

Surface Mount Transient Voltage Suppressors

6.0SMAJ Series 5.0 To 200V 600W

Description

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

Working Voltage: 5.0 to 200 V

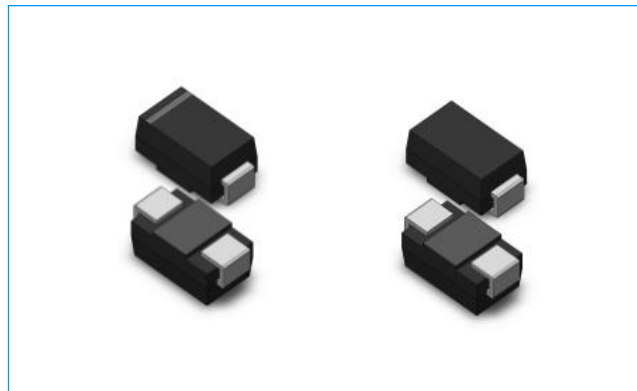
Peak Pulse Power: 600 W

Features

- ◆ Glass passivated chip
- ◆ 600 W peak pulse power capability with a 10/1000 us waveform
- ◆ Repetitive rate (duty cycle): 0.01 %
- ◆ Typical IR less than 1 μ A above 10V.
- ◆ Excellent clamping capability
- ◆ Very fast response time
- ◆ High temperature soldering: 260°C/10s at terminals.
- ◆ RoHS compliant

Applications

TVS devices are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.



Mechanical Data

- ◆ Case: Molded plastic
- ◆ Epoxy: UL 94V-0 rate flame retardant
- ◆ Lead: Solderable per MIL-STD-750, method 2026 guaranteed
- ◆ Polarity: Color band denotes TVS cathode end
- ◆ Mounting position: Any

Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Peak power dissipation with a 10/1000us waveform	P_{PPM}	600	W
Power Dissipation on Infinite Heat Sink at $T_L=75^\circ\text{C}$	P_D	5.0	W
Peak pulse current with a 10/1000us waveform	I_{PP}	See Next Table	A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to +150	$^\circ\text{C}$
Maximum Instantaneous Forward Voltage at 50A for Unidirectional	V_F	5.0	V

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Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Part Number		Marking		Reverse Stand-Off Voltage $V_{RWM}(V)$	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C @ I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @ V_{RWM} (μA)
Uni	Bi	Uni	Bi		MIN	MAX				
6.0SMAJ5.0A	6.0SMAJ5.0CA	KE	AE	5.0	6.40	7.00	10	9.2	65.2	100
6.0SMAJ6.0A	6.0SMAJ6.0CA	KG	AG	6.0	6.67	7.37	10	10.3	58.3	100
6.0SMAJ6.5A	6.0SMAJ6.5CA	KK	AK	6.5	7.22	7.98	10	11.2	53.6	50
6.0SMAJ7.0A	6.0SMAJ7.0CA	KM	AM	7.0	7.78	8.60	10	12.0	50.0	50
6.0SMAJ7.5A	6.0SMAJ7.5CA	KP	AP	7.5	8.33	9.21	1	12.9	46.5	50
6.0SMAJ8.0A	6.0SMAJ8.0CA	KR	AR	8.0	8.89	9.83	1	13.6	44.1	20
6.0SMAJ8.5A	6.0SMAJ8.5CA	KT	AT	8.5	9.44	10.40	1	14.4	41.7	10
6.0SMAJ9.0A	6.0SMAJ9.0CA	KV	AV	9.0	10.00	11.10	1	15.4	39.0	5
6.0SMAJ10A	6.0SMAJ10CA	KX	AX	10.0	11.10	12.30	1	17.0	35.3	2
6.0SMAJ11A	6.0SMAJ11CA	KZ	AZ	11.0	12.20	13.50	1	18.2	33.0	1
6.0SMAJ12A	6.0SMAJ12CA	LE	BE	12.0	13.30	14.70	1	19.9	30.2	1
6.0SMAJ13A	6.0SMAJ13CA	LG	BG	13.0	14.40	15.90	1	21.5	27.9	1
6.0SMAJ14A	6.0SMAJ14CA	LK	BK	14.0	15.60	17.20	1	23.2	25.9	1
6.0SMAJ15A	6.0SMAJ15CA	LM	BM	15.0	16.70	18.50	1	24.4	24.6	1
6.0SMAJ16A	6.0SMAJ16CA	LP	BP	16.0	17.80	19.70	1	26.0	23.1	1
6.0SMAJ17A	6.0SMAJ17CA	LR	BR	17.0	18.90	20.90	1	27.6	21.8	1
6.0SMAJ18A	6.0SMAJ18CA	LT	BT	18.0	20.00	22.10	1	29.2	20.6	1
6.0SMAJ20A	6.0SMAJ20CA	LV	BV	20.0	22.20	24.50	1	32.4	18.6	1
6.0SMAJ22A	6.0SMAJ22CA	LX	BX	22.0	24.40	26.90	1	35.5	16.9	1
6.0SMAJ24A	6.0SMAJ24CA	LZ	BZ	24.0	26.70	29.50	1	38.9	15.4	1
6.0SMAJ26A	6.0SMAJ26CA	ME	CE	26.0	28.90	31.90	1	42.1	14.3	1
6.0SMAJ28A	6.0SMAJ28CA	MG	CG	28.0	31.10	34.40	1	45.4	13.2	1
6.0SMAJ30A	6.0SMAJ30CA	MK	CK	30.0	33.30	36.80	1	48.4	12.4	1
6.0SMAJ33A	6.0SMAJ33CA	MM	CM	33.0	36.70	40.60	1	53.3	11.3	1
6.0SMAJ36A	6.0SMAJ36CA	MP	CP	36.0	40.00	44.20	1	58.1	10.4	1
6.0SMAJ40A	6.0SMAJ40CA	MR	CR	40.0	44.40	49.10	1	64.5	9.3	1
6.0SMAJ43A	6.0SMAJ43CA	MT	CT	43.0	47.80	52.80	1	69.4	8.7	1
6.0SMAJ45A	6.0SMAJ45CA	MV	CV	45.0	50.00	55.30	1	72.7	8.3	1
6.0SMAJ48A	6.0SMAJ48CA	MX	CX	48.0	53.30	58.90	1	77.4	7.8	1
6.0SMAJ51A	6.0SMAJ51CA	MZ	CZ	51.0	56.70	62.70	1	82.4	7.3	1
6.0SMAJ54A	6.0SMAJ54CA	NE	DE	54.0	60.00	66.30	1	87.1	6.9	1
6.0SMAJ58A	6.0SMAJ58CA	NG	DG	58.0	64.40	71.20	1	93.6	6.4	1
6.0SMAJ60A	6.0SMAJ60CA	NK	DK	60.0	66.70	73.70	1	96.8	6.2	1
6.0SMAJ64A	6.0SMAJ64CA	NM	DM	64.0	71.10	78.60	1	103.0	5.8	1
6.0SMAJ70A	6.0SMAJ70CA	NP	DP	70.0	77.80	86.00	1	113.0	5.3	1
6.0SMAJ75A	6.0SMAJ75CA	NR	DR	75.0	83.30	92.10	1	121.0	5.0	1
6.0SMAJ78A	6.0SMAJ78CA	NT	DT	78.0	86.70	95.80	1	126.0	4.8	1
6.0SMAJ85A	6.0SMAJ85CA	NV	DV	85.0	94.40	104.00	1	137.0	4.4	1
6.0SMAJ90A	6.0SMAJ90CA	NX	DX	90.0	100.00	111.00	1	146.0	4.1	1
6.0SMAJ100A	6.0SMAJ100CA	NZ	DZ	100.0	111.00	123.00	1	162.0	3.7	1
6.0SMAJ110A	6.0SMAJ110CA	PE	EE	110.0	122.00	135.00	1	177.0	3.4	1
6.0SMAJ120A	6.0SMAJ120CA	PG	EG	120.0	133.00	147.00	1	193.0	3.1	1
6.0SMAJ130A	6.0SMAJ130CA	PK	EK	130.0	144.00	159.00	1	209.0	2.9	1
6.0SMAJ150A	6.0SMAJ150CA	PM	EM	150.0	167.00	185.00	1	243.0	2.5	1
6.0SMAJ160A	6.0SMAJ160CA	PP	EP	160.0	178.00	197.00	1	259.0	2.3	1
6.0SMAJ170A	6.0SMAJ170CA	PR	ER	170.0	189.00	209.00	1	275.0	2.2	1
6.0SMAJ180A	6.0SMAJ180CA	PT	ET	180.0	201.00	220.00	1	292.0	2.1	1
6.0SMAJ200A	6.0SMAJ200CA	PX	EX	200.0	224.00	247.00	1	324.0	1.9	1

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Ratings and Characteristics Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Figure 1 - Pulse Waveform

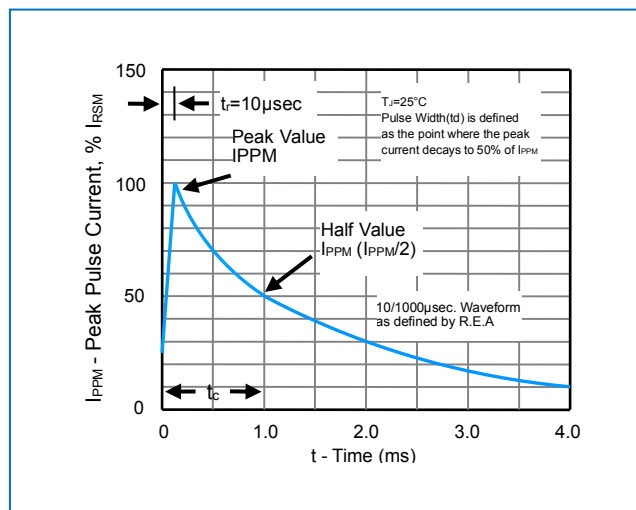
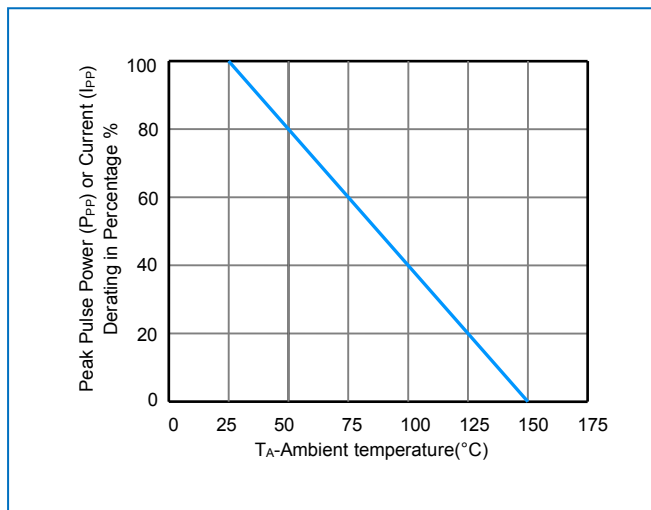
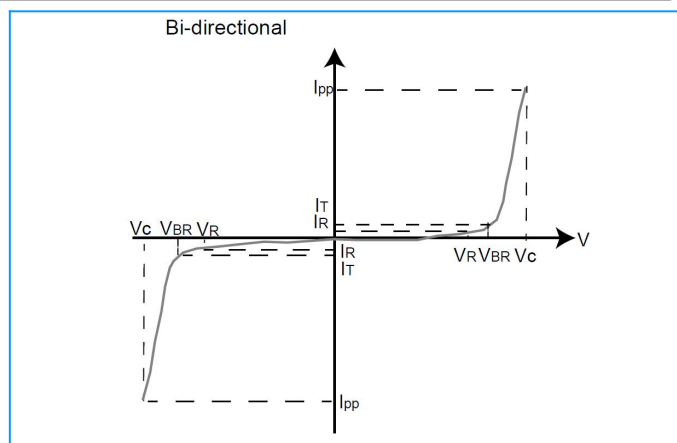
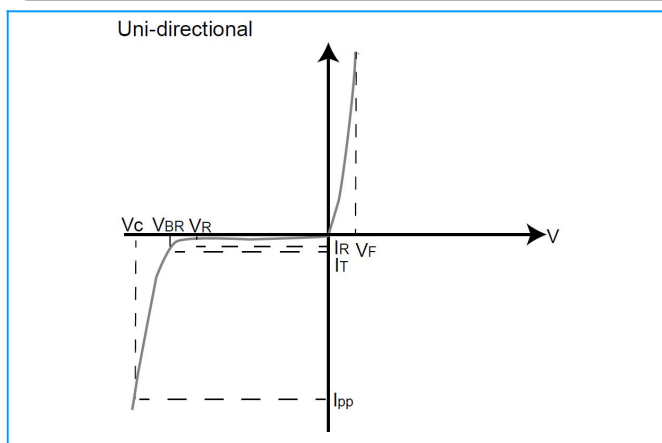


Figure 2 - Pulse Derating Curve

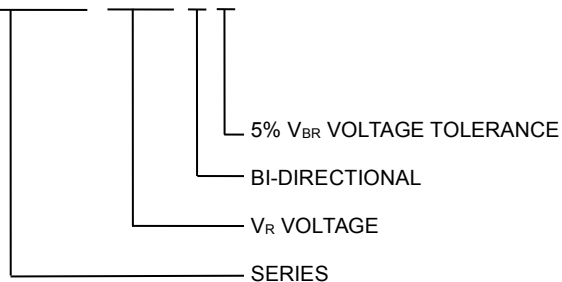


I-V Curve Characteristics



Part Numbering

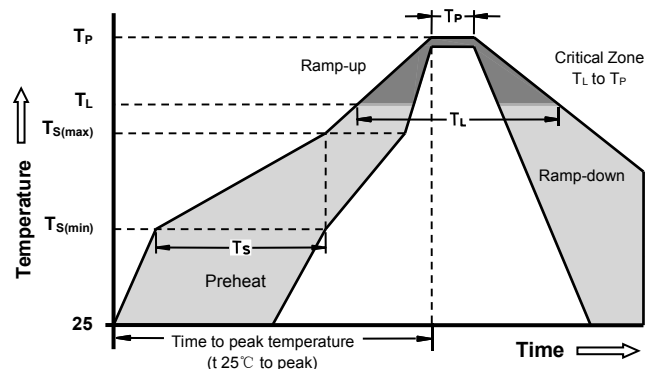
6.0SMAJ × × × CA



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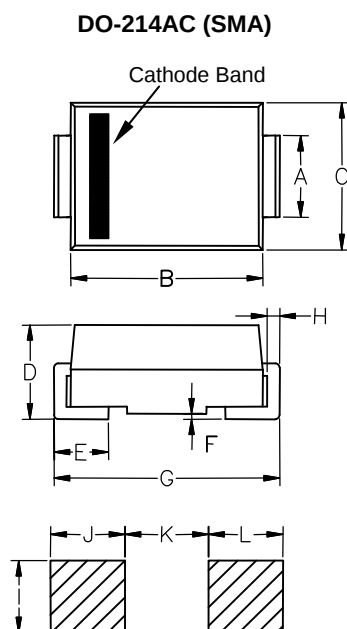
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Soldering Parameters



Reflow Condition		Lead-free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 -180 Seconds
Average ramp up rate (Liquidus Temp T_L to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 -150 Seconds
Peak Temperature (T_P)		260 +0/-5°C
Time within 5°C of actual peak Temperature (t_p)		30 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		280°C

Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.049	0.064	1.230	1.630
B	0.162	0.179	4.10	4.550
C	0.099	0.109	2.510	2.760
D	0.077	0.089	1.960	2.260
E	0.030	0.060	0.750	1.510
F	-	0.008	-	0.203
G	0.192	0.206	4.87	5.220
H	0.006	0.012	0.152	0.305
I	0.070	-	1.800	-
J	0.082	-	2.100	-
K	-	0.090	-	2.300
L	0.082	-	2.100	-