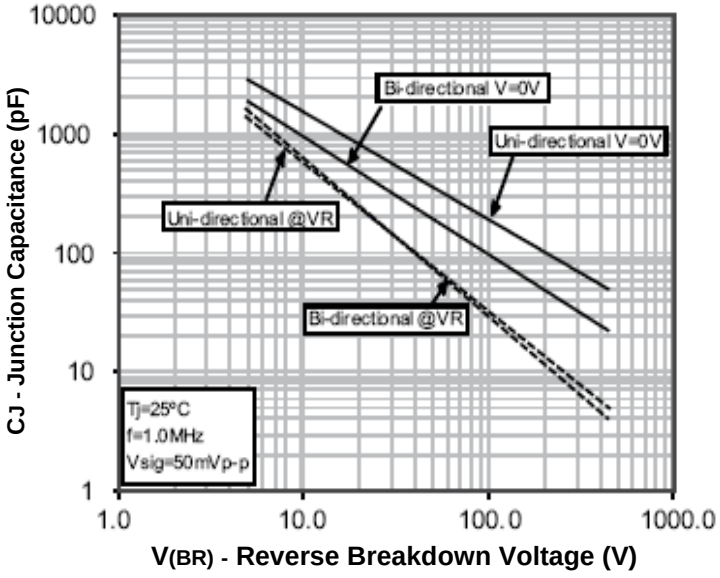
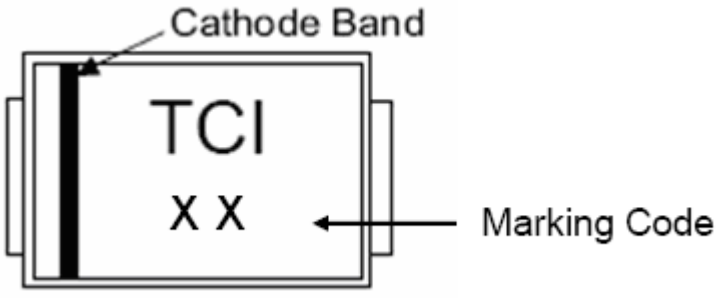


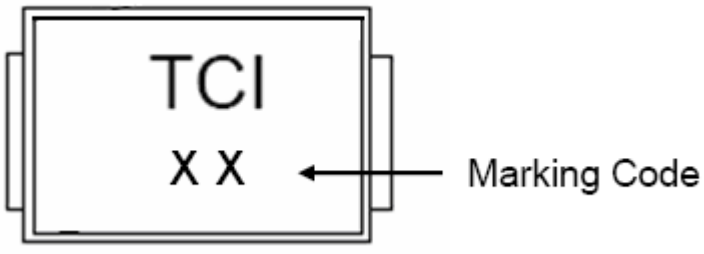
Fig.6- Typical Junction Capacitance



Marking Information:

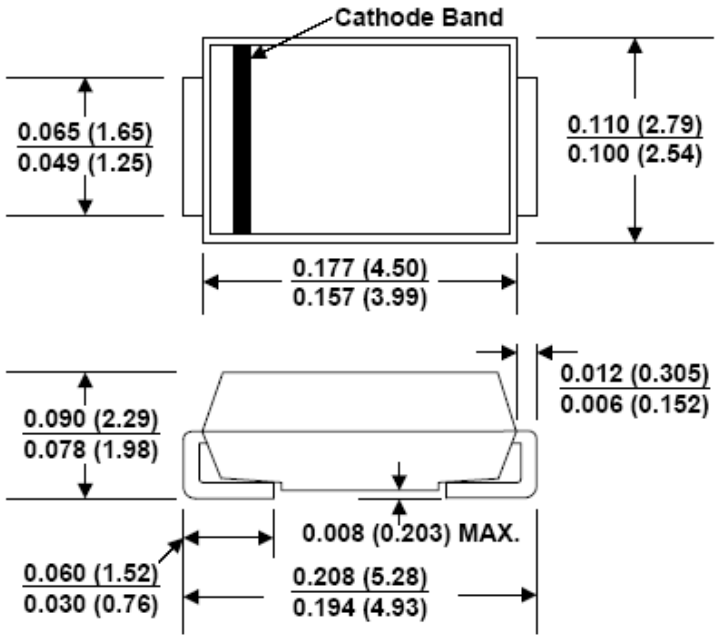


Uni-directional



Bi-directional

Dimensions in inches (mm)



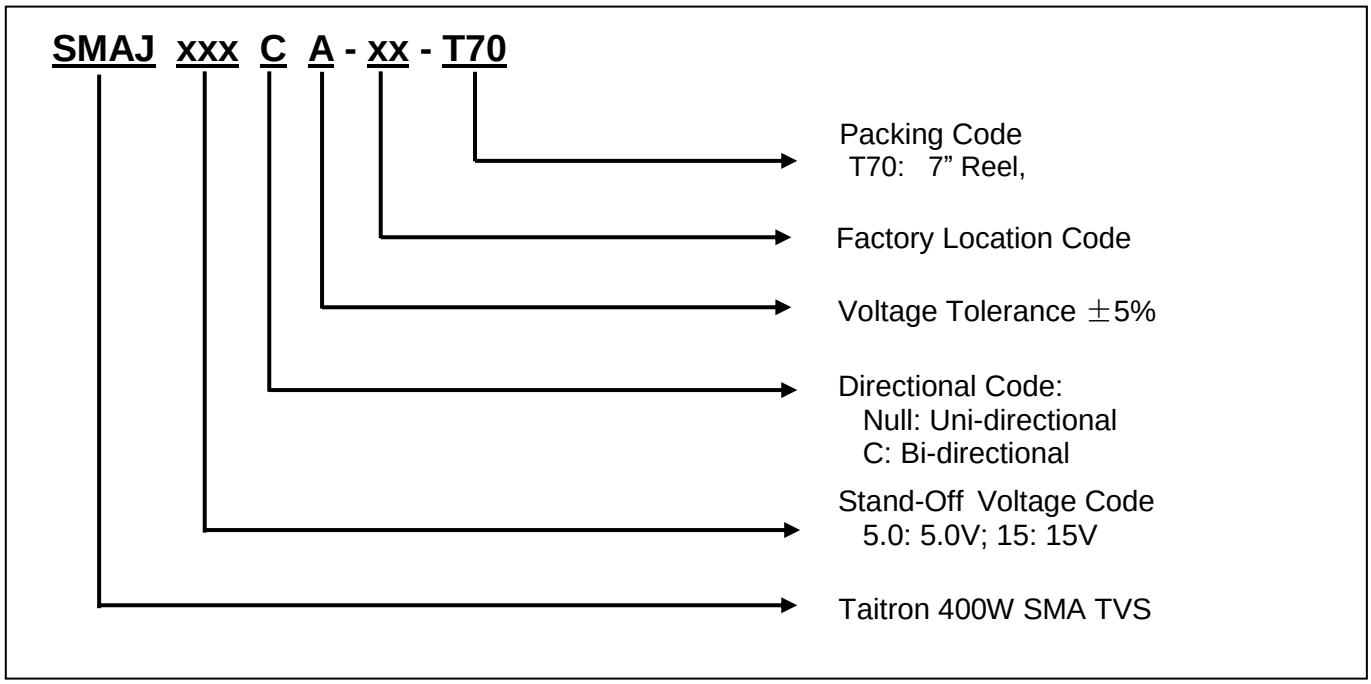
SMA

Packing Information

Packing	Standard Packing	Inner Box	Outer Carton
Tape & Reel	1.8K	7.2K	57.6K
	7” Reel	190x190x70mm	350x350x345mm

SMAJ5.0A – SMAJ440CA

How to Order



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