

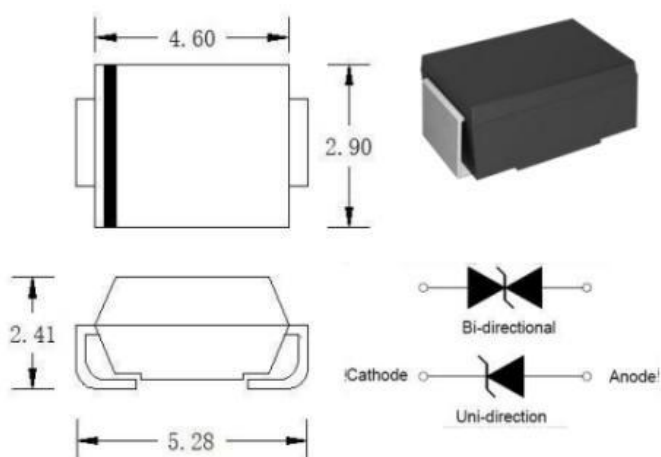
Description

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.

Features

- Glass passivated or planar junction
- Excellent clamping capability
- Repetition rate (duty cycle): 0.01%
- Low profile package and low inductance
- 600W Peak Pulse power capability at 10×1000μs waveform.
- Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- High temperature soldering: 260°C/10s at terminals.
- Plastic package has Underwriters Laboratory Flammability 94V-0.
- For surface mounted applications in order to optimize board space

Dimensions & Symbol (Unit: mm Max)



Mechanical Characteristics

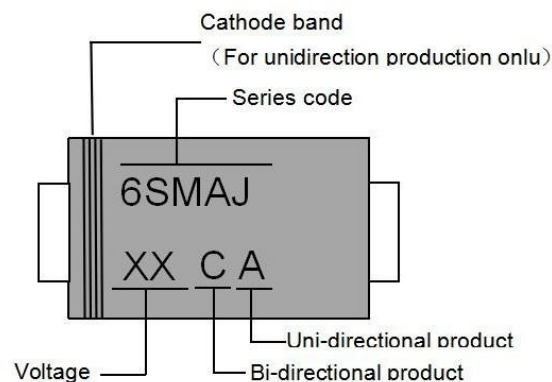
Package: SMA/DO-214AC

- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Polarity: Color band denotes cathode except bi-directional models
- Standard Packaging: 12mm tape (EIA STD RS-481)
- Weight: 0.07g
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- I/O Interface.
- AC/DC Power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

Marking Information



Ordering information

Out line	Reel (pcs)	Per carton (pcs)	Reel diameters (mm)
Taping	5K	80K	330

Electrical characteristics(T=25°C)

Part Number		Marking		V _R	I _{R@V_R}	V _{BR@I_T}		I _T	V _{C@I_{PP}}	I _{PP} [®]
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
6SMAJ5.0A	6SMAJ5.0CA	6SMAJ5.0A	6SMAJ5.0CA	5.0	800	6.40	7.00	10	9.2	65.3
6SMAJ6.0A	6SMAJ6.0CA	6SMAJ6.0A	6SMAJ6.0CA	6.0	800	6.67	7.37	10	10.3	58.3
6SMAJ6.5A	6SMAJ6.5CA	6SMAJ6.5A	6SMAJ6.5CA	6.5	500	7.22	7.98	10	11.2	53.6
6SMAJ7.0A	6SMAJ7.0CA	6SMAJ7.0A	6SMAJ7.0CA	7.0	200	7.78	8.60	10	12.0	50.0
6SMAJ7.5A	6SMAJ7.5CA	6SMAJ7.5A	6SMAJ7.5CA	7.5	100	8.33	9.21	1	12.9	46.5
6SMAJ8.0A	6SMAJ8.0CA	6SMAJ8.0A	6SMAJ8.0CA	8.0	50	8.89	9.83	1	13.6	44.2
6SMAJ8.5A	6SMAJ8.5CA	6SMAJ8.5A	6SMAJ8.5CA	8.5	20	9.44	10.40	1	14.4	41.7
6SMAJ9.0A	6SMAJ9.0CA	6SMAJ9.0A	6SMAJ9.0CA	9.0	10	10.00	11.10	1	15.4	39.0
6SMAJ10A	6SMAJ10CA	6SMAJ10A	6SMAJ10CA	10	5	11.10	12.30	1	17.0	35.3
6SMAJ11A	6SMAJ11CA	6SMAJ11A	6SMAJ11CA	11	1	12.20	13.50	1	18.2	33.0
6SMAJ12A	6SMAJ12CA	6SMAJ12A	6SMAJ12CA	12	1	13.30	14.70	1	19.9	30.2
6SMAJ13A	6SMAJ13CA	6SMAJ13A	6SMAJ13CA	13	1	14.40	15.90	1	21.5	27.9
6SMAJ14A	6SMAJ14CA	6SMAJ14A	6SMAJ14CA	14	1	15.60	17.20	1	23.2	25.9
6SMAJ15A	6SMAJ15CA	6SMAJ15A	6SMAJ15CA	15	1	16.70	18.50	1	24.4	24.6
6SMAJ16A	6SMAJ16CA	6SMAJ16A	6SMAJ16CA	16	1	17.80	19.70	1	26.0	23.1
6SMAJ17A	6SMAJ17CA	6SMAJ17A	6SMAJ17CA	17	1	18.90	20.90	1	27.6	21.8
6SMAJ18A	6SMAJ18CA	6SMAJ18A	6SMAJ18CA	18	1	20.00	22.10	1	29.2	20.6
6SMAJ20A	6SMAJ20CA	6SMAJ20A	6SMAJ20CA	20	1	22.20	24.50	1	32.4	18.6
6SMAJ22A	6SMAJ22CA	6SMAJ22A	6SMAJ22CA	22	1	24.40	26.90	1	35.5	16.9
6SMAJ24A	6SMAJ24CA	6SMAJ24A	6SMAJ24CA	24	1	26.70	29.50	1	38.9	15.4
6SMAJ26A	6SMAJ26CA	6SMAJ26A	6SMAJ26CA	26	1	28.90	31.90	1	42.1	14.3
6SMAJ28A	6SMAJ28CA	6SMAJ28A	6SMAJ28CA	28	1	31.10	34.40	1	45.4	13.2
6SMAJ30A	6SMAJ30CA	6SMAJ30A	6SMAJ30CA	30	1	33.30	36.80	1	48.4	12.4
6SMAJ33A	6SMAJ33CA	6SMAJ33A	6SMAJ33CA	33	1	36.70	40.60	1	53.3	11.3
6SMAJ36A	6SMAJ36CA	6SMAJ36A	6SMAJ36CA	36	1	40.00	44.20	1	58.1	10.4
6SMAJ40A	6SMAJ40CA	6SMAJ40A	6SMAJ40CA	40	1	44.40	49.10	1	64.5	9.3
6SMAJ43A	6SMAJ43CA	6SMAJ43A	6SMAJ43CA	43	1	47.80	52.80	1	69.4	8.7

Part Number		Marking		V_R	$I_{R@V_R}$	$V_{BR@I_T}$		I_T	$V_C@I_{PP}$	$I_{PP}^{\text{①}}$
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
6SMAJ45A	6SMAJ45CA	6SMAJ45A	6SMAJ45CA	45	1	50.00	55.30	1	72.7	8.3
6SMAJ48A	6SMAJ48CA	6SMAJ48A	6SMAJ48CA	48	1	53.30	58.90	1	77.4	7.8
6SMAJ51A	6SMAJ51CA	6SMAJ51A	6SMAJ51CA	51	1	56.70	62.70	1	82.4	7.3
6SMAJ54A	6SMAJ54CA	6SMAJ54A	6SMAJ54CA	54	1	60.00	66.30	1	87.1	6.9
6SMAJ58A	6SMAJ58CA	6SMAJ58A	6SMAJ58CA	58	1	64.40	71.20	1	93.6	6.4
6SMAJ60A	6SMAJ60CA	6SMAJ60A	6SMAJ60CA	60	1	66.70	73.70	1	96.8	6.2
6SMAJ64A	6SMAJ64CA	6SMAJ64A	6SMAJ64CA	64	1	71.10	78.60	1	103.0	5.9
6SMAJ70A	6SMAJ70CA	6SMAJ70A	6SMAJ70CA	70	1	77.80	86.00	1	113.0	5.3
6SMAJ75A	6SMAJ75CA	6SMAJ75A	6SMAJ75CA	75	1	83.30	92.10	1	121.0	5.0

① Surge waveform: 10/1000 μs

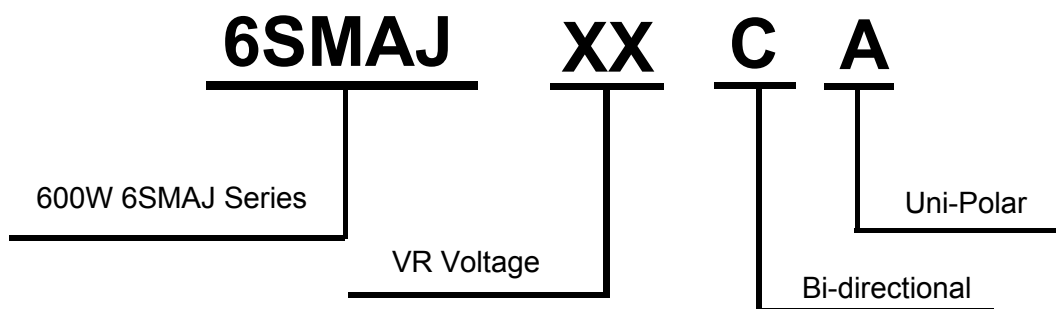
V_R : Stand-off Voltage -- Maximum voltage that can be applied

V_{BR} : Breakdown Voltage

V_C : Clamping Voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse Leakage Current

Part number code



Absolute maximum ratings ($T=25^{\circ}\text{C}$, $\text{RH}=45\%-75\%$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	$^{\circ}\text{C}$
Operating junction temperature range	T_j	-55 to +150	$^{\circ}\text{C}$
Steady state power dissipation at $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	6.5	W
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	600	W
Maximum Instantaneous Forward Voltage at 50A for Unidirectional	V_F	5.0	V

Ratings and V-I characteristics curves (T=25°C, unless otherwise noted)

FIG.1:V- I curve characteristics (Uni-directional)

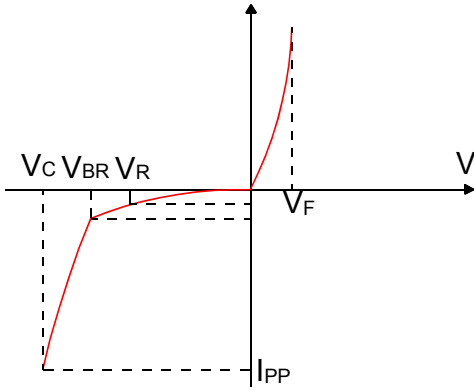
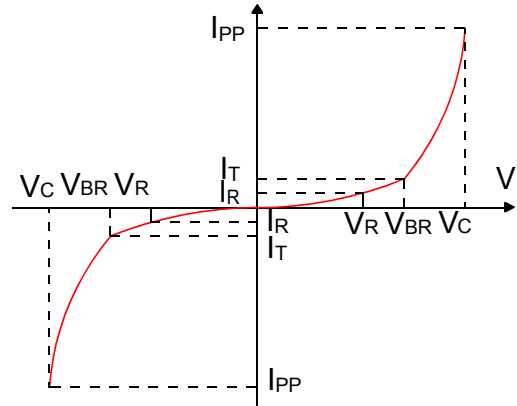


FIG.2:V- I curve characteristics (Bi-directional)



Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

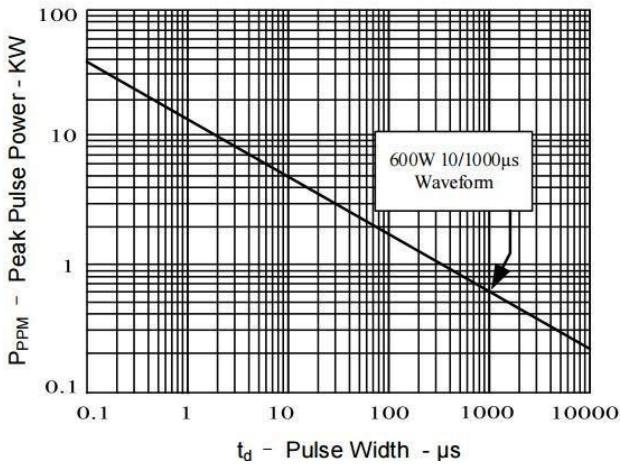


Figure 2: Pulse Derating Curve

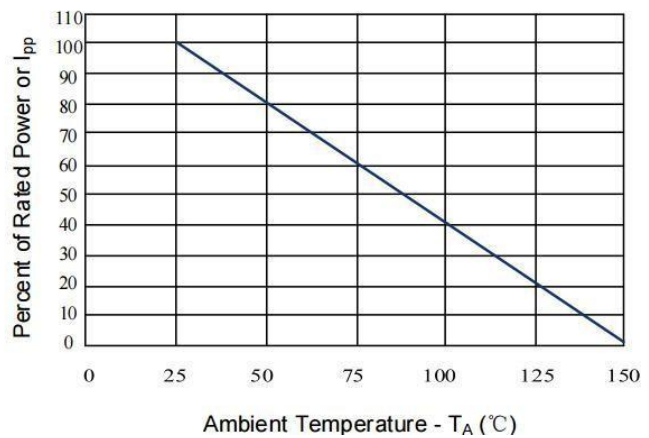


Figure 3: Pulse Waveform

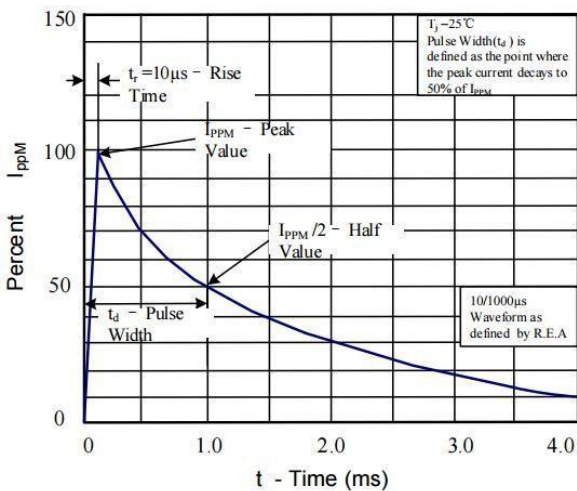


Figure 4: Typical Junction Capacitance

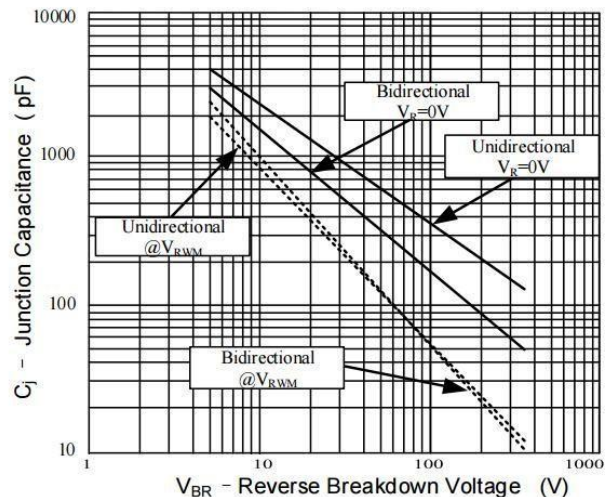


Figure 5: Steady State Power Dissipation Derating Curve

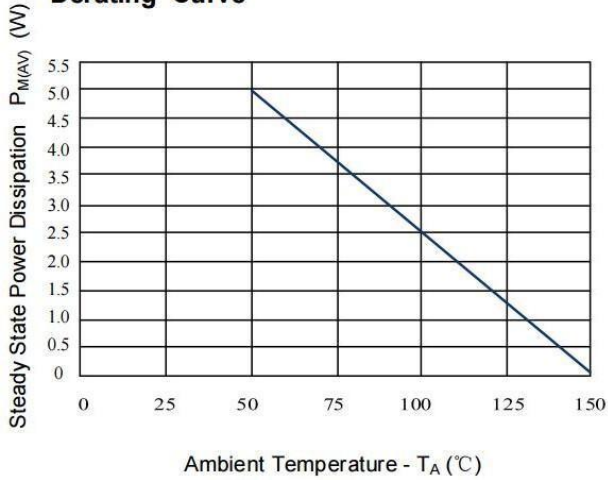
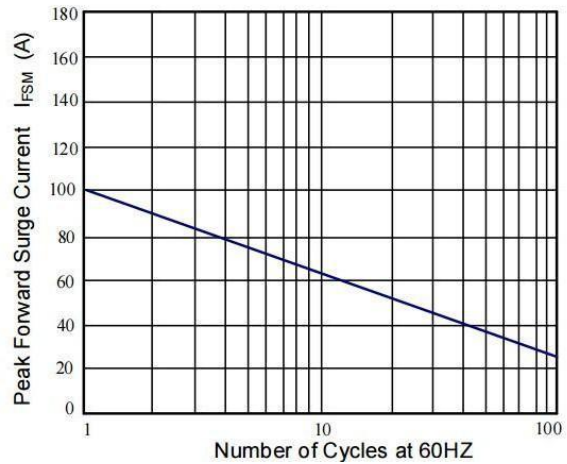
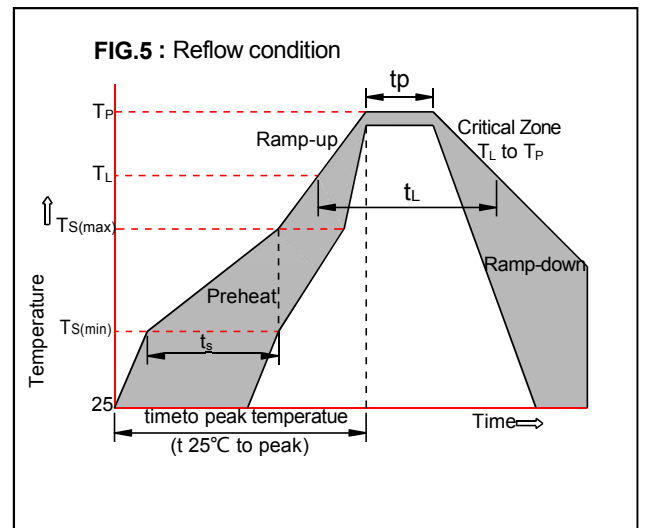


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional

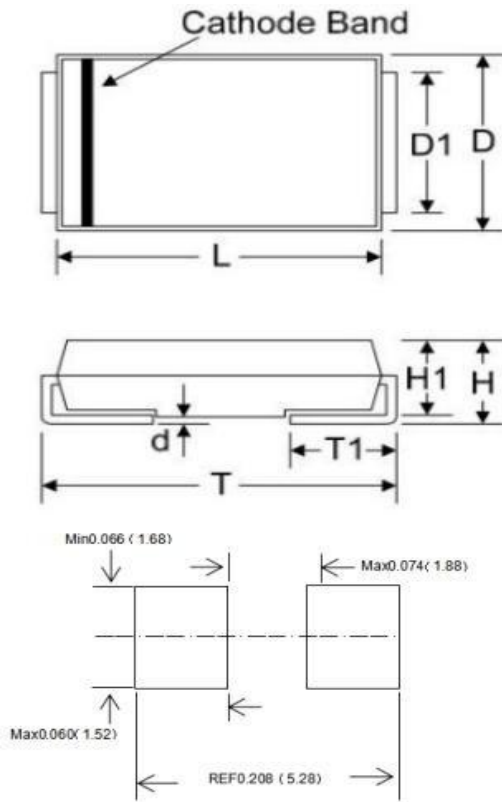


Soldering parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C

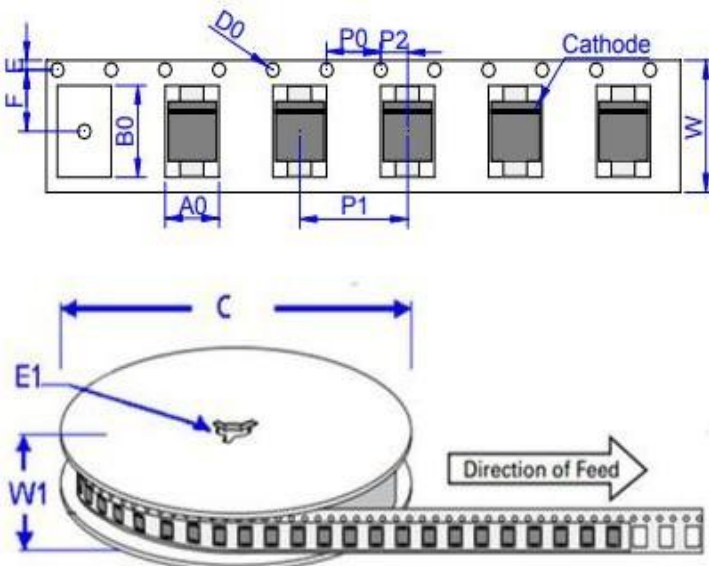


Package mechanical data



Ref.(mm)	Millimeters		Inches	
	Min.	Max.	Min.	Max.
D	2.50	2.90	0.098	0.115
D1	1.20	1.70	0.047	0.067
L	3.99	4.50	0.157	0.178
T	4.93	5.28	0.194	0.208
T1	0.76	1.52	0.029	0.060
d	0	0.203	0	0.008
H	1.98	2.41	0.077	0.095
H1	1.98	2.20	0.077	0.087

Tape & reel specification - SMA



Ref. (mm)	Dimensions	
	Millimeters	Inches
A0	2.79±0.20	0.110±0.008
B0	5.33±0.20	0.210±0.008
C	330.00	13.000
D0	1.55±0.10	0.061±0.004
E	1.75±0.20	0.069±0.008
E1	13.50±1.00	0.532±0.040
F	5.50±0.10	0.217±0.004
P0	4.00±0.20	0.157±0.008
P1	4.00±0.20	0.157±0.008
P2	2.00±0.10	0.079±0.004
W	12.00±0.30	0.472±0.012
W1	16.00±2.00	0.630±0.080

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