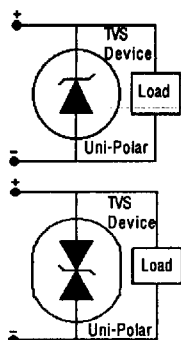


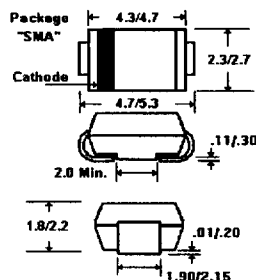
5.0V to 170V SMD TRANSIENT VOLTAGE SUPPRESSORS

SMAJ5.0...170

Description



Mechanical Dimensions



Features

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

Electrical Characteristics @ 25°C.	SMAJ5.0...170	Units
Maximum Ratings		
Peak Power Dissipation... P_{PK} $T_p = 1mS$ (Note 5)	400 Min.	Watts
Steady State Power Dissipation... P_D @ $T_T = 75^\circ C$ (Note 2)	1	Watts
Non-Repetitive Peak Forward Surge Current... I_{FSM} @ Rated Load Conditions, 8.3 mS, 1/2 Sine Wave, Single Phase (Note 3)	100	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, 1/2 Sine Wave, Single Phase Duty Cycle, @ 4 Pulses Per Minute Maximum.
 4. V_{BR} Measured After It Applies for 300 μS . I_T = Square Wave Pulse or Equivalent.
 5. Non-Repetitive Current Pulse. Per Fig. 3 and Derated Above $T_A = 25^\circ C$ per Fig. 2.



5.0V to 170V SMD TRANSIENT VOLTAGE SUPPRESSORS

SMAJ5.0...170

Fig. 1 Pulse Rating Curve

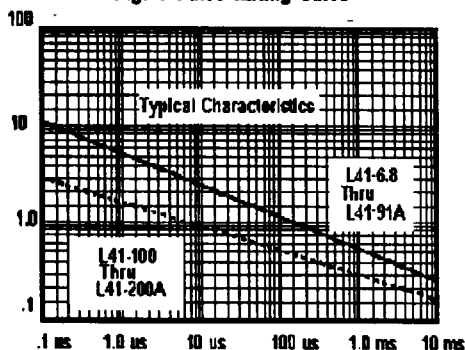


Fig. 4 Typical Junction Capacitance

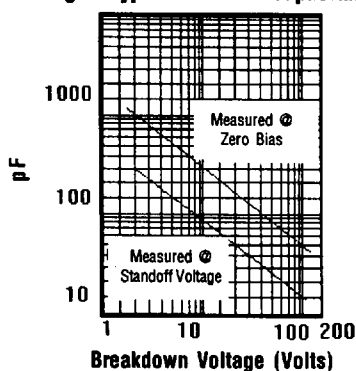


Fig. 2 Pulse Derating Curve

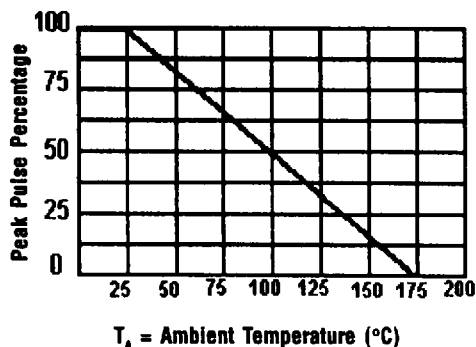


Fig. 5 Steady State Power Derating

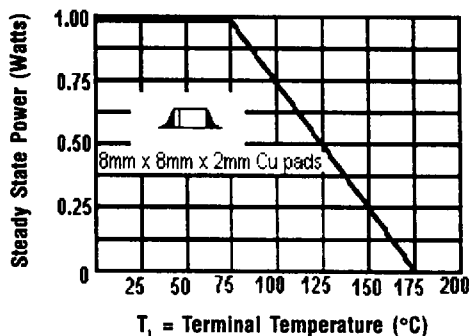


Fig. 3 Pulse Waveform

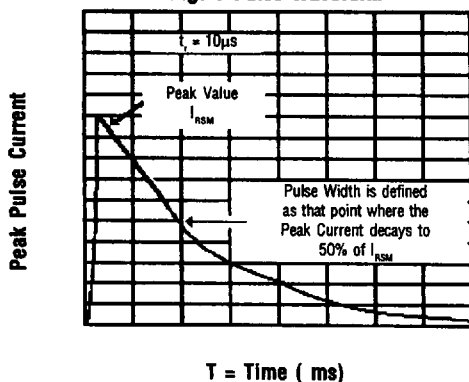
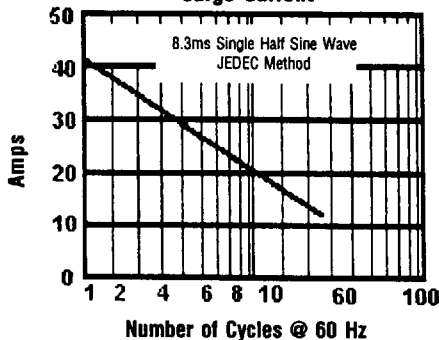


Fig. 6 Maximum Non-Repetitive Surge Current



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 μ 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} (Volts)	Maximum Reverse Leakage @ V_{RWM} I_L (μ Amps)	Maximum Reverse Current @ I_{RSM} (Note 2) (Amps)	Maximum Reverse Voltage @ I_{RSM} Clamping V_{RSM} (Volts)	Maximum Temperature Coefficient of V_{BR} % / °C	Case Marking
	V_{BR} Volts (Note 1)		@ I_T (mA)						
	Min.	Max.							
SMAJ5.0	6.40	7.30	10.00	5.00	800	62.50	9.60	0.061	AD
SMAJ5.0A	6.40	7.00	10.00	5.00	800	65.20	9.20	0.061	AE
SMAJ6.0	6.67	8.15	10.00	6.00	800	52.60	11.40	0.065	AF
SMAJ6.0A	6.67	7.37	10.00	6.00	800	58.30	10.30	0.065	AG
SMAJ6.5	7.22	8.82	10.00	6.50	500	48.70	12.30	0.068	AH
SMAJ6.5A	7.22	7.98	10.00	6.50	500	53.60	11.20	0.068	AK
SMAJ7.0	7.78	9.51	10.00	7.00	200	45.10	13.30	0.073	AL
SMAJ7.0A	7.78	8.60	10.00	7.00	200	50.00	12.00	0.073	AM
SMAJ7.5	8.33	10.20	1.00	7.50	100	42.00	14.30	0.075	AN
SMAJ7.5A	8.33	9.21	1.00	7.50	100	46.50	12.90	0.075	AP
SMAJ8.0	8.89	10.90	1.00	8.00	50.00	40.00	15.00	0.076	AQ
SMAJ8.0A	8.89	9.83	1.00	8.00	50.00	44.10	13.60	0.078	AR
SMAJ8.5	9.44	11.50	1.00	8.50	20.00	37.70	15.90	0.081	AS
SMAJ8.5A	9.44	10.40	1.00	8.50	20.00	41.70	14.40	0.081	AT
SMAJ9.0	10.00	12.20	1.00	9.00	10.00	35.50	16.90	0.084	AU
SMAJ9.0A	10.00	11.10	1.00	9.00	10.00	39.00	15.40	0.084	AV
SMAJ10	11.10	13.60	1.00	10.00	5.00	31.90	18.80	0.086	AW
SMAJ10A	11.10	12.30	1.00	10.00	5.00	35.30	17.00	0.086	AX
SMAJ11	12.20	14.90	1.00	11.00	5.00	29.90	20.10	0.088	AY
SMAJ11A	12.20	13.50	1.00	11.00	5.00	33.00	18.20	0.088	AZ
SMAJ12	13.30	16.30	1.00	12.00	5.00	27.30	22.00	0.090	BD
SMAJ12A	13.30	14.70	1.00	12.00	5.00	30.20	19.90	0.090	BE
SMAJ13	14.40	17.60	1.00	13.00	5.00	25.20	23.80	0.092	BF
SMAJ13A	14.40	15.90	1.00	13.00	5.00	27.90	21.50	0.092	BG
SMAJ14	15.60	19.10	1.00	14.00	5.00	23.30	25.80	0.094	BH
SMAJ14A	15.60	17.20	1.00	14.00	5.00	25.80	23.20	0.094	BK
SMAJ15	16.70	20.40	1.00	15.00	5.00	22.30	26.90	0.096	BL
SMAJ15A	16.70	18.50	1.00	15.00	5.00	24.00	24.40	0.096	BM
SMAJ16	17.80	21.80	1.00	16.00	5.00	20.80	28.80	0.097	BN
SMAJ16A	17.80	19.70	1.00	16.00	5.00	23.10	26.00	0.097	BP
SMAJ17	18.90	23.10	1.00	17.00	5.00	19.70	30.50	0.098	BQ
SMAJ17A	18.90	20.90	1.00	17.00	5.00	21.70	27.60	0.098	BR
SMAJ18	20.00	24.40	1.00	18.00	5.00	18.60	32.20	0.099	BS
SMAJ18A	20.00	22.10	1.00	18.00	5.00	20.50	29.20	0.099	BT
SMAJ20	22.20	27.10	1.00	20.00	5.00	16.70	35.80	0.100	BU
SMAJ20A	22.20	24.50	1.00	20.00	5.00	18.50	32.40	0.100	BV
SMAJ22	24.40	29.80	1.00	22.00	5.00	15.20	39.40	0.101	BW
SMAJ22A	24.40	26.90	1.00	22.00	5.00	16.90	35.50	0.101	BX
SMAJ24	26.70	32.60	1.00	24.00	5.00	14.00	43.00	0.101	BY
SMAJ24A	26.70	29.50	1.00	24.00	5.00	15.40	38.90	0.101	BZ
SMAJ26	28.90	35.30	1.00	26.00	5.00	12.40	46.60	0.102	CD
SMAJ26A	28.90	31.90	1.00	26.00	5.00	14.20	42.10	0.102	CE

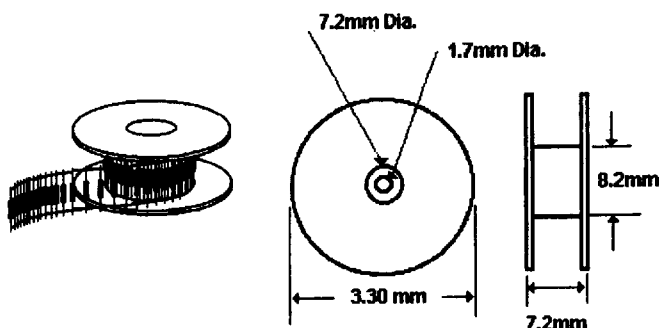
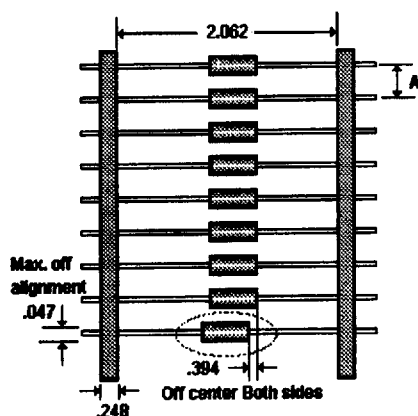
5.0V to 170V GPP TRANSIENT VOLTAGE SUPPRESSORS

SMAJ5.0...170

DEVICE	Breakdown Voltage		$@ I_T$ (mA)	Working Peak Reverse Voltage V_{WRM} (Volts)	Maximum Reverse Leakage $@ V_{WRM}$ I_R (μ Amps)	Maximum Reverse Current $@ I_{RSM}$ (Note 2) (Amps)	Maximum Reverse Voltage $@ I_{RSM}$ Clamping V. V_{CSM} (Volts)	Maximum Temperature Coefficient of V_m % / °C	Case Marking
	V_m (Note 1)								
	Min.	Max.							
SMAJ28	31.10	38.00	1.00	28.00	5.00	12.00	50.10	0.104	CF
SMAJ28A	31.10	34.40	1.00	28.00	5.00	13.20	45.40	0.104	CG
SMAJ30	33.30	40.70	1.00	30.00	5.00	11.20	53.50	0.104	CH
SMAJ30A	33.30	36.80	1.00	30.00	5.00	12.40	48.40	0.104	CK
SMAJ33	36.70	44.90	1.00	33.00	5.00	10.20	59.00	0.104	CL
SMAJ33A	36.70	40.60	1.00	33.00	5.00	11.30	53.30	0.104	CM
SMAJ36	40.00	49.90	1.00	36.00	5.00	9.30	64.30	0.104	CN
SMAJ36A	40.00	44.20	1.00	36.00	5.00	10.30	58.10	0.104	CP
SMAJ40	44.40	54.30	1.00	40.00	5.00	8.40	71.40	0.104	CQ
SMAJ40A	44.40	49.10	1.00	40.00	5.00	9.30	64.50	0.104	CR
SMAJ43	47.80	58.40	1.00	43.00	5.00	7.80	76.70	0.104	CS
SMAJ43A	47.80	52.80	1.00	43.00	5.00	8.60	69.40	0.104	CT
SMAJ45	50.00	61.10	1.00	45.00	5.00	7.50	80.30	0.104	CU
SMAJ45A	50.00	55.30	1.00	45.00	5.00	8.30	72.70	0.104	CV
SMAJ48	53.30	65.10	1.00	48.00	5.00	7.00	85.50	0.104	CW
SMAJ48A	53.30	58.90	1.00	48.00	5.00	7.70	77.40	0.104	CX
SMAJ51	56.70	69.30	1.00	51.00	5.00	6.60	91.10	0.104	CY
SMAJ51A	56.70	62.70	1.00	51.00	5.00	7.30	82.40	0.104	CZ
SMAJ54	60.00	73.30	1.00	54.00	5.00	6.20	96.30	0.104	RD
SMAJ54A	60.00	66.30	1.00	54.00	5.00	6.90	87.10	0.104	RE
SMAJ58	64.40	78.70	1.00	58.00	5.00	5.80	103.00	0.104	RF
SMAJ58A	64.40	71.20	1.00	58.00	5.00	6.40	93.60	0.104	RG
SMAJ60	66.70	81.50	1.00	60.00	5.00	5.60	107.00	0.104	RH
SMAJ60A	66.70	73.70	1.00	60.00	5.00	6.20	96.80	0.104	RK
SMAJ64	71.10	86.90	1.00	64.00	5.00	5.30	114.00	0.104	RL
SMAJ64A	71.10	78.60	1.00	64.00	5.00	5.80	103.00	0.104	RM
SMAJ70	77.80	95.00	1.00	70.00	5.00	4.80	125.00	0.104	RN
SMAJ70A	77.80	86.00	1.00	70.00	5.00	5.30	113.00	0.104	RP
SMAJ75	83.30	102.00	1.00	75.00	5.00	4.50	134.00	0.104	RQ
SMAJ75A	83.30	92.10	1.00	75.00	5.00	4.90	121.00	0.104	RR
SMAJ78	86.70	106.00	1.00	78.00	5.00	4.30	139.00	0.104	RS
SMAJ78A	86.70	95.80	1.00	78.00	5.00	4.70	126.00	0.104	RT
SMAJ85	94.40	115.00	1.00	85.00	5.00	3.90	151.00	0.104	RU
SMAJ85A	94.40	104.00	1.00	85.00	5.00	4.40	137.00	0.104	RV
SMAJ90	100.00	122.00	1.00	90.00	5.00	3.80	160.00	0.104	RW
SMAJ90A	100.00	111.00	1.00	90.00	5.00	4.10	146.00	0.104	RX
SMAJ100	111.00	136.00	1.00	100.00	5.00	3.40	179.00	0.104	RY
SMAJ100A	111.00	123.00	1.00	100.00	5.00	3.70	162.00	0.104	RZ
SMAJ110	122.00	149.00	1.00	110.00	5.00	3.00	196.00	0.104	SD
SMAJ110A	122.00	135.00	1.00	110.00	5.00	3.40	177.00	0.104	SE
SMAJ120	133.00	163.00	1.00	120.00	5.00	2.80	214.00	0.104	SF
SMAJ120A	133.00	147.00	1.00	120.00	5.00	3.10	193.00	0.104	SG
SMAJ130	144.00	176.00	1.00	130.00	5.00	2.60	231.00	0.104	SH
SMAJ130A	144.00	159.00	1.00	130.00	5.00	2.90	209.00	0.104	SK
SMAJ150	167.00	204.00	1.00	150.00	5.00	2.20	268.00	0.104	SL
SMAJ150A	167.00	185.00	1.00	150.00	5.00	2.50	243.00	0.104	SM
SMAJ160	178.00	218.00	1.00	160.00	5.00	2.10	287.00	0.104	SN
SMAJ160A	178.00	197.00	1.00	160.00	5.00	2.30	259.00	0.104	SP
SMAJ170	189.00	231.00	1.00	170.00	5.00	2.00	304.00	0.104	SQ
SMAJ170A	189.00	209.00	1.00	170.00	5.00	2.00	275.00	0.104	SR

Reel Packaging

Package Style	Quantity per Reel	Component Spacing "A" Fig. 1	Approximate Gross Weight Packed Reel	Carton Size	Pcs. Per Carton	Appx. Gross Weight
Axials						
D041	5000	5mm	2.32 KG	34X34X34.5 cm	20,000	10.5KG
D015	4000	5mm	2.25 KG	34X34X34.5 cm	16,000	10.0KG
D0201AD	1200	10mm	2.08 KG	34X34X34.5 cm	4,800	7.3KG
P6	700	10mm	1.55 KG	34X34X34.5 cm	2,800	9.2KG


Ammunition Packaging

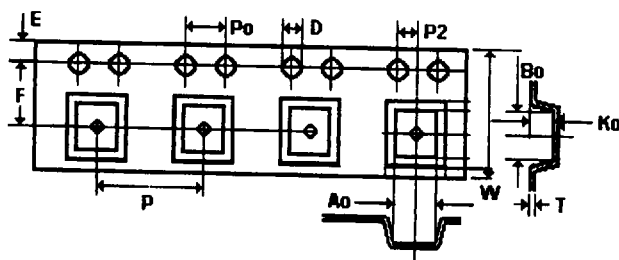
Package Style	Quantity Pcs / Box	Component Spacing "A" Fig. 1	Box Size	Carton Size	Pcs. Per Carton	Appx. Gross Weight
D041	4000	5mm	26X10X10cm	30X27X22cm	24,000	10KG
D015	2200	5mm	26X10X10cm	30X27X22cm	13,200	10KG
D0201AD	1000	10mm	26X10X10cm	30X27X22cm	6,000	9.4KG
P6	300	10mm	26X10X10cm	30X27X22cm	1,800	7KG

Bulk Packaging

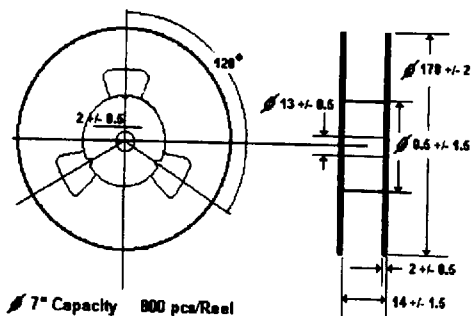
Package Style	Box Size	Pcs. Per Carton	Appx. Gross Weight	Carton Size	Pcs. Per Carton	Appx. Gross Weight
D041	20.3X8.3X2.54cm	1,000	.38KG	46X21.5X25.4cm	50,000	20KG
D015	20.3X8.3X2.54cm	500	.21KG	46X21.5X25.4cm	25,000	12KG
D0201AD	26X10X10cm	500	.68KG	46X21.5X25.4cm	12,500	18KG
P6	26X10X10cm	200	.50KG	46X21.5X25.4cm	5000	13.5KG

Bulk Packaging

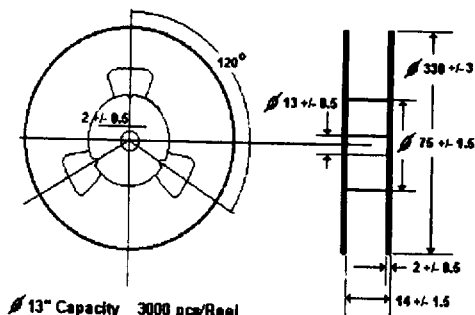
Package Style	Box Size	Pcs. Per Carton	Appx. Gross Weight	Carton Size	Pcs. Per Carton	Appx. Gross Weight
1W, W, 2W	21X9X8.8cm	500	Std. .98KG	48X22X36cm	10,000	Std. 21KG
		500	Min. .78KG	48X22X36cm	10,000	Mn. 17KG
MDA	23.5X23.5X5.5cm	400	1.24KG	51X25X30cm	4,000	13.1KG
KBL	23.5X23.5X5.5cm	400	2.36KG	51X25X30cm	4,000	24.3KG
KBU	23.5X23.5X5.5cm	400	2.60KG	51X25X30cm	4,000	26.7KG
KBPC8	23.5X23.5X5.5cm	200	1.30KG	51X25X30cm	2000	13.7KG
KBPC1	21X21X5.5cm	200	.66KG	47X22X27cm	1600	5.9KG
KBPC6	21X21X5.5cm	200	.94KG	47X22X27cm	1600	8.1KG
KBPC10,15,25,35	21X21X5.5cm	50	1.77KG	47X22X27cm	400	14.9KG

SMD Packing


	W	Po	P	P2	D	E	F	Ao	Bo	Ko	T
MM	12	4	8	2	1.5	1.75	3.5	2.8	5.8	2.9	0.3
Inches	0.47	0.16	0.32	0.08	0.06	0.07	0.14	0.11	0.22	0.11	0.01



7° Capacity 800 pcs/Reel



13° Capacity 3000 pcs/Reel