

Surface Mount Transient Voltage Suppressors

4.0 SMF Series 3.3 To 48V 400W

Description

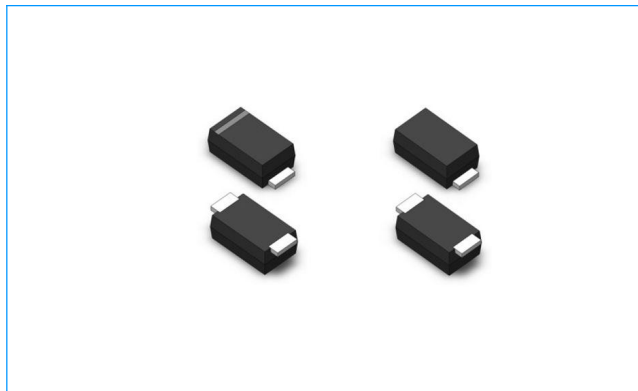
TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

Working Voltage: 3.3 to 48 V

Peak Pulse Power: 400 W

Features

- ◆ Glass passivated chip
- ◆ 400 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.
- ◆ Meet AEC-Q101 requirement
- ◆ RoHS compliant



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 en
- ◆ Mounting position: Any

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.

Maximum Ratings and Thermal Characteristingscs(Ta=25C unless Otherwise noted)

Parameter	Symbol	Value	Units
Peak power dissipation with a 10/1000us waveform	P _{PPM}	400	W
Power Dissipation on Infinite Heat Sink at T _L =75° C	P _D	2.8	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	°C
Maximum Instantaneous Forward Voltage at 20A 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				
4.0SMF3.3A	-	KD	-	3.3	4.10	-	1	7.3	50.0	80
4.0SMF5.0A	4.0SMF5.0CA	AE	5CL	5.0	6.40	7.00	10	9.2	40.1	120
4.0SMF6.0A	4.0SMF6.0CA	AG	6CL	6.0	6.67	7.37	10	10.3	35.9	120
4.0SMF6.5A	4.0SMF6.5CA	AK	6VCL	6.5	7.22	7.98	10	11.2	33.1	80
4.0SMF7.0A	4.0SMF7.0CA	AM	7CL	7.0	7.78	8.60	10	12.0	30.9	50
4.0SMF7.5A	4.0SMF7.5CA	AP	7VCL	7.5	8.33	9.21	1	12.9	28.7	50
4.0SMF8.0A	4.0SMF8.0CA	AR	8CL	8.0	8.89	9.83	1	13.6	27.2	20
4.0SMF9.0A	4.0SMF9.0CA	AV	9CL	9.0	10.00	11.10	1	15.4	24.1	5
4.0SMF10A	4.0SMF10CA	AX	10CL	10.0	11.10	12.30	1	17.0	23.5	2
4.0SMF11A	4.0SMF11CA	AZ	11CL	11.0	12.20	13.50	1	18.2	22.0	1
4.0SMF12A	4.0SMF12CA	BE	12CL	12.0	13.30	14.70	1	19.9	20.1	1
4.0SMF13A	4.0SMF13CA	BG	13CL	13.0	14.40	15.90	1	21.5	18.6	1
4.0SMF14A	4.0SMF14CA	BK	14CL	14.0	15.60	17.20	1	23.2	17.2	1
4.0SMF15A	4.0SMF15CA	BM	15CL	15.0	16.70	18.50	1	24.4	16.4	1
4.0SMF17A	--	BR	--	17.0	18.90	20.90	1	27.6	14.5	1
4.0SMF18A	4.0SMF18CA	BT	18CL	18.0	20.00	22.10	1	29.2	13.7	1
4.0SMF20A	4.0SMF20CA	BV	20CL	20.0	22.20	24.50	1	32.4	12.3	1
4.0SMF22A	4.0SMF22CA	BX	22CL	22.0	24.40	26.90	1	35.5	11.3	1
4.0SMF24A	4.0SMF24CA	BZ	24CL	24.0	26.70	29.50	1	38.9	10.3	1
4.0SMF26A	4.0SMF26CA	CE	26CL	26.0	28.90	31.90	1	42.1	9.5	1
4.0SMF28A	4.0SMF28CA	CG	28CL	28.0	31.10	34.40	1	45.4	8.8	1
4.0SMF30A	4.0SMF30CA	CK	30CL	30.0	33.30	36.80	1	48.4	8.3	1
4.0SMF33A	4.0SMF33CA	CM	33CL	33.0	36.70	40.60	1	53.3	7.5	1
4.0SMF36A	4.0SMF36CA	CP	36CL	36.0	40.00	44.20	1	58.1	6.9	1
4.0SMF40A	4.0SMF40CA	CR	40CL	40.0	44.40	49.10	1	64.5	6.2	1
4.0SMF43A	4.0SMF43CA	CT	43CL	43.0	47.80	52.80	1	69.4	5.8	1
4.0SMF45A	4.0SMF45CA	CV	45CL	45.0	50.00	55.30	1	72.7	5.5	1
4.0SMF48A	4.0SMF48CA	CX	48CL	48.0	53.30	58.90	1	77.4	5.2	1
4.0SMF51A	--	CZ	--	51.0	56.70	62.70	1	82.4	4.9	1
4.0SMF58A	--	DE	--	58.0	64.40	71.20	1	93.6	4.3	1
4.0SMF60A	--	DG	--	60.0	66.70	73.70	1	96.8	4.1	1
4.0SMF64A	--	DM	--	64.0	71.10	78.60	1	103.0	3.9	1
4.0SMF70A	--	DP	--	70.0	77.80	86.00	1	113.0	6.5	1
4.0SMF75A	--	DR	--	75.0	83.30	92.10	1	121.0	3.3	1
4.0SMF78A	--	DT	--	78.0	86.70	95.80	1	126.0	3.2	1
4.0SMF85A	--	DV	--	85.0	94.40	104.00	1	137.0	2.9	1

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Ratings and Characteristics Curves(TA=25°C unless otherwise noted)

Figure 1-Pulse Waveform

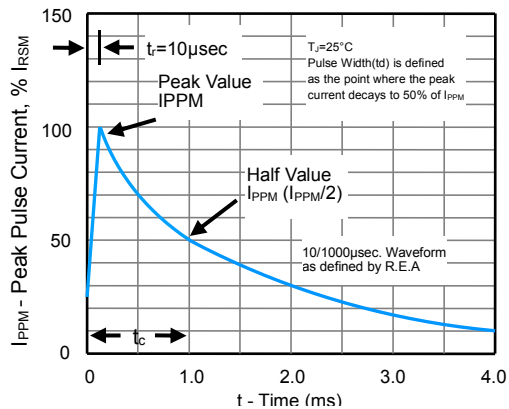
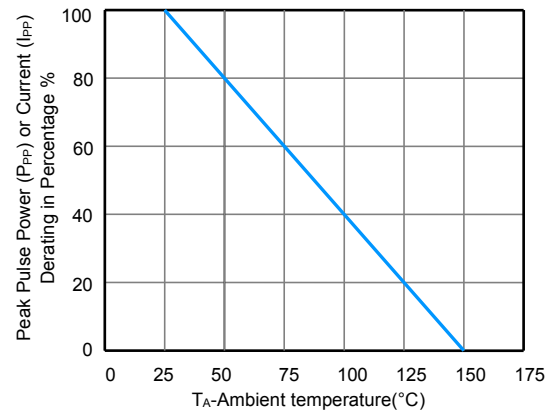
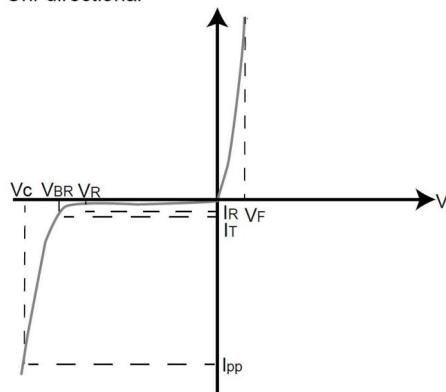


Figure 2-Pulse Derating Curve

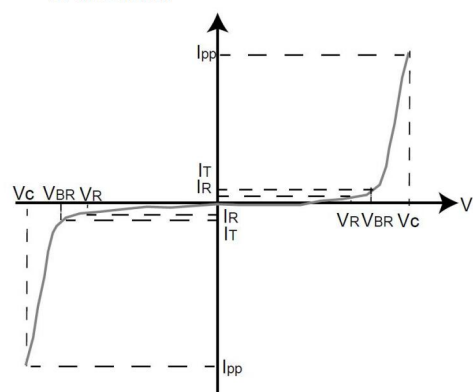


I-V Curve Characteristics

Uni-directional



Bi-directional



Part Numbering

4.0 SMF x x x C A

5% VBR VOLTAGE TOLERANCE

BI-DIRECTIONAL

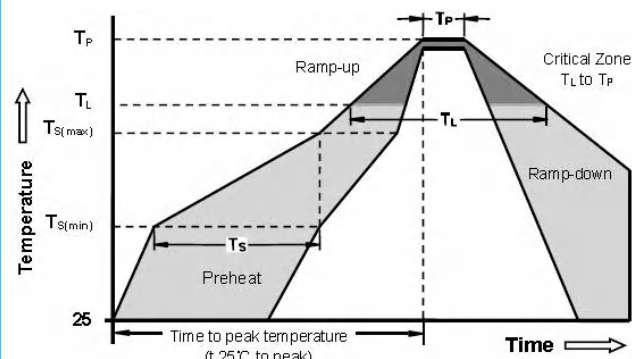
VR VOLTAGE

SERIES

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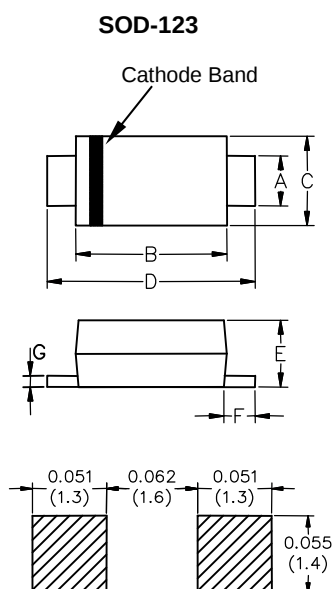
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Soldering Parameters



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	0.031	0.044	0.77	1.09
B	0.1	0.112	2.51	2.81
C	0.055	0.071	1.38	1.85
D	0.140	0.152	3.51	3.82
E	0.037	0.053	0.93	1.33
F	0.01	-	0.25	-
G	-	0.008	-	0.20

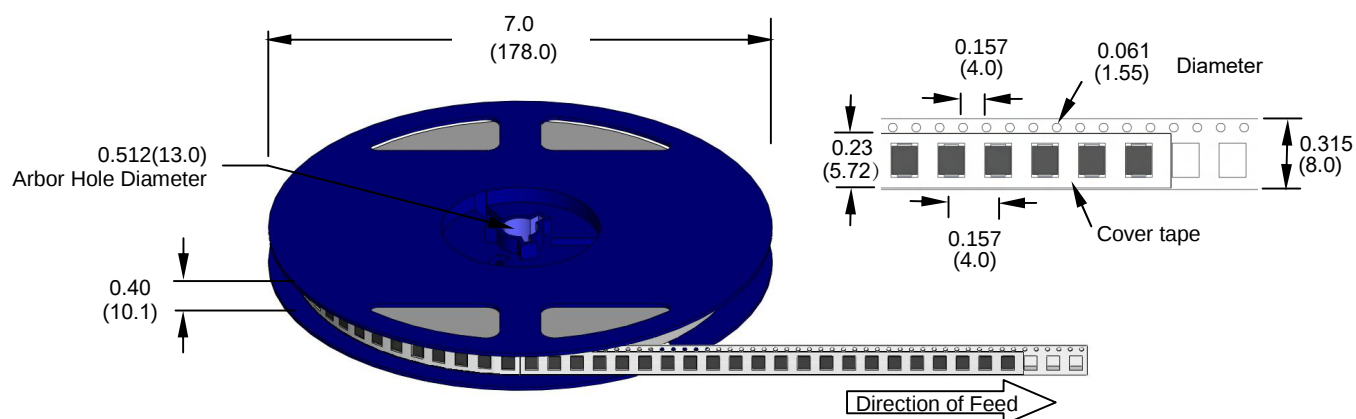
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Packaging

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
4.0SMFXXXXX	SOD-123	3000	Tape & Reel -8mm/7"tape	EIA STD RS-481

Tape and Reel Specifications



Dimensions are in inches
(and millimeters)