

400W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS, 5.0V – 440V

Value Inch[mm]		
Dim.	Min.	Max.
A	0.188[4.80]	0.220[5.60]
B	0.157[3.99]	0.181[4.60]
C	0.090[2.30]	0.114[2.90]
D	0.078[1.98]	0.100[2.60]
E	0.030[0.76]	0.060[1.52]
F	0.040[1.25]	0.065[1.65]

PRODUCT FEATURES

1. FLAMMABILITY CLASSIFICATION 94V-0
2. GLASS PASSIVATED CHIP JUNCTION
3. 400W PEAK PULSE POWER CAPABILITY WITH A 10/1000 μ S WAVEFORM, REPETITION RATE (DUTY CYCLE): 0.01%.
4. EXCELLENT CLAMPING CAPABILITY
5. FAST RESPONSE TIME FROM 0V TO V_{BR} , TYPICALLY <1 pS FOR UNI-DIRECTIONAL & <5 nS FOR BI-DIRECTIONAL
6. POLARITY: INDICATED BY CATHODE BAND
7. MOLDED PLASTIC CASE DO-214AC (SMA)
8. DIMENSIONS IN INCHES AND (MILLIMETERS)
9. LEADS: SOLDERABILITY PER MIL-STD-750 METHOD 2026
10. WEIGHT: 0.05 GRAMS
11. RoHS COMPLIANT.

ELECTRICAL CHARACTERISTICS

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

PARAMETER	CONDITIONS	SYMBOL		UNIT
PEAK POWER DISSIPATION	WITH A 10/1000 μ S WAVEFORM, SEE NOTE 1 & FIG.1	P_{PPM}	400	W
PEAK PULSE CURRENT	WITH A 10/1000 μ S WAVEFORM, SEE NOTE 1 & FIG.1	I_{PPM}	SEE TABLE	A
STEADY STATE POWER DISSIPATION	AT $T_L = 75^\circ\text{C}$, SEE NOTE 2	$P_{M(AV)}$	1.0	W
PEAK FORWARD SURGE CURRENT	8.3mS SINGLE HALF SINE-WAVE (JEDEC METHOD), SEE NOTE 3	I_{FSM}	40	A
MAXIMUM INSTANTANEOUS FORWARD VOLTAGE	AT 25A FOR UNI-DIRECTIONAL TYPES ONLY, SEE NOTE 4	V_F	3.5/6.5	V
OPERATING JUNCTION TEMPERATURE RANGE		T_J	-55 TO +150	$^\circ\text{C}$
STORAGE TEMPERATURE RANGE		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. 2
 2. Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per fig. 5
 3. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum
 4. $V_F < 3.5\text{V}$ for device with $V_{BR} \leq 200\text{V}$ and $V_F < 5.0\text{V}$ for device with $V_{BR} > 200\text{V}$



SMAJ_SERIES SPECIFICATION

Rev. A

Part No.	Reverse Stand-off Voltage	Breakdown Voltage @ I_T		Test Current	Maximum Clamping Voltage @ I_{PP}		Maximum Reverse Leakage Current	Marking Code	
	V_{RWM}	V_{BR} Min	V_{BR} Max	I_T	V_C	I_{PP}	I_R @ V_{RWM}		
	Volts	Volts	Volts	mA	Volts	A	μ A	UNI	BI
SMAJ5.0(C)A	5.0	6.40	7.00	10	9.2	43.5	800	AE	WE
SMAJ6.0(C)A	6.0	6.67	7.37	10	10.3	38.0	800	AG	WG
SMAJ6.5(C)A	6.5	7.22	7.98	10	11.2	35.7	500	AK	WK
SMAJ7.0(C)A	7.0	7.78	8.60	10	12.0	33.3	200	AM	WM
SMAJ7.5(C)A	7.5	8.33	9.21	1.0	12.9	31.0	100	AP	WP
SMAJ8.0(C)A	8.0	8.89	9.83	1.0	13.6	29.4	50	AR	WR
SMAJ8.5(C)A	8.5	9.44	10.4	1.0	14.4	27.7	20	AT	WT
SMAJ9.0(C)A	9.0	10.0	11.1	1.0	15.4	26.0	10	AV	WV
SMAJ10(C)A	10	11.1	12.3	1.0	17.0	23.5	5	AX	WX
SMAJ11(C)A	11	12.2	13.5	1.0	18.2	22.0	5	AZ	WZ
SMAJ12(C)A	12	13.3	14.7	1.0	19.9	20.1	5	BE	XE
SMAJ13(C)A	13	14.4	15.9	1.0	21.5	18.6	5	BG	XG
SMAJ14(C)A	14	15.6	17.2	1.0	23.2	17.2	5	BK	XK
SMAJ15(C)A	15	16.7	18.5	1.0	24.4	16.4	5	BM	XM
SMAJ16(C)A	16	17.8	19.7	1.0	26.0	15.4	5	BP	XP
SMAJ17(C)A	17	18.9	20.9	1.0	27.6	14.5	5	BR	XR
SMAJ18(C)A	18	20.0	22.1	1.0	29.2	13.7	5	BT	XT
SMAJ20(C)A	20	22.2	24.5	1.0	32.4	12.3	5	BV	XV
SMAJ22(C)A	22	24.4	26.9	1.0	35.5	11.2	5	BX	XX
SMAJ24(C)A	24	26.7	29.5	1.0	38.9	10.3	5	BZ	XZ
SMAJ26(C)A	26	28.9	31.9	1.0	42.1	9.5	5	CE	YE
SMAJ28(C)A	28	31.1	34.4	1.0	45.4	8.8	5	CG	YG
SMAJ30(C)A	30	33.3	36.8	1.0	48.4	8.3	5	CK	YK
SMAJ33(C)A	33	36.7	40.6	1.0	53.3	7.5	5	CM	YM
SMAJ36(C)A	36	40.0	44.2	1.0	58.1	6.9	5	CP	YP
SMAJ40(C)A	40	44.4	49.1	1.0	64.5	6.2	5	CR	YR
SMAJ43(C)A	43	47.8	52.8	1.0	69.4	5.8	5	CT	YT
SMAJ45(C)A	45	50.0	55.3	1.0	72.7	5.5	5	CV	YV
SMAJ48(C)A	48	53.3	58.9	1.0	77.4	5.2	5	CX	YX
SMAJ51(C)A	51	56.7	62.7	1.0	82.4	4.9	5	CZ	YZ
SMAJ54(C)A	54	60.0	66.3	1.0	87.1	4.6	5	RE	ZE
SMAJ58(C)A	58	64.4	71.2	1.0	93.6	4.3	5	RG	ZG
SMAJ60(C)A	60	66.7	73.7	1.0	96.8	4.1	5	RK	ZK
SMAJ64(C)A	64	71.1	78.6	1.0	103.0	3.9	5	RM	ZM
SMAJ70(C)A	70	77.8	86.0	1.0	113.0	3.5	5	RP	ZP
SMAJ75(C)A	75	83.3	92.1	1.0	121.0	3.3	5	RR	ZR
SMAJ78(C)A	78	86.7	95.8	1.0	126.0	3.2	5	RT	ZT
SMAJ85(C)A	85	94.4	104	1.0	137.0	2.9	5	RV	ZV



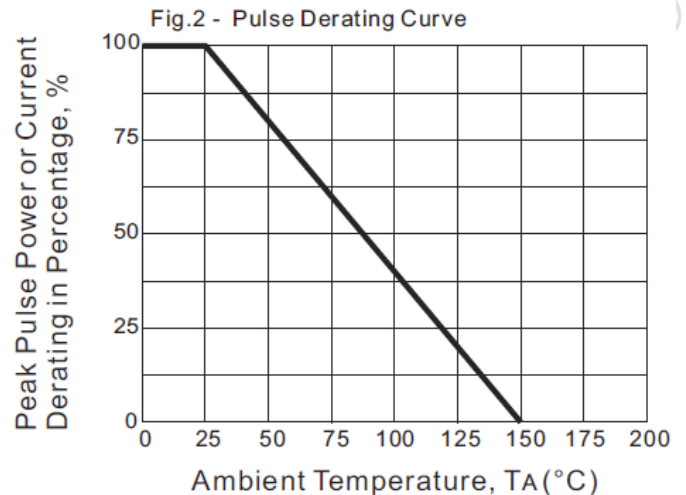
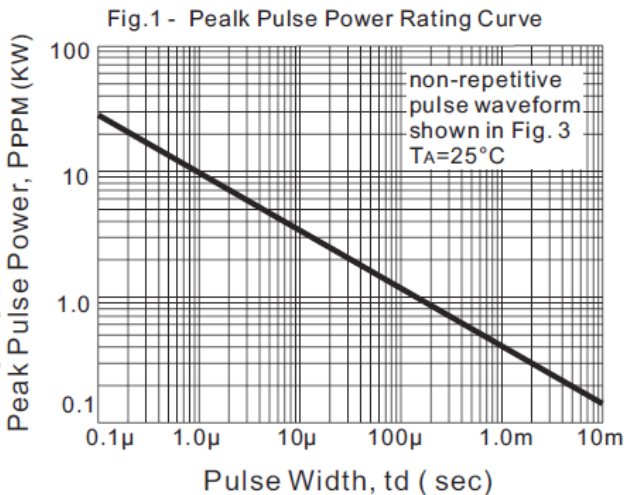
SMAJ_SERIES SPECIFICATION

Rev. A

Part No.	Reverse Stand-off Voltage	Breakdown Voltage @ I_T		Test Current	Maximum Clamping Voltage @ I_{PP}		Maximum Reverse Leakage Current	Marking Code	
	V_{RWM}	V_{BR} Min	V_{BR} Max	I_T	V_C	I_{PP}	$I_R @ V_{RWM}$		
	Volts	Volts	Volts	mA	Volts	A	μA	UNI	BI
SMAJ90(C)A	90	100	111	1.0	146.0	2.7	5	RX	ZX
SMAJ100(C)A	100	111	123	1.0	162.0	2.5	5	RZ	ZZ
SMAJ110(C)A	110	122	135	1.0	177.0	2.3	5	SE	VE
SMAJ120(C)A	120	133	147	1.0	193.0	2.1	5	SG	VG
SMAJ130(C)A	130	144	159	1.0	209.0	1.9	5	SK	VK
SMAJ150(C)A	150	167	185	1.0	243.0	1.6	5	SM	VM
SMAJ160(C)A	160	178	197	1.0	259.0	1.5	5	SP	VP
SMAJ170(C)A	170	189	209	1.0	275.0	1.5	5	SR	VR
SMAJ180(C)A	180	201	222	1.0	292.0	1.4	5	ST	VT
SMAJ200(C)A	200	224	247	1.0	324.0	1.2	5	SV	VV
SMAJ220(C)A	220	246	272	1.0	356.0	1.1	5	SX	VX
SMAJ250(C)A	250	279	309	1.0	405.0	1.0	5	SZ	VZ
SMAJ300(C)A	300	335	371	1.0	486.0	0.8	5	TE	UE
SMAJ350(C)A	350	391	432	1.0	567.0	0.7	5	TG	UG
SMAJ400(C)A	400	447	494	1.0	648.0	0.6	5	TK	UK
SMAJ440(C)A	440	492	543	1.0	713.0	0.6	5	TM	UM

- Note 1. V_{BR} measured after I_T applied for 300us, I_T =square wave pulse or equivalent
 2. Surge current waveform per Fig. 3 and derated per Fig. 2
 3. For bi-directional types having V_{RWM} of 10 volts and less, the I_R limit is doubled
 4. Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices, no suffix denotes 10% tolerance devices.
 5. All terms and symbols are consistent with ANS/IEEE C62.35
 6. Transient Voltage Suppressors (TVS) are devices used to protect vulnerable circuits from electrical overstress such as that caused by electrostatic discharge, inductive load switching and induced lightning. Within the TVS, damaging voltage spikes are limited by clamping or avalanche action of a rugged silicon PN junction which reduces the amplitude of the transient to a nondestructive level. See Fig. 7 & Fig. 8

RATINGS AND CHARACTERISTIC CURVES



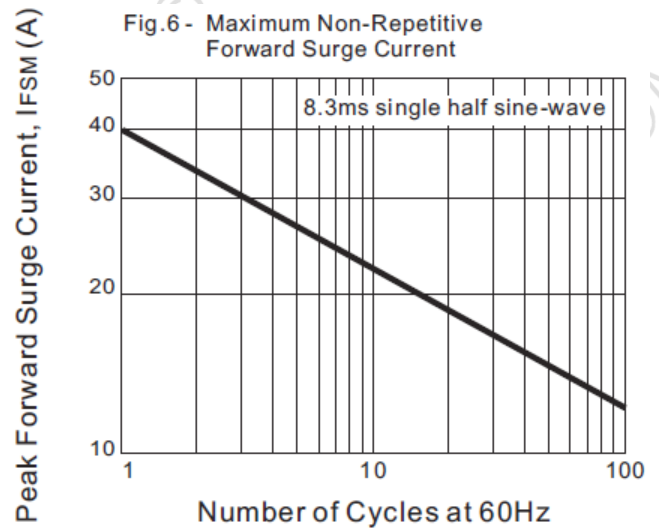
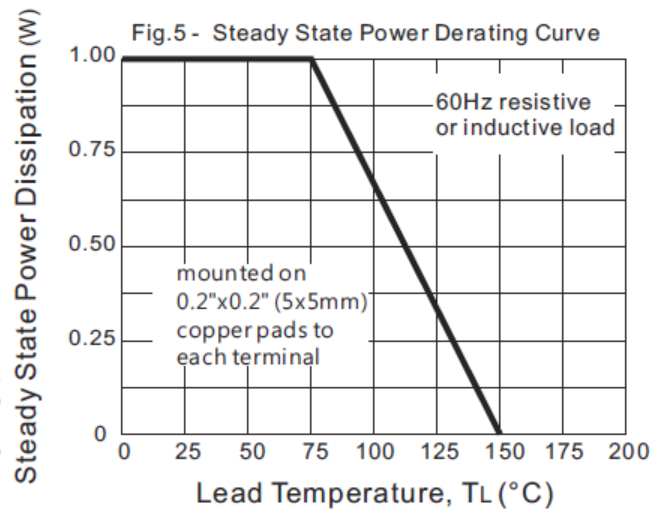
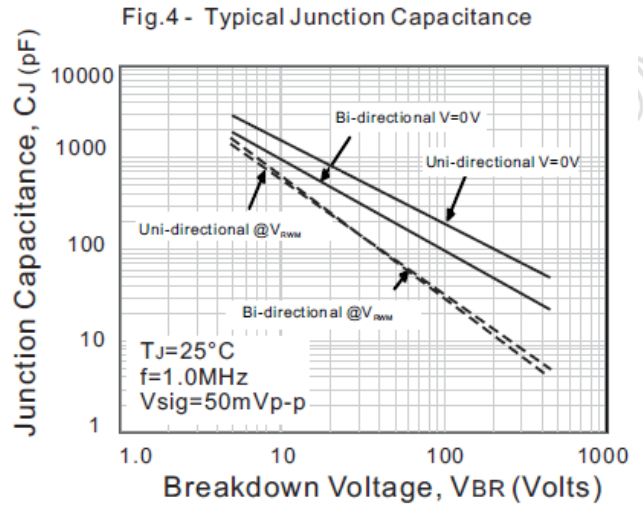
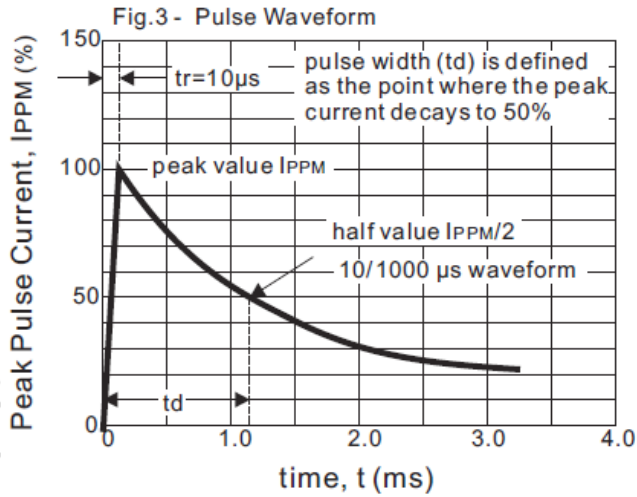


Fig. 7 - Transients of several thousand volts can be clamped to a safe level by the TVS

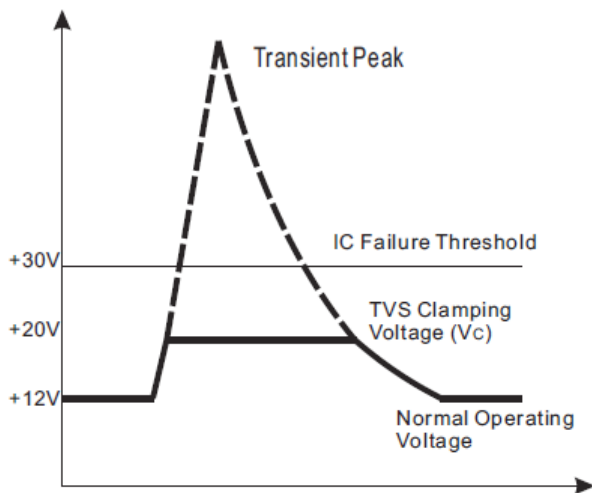


Fig. 8 - Transient current is diverted to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level

