



P4SMFT Series

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 or planar junction
- Excellent clamping capability
- Repetition rate (duty cycle): 0.01%
- 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°C/10s at terminals.
- Plastic package has Underwriters Laboratory Flammability 94V-0.
- For surface mounted applications in order to optimize board space.

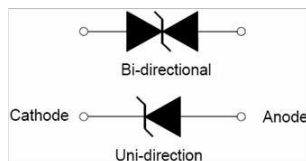
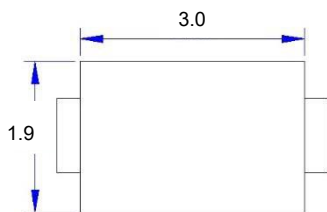
Package: SMF/SOD-123FL

- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Polarity: Color band denotes cathode except bi-directional models
- Weight: 0.017g
- Terminal Connections: See Diagram Below
- Marking Information: See Below

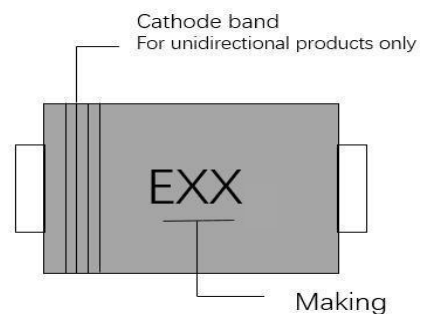
Applications

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

Dimensions & Symbol (Unit: mm Max)



Marking Information



Ordering Information

Out line	Reel (pcs)	Reel diameters
Taping	3K	7inch



Electrical Characteristics (T_A=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
P4SMF5.0A	P4SMF5.0CA	EHE	ETE	5.0	400	6.40	7.00	10	9.2	43.5
P4SMF6.0A	P4SMF6.0CA	EHG	ETG	6.0	400	6.67	7.37	10	10.3	38.8
P4SMF6.5A	P4SMF6.5CA	EHK	ETK	6.5	400	7.22	7.98	10	11.2	35.7
P4SMF7.0 A	P4SMF7.0CA	EHM	ETM	7.0	250	7.78	8.60	10	12.0	33.3
P4SMF7.5A	P4SMF7.5CA	EHP	ETP	7.5	100	8.33	9.21	10	12.9	31.0
P4SMF8.0A	P4SMF8.0CA	EHR	ETR	8.0	50	8.89	9.83	1	13.6	29.4
P4SMF8.5 A	P4SMF8.5CA	EHT	ETT	8.5	25	9.44	10.4	1	14.4	27.8
P4SMF9.0 A	P4SMF9.0CA	EHV	ETV	9.0	10	10.0	11.1	1	15.4	26.0
P4SMF10A	P4SMF10CA	EHX	ETX	10.0	5	11.1	12.3	1	17.0	23.5
P4SMF11A	P4SMF11CA	EHZ	ETZ	11.0	2.5	12.2	13.5	1	18.2	22.0
P4SMF12A	P4SMF12CA	EIE	EUE	12.0	2.5	13.3	14.7	1	19.9	20.1
P4SMF13A	P4SMF13CA	EIG	EUG	13.0	2.5	14.4	15.9	1	21.5	18.6
P4SMF14A	P4SMF14CA	EIK	EUK	14.0	1	15.6	17.2	1	23.2	17.2
P4SMF15A	P4SMF15CA	EIM	EUM	15.0	1	16.7	18.5	1	24.4	16.4
P4SMF16A	P4SMF16CA	EIP	EUP	16.0	1	17.8	19.7	1	26.0	15.4
P4SMF17A	P4SMF17CA	EIR	EUR	17.0	1	18.9	20.9	1	27.6	14.5
P4SMF18A	P4SMF18CA	EIT	EUT	18.0	1	20.0	22.1	1	29.2	13.7
P4SMF20A	P4SMF20CA	EIV	EUV	20.0	1	22.2	24.5	1	32.4	12.3
P4SMF22A	P4SMF22CA	EIX	EUX	22.0	1	24.4	26.9	1	35.5	11.3
P4SMF24A	P4SMF24CA	EIZ	EUZ	24.0	1	26.7	29.5	1	38.9	10.3
P4SMF26A	P4SMF26CA	EJE	EVE	26.0	1	28.9	31.9	1	42.1	9.5
P4SMF28A	P4SMF28CA	EJG	EVG	28.0	1	31.1	34.4	1	45.4	8.8
P4SMF30A	P4SMF30CA	EJK	EVK	30.0	1	33.3	36.8	1	48.4	8.3
P4SMF33A	P4SMF33CA	EJM	EVM	33.0	1	36.7	40.6	1	53.3	7.5
P4SMF36A	P4SMF36CA	EJP	EVP	36.0	1	40.0	44.2	1	58.1	6.9
P4SMF40A	P4SMF40CA	EJR	EVR	40.0	1	44.4	49.1	1	64.5	6.2
P4SMF43A	P4SMF43CA	EJT	EVT	43.0	1	47.8	52.8	1	69.4	5.8
P4SMF45A	P4SMF45CA	EJV	EVV	45.0	1	50.0	55.3	1	72.7	5.5
P4SMF48A	P4SMF48CA	EJX	EVX	48.0	1	53.3	58.9	1	77.4	5.2
P4SMF51A	P4SMF51CA	EJZ	EVZ	51.0	1	56.7	62.7		82.4	4.9



Electrical characteristics (T_A=25°C)

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
P4SMF54A	P4SMF54CA	ERE	EWE	54.0	1	60.0	66.3	1	87.1	4.6
P4SMF58A	P4SMF58CA	ERG	EWG	58.0	1	64.4	71.2	1	93.6	4.3
P4SMF60A	P4SMF60CA	ERK	EWK	60.0	1	66.7	73.7	1	96.8	4.1

① Surge waveform: 10/1000μs

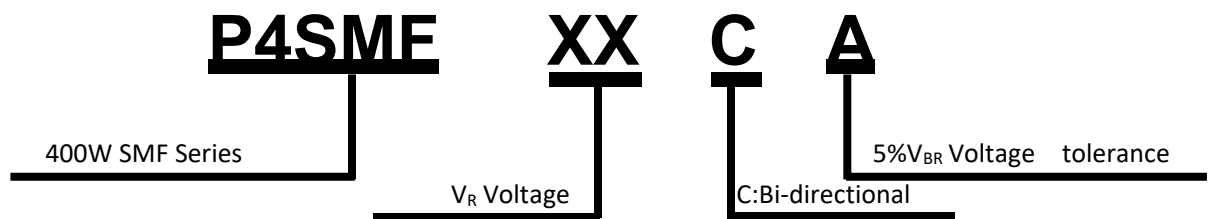
V_R : Stand-off Voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown Voltage

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

I_R: Reverse Leakage Current

Part Number Code



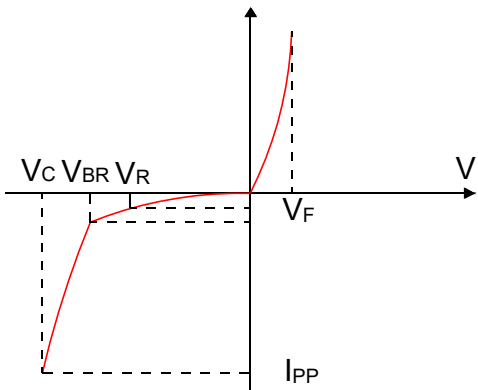
Absolute maximum ratings (T_A=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T _{stg}	-55 to +150	°C
Operating junction temperature range	T _j	-55 to +150	°C
Peak pulse power dissipation on 10/1000μs waveform	P _{PP}	400	W
Power Dissipation on infinite heat sink T _a =50°C	V _F	6.5	V

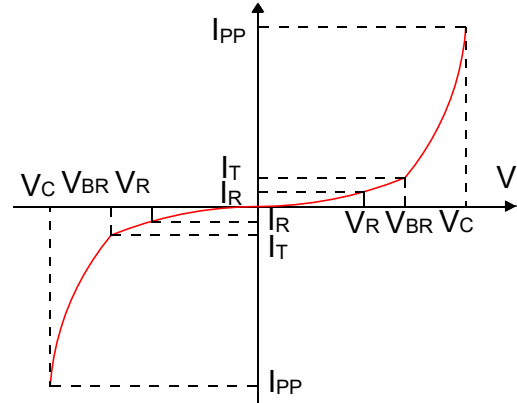


Ratings and V-I characteristics curves($T_A=25^{\circ}\text{C}$, unless otherwise noted)

**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

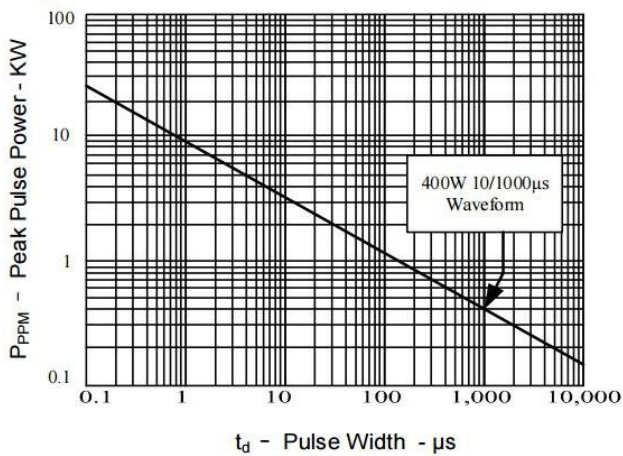


Figure 2: Pulse Derating Curve

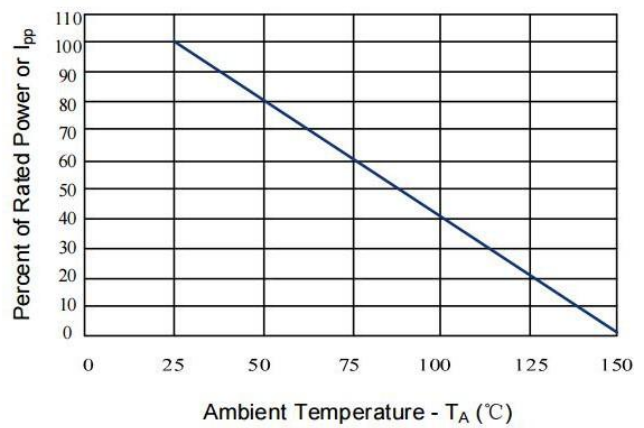


Figure 3: Pulse Waveform

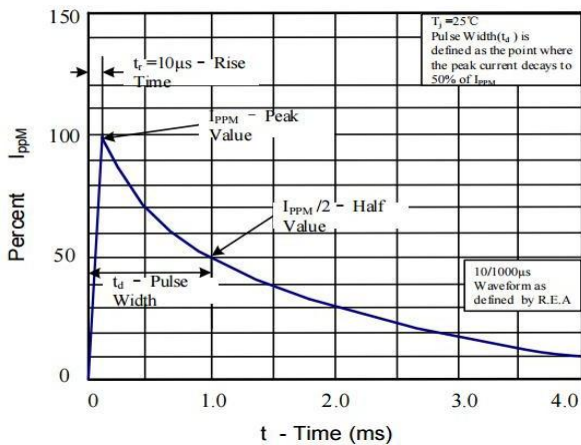


Figure 4: Typical Junction Capacitance

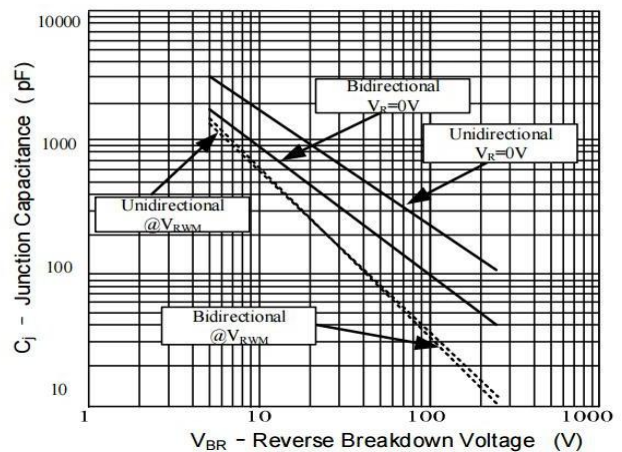




Figure 5: Steady State Power Dissipation Derating Curve

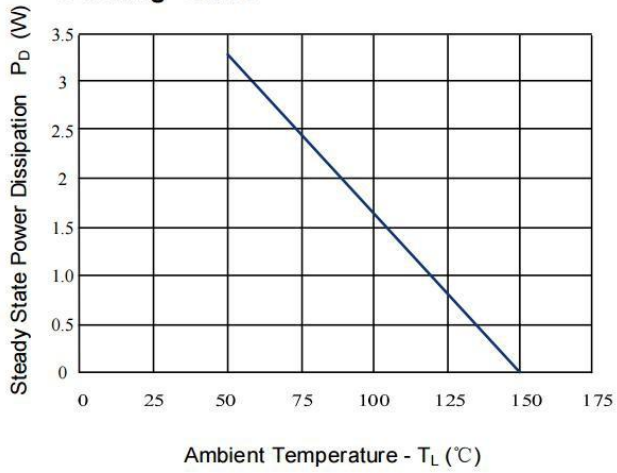
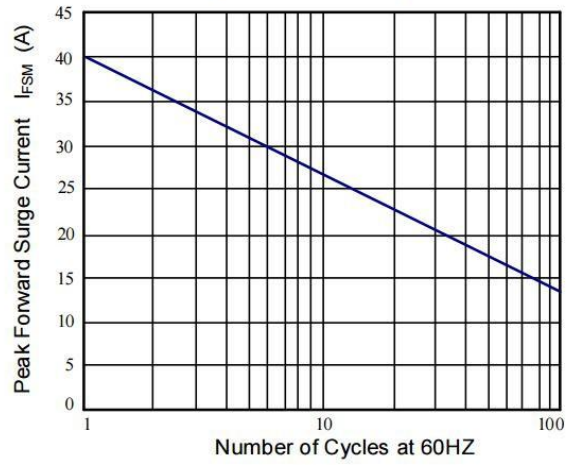
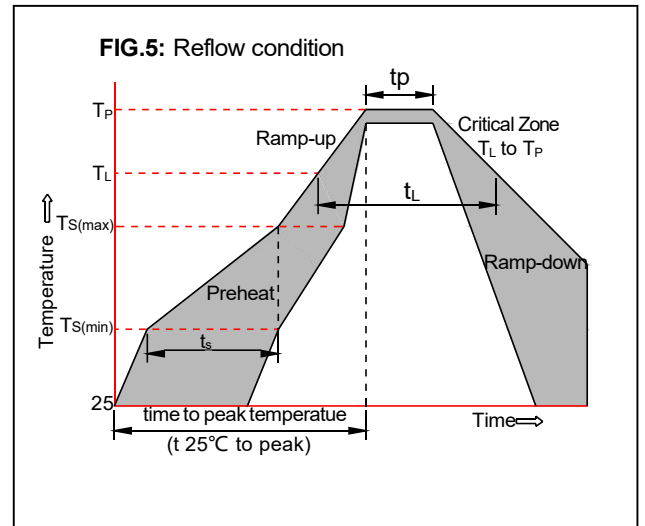


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional

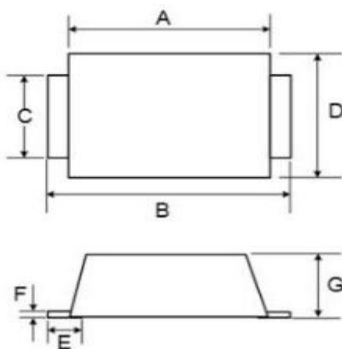


Soldering Parameters

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



Dimension	Millimeters	
	Min	Max
A	2.5	3.0
B	3.4	4.0
C	0.7	1.1
D	1.5	1.9
E	0.45	0.95
F	0.05	0.26
G	0.9	1.1