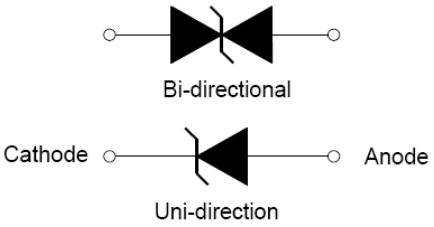
S-SMAJ Series 400W Transransient Voltage Suppressor

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.

SMA



Symbol

FEATURES:

- ✧ Glass passivated or planar junction
- ✧ Excellent clamping capability
- ✧ Repetition rate (duty cycle): 0.01%
- ✧ Typical I_R less than 1μA above 10V.
- ✧ Low profile package and low inductance
- ✧ 400W 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℃/10s at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-0.
- ✧ For surface mounted applications in order to optimize board space
- ✧ AEC-Q101 qualified.

ABSOLUTE MAXIMUM RATINGS (T_A=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	℃
Operating junction temperature range	T_j	-55 to +150	℃
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	3.3	W
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	400	W

ELECTRICAL CHARACTERISTICS (T_A=25℃)

Part Number		V_R	I_R@ V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
S-SMAJ5.0A	S-SMAJ5.0CA	5.0	100	6.40	7.00	10	9.2	43.5
S-SMAJ6.0A	S-SMAJ6.0CA	6.0	100	6.67	7.37	10	10.3	38.8
S-SMAJ6.5A	S-SMAJ6.5CA	6.5	50	7.22	7.98	10	11.2	35.7
S-SMAJ7.0A	S-SMAJ7.0CA	7.0	50	7.78	8.60	10	12.0	33.3
S-SMAJ7.5A	S-SMAJ7.5CA	7.5	50	8.33	9.21	1	12.9	31.0
S-SMAJ8.0A	S-SMAJ8.0CA	8.0	20	8.89	9.83	1	13.6	29.4
S-SMAJ8.5A	S-SMAJ8.5CA	8.5	10	9.44	10.40	1	14.4	27.8
S-SMAJ9.0A	S-SMAJ9.0CA	9.0	5	10.00	11.10	1	15.4	26.0
S-SMAJ10A	S-SMAJ10CA	10.0	2	11.10	12.30	1	17.0	23.5
S-SMAJ11A	S-SMAJ11CA	11.0	1	12.20	13.50	1	18.2	22.0
S-SMAJ12A	S-SMAJ12CA	12.0	1	13.30	14.70	1	19.9	20.1
S-SMAJ13A	S-SMAJ13CA	13.0	1	14.40	15.90	1	21.5	18.6
S-SMAJ14A	S-SMAJ14CA	14.0	1	15.60	17.20	1	23.2	17.3
S-SMAJ15A	S-SMAJ15CA	15.0	1	16.70	18.50	1	24.4	16.4
S-SMAJ16A	S-SMAJ16CA	16.0	1	17.80	19.70	1	26.0	15.4
S-SMAJ17A	S-SMAJ17CA	17.0	1	18.90	20.90	1	27.6	14.5
S-SMAJ18A	S-SMAJ18CA	18.0	1	20.00	22.10	1	29.2	13.7
S-SMAJ20A	S-SMAJ20CA	20.0	1	22.20	24.50	1	32.4	12.4
S-SMAJ22A	S-SMAJ22CA	22.0	1	24.40	26.90	1	35.5	11.3
S-SMAJ24A	S-SMAJ24CA	24.0	1	26.70	29.50	1	38.9	10.3
S-SMAJ26A	S-SMAJ26CA	26.0	1	28.90	31.90	1	42.1	9.5
S-SMAJ28A	S-SMAJ28CA	28.0	1	31.10	34.40	1	45.4	8.8
S-SMAJ30A	S-SMAJ30CA	30.0	1	33.30	36.80	1	48.4	8.3
S-SMAJ33A	S-SMAJ33CA	33.0	1	36.70	40.60	1	53.3	7.5
S-SMAJ36A	S-SMAJ36CA	36.0	1	40.00	44.20	1	58.1	6.9
S-SMAJ40A	S-SMAJ40CA	40.0	1	44.40	49.10	1	64.5	6.2
S-SMAJ43A	S-SMAJ43CA	43.0	1	47.80	52.80	1	69.4	5.8
S-SMAJ45A	S-SMAJ45CA	45.0	1	50.00	55.30	1	72.7	5.5
S-SMAJ48A	S-SMAJ48CA	48.0	1	53.30	58.90	1	77.4	5.2
S-SMAJ51A	S-SMAJ51CA	51.0	1	56.70	62.70	1	82.4	4.9

ELECTRICAL CHARACTERISTICS (T_A=25℃, continued)

Part Number		V_R	I_R@ V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
S-SMAJ54A	S-SMAJ54CA	54.0	1	60.00	66.30	1	87.1	4.6
S-SMAJ58A	S-SMAJ58CA	58.0	1	64.40	71.20	1	93.6	4.3
S-SMAJ60A	S-SMAJ60CA	60.0	1	66.70	73.70	1	96.8	4.1
S-SMAJ64A	S-SMAJ64CA	64.0	1	71.10	78.60	1	103.0	3.9
S-SMAJ70A	S-SMAJ70CA	70.0	1	77.80	86.00	1	113.0	3.6
S-SMAJ75A	S-SMAJ75CA	75.0	1	83.30	92.10	1	121.0	3.3
S-SMAJ78A	S-SMAJ78CA	78.0	1	86.70	95.80	1	126.0	3.2
S-SMAJ85A	S-SMAJ85CA	85.0	1	94.40	104.0	1	137.0	2.9
S-SMAJ90A	S-SMAJ90CA	90.0	1	100.0	111.0	1	146.0	2.8
S-SMAJ100A	S-SMAJ100CA	100.0	1	111.0	123.0	1	162.0	2.5
S-SMAJ110A	S-SMAJ110CA	110.0	1	122.0	135.0	1	177.0	2.3
S-SMAJ120A	S-SMAJ120CA	120.0	1	133.0	147.0	1	193.0	2.1
S-SMAJ130A	S-SMAJ130CA	130.0	1	144.0	159.0	1	209.0	1.9
S-SMAJ150A	S-SMAJ150CA	150.0	1	167.0	185.0	1	243.0	1.7
S-SMAJ160A	S-SMAJ160CA	160.0	1	178.0	197.0	1	259.0	1.6
S-SMAJ170A	S-SMAJ170CA	170.0	1	189.0	209.0	1	275.0	1.5
S-SMAJ180A	S-SMAJ180CA	180.0	1	201.0	222.0	1	292.0	1.4
S-SMAJ200A	S-SMAJ200CA	200.0	1	224.0	247.0	1	324.0	1.3
S-SMAJ220A	S-SMAJ220CA	220.0	1	246.0	272.0	1	356.0	1.1
S-SMAJ250A	S-SMAJ250CA	250.0	1	279.0	309.0	1	405.0	1.0
S-SMAJ300A	S-SMAJ300CA	300.0	1	335.0	371.0	1	486.0	0.8
S-SMAJ350A	S-SMAJ350CA	350.0	1	391.0	432.0	1	567.0	0.7
S-SMAJ400A	S-SMAJ400CA	400.0	1	447.0	494.0	1	648.0	0.6
S-SMAJ440A	S-SMAJ440CA	440.0	1	492.0	543.0	1	713.0	0.6

① Surge waveform: 10/1000μs

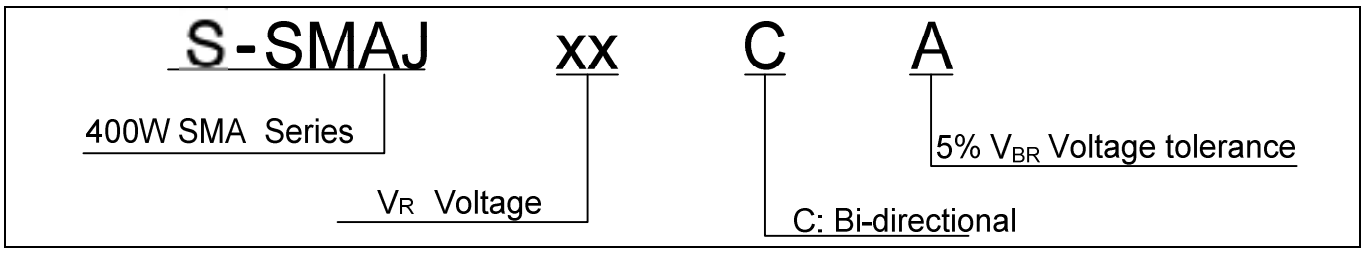
V_R ： Stand-off Voltage -- Maximum voltage that can be applied

V_{BR}： Breakdown Voltage

V_C： Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp

I_R： Reverse Leakage Current

ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25ºC, unless otherwise noted)

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

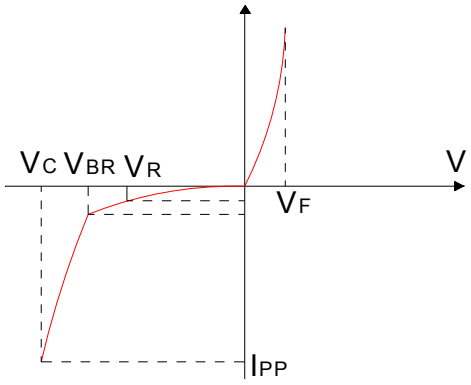


FIG.2:V- I curve characteristics (Bi-directional)

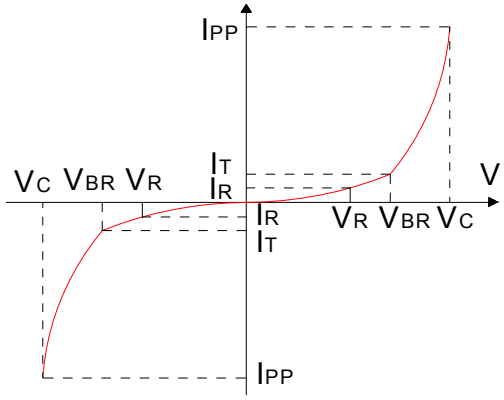


FIG.3: Pulse waveform

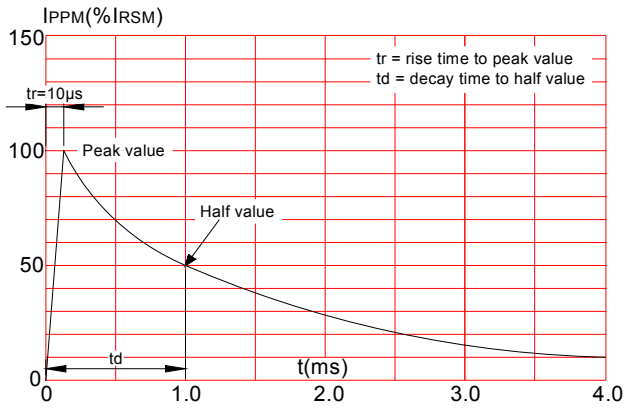
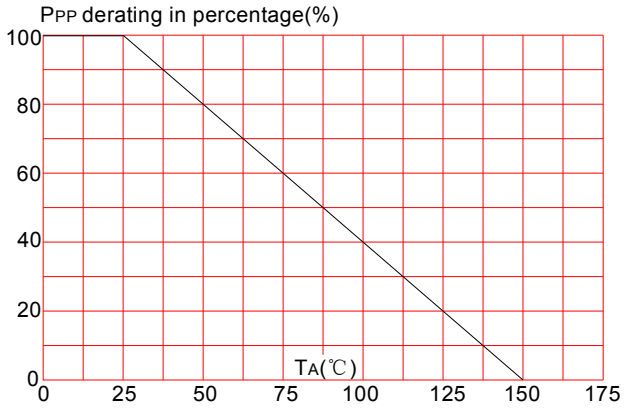
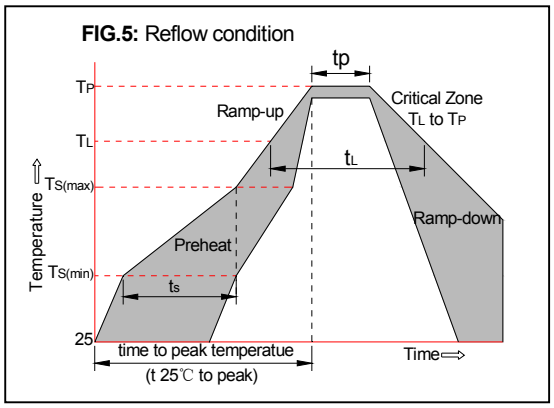


FIG.4: Pulse derating curve

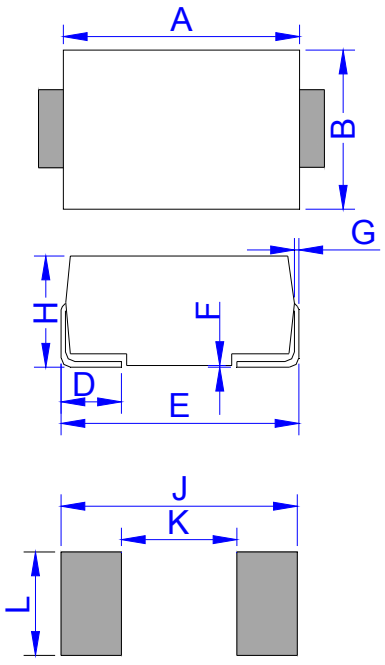


SOLDERING PARAMETERS

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



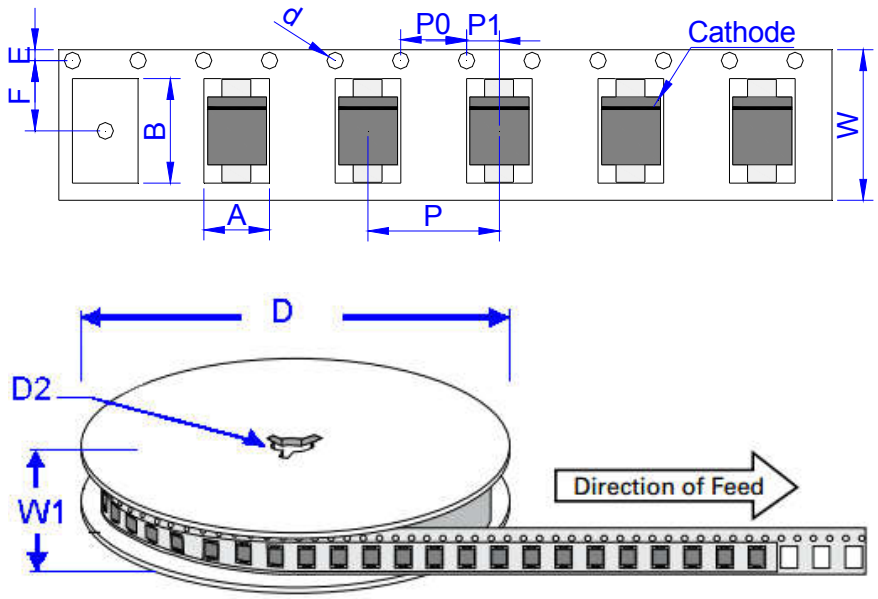
PACKAGE MECHANICAL DATA



DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.90	4.65	0.153	0.183
B	2.30	2.90	0.091	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.70	5.28	0.185	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.90	2.41	0.075	0.095
J	6.50		0.256	
K		2.30		0.090
L	1.70		0.067	

TAPE AND REEL SPECIFICATION-SMA



Ref.	Dimensions	
	Millimeters	Inches
A	2.79 ± 0.3	0.110 ± 0.012
B	5.33 ± 0.3	0.210 ± 0.012
d	1.5 ± 0.1	0.059 ± 0.004
D	330.0	13.0
D2	13 ± 1	0.512 ± 0.039
E	1.5 ± 0.2	0.059 ± 0.008
F	5.65 ± 0.2	0.222 ± 0.008
P	4.0 ± 0.2	0.157 ± 0.008
P0	4.0 ± 0.2	0.157 ± 0.008
P1	2.0 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	16.8 ± 2.0	0.661 ± 0.079

OUTLINE	REEL (PCS)	PER CARTON (PCS)	REEL DIAMETERS (mm)
TAPING	5,000	80,000	330

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