

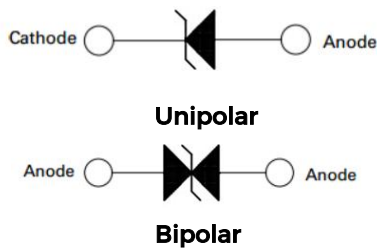
## P4SMF Series TRANSIENT VOLTAGE SUPPRESSOR



### Features

- Compatible with IEC 61000-4-2 (ESD): Air ±15kV, Contact ±8kV
- Compatible with IEC 61000-4-4 (EFT): 40A, 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 8/20µs Waveform
- 400 Watts Peak Pulse Power per Line (tp = 10/1000µs)
- Low Inductance
- Excellent Clamping Capability
- Unidirectional & Bidirectional Configurations
- Low Leakage Current: < 1µA (Typical)
- Fast Response Time
- Available in Multiple Voltages
- RoHS Compliant
- This is a Halogen Free device
- "-A" suffix is for Automotive qualified

### Circuit Diagram



### Mechanical Data

- Case: JEDEC SOD-123FL
- Terminals: Solder plated, solderable per MIL-STD-750 Method 2026
- Polarity: For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation

### Maximum Ratings@T<sub>A</sub>=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000µs waveform (Note1,2)	P <sub>PPM</sub>	400	W
Forward voltage @IF=20A for Unidirectional only	V <sub>F</sub>	5.0	V
Typical Thermal Resistance Junction to Lead	R <sub>θJL</sub>	100	°C/W
Typical Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	220	°C/W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:**
1. Non-repetitive current pulse and derated above T<sub>A</sub>=25°C
  2. Mounted on 5.0mm<sup>2</sup> copper pads to each terminal.

**Electrical Characteristics @T<sub>A</sub>=25°C unless otherwise specified**

Part Number (Unidirectional)	Part Number (Bidirectional)	Device Marking		Nom. Stand-off Voltage V <sub>wm</sub> (V)	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> (V)		Test Current I <sub>T</sub> (mA)	Max. Clamping Voltage V <sub>c</sub> (10/1000μs) @ I <sub>PP</sub> (V)	Peak Pulse Current I <sub>PP</sub> @10/1000μs Waveform (A)	Max. Reverse Leakage Current I <sub>R</sub> @ V <sub>wm</sub> (μA)
		UNI	BI		Min.	Max.				
P4SMF5.0A	P4SMF5.0CA	KE	KEC	5	6.40	7.00	10	9.2	40.1	800
P4SMF6.0A	P4SMF6.0CA	AG	AGC	6	6.67	7.37	10	10.3	35.9	800
P4SMF6.5A	P4SMF6.5CA	AK	AKC	6.5	7.22	7.98	10	11.2	33.1	500
P4SMF7.0A	P4SMF7.0CA	KM	KMC	7	7.78	8.6	10	12	30.9	200
P4SMF7.5A	P4SMF7.5CA	KP	KPC	7.5	8.33	9.21	1	12.9	28.7	100
P4SMF8.0A	P4SMF8.0CA	KR	KRC	8	8.99	9.83	1	13.6	27.2	50
P4SMF8.5A	P4SMF8.5CA	KT	KTC	8.5	9.44	10.4	1	14.4	25.7	20
P4SMF9.0A	P4SMF9.0CA	KV	KVC	9	10	11.1	1	15.4	26.4	5
P4SMF10A	P4SMF10CA	KX	KXC	10	11.1	12.3	1	17	23.5	5
P4SMF11A	P4SMF11CA	KZ	KZC	11	12.2	13.5	1	18.2	22	1
P4SMF12A	P4SMF12CA	BE	BEC	12	13.3	14.7	1	19.9	20.1	1
P4SMF13A	P4SMF13CA	BG	BGC	13	14.4	15.9	1	21.5	18.6	1
P4SMF14A	P4SMF14CA	IK	IKC	14	15.6	17.2	1	23.2	17.2	1
P4SMF15A	P4SMF15CA	BM	BMC	15	16.7	18.5	1	24.4	16.4	1
P4SMF16A	P4SMF16CA	LP	LPC	16	17.8	19.7	1	26	15.4	1
P4SMF17A	P4SMF17CA	LR	LRC	17	18.9	20.9	1	27.6	14.5	1
P4SMF18A	P4SMF18CA	BT	BTC	18	20.0	22.1	1	29.2	13.7	1
P4SMF20A	P4SMF20CA	LV	LVC	20	22.2	24.5	1	32.4	12.3	1
P4SMF22A	P4SMF22CA	LX	LXC	22	24.4	26.9	1	35.5	11.3	1
P4SMF24A	P4SMF24CA	BZ	BZC	24	26.7	29.5	1	38.9	10.3	1
P4SMF26A	P4SMF26CA	ME	MEC	26	28.9	31.9	1	42.1	9.5	1
P4SMF28A	P4SMF28CA	CG	CGC	28	31.1	34.4	1	45.4	8.8	1
P4SMF30A	P4SMF30CA	CK	CKC	30	33.3	36.8	1	48.4	8.3	1
P4SMF33A	P4SMF33CA	MM	MMC	33	36.7	40.6	1	53.3	7.5	1
P4SMF36A	P4SMF36CA	CP	CPC	36	40.0	36.8	1	58.1	6.9	1
P4SMF40A	P4SMF40CA	MR	MRC	40	44.4	49.1	1	64.5	6.2	1
P4SMF43A	P4SMF43CA	MT	MTC	43	47.8	52.8	1	69.4	5.8	1
P4SMF45A	P4SMF45CA	MV	MVC	45	50	55.3	1	72.7	5.5	1
P4SMF48A	P4SMF48CA	MX	MXC	48	53.3	58.9	1	77.4	5.2	1
P4SMF51A	P4SMF51CA	MZ	MZC	51	56.7	62.7	1	82.4	4.9	1
P4SMF54A	P4SMF54CA	NE	NEC	54	60	66.3	1	87.1	4.6	1
P4SMF58A	P4SMF58CA	NG	NGC	58	64.4	71.2	1	93.6	4.3	1
P4SMF60A	P4SMF60CA	NK	NKC	60	66.7	73.7	1	96.8	4.1	1
P4SMF64A	P4SMF64CA	NM	NMC	64	71.1	78.6	1	103	3.9	1
P4SMF70A	P4SMF70CA	NP	NPC	70	77.8	86	1	113	3.5	1
P4SMF75A	P4SMF75CA	NR	NRC	75	83.3	92.1	1	121	3.3	1
P4SMF78A	P4SMF78CA	NT	NTC	78	86.7	95.8	1	126	3.2	1
P4SMF85A	P4SMF85CA	NV	NVC	85	94.4	104	1	137	2.9	1
P4SMF90A	P4SMF90CA	NX	NXC	90	100	111	1	146	1.4	1
P4SMF100A	P4SMF100CA	NZ	NZC	100	111	123	1	162	1.2	1
P4SMF110A	P4SMF110CA	OE	OEC	110	122	135	1	177	1.1	1
P4SMF120A	P4SMF120CA	OG	OGC	120	133	147	1	193	1	1
P4SMF130A	P4SMF130CA	OK	OKC	130	144	159	1	209	1	1
P4SMF150A	P4SMF150CA	OM	OMC	150	167	185	1	243	0.8	1

**Ratings and Characteristics Curves**

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

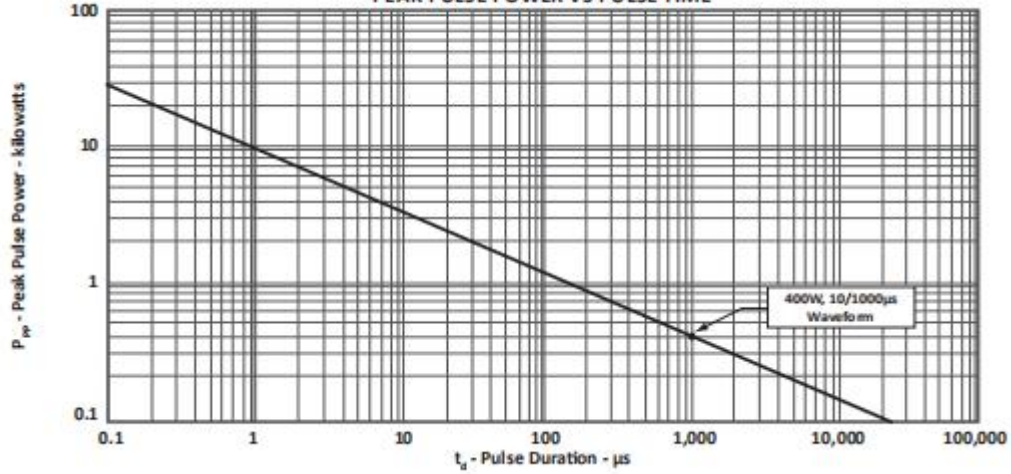


FIGURE 2  
PULSE WAVEFORM

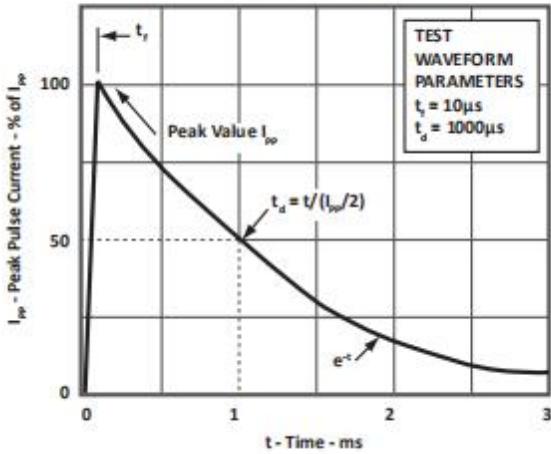
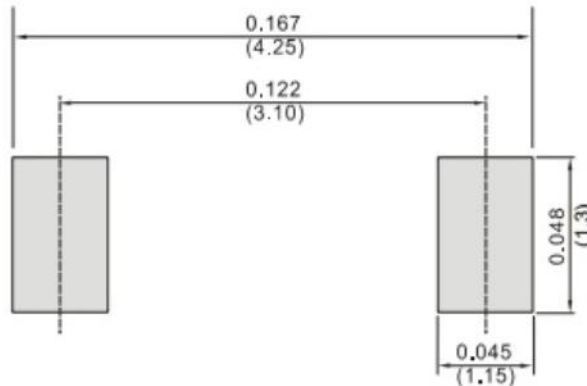
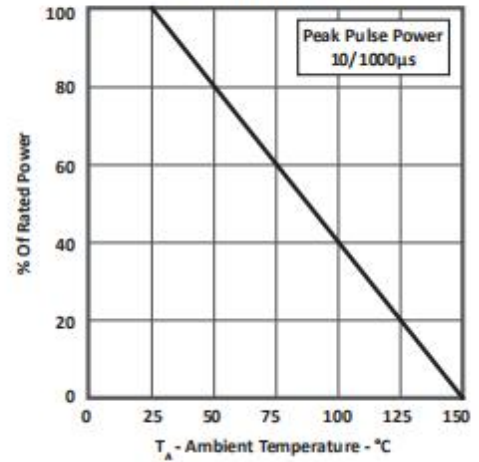
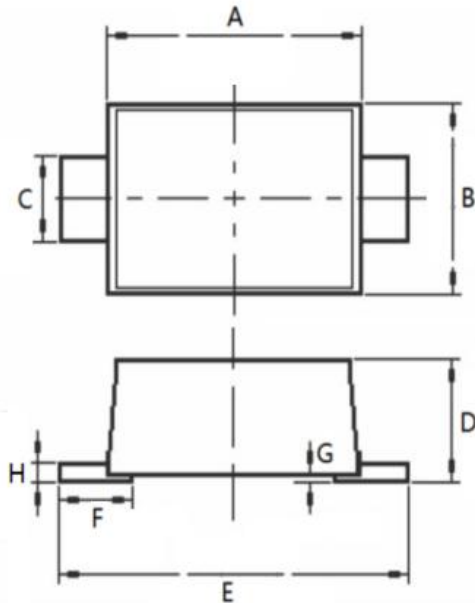


FIGURE 3  
POWER DERATING CURVE



Suggested PCB Solder Layout (mm)

**Mechanical Dimensions SOD-123FL(Millimeters/Inches)**



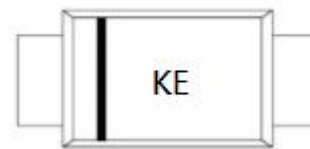
SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.50	3.05	0.098	0.138
B	1.55	1.95	0.061	0.077
C	0.60	1.10	0.024	0.043
D	0.80	1.40	0.031	0.055
E	3.35	4.05	0.132	0.159
F	0.35	1.10	0.0137	0.043
G	-	0.1	-	0.004
H	0.05	0.25	0.002	0.010

**Ordering Information**

Device	Package	Shipping
P4SMF Series	SOD-123FL	3000pcs / reel
P4SMF Series TR	SOD-123FL	3000pcs / reel

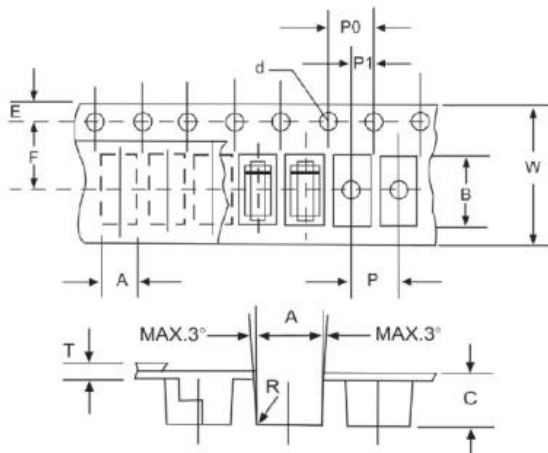
For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

**Marking Diagram**



KE = Device Marking

**Carrier Tape Specification SOD-123FL**



SYMBOL	Millimeters	
	Min.	Max.
A	1.95	2.15
B	3.85	4.05
C	1.35	1.55
d	1.50	1.60
E	1.65	1.85
F	3.40	3.60
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
W	7.90	8.30

**DISCLAIMER:**

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC Diode Solutions sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC Diode Solutions be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC Diode Solution assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC Diode Solutions be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC Diode Solutions.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC Diode Solutions.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations..