

400W Transient Voltage Suppressor

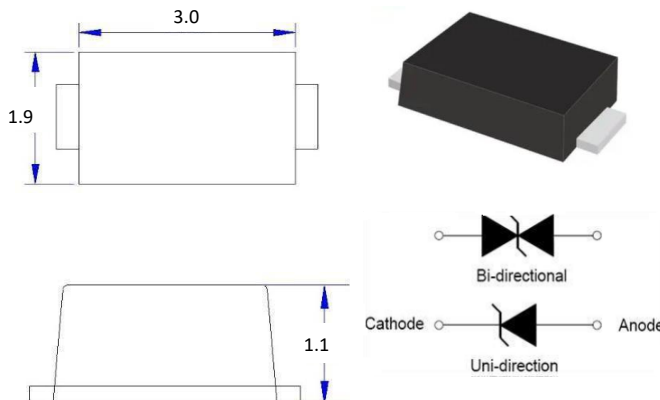
Description

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.

Features

- Glass passivated junction chip
- 400 W peak pulse power capability with a 10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- Excellent clamping capability
- Low reverse leakage
- Very fast response time
- Lead and body according with RoHS standard

Pin Configuration



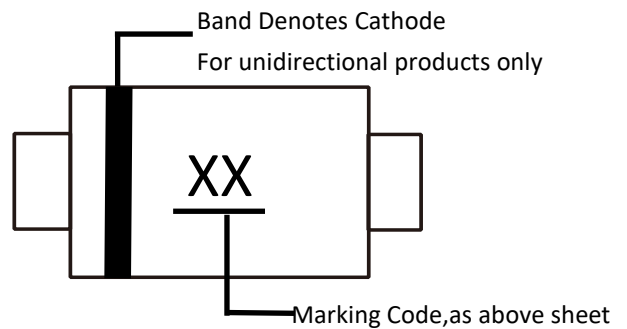
Mechanical Characteristics

- Case:SOD123FL Molded plastic
- Lead:Solderable per MIL-STD-750,method 2026
- Moisture Sensitivity: Level 1 per J-STD-020

Applications

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

Marking Information



Ordering Information

Out line	Packaging	Real Size
Taping	3000/Tape & Reel	7 inch

Maximum Ratings And Electrical Characteristics

Ratings at 25 C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000 us waveform ⁽¹⁾	P _{PP}	400	W
Peak pulse current with a 10/1000 us waveform ⁽¹⁾	I _{PP}	See Next Table	A
Power dissipation on infinite heatsink at TL = 75 °C	P _D	3	W

Peak forward surge current, 8.3 ms single half sinewave unidirectional only ⁽²⁾	I _{FSM}	40	A
Maximum instantaneous forward voltage at 15 A for unidirectional only ⁽³⁾	V _F	3.5	V
Operating junction Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

NOTE:

1)Non-repetitive current pulse per Fig.5 and derated above TA= 25 °Cper Fig.1;

2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum;

Part Number		Device Marking Code		Reverse Stand-off Voltage	Breakdown Voltage V _{BR} @ I _T		Test Current	Max. Clamping Voltage @ I _{PP}	Max. Peak Pulse Current	Max. Reverse Leakage @ V _{RWM}
UNI-POLAR	BI-POLAR	UNI	BI	V _{RWM} (V)	Min.(V)	Max.(V)	I _T (mA)	V _C MAX.(V)	I _{PP} (A)	I _R (uA)
S4MF5.0A	S4MF5.0CA	AE	WE	5.0	6.40	7.00	10	9.2	43.5	800
S4MF6.0A	S4MF6.0CA	AG	WG	6.0	6.67	7.37	10	10.3	38.8	800
S4MF6.5A	S4MF6.5CA	AK	WK	6.5	7.22	7.98	10	11.2	35.7	500
S4MF7.0A	S4MF7.0CA	AM	WM	7.0	7.78	8.60	10	12.0	33.3	200
S4MF7.5A	S4MF7.5CA	AP	WP	7.5	8.33	9.21	1	12.9	31.0	100
S4MF8.0A	S4MF8.0CA	AR	WR	8.0	8.89	9.83	1	13.6	29.4	50
S4MF8.5A	S4MF8.5CA	AT	WT	8.5	9.44	10.40	1	14.4	27.8	20
S4MF9.0A	S4MF9.0CA	AV	WV	9.0	10.00	11.10	1	15.4	26.0	10
S4MF10A	S4MF10CA	AX	WX	10.0	11.10	12.30	1	17.0	23.5	5
S4MF11A	S4MF11CA	AZ	WZ	11.0	12.20	13.50	1	18.2	22.0	1
S4MF12A	S4MF12CA	BE	XE	12.0	13.30	14.70	1	19.9	20.1	1
S4MF13A	S4MF13CA	BG	XG	13.0	14.40	15.90	1	21.5	18.6	1
S4MF14A	S4MF14CA	BK	XK	14.0	15.60	17.20	1	23.2	17.2	1
S4MF15A	S4MF15CA	BM	XM	15.0	16.70	18.50	1	24.4	16.4	1
S4MF16A	S4MF16CA	BP	XP	16.0	17.80	19.70	1	26.0	15.4	1
S4MF17A	S4MF17CA	BR	XR	17.0	18.90	20.90	1	27.6	14.5	1
S4MF18A	S4MF18CA	BT	XT	18.0	20.00	22.10	1	29.2	13.7	1
S4MF20A	S4MF20CA	BV	XV	20.0	22.20	24.50	1	32.4	12.3	1
S4MF22A	S4MF22CA	BX	XX	22.0	24.40	26.90	1	35.5	11.3	1
S4MF24A	S4MF24CA	BZ	XZ	24.0	26.70	29.50	1	38.9	10.3	1
S4MF26A	S4MF26CA	CE	YE	26.0	28.90	31.90	1	42.1	9.5	1

S4MF28A	S4MF28CA	CG	YG	28.0	31.10	34.40	1	45.4	8.8	1
S4MF30A	S4MF30CA	CK	YK	30.0	33.50	36.80	1	48.4	8.3	1
S4MF33A	S4MF33CA	CM	YM	33.0	36.70	40.60	1	53.3	7.5	1
S4MF36A	S4MF36CA	CP	YP	36.0	40.00	44.20	1	58.1	6.9	1
S4MF40A	S4MF40CA	CR	YR	40.0	44.40	49.10	1	64.5	6.2	1
S4MF43A	S4MF43CA	CT	YT	43.0	47.80	52.80	1	69.4	5.8	1
S4MF45A	S4MF45CA	CV	YV	45.0	50.00	55.30	1	72.7	5.5	1
S4MF48A	S4MF48CA	CX	YX	48.0	53.30	58.90	1	77.4	5.2	1
S4MF51A	S4MF51CA	CZ	YZ	51.0	56.70	62.70	1	82.4	4.9	1
S4MF54A	S4MF54CA	RE	ZE	54.0	60.00	66.30	1	87.1	4.6	1
S4MF58A	S4MF58CA	RG	ZG	58.0	64.40	71.20	1	93.6	4.3	1
S4MF60A	S4MF60CA	RK	ZK	60.0	66.70	73.70	1	96.8	4.1	1
S4MF64A	S4MF64CA	RM	ZM	64.0	71.10	78.60	1	103.0	3.9	1
S4MF70A	S4MF70CA	RP	ZP	70.0	77.80	86.00	1	113.0	3.5	1
S4MF75A	S4MF75CA	RR	ZR	75.0	83.30	92.10	1	121.0	3.3	1
S4MF78A	S4MF78CA	RT	ZT	78.0	86.70	95.80	1	126.0	3.2	1
S4MF85A	S4MF85CA	RV	ZV	85.0	94.4	104.0	1	137.0	2.9	1
S4MF90A	S4MF90CA	RX	ZX	90.0	100.0	111.0	1	146.0	2.7	1
S4MF100A	S4MF100CA	RZ	ZZ	100.0	111.0	123.0	1	162.0	2.5	1
S4MF110A	S4MF110CA	SE	VE	110.0	122.0	135.0	1	177.0	2.3	1
S4MF120A	S4MF120CA	SG	VG	120.0	133.0	147.0	1	193.0	2.1	1
S4MF130A	S4MF130CA	SK	VK	130.0	144.0	159.0	1	209.0	1.9	1
S4MF150A	S4MF150CA	SM	VM	150.0	167.0	185.0	1	243.0	1.6	1
S4MF160A	S4MF160CA	SP	VP	160.0	178.0	197.0	1	259.0	1.5	1
S4MF170A	S4MF170CA	SR	VR	170.0	189.0	209.0	1	275.0	1.5	1
S4MF180A		ST		180.0	201.0	222.0	1	292.0	1.4	1
S4MF190A		SU		190.0	209.0	243.0	1	308.0	1.3	1
S4MF200A		SV		200.0	224.0	247.0	1	324.0	1.2	1
S4MF210A		SW		210.0	231.0	268.0	1	340.0	1.2	1
S4MF220A		GX		220.0	246.0	272.0	1	356.0	1.1	1

Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

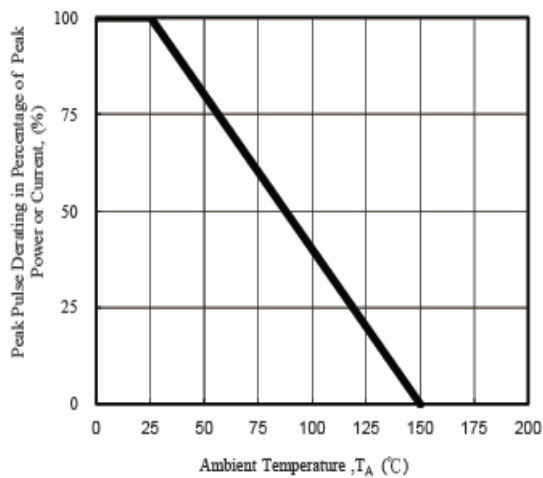


Fig. 1 - Pulse Derating Curve

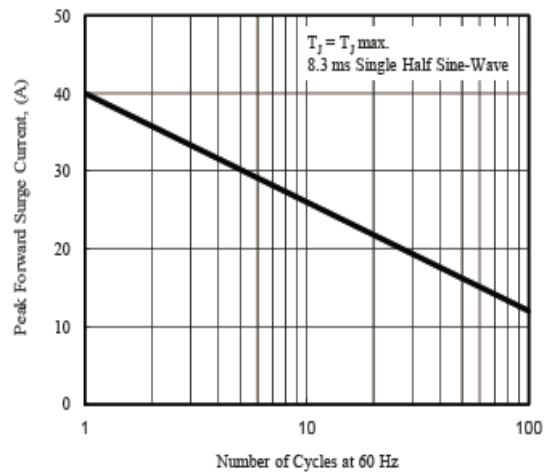


Fig. 2 - Maximum Non-Repetitive Surge Current

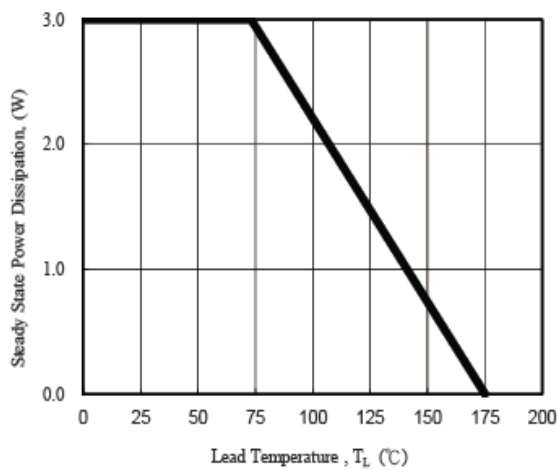


Fig. 3 - Steady State Power Derating Curve

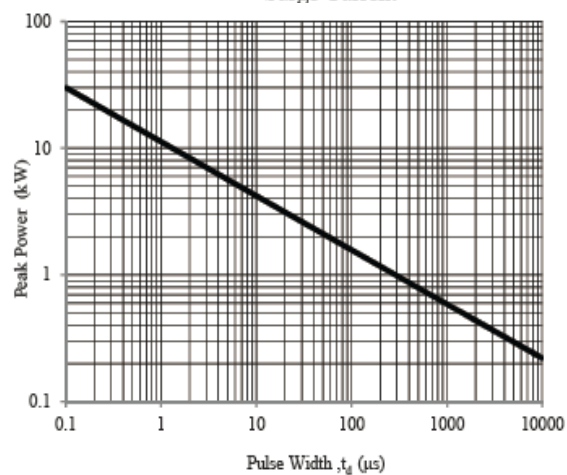


Fig. 4 - Peak Pulse Power Rating Curve

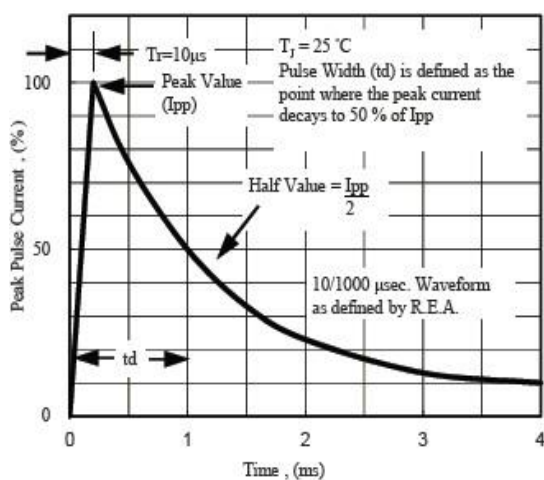


Fig. 5 - Pulse Waveform

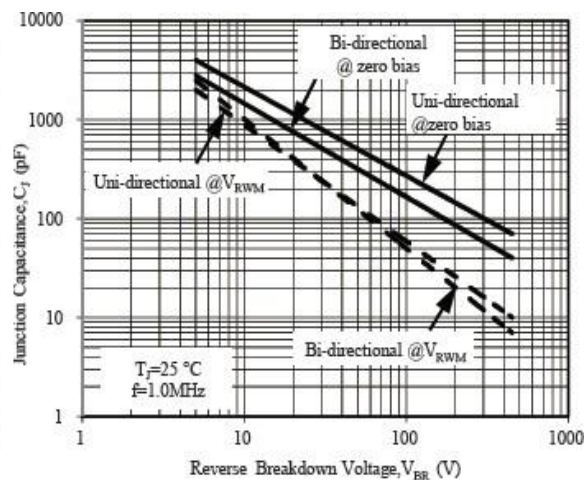
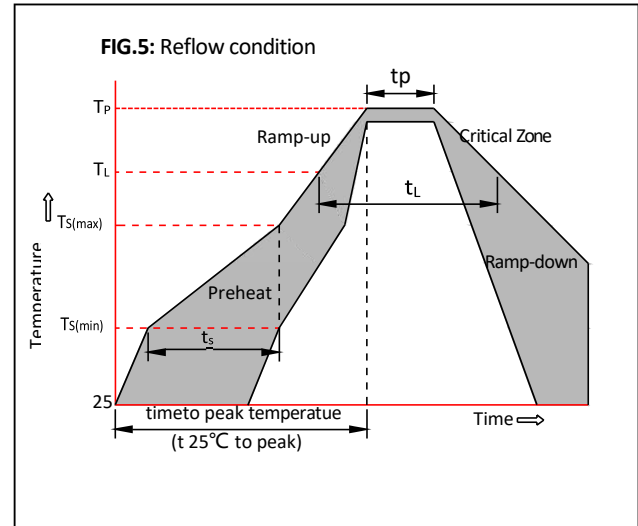


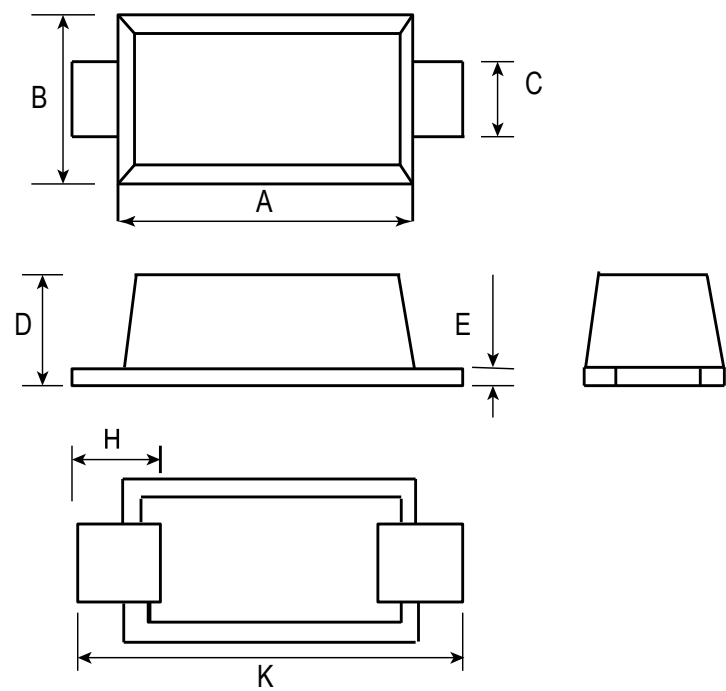
Fig. 6 - Typical Junction Capacitance

Soldering Parameters

Reflow Condition		Pb-Free assembly (see as below)
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

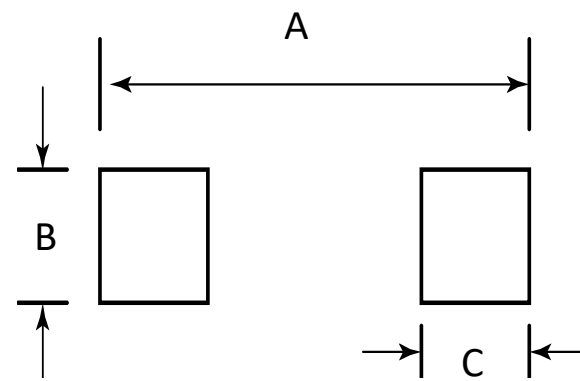


SOD-123FL Package Outline Drawing



DIM	Millimeters		
	Min	Nom	Max
A	2.60	2.80	3.00
B	1.60	1.80	2.00
C	0.80	1.00	1.20
D	0.9		1.30
E	0.10	0.20	0.30
H	0.35		0.85
K	3.50		4.00

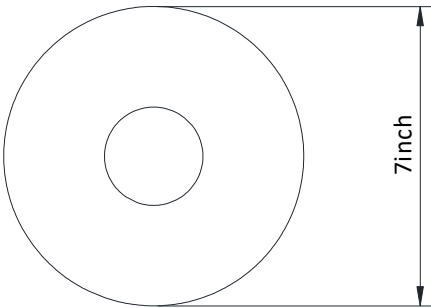
Suggested Land Pattern



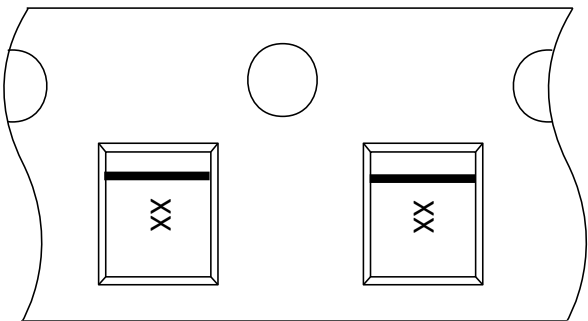
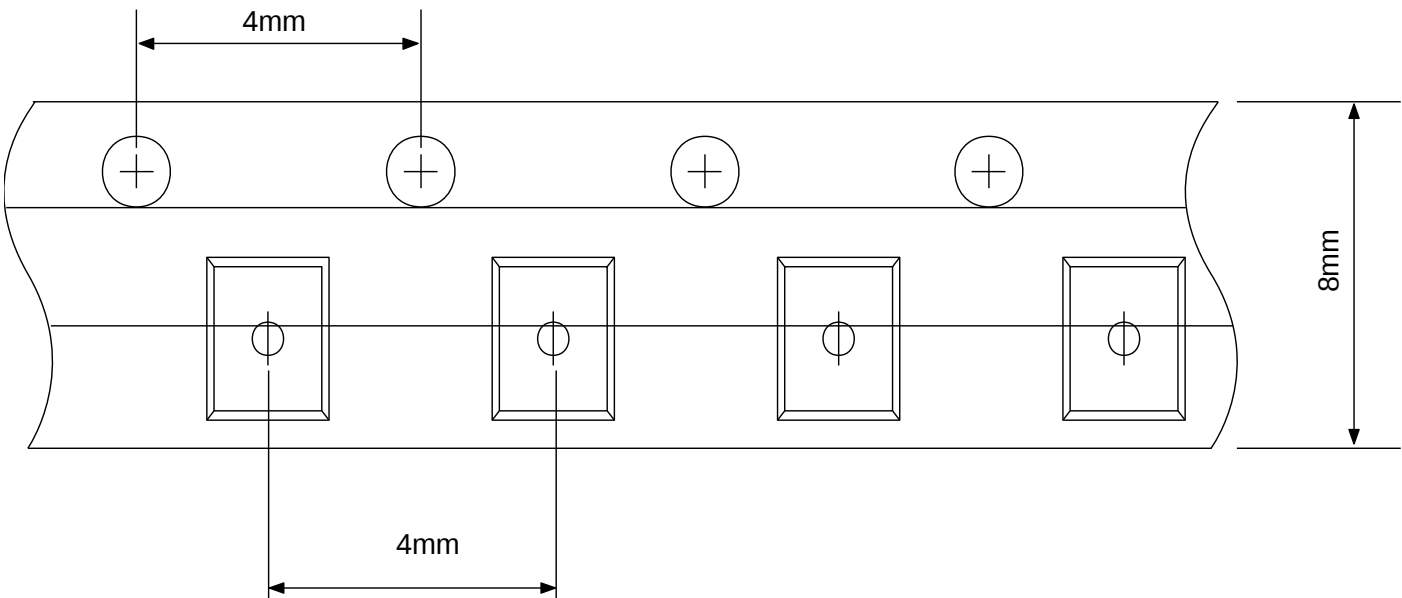
SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	4.19	0.165
B	1.20	0.048
C	0.90	0.036

TAPE AND REEL INFORMATION

Reel Dimensions

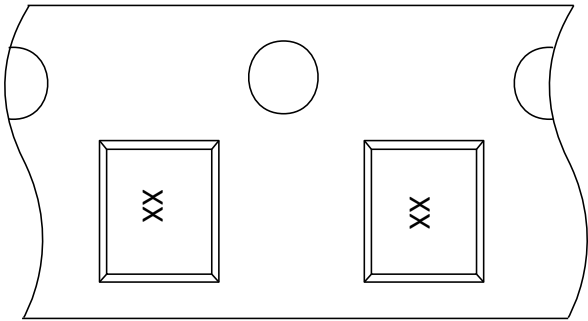


Tape Dimensions



Marking For Uni-Polar

or



Marking For Bi-Polar



User Direction of Feed

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