

Transient Voltage Suppressor Diodes

Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 400 W peak pulse power capability with a 10/1000 μ s waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS
- AEC-Q101 qualified available
- Automotive product No.: base P/N-H

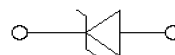
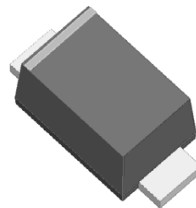
Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

Mechanical Data

- **Package:** SOD123
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D
- **Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

Uni-directional



Bi-directional



■Maximum Ratings (T_a=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Max
Peak power dissipation, with a 10/1000us waveform ^{(1) (2)} (Fig.1)	P _{PPM}	W	400
Peak pulse current, with a 10/1000us waveform ⁽¹⁾	I _{PPM}	A	See Next Table
Power dissipation, on infinite heat sink at T _L =75°C	P _D	W	1.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾	I _{FSM}	A	40
Operating junction and storage temperature range	T _J , T _{STG}	°C	-55 to +150

■Electrical Characteristics (T_a=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @ at 25A for unidirectional only ⁽³⁾	V _F	V	3.5/5.0
Maximum instantaneous forward voltage @ at 1A for unidirectional only	V _F	V	1.5

■Thermal Characteristics (T_a=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	R _{θJL}	°C/W	junction to lead	30
	R _{θJA}	°C/W	junction to ambient	120

Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25°C per Fig.2.
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal
- (3) V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

■ Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Marking		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ 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_R (μA)
		UNI	BI		MIN	MAX				
P4SMF6.8A	P4SMF6.8CA	6V8A	6V8C	5.80	6.45	7.14	10	10.5	39.0	1000
P4SMF7.5A	P4SMF7.5CA	7V5A	7V5C	6.40	7.13	7.88	10	11.3	36.3	500
P4SMF8.2A	P4SMF8.2CA	8V2A	8V2C	7.02	7.79	8.61	10	12.1	33.9	200
P4SMF9.1A	P4SMF9.1CA	9V1A	9V1C	7.78	8.65	9.55	1	13.4	30.6	50
P4SMF10A	P4SMF10CA	10A	10C	8.55	9.50	10.50	1	14.5	28.3	10
P4SMF11A	P4SMF11CA	11A	11C	9.40	10.50	11.60	1	15.6	26.3	5
P4SMF12A	P4SMF12CA	12A	12C	10.20	11.40	12.60	1	16.7	24.6	5
P4SMF13A	P4SMF13CA	13A	13C	11.10	12.40	13.70	1	18.2	22.5	1
P4SMF15A	P4SMF15CA	15A	15C	12.80	14.30	15.80	1	21.2	19.3	1
P4SMF16A	P4SMF16CA	16A	16C	13.60	15.20	16.80	1	22.5	18.2	1
P4SMF18A	P4SMF18CA	18A	18C	15.30	17.10	18.90	1	25.5	16.1	1
P4SMF20A	P4SMF20CA	20A	20C	17.10	19.00	21.00	1	27.7	14.8	1
P4SMF22A	P4SMF22CA	22A	22C	18.80	20.90	23.10	1	30.6	13.4	1
P4SMF24A	P4SMF24CA	24A	24C	20.50	22.80	25.20	1	33.2	12.3	1
P4SMF27A	P4SMF27CA	27A	27C	23.10	25.70	28.40	1	37.5	10.9	1
P4SMF30A	P4SMF30CA	30A	30C	25.60	28.50	31.50	1	41.4	9.9	1
P4SMF33A	P4SMF33CA	33A	33C	28.20	31.40	34.70	1	45.7	9.0	1
P4SMF36A	P4SMF36CA	36A	36C	30.80	34.20	37.80	1	49.9	8.2	1
P4SMF39A	P4SMF39CA	39A	39C	33.30	37.10	41.00	1	53.9	7.6	1
P4SMF43A	P4SMF43CA	43A	43C	36.80	40.90	45.20	1	59.3	6.9	1
P4SMF47A	P4SMF47CA	47A	47C	40.20	44.70	49.40	1	64.8	6.3	1
P4SMF51A	P4SMF51CA	51A	51C	43.60	48.50	53.60	1	70.1	5.8	1
P4SMF56A	P4SMF56CA	56A	56C	47.80	53.20	58.80	1	77.0	5.3	1
P4SMF62A	P4SMF62CA	62A	62C	53.00	58.90	65.10	1	85.0	4.8	1
P4SMF68A	P4SMF68CA	68A	68C	58.10	64.60	71.40	1	92.0	4.5	1
P4SMF75A	P4SMF75CA	75A	75C	64.10	71.30	78.80	1	103.0	4.0	1
P4SMF82A	P4SMF82CA	82A	82C	70.10	77.90	86.10	1	113.0	3.6	1
P4SMF91A	P4SMF91CA	91A	91C	77.80	86.50	95.50	1	125.0	3.3	1
P4SMF100A	P4SMF100CA	100A	100C	85.50	95.00	105.00	1	137.0	3.0	1
P4SMF110A	P4SMF110CA	110A	110C	94.00	105.00	116.00	1	152.0	2.7	1
P4SMF120A	P4SMF120CA	120A	120C	102.00	114.00	126.00	1	165.0	2.5	1
P4SMF130A	P4SMF130CA	130A	130C	111.00	124.00	137.00	1	179.0	2.3	1
P4SMF150A	P4SMF150CA	150A	150C	128.00	143.00	158.00	1	207.0	2.0	1
P4SMF160A	P4SMF160CA	160A	160C	136.00	152.00	168.00	1	219.0	1.9	1
P4SMF170A	P4SMF170CA	170A	170C	145.00	162.00	179.00	1	234.0	1.8	1
P4SMF180A	P4SMF180CA	180A	180C	154.00	171.00	189.00	1	246.0	1.7	1
P4SMF200A	P4SMF200CA	200A	200C	171.00	190.00	210.00	1	274.0	1.5	1
P4SMF220A	P4SMF220CA	220A	220C	185.00	209.00	231.00	1	328.0	1.3	1
P4SMF250A	P4SMF250CA	250A	250C	214.00	237.00	263.00	1	344.0	1.2	1

备注: Notes:

- (1) $t_p \leq 50\text{ms}$ Pulse test: $t_p \leq 50\text{ms}$
- (2) Surge current waveform per Fig. 3 and derated per Fig.2.
- (3) For bi-directional types having VWM of 10 V and less, the I_R limit is doubled

■ Characteristics(Typical)

FIG1: Peak Pulse Power Rating Curve

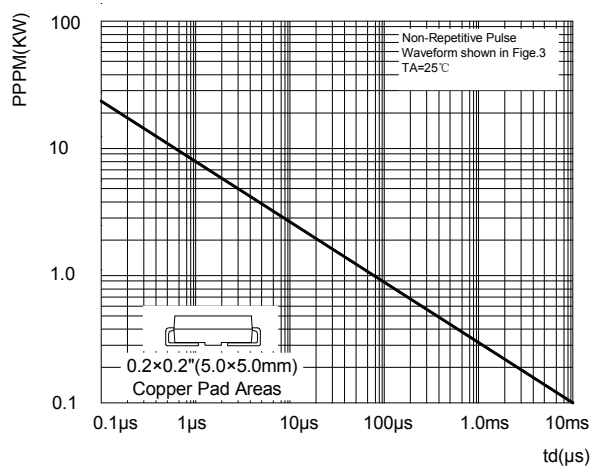


FIG2: Pulse Power or Current vs. Initial Junction Temperature

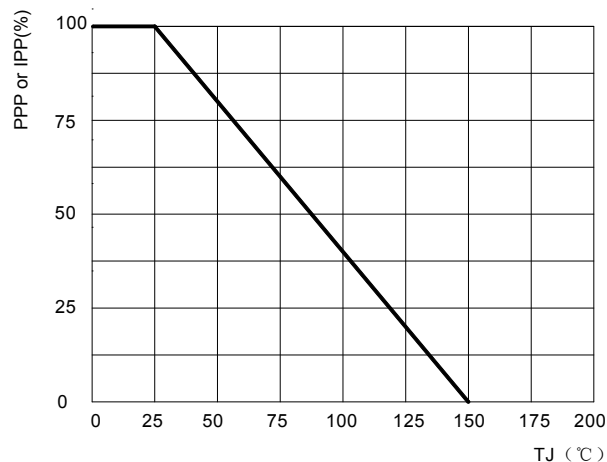


FIG3: Pulse Waveform

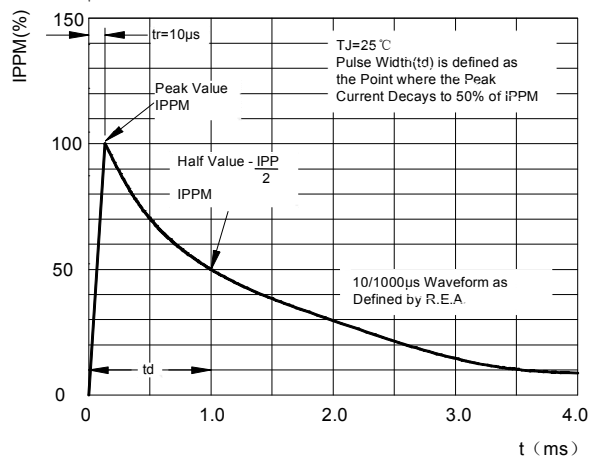


FIG4: Typical Transient Thermal Impedance

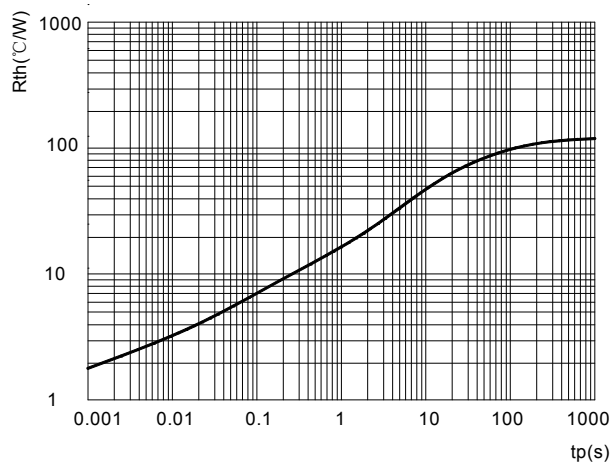
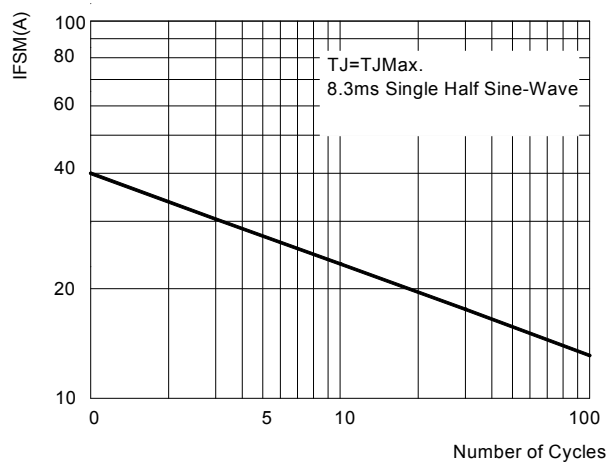


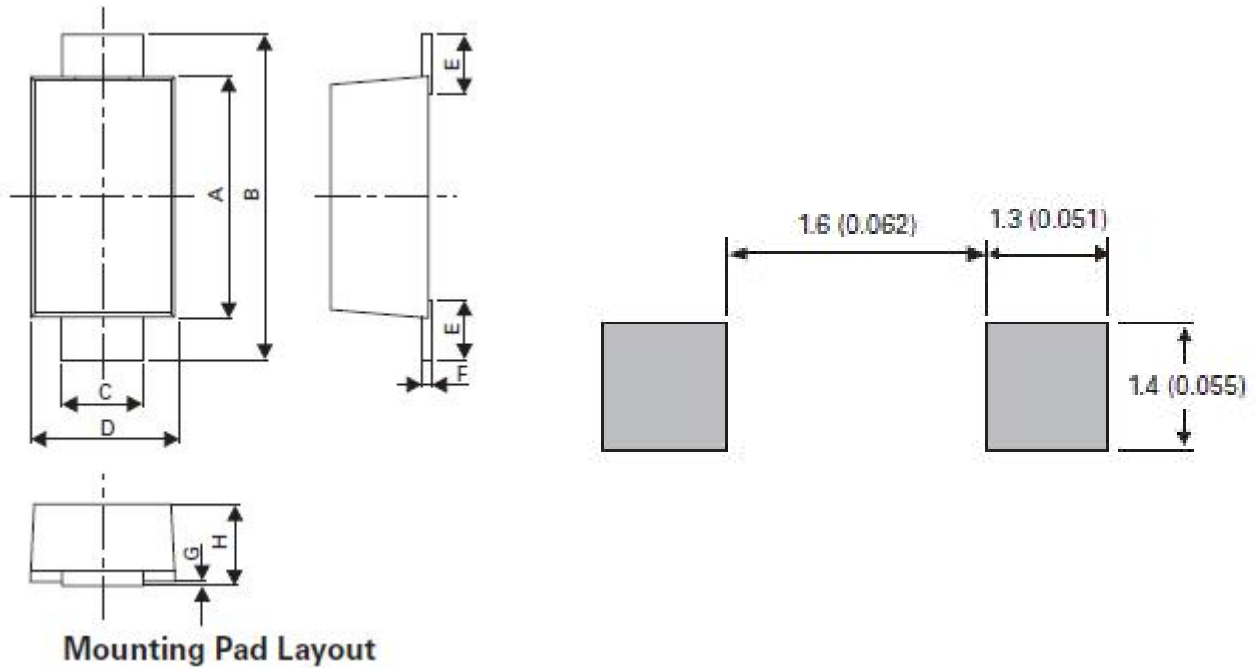
FIG5: Maximum Non-Repetitive Surge Current



■ Ordering Information (Example)

PREFERED	PACKAGE CODE	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
P4SMF Series	SOD-123	3000	15000	150000	7" reel

■ Outline Dimensions



Dimensions	Millimeters		Inches	
	Min	Max	Min	Max
A	2.50	2.90	0.0984	0.1142
B	3.40	3.90	0.1339	0.1535
C	0.70	1.20	0.0275	0.0472
D	1.50	2.00	0.0591	0.0787
E	0.35	0.90	0.0138	0.0354
F	0.05	0.26	0.0020	0.0102
G	0.00	0.10	0.0000	0.0039
H	0.95	1.10	0.0374	0.0433

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