

V. Transient Voltage Suppressor

400W Surface Mount TVS (Reverse Stand-off Voltage: 3.3~220 Volts)

S4MF Series

(Package: SOD-123FL)

<p><u>FEATURES</u></p> <ul style="list-style-type: none"> • Glass passivated chip • 400W peak pulse power capability with a 10/1000μs waveform, repetitive rate (duty cycle): 0.01% • Excellent clamping capability • Low reverse leakage • Very fast response time • Lead and body according with RoHS standard <p><u>MECHANICAL DATA</u></p> <ul style="list-style-type: none"> • Case : SOD-123FL molded plastic • Lead : Solderable per MIL-STD-750, Method 2026 • Epoxy : UL 94V-0 rate flame retardant • Polarity : Color band denotes cathode end except Bipolar • Mounting position : Any 	<p style="text-align: center;">Cathode Band Top View</p> <p style="text-align: center;">1.70-1.90 2.70-2.90 0.80-1.20 1.15-1.45 0.10-0.30 0.35-0.85 3.50-3.90</p> <p>Case: SOD-123FL Dimensions in inches and (millimetres)</p>
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Devices for Bi-Directional Applications

For bi-directional devices use suffix "CA" for types S4MF3.3CA thru S4MF170CA (e.g. S4MF28CA)

Electrical characteristics apply in both directions.

Maximum Ratings & Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Units
Peak power dissipation with a 10/1000 μ s waveform ⁽¹⁾	P _{PPM}	400	Watts
Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾	I _{PPM}	See next table	Amps
Power dissipation on infinite heatsink at T _L = 75°C	P _{M(AV)}	2.0	Watts
Peak forward surge current, 8.3ms single half sinewave unidirectional only ⁽²⁾	I _{FSM}	50	Amps
Maximum instantaneous forward voltage at 10A for unidirectional only ⁽³⁾	V _F	3.5/6.5	Volts
Operating junction and storage temperature range	T _j , T _{stg}	-55 to +155	°C

Note:

1. Non-repetitive current pulse per Fig.5 and derated above Ta = 25 °C per Fig.1

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

3. V_F<3.5V for devices of V_(BR)<200V and V_F<6.5V for devices of V_(BR)>201

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Device Type	Device Marking Code		Reverse Stand-off Voltage V_{RWM} (V)	Breakdown Voltage $V_{(BR)}$ @ I_T		Test Current I_T (mA)	Max. Clamping Voltage @ I_{PPM} V_C Max.(V)	Max. Peak Pulse Current I_{PPM} (A)	Max. Reverse Leakage @ V_{RWM} I_R (μ A)
	UNI-	BI-		Min (V)	Max (V)				
S4MF3.3(C)A	ZZ	UZ	3.3	5.20	6.00	10	8.0	43.80	600
S4MF5.0(C)A	AE	WE	5.0	6.40	7.00	10	9.2	43.50	400
S4MF6.0(C)A	AG	WG	6.0	6.67	7.37	10	10.3	38.80	400
S4MF6.5(C)A	AK	WK	6.5	7.22	7.98	10	11.2	35.70	250
S4MF7.0(C)A	AM	WM	7.0	7.78	8.60	10	12.0	33.30	100
S4MF7.5(C)A	AP	WP	7.5	8.33	9.21	1	12.9	31.00	50
S4MF8.0(C)A	AR	WR	8.0	8.89	9.83	1	13.6	29.40	25
S4MF8.5(C)A	AT	WT	8.5	9.44	10.4	1	14.4	27.80	10
S4MF9.0(C)A	AV	WV	9.0	10.00	11.10	1	15.4	26.00	2.5
S4MF10(C)A	AX	WX	10.0	11.10	12.30	1	17.0	23.50	2.5
S4MF11(C)A	AZ	WZ	11.0	12.20	13.50	1	18.2	22.00	2.5
S4MF12(C)A	BE	XE	12.0	13.30	14.70	1	19.9	20.10	2.5
S4MF13(C)A	BG	XG	13.0	14.40	15.90	1	21.5	18.60	1
S4MF14(C)A	BK	XK	14.0	15.60	17.20	1	23.2	17.20	1
S4MF15(C)A	BM	XM	15.0	16.70	18.50	1	24.4	16.40	1
S4MF16(C)A	BP	XP	16.0	17.80	19.70	1	26.0	15.40	1
S4MF17(C)A	BR	XR	17.0	18.90	20.90	1	27.6	14.50	1
S4MF18(C)A	BT	XT	18.0	20.00	22.10	1	29.2	13.70	1
S4MF20(C)A	BV	XV	20.0	22.20	24.50	1	32.4	12.30	1
S4MF22(C)A	BX	XX	22.0	24.40	26.90	1	35.5	11.30	1
S4MF24(C)A	BZ	XZ	24.0	26.70	29.50	1	38.9	10.30	1
S4MF26(C)A	CE	YE	26.0	28.90	31.90	1	42.1	9.50	1
S4MF28(C)A	CG	YG	28.0	31.10	34.40	1	45.4	8.80	1
S4MF30(C)A	CK	YK	30.0	33.50	36.80	1	48.4	8.30	1
S4MF33(C)A	CM	YM	33.0	36.70	40.60	1	53.3	7.50	1
S4MF36(C)A	CP	YP	36.0	40.00	44.20	1	58.1	6.90	1
S4MF40(C)A	CR	YR	40.0	44.40	49.10	1	64.5	6.20	1
S4MF43(C)A	CT	YT	43.0	47.80	52.80	1	69.4	5.80	1
S4MF45(C)A	CV	YV	45.0	50.00	55.30	1	72.7	5.50	1
S4MF48(C)A	CX	YX	48.0	53.30	58.90	1	77.4	5.20	1
S4MF51(C)A	CZ	YZ	51.0	56.70	62.70	1	82.4	4.90	1
S4MF54(C)A	RE	ZE	54.0	60.00	66.30	1	87.1	4.60	1
S4MF58(C)A	RG	ZG	58.0	64.40	71.20	1	93.6	4.30	1
S4MF60(C)A	RK	ZK	60.0	66.70	73.70	1	96.8	4.10	1
S4MF64(C)A	RM	ZM	64.0	71.10	78.60	1	103.0	3.90	1
S4MF70(C)A	RP	ZP	70.0	77.80	86.00	1	113.0	3.50	1
S4MF75(C)A	RR	ZR	75.0	83.30	92.10	1	121.0	3.30	1
S4MF78(C)A	RT	ZT	78.0	86.70	95.80	1	126.0	3.20	1
S4MF85(C)A	RV	ZV	85.0	94.40	104.00	1	137.0	2.90	1
S4MF90(C)A	RX	ZX	90.0	100.00	111.00	1	146.0	2.70	1
S4MF100(C)A	RZ	ZZ	100.0	111.00	123.00	1	162.0	2.50	1
S4MF110(C)A	SE	VE	110.0	122.00	135.00	1	177.0	2.30	1
S4MF120(C)A	SG	VG	120.0	133.00	147.00	1	193.0	2.10	1
S4MF130(C)A	SK	VK	130.0	144.00	159.00	1	209.0	1.90	1
S4MF150(C)A	SM	VM	150.0	167.00	185.00	1	243.0	1.60	1
S4MF160(C)A	SP	VP	160.0	178.00	197.00	1	259.0	1.50	1
S4MF170(C)A	SR	VR	170.0	189.00	209.00	1	275.0	1.50	1
S4MF180A	ST		180.0	201.00	222.00	1	292.0	1.40	1
S4MF190A	SU		190.0	209.00	243.00	1	308.0	1.30	1
S4MF200A	SV		200.0	224.00	247.00	1	324.0	1.20	1
S4MF210A	SW		210.0	231.00	268.00	1	340.0	1.20	1
S4MF220A	GX		220.0	246.00	272.00	1	356.0	1.10	1

Ratings and Characteristic Curves of S4MF Series

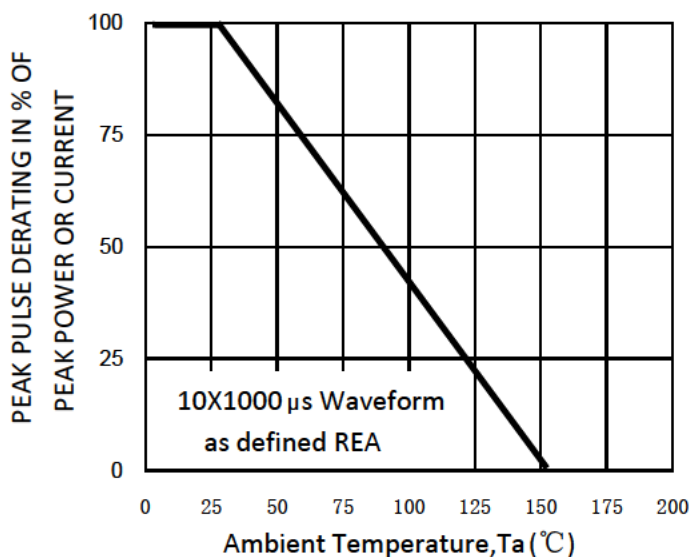


Fig. 1-Pulse Derating Curve

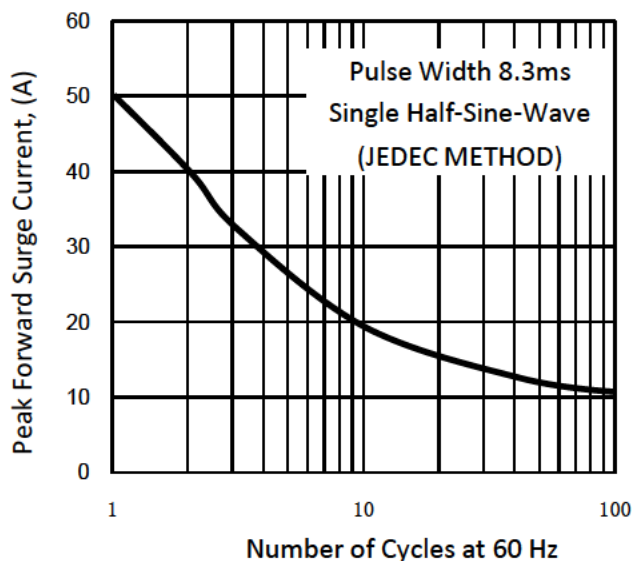


Fig. 2-Maximum Non-Repetitive Surge Current

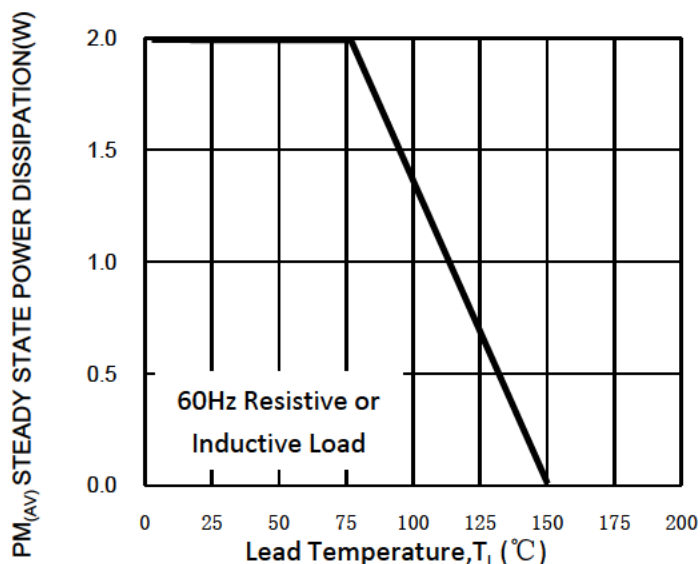


Fig. 3-Steady State Power Derating Curve

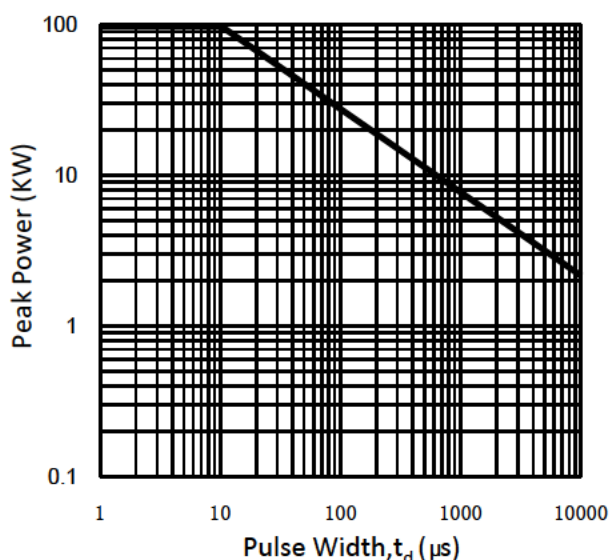


Fig. 4-Peak Pulse Power Rating Curve

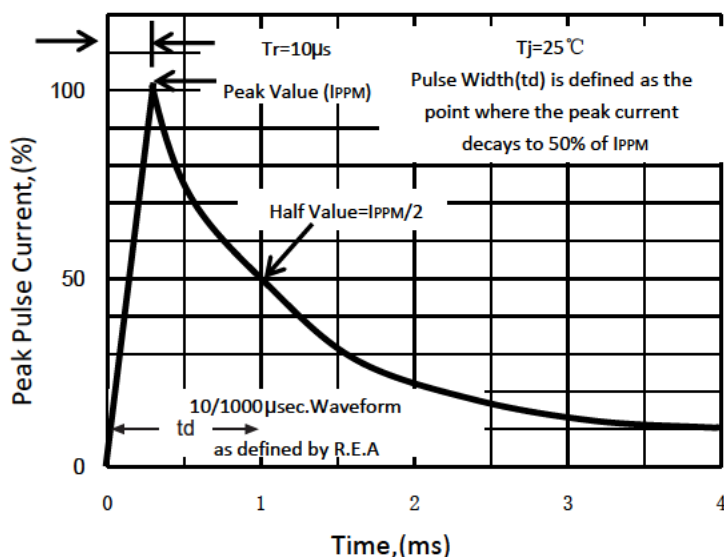


Fig. 5-Pulse Waveform

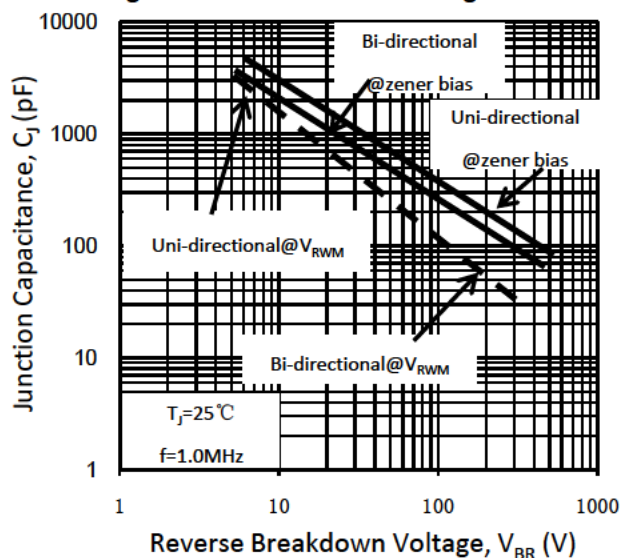


Fig. 6-Typical Junction Capacitance