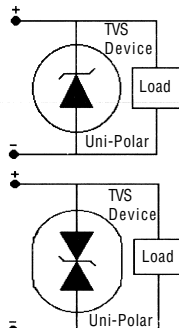


# 5.0V to 170V SMD TRANSIENT VOLTAGE SUPPRESSORS

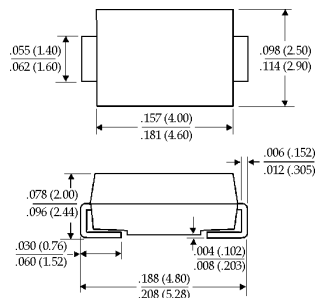
**SMAJ5.0...170**

## Description



## Mechanical Dimensions

Package  
"SMA"



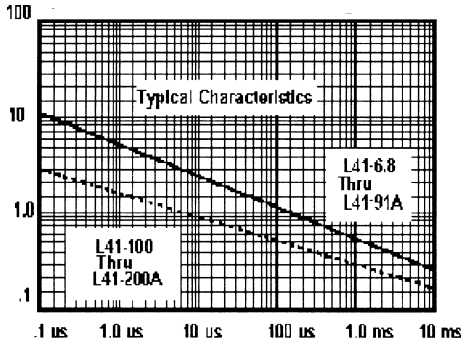
## Features

- 400 WATT PEAK POWER PROTECTION
- EXCELLENT CLAMPING CAPABILITY
- FAST RESPONSE TIME
- TYPICAL  $I_R < 1\mu A$  ABOVE 10V
- GLASSPASSIVATED CHIP CONSTRUCTION
- MEETS UL SPECIFICATION 94V-0

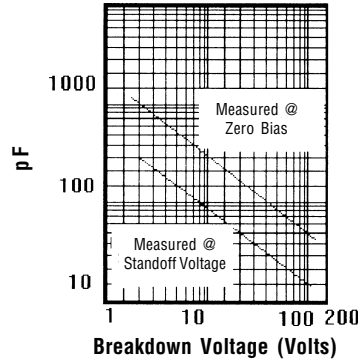
Electrical Characteristics @ 25°C.	SMAJ5.0...170	Units
<b>Maximum Ratings</b>		
Peak Power Dissipation... $P_{PK}$ $T_p = 1mS$ (Note 5)	400 Min.	Watts
Steady State Power Dissipation... $P_D$ @ $T_T = 75°C$ (Note 2)	1	Watts
Non-Repetitive Peak Forward Surge Current... $I_{FSM}$ @ Rated Load Conditions, 8.3 mS, ½ Sine Wave, Single Phase (Note 3)	40	Amps
Weight... $G_{RM}$	0.12	Grams
Soldering Requirements (Time & Temp)... $S_T$ @ 250°C	10 Sec.	Min. to Solder
Operating & Storage Temperature Range... $T_J, T_{STRG}$	-65 to 175	°C

- NOTES:**
1. For Bi-Directional Applications, Use C or CA. Electrical Characteristics Apply in Both Directions.
  2. Mounted on 8mm Copper Pads to Each Terminal.
  3. 8.3 mS, ½ Sine Wave, Single Phase Duty Cycle, @ 4 Pulses Per Minute Maximum.
  4.  $V_{BR}$  Measured After It Applies for 300  $\mu S$ .  $I_T =$  Square Wave Pulse or Equivalent.
  5. Non-Repetitive Current Pulse. Per Fig. 3 and Derated Above  $T_A = 25°C$  per Fig. 2.

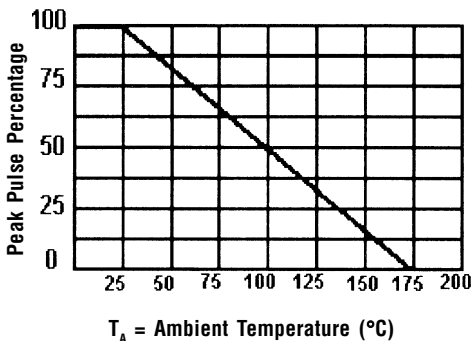
**Fig. 1 Pulse Rating Curve**



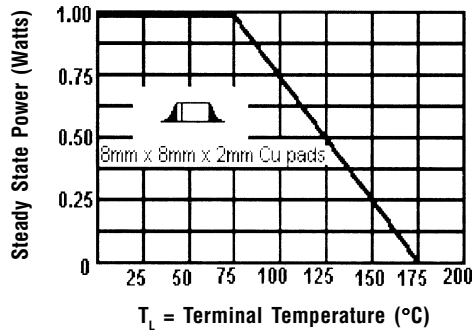
**Fig. 4 Typical Junction Capacitance**



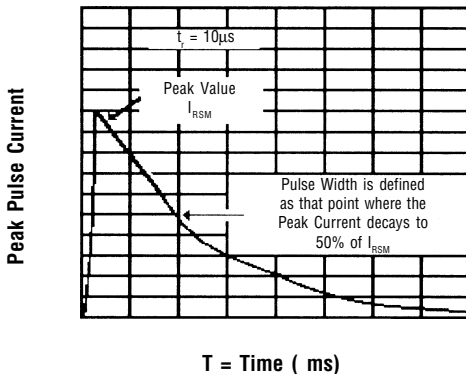
**Fig. 2 Pulse Derating Curve**



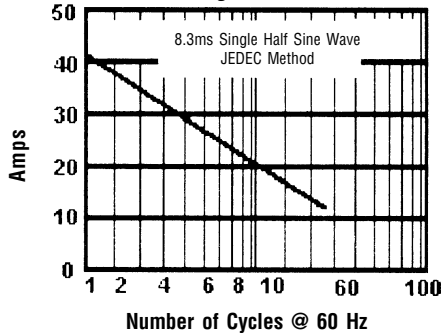
**Fig. 5 Steady State Power Derating**



**Fig. 3 Pulse Waveform**



**Fig. 6 Maximum Non-Repetitive Surge Current**



Ratings at 25 Deg. C ambient temperature unless otherwise specified.

Single Phase Half Wave, 60 HZ Resistive or Inductive Load.

For Capacitive Load, Derate Current by 20%.

- NOTES:**
1. For Bi-Directional Applications, Use C or CA. Electrical Characteristics Apply in Both Directions.
  2. Mounted on 8mm Copper Pads to Each Terminal.
  3. 8.3 mS, 1/2 Sine Wave, Single Phase Duty Cycle, @ 4 Pulses Per Minute Maximum.
  4.  $V_{BR}$  Measured After It Applies for 300  $\mu$ S.  $I_T$  = Square Wave Pulse or Equivalent.
  5. Non-Repetitive Current Pulse. Per Fig. 3 and Derated Above  $T_A = 25^\circ\text{C}$  per Fig. 2.

# 5.0V to 170V SMD TRANSIENT VOLTAGE SUPPRESSORS

**SMAJ5.0...170**

DEVICE	Breakdown Voltage			Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ ( $\mu$ A)	Peak Pulse Current $I_{PP}$ (A) (Note 2)	Maximum Clamping Voltage @ $I_{PP}$ $V_C$ (V)	Maximum Temperature Coefficient of $V_{BR}$ % / $^{\circ}$ C	Case Marking
	$V_{BR}$ Volts (Note 1)		@ $I_T$ (mA)						
	Min.	Max.							
SMAJ5.0	6.40	7.30	10.00	5.00	800	41.6	9.60	0.061	AD
SMAJ5.0A	6.40	7.00	10.00	5.00	800	43.5	9.20	0.061	AE
SMAJ6.0	6.67	8.15	10.00	6.00	800	35.1	11.40	0.065	AF
SMAJ6.0A	6.67	7.37	10.00	6.00	800	38.8	10.30	0.065	AG
SMAJ6.5	7.22	8.82	10.00	6.50	500	32.5	12.30	0.068	AH
SMAJ6.5A	7.22	7.98	10.00	6.50	500	35.7	11.20	0.068	AK
SMAJ7.0	7.78	9.51	10.00	7.00	200	30.1	13.30	0.073	AL
SMAJ7.0A	7.78	8.60	10.00	7.00	200	33.3	12.00	0.073	AM
SMAJ7.5	8.33	10.20	1.00	7.50	100	28.0	14.30	0.075	AN
SMAJ7.5A	8.33	9.21	1.00	7.50	100	31.0	12.90	0.075	AP
SMAJ8.0	8.89	10.90	1.00	8.00	50.00	26.5	15.00	0.076	AQ
SMAJ8.0A	8.89	9.83	1.00	8.00	50.00	29.4	13.60	0.078	AR
SMAJ8.5	9.44	11.50	1.00	8.50	20.00	25.1	15.90	0.081	AS
SMAJ8.5A	9.44	10.40	1.00	8.50	20.00	27.7	14.40	0.081	AT
SMAJ9.0	10.00	12.20	1.00	9.00	10.00	23.6	16.90	0.084	AU
SMAJ9.0A	10.00	11.10	1.00	9.00	10.00	26.0	15.40	0.084	AV
SMAJ10	11.10	13.60	1.00	10.00	5.00	21.2	18.80	0.086	AW
SMAJ10A	11.10	12.30	1.00	10.00	5.00	23.5	17.00	0.086	AX
SMAJ11	12.20	14.90	1.00	11.00	5.00	20.0	20.10	0.088	AY
SMAJ11A	12.20	13.50	1.00	11.00	5.00	22.0	18.20	0.088	AZ
SMAJ12	13.30	16.30	1.00	12.00	5.00	18.1	22.00	0.090	BD
SMAJ12A	13.30	14.70	1.00	12.00	5.00	20.1	19.90	0.090	BE
SMAJ13	14.40	17.60	1.00	13.00	5.00	16.8	23.80	0.092	BF
SMAJ13A	14.40	15.90	1.00	13.00	5.00	18.6	21.50	0.092	BG
SMAJ14	15.60	19.10	1.00	14.00	5.00	15.5	25.80	0.094	BH
SMAJ14A	15.60	17.20	1.00	14.00	5.00	17.2	23.20	0.094	BK
SMAJ15	16.70	20.40	1.00	15.00	5.00	14.8	26.90	0.096	BL
SMAJ15A	16.70	18.50	1.00	15.00	5.00	16.4	24.40	0.096	BM
SMAJ16	17.80	21.80	1.00	16.00	5.00	13.8	28.80	0.097	BN
SMAJ16A	17.80	19.70	1.00	16.00	5.00	15.3	26.00	0.097	BP
SMAJ17	18.90	23.10	1.00	17.00	5.00	13.1	30.50	0.098	BQ
SMAJ17A	18.90	20.90	1.00	17.00	5.00	14.5	27.60	0.098	BR
SMAJ18	20.00	24.40	1.00	18.00	5.00	12.4	32.20	0.099	BS
SMAJ18A	20.00	22.10	1.00	18.00	5.00	13.7	29.20	0.099	BT
SMAJ20	22.20	27.10	1.00	20.00	5.00	11.1	35.80	0.100	BU
SMAJ20A	22.20	24.50	1.00	20.00	5.00	12.3	32.40	0.100	BV
SMAJ22	24.40	29.80	1.00	22.00	5.00	10.1	39.40	0.101	BW
SMAJ22A	24.40	26.90	1.00	22.00	5.00	11.2	35.50	0.101	BX
SMAJ24	26.70	32.60	1.00	24.00	5.00	9.3	43.00	0.101	BY
SMAJ24A	26.70	29.50	1.00	24.00	5.00	10.3	38.90	0.101	BZ
SMAJ26	28.90	35.30	1.00	26.00	5.00	8.6	46.60	0.102	CD
SMAJ26A	28.90	31.90	1.00	26.00	5.00	9.5	42.10	0.102	CE



# 5.0V to 170V GPP TRANSIENT VOLTAGE SUPPRESSORS

**SMAJ5.0...170**

DEVICE	Breakdown Voltage			Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ ( $\mu$ A)	Peak Pulse Current $I_{PP}$ (A) (Note 2)	Maximum Clamping Voltage @ $I_{PP}$ $V_C$ (V)	Maximum Temperature Coefficient of $V_{BR}$ % / °C	Case Marking
	$V_{BR}$ Volts (Note 1)		@ $I_T$ (mA)						
	Min.	Max.							
SMAJ28	31.10	38.00	1.00	28.00	5.00	8.0	50.10	0.104	CF
SMAJ28A	31.10	34.40	1.00	28.00	5.00	8.8	45.40	0.104	CG
SMAJ30	33.30	40.70	1.00	30.00	5.00	7.5	53.50	0.104	CH
SMAJ30A	33.30	36.80	1.00	30.00	5.00	8.3	48.40	0.104	CK
SMAJ33	36.70	44.90	1.00	33.00	5.00	6.8	59.00	0.104	CL
SMAJ33A	36.70	40.60	1.00	33.00	5.00	7.5	53.30	0.104	CM
SMAJ36	40.00	49.90	1.00	36.00	5.00	6.2	64.30	0.104	CN
SMAJ36A	40.00	44.20	1.00	36.00	5.00	6.9	58.10	0.104	CP
SMAJ40	44.40	54.30	1.00	40.00	5.00	5.6	71.40	0.104	CQ
SMAJ40A	44.40	49.10	1.00	40.00	5.00	6.2	64.50	0.104	CR
SMAJ43	47.80	58.40	1.00	43.00	5.00	5.2	76.70	0.104	CS
SMAJ43A	47.80	52.80	1.00	43.00	5.00	5.7	69.40	0.104	CT
SMAJ45	50.00	61.10	1.00	45.00	5.00	5.0	80.30	0.104	CU
SMAJ45A	50.00	55.30	1.00	45.00	5.00	5.5	72.70	0.104	CV
SMAJ48	53.30	65.10	1.00	48.00	5.00	4.7	85.50	0.104	CW
SMAJ48A	53.30	58.90	1.00	48.00	5.00	5.2	77.40	0.104	CX
SMAJ51	56.70	69.30	1.00	51.00	5.00	4.4	91.10	0.104	CY
SMAJ51A	56.70	62.70	1.00	51.00	5.00	4.9	82.40	0.104	CZ
SMAJ54	60.00	73.30	1.00	54.00	5.00	4.2	96.30	0.104	RD
SMAJ54A	60.00	66.30	1.00	54.00	5.00	4.6	87.10	0.104	RE
SMAJ58	64.40	78.70	1.00	58.00	5.00	3.9	103.00	0.104	RF
SMAJ58A	64.40	71.20	1.00	58.00	5.00	4.3	93.60	0.104	RG
SMAJ60	66.70	81.50	1.00	60.00	5.00	3.7	107.00	0.104	RH
SMAJ60A	66.70	73.70	1.00	60.00	5.00	4.1	96.80	0.104	RK
SMAJ64	71.10	86.90	1.00	64.00	5.00	3.5	114.00	0.104	RL
SMAJ64A	71.10	78.60	1.00	64.00	5.00	3.9	103.00	0.104	RM
SMAJ70	77.80	95.00	1.00	70.00	5.00	3.2	125.00	0.104	RN
SMAJ70A	77.80	86.00	1.00	70.00	5.00	3.5	113.00	0.104	RP
SMAJ75	83.30	102.00	1.00	75.00	5.00	3.0	134.00	0.104	RQ
SMAJ75A	83.30	92.10	1.00	75.00	5.00	3.3	121.00	0.104	RR
SMAJ78	86.70	106.00	1.00	78.00	5.00	2.9	139.00	0.104	RS
SMAJ78A	86.70	95.80	1.00	78.00	5.00	2.2	126.00	0.104	RT
SMAJ85	94.40	115.00	1.00	85.00	5.00	2.6	151.00	0.104	RU
SMAJ85A	94.40	104.00	1.00	85.00	5.00	2.9	137.00	0.104	RV
SMAJ90	100.00	122.00	1.00	90.00	5.00	2.5	160.00	0.104	RW
SMAJ90A	100.00	111.00	1.00	90.00	5.00	2.7	146.00	0.104	RX
SMAJ100	111.00	136.00	1.00	100.00	5.00	2.2	179.00	0.104	RY
SMAJ100A	111.00	123.00	1.00	100.00	5.00	2.5	162.00	0.104	RZ
SMAJ110	122.00	149.00	1.00	110.00	5.00	2.0	196.00	0.104	SD
SMAJ110A	122.00	135.00	1.00	110.00	5.00	2.3	177.00	0.104	SE
SMAJ120	133.00	163.00	1.00	120.00	5.00	1.9	214.00	0.104	SF
SMAJ120A	133.00	147.00	1.00	120.00	5.00	2.0	193.00	0.104	SG
SMAJ130	144.00	176.00	1.00	130.00	5.00	1.7	231.00	0.104	SH
SMAJ130A	144.00	159.00	1.00	130.00	5.00	1.9	209.00	0.104	SK
SMAJ150	167.00	204.00	1.00	150.00	5.00	1.5	268.00	0.104	SL
SMAJ150A	167.00	185.00	1.00	150.00	5.00	1.6	243.00	0.104	SM
SMAJ160	178.00	218.00	1.00	160.00	5.00	1.4	287.00	0.104	SN
SMAJ160A	178.00	197.00	1.00	160.00	5.00	1.5	259.00	0.104	SP
SMAJ170	189.00	231.00	1.00	170.00	5.00	1.3	304.00	0.104	SQ
SMAJ170A	189.00	209.00	1.00	170.00	5.00	1.4	275.00	0.104	SR