

Transient Voltage Suppressors SMAJ series

Description:

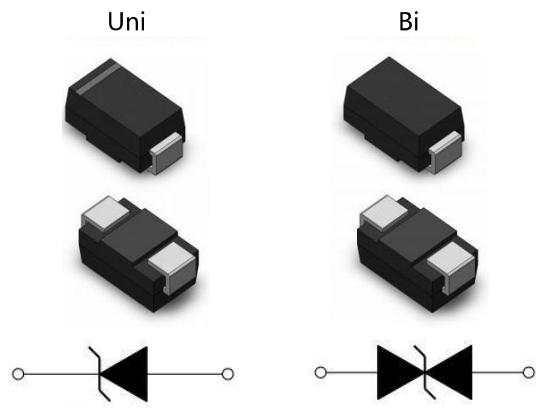
TVS is designed specifically to protect sensitive electronic Equipment from voltage transients induced by lightning and other transient voltage events.

Used in telecommunications, computer, industrial and consumer electronic applications. TVS is the ideal I/O interface, VCC bus and other vulnerable circuit protection device.

Features:

- Low zener impedance
- Glass passivated chip junction
- Ideal for automated placement
- Available in uni-directional and bi-directional
- Excellent clamping capability
- 400W Peak power capability at 10×1000µs waveform Repetition rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps
- High Temperature soldering: 260 °C/40 seconds at terminals
- IEC-61000-4-2ESD 15KV(Air), 8KV (Contact)

Appearance:



Packaging :

Part Number	Component Package	Quantity	Packaging
SMAJ***A/CA	DO-214AC (SMA)	2000 PCS	Tape & Reel

Maximum Ratings (TA= 25 °C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000µs waveform.(1)(2)	P _{PPM}	400	W
Power Dissipation on infinite heat sink at T _A =50°C	P _{M(AV)}	3.3	W
Peak forward surge current 8.3 ms single half sine-wave uni-directional only.(2)	I _{FSM}	40	A
Maximum Instantaneous Forward voltage at 100A for Unidirectional only	V _F	3.5/6.5	V
Operating junction and storage temperature range.	T _J T _{STG}	-65 to +150	°C
Typical Thermal Resistance Junction to Lead	R _{UJL}	30	°C/W
Typical Thermal Resistance Junction to Ambient	R _{ULA}	120	°C/W

Notes:

- (1).Non-repetitive current pulse, per fig.3 and derated above TA= 25°C per fig.2.
- (2).Mounted on 5.0mm x 5.0mm (0.03mm thick)Copper Pads to each terminal.
- (3).8.3ms single half sine-wave, or equivalent square wave, Duty cycle= 4 pulses per minutes maximum.

SMAJ Series

Electrical Characteristics (TA= 25 °C unless otherwise noted)

Part Number		Reverse Stand-Off Voltage V _{RWM} (V)	Breakdown Voltage @I _T V _{BR} (V)		Test Current I _T (mA)	Max Clamping Voltage @I _{PP} V _C (V)	Max Peak Pulse Current I _{PP} (A)	Max Reverse Leakage @V _{RWM} I _R (μA)
Uni	Bi		Min	Max				
SMAJ5.0A	SMAJ5.0CA	5.0	6.40	7.00	10	9.2	41.67	800
SMAJ6.0A	SMAJ6.0CA	6.0	6.67	7.37	10	10.3	38.83	800
SMAJ6.5A	SMAJ6.5CA	6.5	7.22	7.98	10	11.2	35.71	500
SMAJ7.0A	SMAJ7.0CA	7.0	7.78	8.60	10	12.0	33.33	200
SMAJ7.5A	SMAJ7.5CA	7.5	8.33	9.21	1	12.9	31.01	100
SMAJ8.0A	SMAJ8.0CA	8.0	8.89	9.83	1	13.6	29.41	50
SMAJ8.5A	SMAJ8.5CA	8.5	9.44	10.40	1	14.4	27.78	20
SMAJ9.0A	SMAJ9.0CA	9.0	10.00	11.10	1	15.4	25.97	10
SMAJ10A	SMAJ10CA	10.0	11.10	12.30	1	17.0	23.53	5
SMAJ11A	SMAJ11CA	11.0	12.20	13.50	1	18.2	21.98	1
SMAJ12A	SMAJ12CA	12.0	13.30	14.70	1	19.9	20.10	1
SMAJ13A	SMAJ13CA	13.0	14.40	15.90	1	21.5	18.60	1
SMAJ14A	SMAJ14CA	14.0	15.60	17.20	1	23.2	17.24	1
SMAJ15A	SMAJ15CA	15.0	16.70	18.50	1	24.4	16.39	1
SMAJ16A	SMAJ16CA	16.0	17.80	19.70	1	26.0	15.38	1
SMAJ17A	SMAJ17CA	17.0	18.90	20.90	1	27.6	14.49	1
SMAJ18A	SMAJ18CA	18.0	20.00	22.10	1	29.2	13.70	1
SMAJ19A	SMAJ19CA	19.0	21.10	23.30	1	30.8	13.00	1
SMAJ20A	SMAJ20CA	20.0	22.20	24.50	1	32.4	12.35	1
SMAJ22A	SMAJ22CA	22.0	24.40	26.90	1	35.5	11.27	1
SMAJ24A	SMAJ24CA	24.0	26.70	29.50	1	38.9	10.28	1
SMAJ26A	SMAJ26CA	26.0	28.90	31.90	1	42.1	9.50	1
SMAJ28A	SMAJ28CA	28.0	31.10	34.40	1	45.4	8.81	1
SMAJ30A	SMAJ30CA	30.0	33.30	36.80	1	48.4	8.26	1
SMAJ33A	SMAJ33CA	33.0	36.70	40.60	1	53.3	7.50	1
SMAJ36A	SMAJ36CA	36.0	40.00	44.20	1	58.1	6.88	1
SMAJ40A	SMAJ40CA	40.0	44.40	49.10	1	64.5	6.20	1
SMAJ43A	SMAJ43CA	43.0	47.80	52.80	1	69.4	5.76	1
SMAJ45A	SMAJ45CA	45.0	50.00	55.30	1	72.7	5.50	1

Part Number		Reverse Stand-Off Voltage $V_{RWM}(V)$	Breakdown Voltage @ I_T $V_{BR}(V)$		Test Current I_T (mA)	Max Clamping Voltage @ I_{PP} $V_C(V)$	Max Peak Pulse Current $I_{PP}(A)$	Max Reverse Leakage @ V_{RWM} $I_R(\mu A)$
Uni	Bi		Min	Max				
SMAJ48A	SMAJ48CA	48.0	53.30	58.90	1	77.4	5.17	1
SMAJ51A	SMAJ51CA	51.0	56.70	62.70	1	82.4	4.85	1
SMAJ54A	SMAJ54CA	54.0	60.00	66.30	1	87.1	4.59	1
SMAJ58A	SMAJ58CA	58.0	64.40	71.20	1	93.6	4.27	1
SMAJ60A	SMAJ60CA	60.0	66.70	73.70	1	96.8	4.13	1
SMAJ64A	SMAJ64CA	64.0	71.10	78.60	1	103.0	3.88	1
SMAJ70A	SMAJ70CA	70.0	77.80	86.00	1	113.0	3.54	1
SMAJ75A	SMAJ75CA	75.0	83.30	92.10	1	121.0	3.31	1
SMAJ78A	SMAJ78CA	78.0	86.70	95.80	1	126.0	3.17	1
SMAJ80A	SMAJ80CA	80.0	88.80	97.60	1	129.6	3.09	1
SMAJ85A	SMAJ85CA	85.0	94.40	104.00	1	137.0	2.92	1
SMAJ90A	SMAJ90CA	90.0	100.00	111.00	1	146.0	2.74	1
SMAJ100A	SMAJ100CA	100.0	111.00	123.00	1	162.0	2.47	1
SMAJ110A	SMAJ110CA	110.0	122.00	135.00	1	177.0	2.26	1
SMAJ120A	SMAJ120CA	120.0	133.00	147.00	1	193.0	2.07	1
SMAJ130A	SMAJ130CA	130.0	144.00	159.00	1	209.0	1.91	1
SMAJ140A	SMAJ140CA	140.0	155.00	171.00	1	226.8	1.76	1
SMAJ150A	SMAJ150CA	150.0	167.00	185.00	1	243.0	1.65	1
SMAJ160A	SMAJ160CA	160.0	178.00	197.00	1	259.0	1.54	1
SMAJ170A	SMAJ170CA	170.0	189.00	209.00	1	275.0	1.45	1
SMAJ180A	SMAJ180CA	180.0	201.00	220.00	1	291.6	1.37	1
SMAJ190A	SMAJ190CA	190.0	211.00	232.00	1	307.8	1.30	1
SMAJ200A	SMAJ200CA	200.0	224.00	247.00	1	324.0	1.23	1
SMAJ220A	SMAJ220CA	220.0	246.00	272.00	1	356.0	1.12	1
SMAJ250A	SMAJ250CA	250.0	279.00	309.00	1	405.0	0.99	1
SMAJ300A	SMAJ300CA	300.0	335.00	371.00	1	486.0	0.82	1
SMAJ350A	SMAJ350CA	350.0	391.00	432.00	1	567.0	0.71	1
SMAJ400A	SMAJ400CA	400.0	447.00	494.00	1	648.0	0.62	1
SMAJ440A	SMAJ440CA	440.0	492.00	543.00	1	713.0	0.56	1

Note: 1.Suffix 'A' denotes 5% tolerance device.

2.Add suffix 'CA' after part number to specify Bi-directional devices.

3.For Bi-Directional devices having VR of 10 volts and under, the IR limit is double.

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

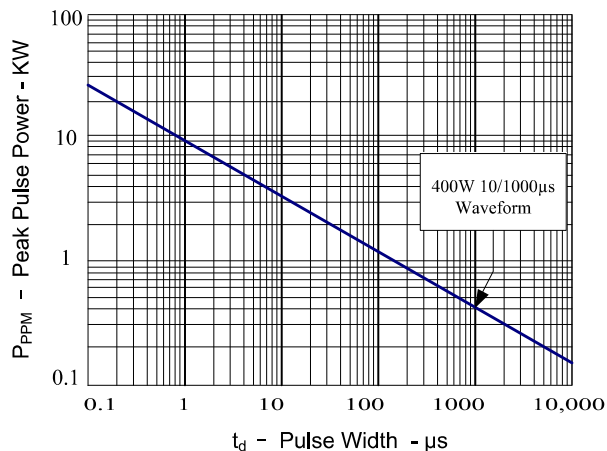


Figure 2: Pulse Derating Curve

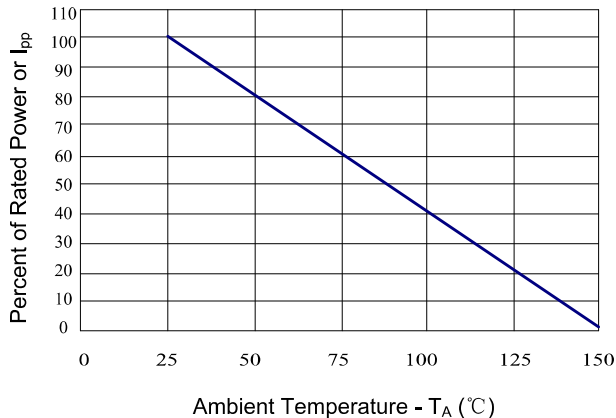


Figure 3: Pulse Waveform

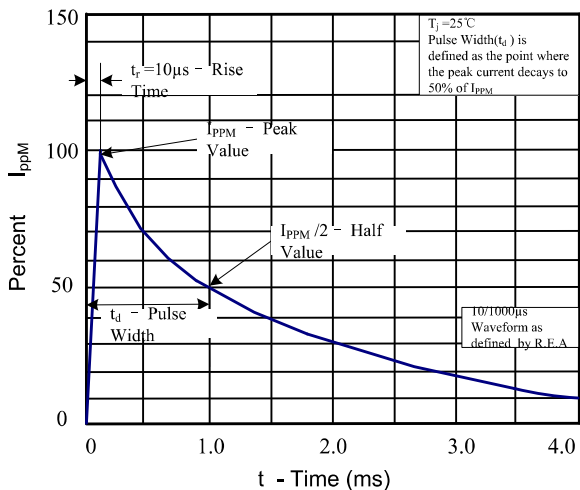


Figure 4: Typical Junction Capacitance

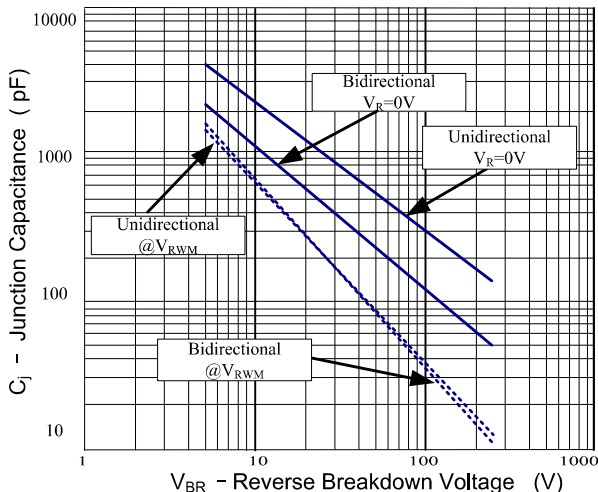


Figure 5: Steady State Power Dissipation Derating Curve

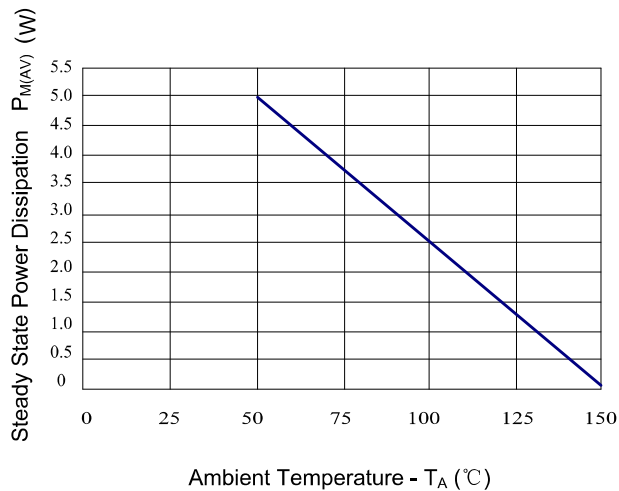
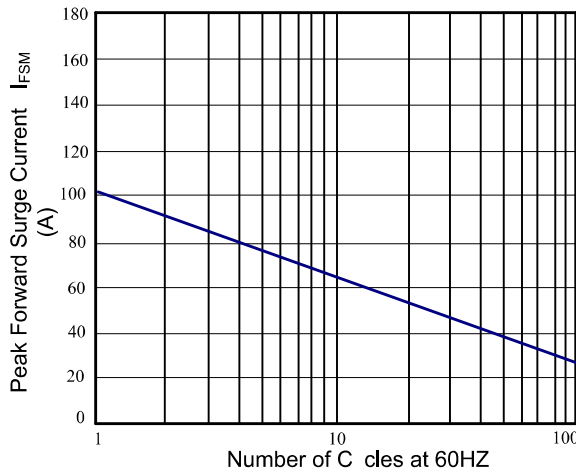
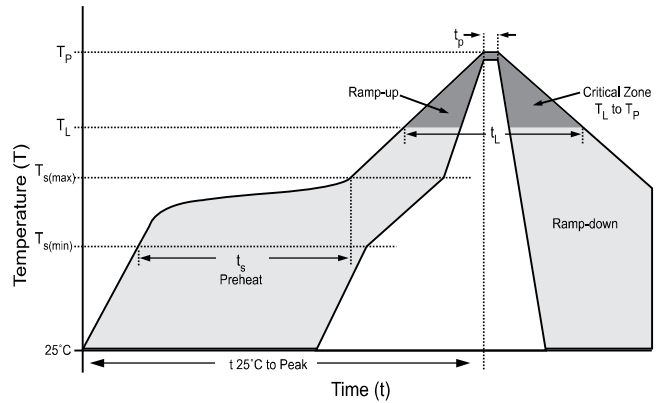


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional



Soldering Parameters

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (TS max to TP)	3°C/ second max.
Preheat: Temperature Min (TS min) Temperature Max (TS max) Time(TSmin to TS max)	150°C 200°C 60-180 seconds
Time maintained above: Temperature(TL) Time (TL)	217°C 60-150 seconds
Peak/Classification Temperature(TP):	260°C
Ramp-down Rate:	3°C/ second max.
Time 25°C to Peak Temperature	8 minutes max.
Do not exceed	280°C



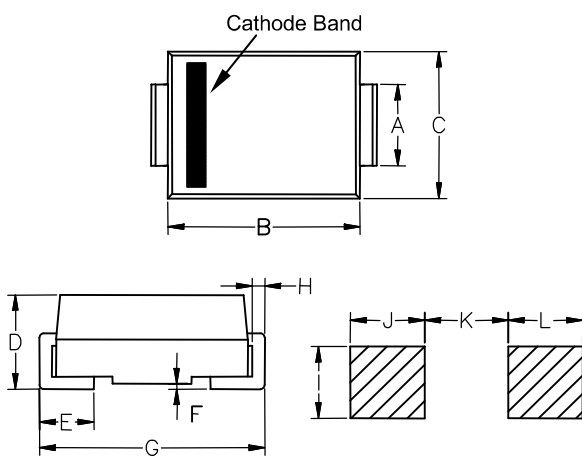
Physical Specifications

Weight	0.002 ounce, 0.061 grams
Case	JEDEC DO214AB. Molded plastic body over glass passivated junction.
Polarity	Color band denotes positive end (cathode) except Bidirectional
Terminal	Matte Tin-Plated leads, Solderable Per JESD22-B102D

Environmental Specifications

Temperature Cycle	JESD22-A104
Pressure Cooker	JESD22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

Outline Drawing



DO-214AC (SMA)

Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.049	0.064	1.250	1.650
B	0.157	0.177	3.990	4.500
C	0.100	0.110	2.540	2.790
D	0.078	0.090	1.980	2.290
E	0.030	0.060	0.780	1.520
F	-	0.008	-	0.203
G	0.194	0.208	4.930	5.280
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	-