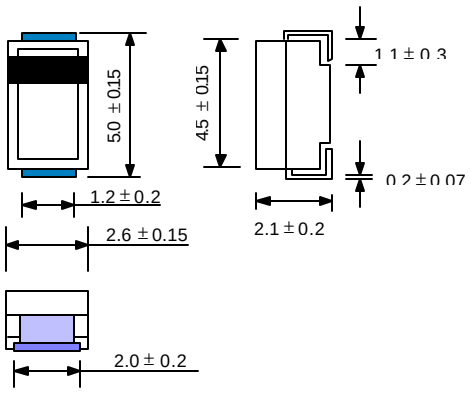
SMAJ 5.0 ~ 170A

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

V_{BR} : 6.8 - 200 Volts
P_{PK} : 400 Watts

SMA (DO-214AC)



Dimensions in millimeter

FEATURES :

* 400W surge capability at 1ms
* Excellent clamping capability
* Low zener impedance
* Fast response time : typically less then 1.0 ps from 0 volt to $V_{BR(min.)}$
* Typical I_R less then 1µA above 10V

MECHANICAL DATA

* Case : SMA Molded plastic
* Epoxy : UL94V-O rate flame retardant
* Lead : Lead Formed for Surface Mount
* Polarity : Color band denotes cathode end except Bipolar.
* Mounting position : Any
* Weight : 0.064 grams

MAXIMUM RATINGS

Rating at Ta = 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation (Note1,2,5) Fig. 4	P_{PPM}	Minimum 400	Watts
Peak Forward Surge Current per Fig. 5 (Note 3)	I_{FSM}	40	Amps
Peak Pulse Current on 10/1000µs waveform (Note 1, Fig. 1)	I_{PPM}	See Table	Amps
Steady State Power Dissipation (Note 4)	$P_{M(AV)}$	1.0	Watt
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to + 150	°C

Notes :

(1) Non-repetitive Current pulse, per Fig. 3 and derated above Ta = 25 °C per Fig. 1

(2) Mounted on 5.0mm^2 (0.013mm) copper pads to each terminal.

(3) 8.3ms single half sine-wave duty cycle=4 pulses per minutes maximum.

(4) Lead temperature at T_L=75°C

(5) Peak pulse power waveform is 10/1000µs.

UPDATE : SEPTEMBER 5, 2000

ELECTRICAL CHARACTERISTICS

Rating at Ta = 25 °C ambient temperature unless otherwise specified

TYPE	Marking Code	Breakdown Voltage @ I_T (Note 1)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{WM}	Maximum Peak Impulse Surge Current (Note 1)	Maximum Clamping Voltage @ I_{PPM} (Note 1)
		V_{BR} (V)		I_T	V_{WM}	I_D	I_{PPM}	V_C
		Min.	Max.	(mA)	(V)	(µA)	(A)	(V)
SMAJ5.0	**S06H**	6.40	7.3	10	5.0	800	41.6	9.6
SMAJ5.0A	**S56H**	6.40	7.0	10	5.0	800	43.5	9.2
SMAJ6.0	**S07A**	6.67	8.15	10	6.0	800	35.1	11.4
SMAJ6.0A	**S57A**	6.67	7.37	10	6.0	800	38.8	10.3
SMAJ6.5	**S07G**	7.22	8.82	10	6.5	500	32.5	12.3
SMAJ6.5A	**S57G**	7.22	7.98	10	6.5	500	35.7	11.2
SMAJ7.0	**S08C**	7.78	9.51	10	7.0	200	30.1	13.3
SMAJ7.0A	**S58C**	7.78	8.6	10	7.0	200	33.3	12.0
SMAJ7.5	**S08I**	8.33	10.3	1.0	7.5	100	28.0	14.3
SMAJ7.5A	**S58I**	8.33	9.21	1.0	7.5	100	31.0	12.9
SMAJ8.0	**S09B**	8.89	10.9	1.0	8.0	50	26.5	15.0
SMAJ8.0A	**S59B**	8.89	9.83	1.0	8.0	50	29.4	13.6
SMAJ8.5	**S010**	9.44	11.5	1.0	8.5	10	25.1	15.9
SMAJ8.5A	**S510**	9.44	10.4	1.0	8.5	10	27.7	14.4
SMAJ9.0	**S011**	10.0	12.2	1.0	9.0	5.0	23.6	16.9
SMAJ9.0A	**S511**	10.0	11.1	1.0	9.0	5.0	26.0	15.4
SMAJ10	**S012**	11.1	13.6	1.0	10	5.0	21.2	18.8
SMAJ10A	**S512**	11.1	12.3	1.0	10	5.0	23.5	17.0
SMAJ11	**S013**	12.2	14.9	1.0	11	5.0	20.0	20.1
SMAJ11A	**S513**	12.2	13.5	1.0	11	5.0	22.0	18.2
SMAJ12	**S014**	13.3	16.3	1.0	12	5.0	18.1	22.0
SMAJ12A	**S514**	13.3	14.7	1.0	12	5.0	20.1	19.9
SMAJ13	**S015**	14.4	17.6	1.0	13	5.0	16.8	23.8
SMAJ13A	**S515**	14.4	15.9	1.0	13	5.0	18.6	21.5
SMAJ14	**S016**	15.6	19.1	1.0	14	5.0	15.5	25.8
SMAJ14A	**S516**	15.6	17.2	1.0	14	5.0	17.2	23.2
SMAJ15	**S018**	16.7	20.4	1.0	15	5.0	14.8	26.9
SMAJ15A	**S518**	16.7	18.5	1.0	15	5.0	16.4	24.4
SMAJ16	**S019**	17.8	21.8	1.0	16	5.0	13.8	28.8
SMAJ16A	**S519**	17.8	19.7	1.0	16	5.0	15.3	26.0
SMAJ17	**S020**	18.9	23.1	1.0	17	5.0	13.1	30.5
SMAJ17A	**S520**	18.9	20.9	1.0	17	5.0	14.5	27.6
SMAJ18	**S021**	20.0	24.4	1.0	18	5.0	12.4	32.2
SMAJ18A	**S521**	20.0	22.1	1.0	18	5.0	13.7	29.2
SMAJ20	**S023**	22.2	27.1	1.0	20	5.0	11.1	35.8
SMAJ20A	**S523**	22.2	24.5	1.0	20	5.0	12.3	32.4
SMAJ22	**S026**	24.4	29.8	1.0	22	5.0	10.1	39.4
SMAJ22A	**S526**	24.4	26.9	1.0	22	5.0	11.2	35.5
SMAJ24	**S028**	26.7	32.6	1.0	24	5.0	9.3	43.0
SMAJ24A	**S528**	26.7	29.5	1.0	24	5.0	10.3	38.9
SMAJ26	**S030**	28.9	35.3	1.0	26	5.0	8.6	46.6
SMAJ26A	**S530**	28.9	31.9	1.0	26	5.0	9.5	42.1
SMAJ28	**S033**	31.1	38.0	1.0	28	5.0	8.0	60.0
SMAJ28A	**S533**	31.1	34.4	1.0	28	5.0	8.8	45.4
SMAJ30	**S035**	33.3	40.7	1.0	30	5.0	7.5	53.5
SMAJ30A	**S535**	33.3	36.8	1.0	30	5.0	8.3	48.4

ELECTRICAL CHARACTERISTICS

Rating at Ta = 25 °C ambient temperature unless otherwise specified

TYPE	Marking Code	Breakdown Voltage @ IT (Note 1)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ VWM	Maximum Peak Impulse Surge Current (Note 1)	Maximum Clamping Voltage @ IPPM (Note 1)
		VBR (V)		IT	VWM	ID	IPPM	VC
		Min.	Max.	(mA)	(V)	(µA)	(A)	(V)
SMAJ33	**S039**	36.7	44.9	1.0	33	5.0	6.8	59.0
SMAJ33A	**S539**	36.7	40.6	1.0	33	5.0	7.5	53.3
SMAJ36	**S042**	40.0	48.9	1.0	36	5.0	6.2	64.3
SMAJ36A	**S542**	40.0	44.2	1.0	36	5.0	6.9	58.1
SMAJ40	**S047**	44.4	54.3	1.0	40	5.0	5.6	71.4
SMAJ40A	**S547**	44.4	49.1	1.0	40	5.0	6.2	64.5
SMAJ43	**S050**	47.8	58.4	1.0	43	5.0	5.2	76.7
SMAJ43A	**S550**	47.8	52.8	1.0	43	5.0	5.7	69.4
SMAJ45	**S053**	50.0	61.1	1.0	45	5.0	5.0	80.3
SMAJ45A	**S553**	50.0	55.3	1.0	45	5.0	5.5	72.7
SMAJ48	**S056**	53.3	65.1	1.0	48	5.0	4.7	85.5
SMAJ48A	**S556**	53.3	58.9	1.0	48	5.0	5.2	77.4
SMAJ51	**S060**	56.7	69.3	1.0	51	5.0	4.4	91.1
SMAJ51A	**S560**	56.7	62.7	1.0	51	5.0	4.9	82.4
SMAJ54	**S063**	60.0	73.3	1.0	54	5.0	4.2	96.3
SMAJ54A	**S563**	60.0	66.3	1.0	54	5.0	4.6	87.1
SMAJ58	**S068**	64.4	78.7	1.0	58	5.0	3.9	103.0
SMAJ58A	**S568**	64.4	71.2	1.0	58	5.0	4.3	93.6
SMAJ60	**S071**	66.7	81.5	1.0	60	5.0	3.7	107
SMAJ60A	**S571**	66.7	73.7	1.0	60	5.0	4.1	96.8
SMAJ64	**S075**	71.1	86.4	1.0	64	5.0	3.5	114
SMAJ64A	**S575**	71.1	78.6	1.0	64	5.0	3.9	103
SMAJ70	**S082**	77.8	95.1	1.0	70	5.0	3.2	125
SMAJ70A	**S582**	77.8	86	1.0	70	5.0	3.5	113
SMAJ75	**S088**	83.3	102	1.0	75	5.0	3.0	134
SMAJ75A	**S588**	83.3	92.1	1.0	75	5.0	3.3	121
SMAJ78	**S091**	86.7	106	1.0	78	5.0	2.9	139
SMAJ78A	**S591**	86.7	95.8	1.0	78	5.0	2.2	126
SMAJ85	**S099**	94.4	115	1.0	85	5.0	2.6	151
SMAJ85A	**S599**	94.4	104	1.0	85	5.0	2.9	137
SMAJ90	**S0B1**	100	122	1.0	90	5.0	2.5	160
SMAJ90A	**S5B1**	100	111	1.0	90	5.0	2.7	146
SMAJ100	**S0B2**	111	136.0	1.0	100	5.0	2.2	179
SMAJ100A	**S5B2**	111	123.0	1.0	100	5.0	2.5	162
SMAJ110	**S0B3**	122	149	1.0	110	5.0	2.0	196
SMAJ110A	**S5B3**	122	135	1.0	110	5.0	2.3	177
SMAJ120	**S0B4**	133	163.0	1.0	120	5.0	1.9	214
SMAJ120A	**S5B4**	133	147.0	1.0	120	5.0	2.0	193
SMAJ130	**S0B5**	144	176	1.0	130	5.0	1.7	231
SMAJ130A	**S5B5**	144	159	1.0	130	5.0	1.9	209
SMAJ150	**S0B8**	167	204	1.0	150	5.0	1.5	268
SMAJ150A	**S5B8**	167	185	1.0	150	5.0	1.6	243
SMAJ160	**S0B9**	178	218.0	1.0	160	5.0	1.4	287
SMAJ160A	**S5B9**	178	197.0	1.0	160	5.0	1.5	259
SMAJ170	**S0D0**	189	231	1.0	170	5.0	1.3	304
SMAJ170A	**S5D0**	189	209	1.0	170	5.0	1.4	275

Note:

(1) Peak pulse power waveform is 10/1000µs.

RATING AND CHARACTERISTIC CURVES (SMAJ5.0 - SMAJ170A)

FIG.1 - PULSE DERATING CURVE

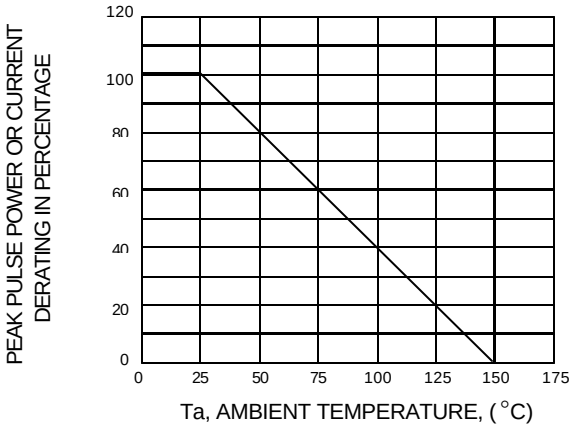


FIG.2 - TYPICAL JUNCTION CAPACITANCE

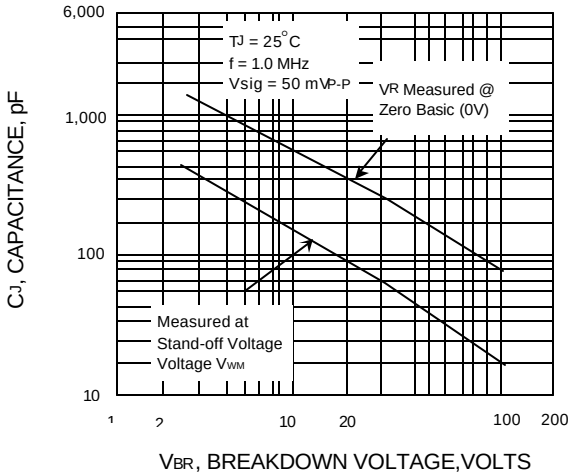


FIG.3 - PULSE WAVEFORM

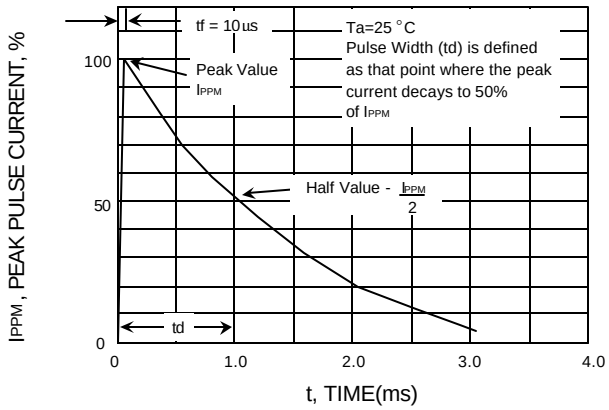


FIG.4 - PEAK PULSE POWER RATING CURVE

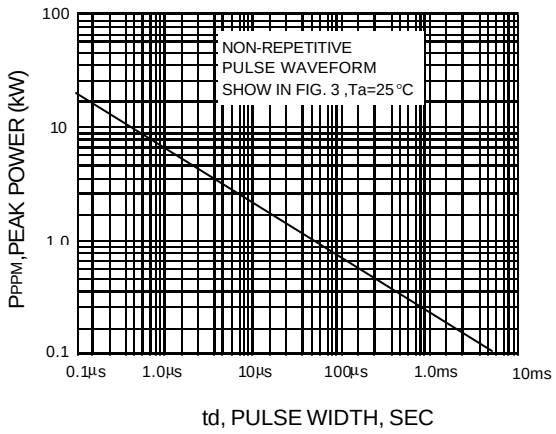
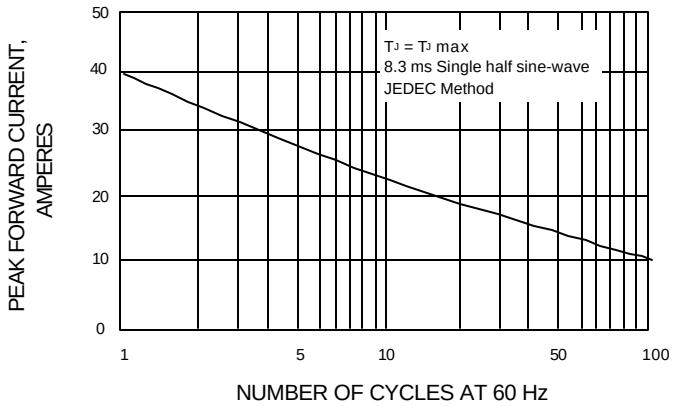



FIG.5 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT