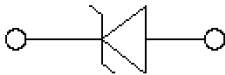
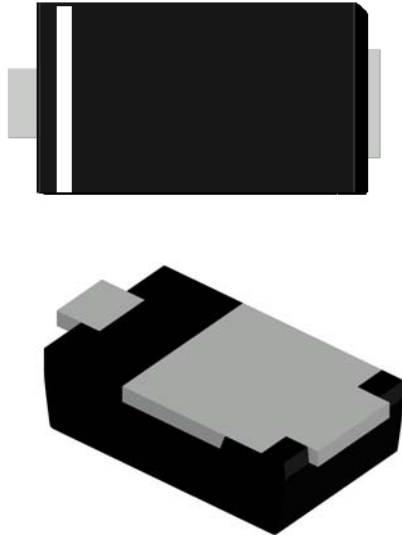


## Surface Mount Transient Voltage Suppressor

### Uni-directional



### Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 200 W peak pulse power capability with a 10/1000  $\mu$ 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

### 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 Date

- **Package:** SOD-123HE  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** For uni-directional types the band denotes cathode end

### ■Maximum Ratings ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	Max
Peak power dissipation <sup>(1)</sup> <sup>(2)</sup> (Fig.1)	$P_{PPM}$	W	with a 10/1000us waveform	200
Peak pulse current <sup>(1)</sup>	$I_{PPM}$	A	with a 10/1000us waveform	(See Next Table)
Power dissipation, on infinite heat sink	$P_D$	W	$T_L=75^\circ\text{C}$	0.4
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup>	$I_{FSM}$	A		20
Maximum instantaneous forward voltage	VF	V	IF=1A	1.5
Operating junction temperature range	$T_J$	$^\circ\text{C}$		-55 to +150
Storage temperature range	$T_{STG}$	$^\circ\text{C}$		-55 to +150
Electrostatic Discharge	ESD	KV	IEC61000-4-2 air discharge	$\pm 30$
Electrostatic Discharge			IEC61000-4-2 contact discharge	
Thermal resistance <sup>(3)</sup>	$R_{\theta JL}$	$^\circ\text{C/W}$	Between junction and lead	35
	$R_{\theta JA}$		Between junction and Ambient	200



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Notes:

- (1). Non repetitive current pulse, per Fig2 and derated above TA=25°C per Fig3.
- (2). Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum
- (3). Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

## ■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMFE SERIES	F1	0.024	3000	24000	96000	7" reel

## ■ Electrical Characteristics (TA=25°C unless otherwise noted)

Part Number	Marking	Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R^{(3)}$ @ $V_{RWM}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A)	Maximum Clamping Voltage $V_c$ @ $I_{PP}$ (V)
		Min(V)	Max (V)	$I_T^{(1)}$ (mA)				
SMFE5.0A	5.0A	6.4	7.07	10	400	5	21.74	9.2
SMFE6.0A	6.0A	6.67	7.37	10	400	6	19.42	10.3
SMFE6.5A	6.5A	7.22	7.98	10	250	6.5	17.86	11.2
SMFE7.0A	7.0A	7.78	8.6	10	100	7	16.67	12
SMFE7.5A	7.5A	8.33	9.21	1	50	7.5	15.5	12.9
SMFE8.0A	8.0A	8.89	9.83	1	25	8	14.71	13.6
SMFE8.5A	8.5A	9.44	10.4	1	10	8.5	13.89	14.4
SMFE9.0A	9.0A	10	11.1	1	5	9	12.99	15.4
SMFE10A	10A	11.1	12.3	1	2.5	10	11.76	17
SMFE11A	11A	12.2	13.5	1	2.5	11	10.99	18.2
SMFE12A	12A	13.3	14.7	1	2.5	12	10.05	19.9
SMFE13A	13A	14.4	15.9	1	1	13	9.3	21.5
SMFE14A	14A	15.6	17.2	1	1	14	8.62	23.2
SMFE15A	15A	16.7	18.5	1	1	15	8.2	24.4
SMFE16A	16A	17.8	19.7	1	1	16	7.69	26
SMFE17A	17A	18.9	20.9	1	1	17	7.25	27.6
SMFE18A	18A	20	22.1	1	1	18	6.85	29.2
SMFE19A	19A	21.1	23.3	1	1	19	6.54	30.6
SMFE20A	20A	22.2	24.5	1	1	20	6.17	32.4
SMFE22A	22A	24.4	26.9	1	1	22	5.63	35.5
SMFE24A	24A	26.7	29.5	1	1	24	5.14	38.9
SMFE26A	26A	28.9	31.9	1	1	26	4.75	42.1
SMFE28A	28A	31.1	34.4	1	1	28	4.41	45.4
SMFE30A	30A	33.3	36.8	1	1	30	4.13	48.4
SMFE33A	33A	36.7	40.6	1	1	33	3.75	53.3
SMFE36A	36A	40	44.2	1	1	36	3.44	58.1
SMFE40A	40A	44.4	49.1	1	1	40	3.1	64.5
SMFE43A	43A	47.8	52.8	1	1	43	2.88	69.4
SMFE45A	45A	50	55.3	1	1	45	2.75	72.7
SMFE48A	48A	53.3	58.9	1	1	48	2.58	77.4
SMFE51A	51A	56.7	62.7	1	1	51	2.43	82.4
SMFE54A	54A	60	66.3	1	1	54	2.3	87.1
SMFE58A	58A	64.4	71.2	1	1	58	2.14	93.6
SMFE60A	60A	66.7	73.7	1	1	60	2.07	96.8



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SMFE64A	64A	71.1	78.6	1	1	64	1.94	103
SMFE70A	70A	77.8	86	1	1	70	1.77	113
SMFE75A	75A	83.3	92.1	1	1	75	1.65	121
SMFE78A	78A	86.7	95.8	1	1	78	1.59	126
SMFE80A	80A	88.8	97.6	1	1	80	1.55	129
SMFE85A	85A	94.4	104	1	1	85	1.46	137
SMFE90A	90A	100	111	1	1	90	1.37	146
SMFE100A	100A	111	123	1	1	100	1.23	162

**Notes:**

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

## ■ Characteristics(Typical)

FIG1: Peak Pulse Power Rating Curve

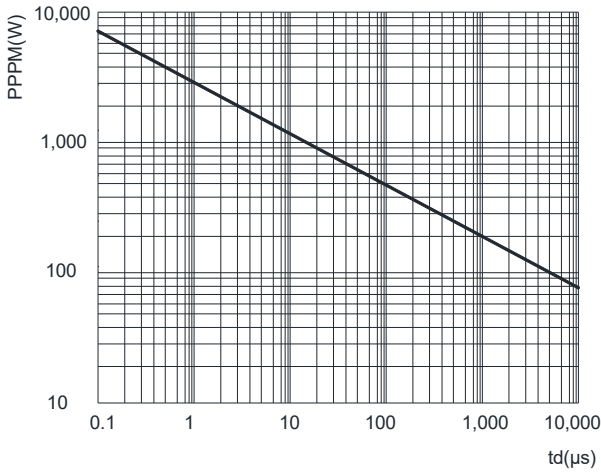


FIG2: Pulse Waveform

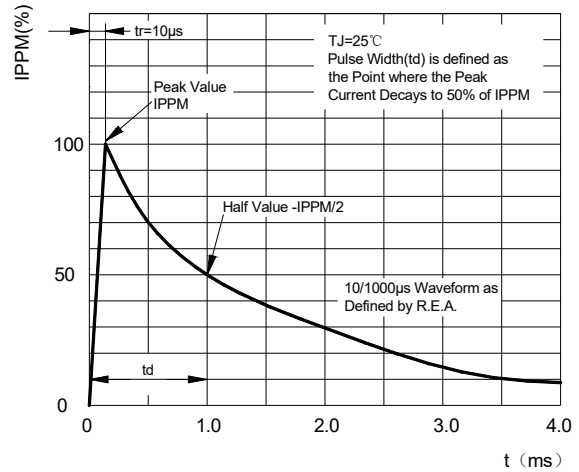


FIG3: Pulse Power or Current vs. Initial Junction Temperature

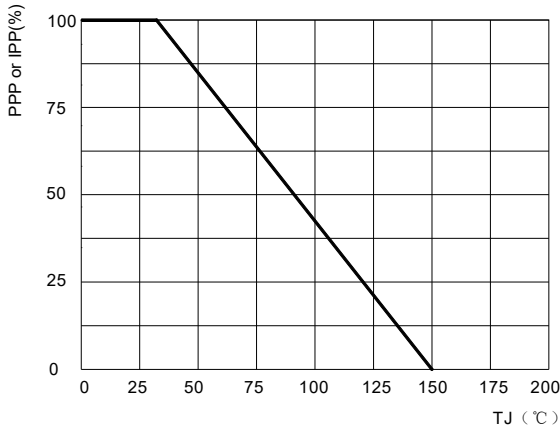
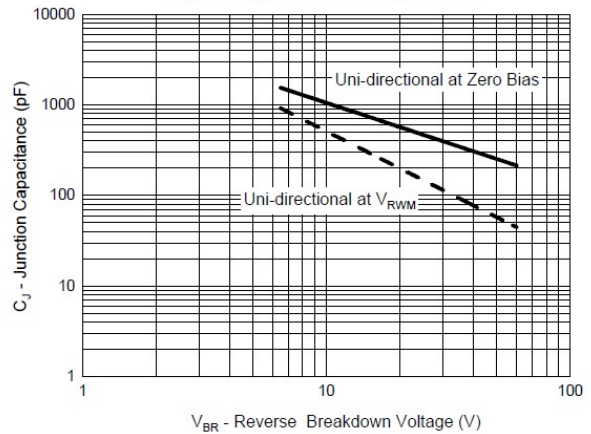


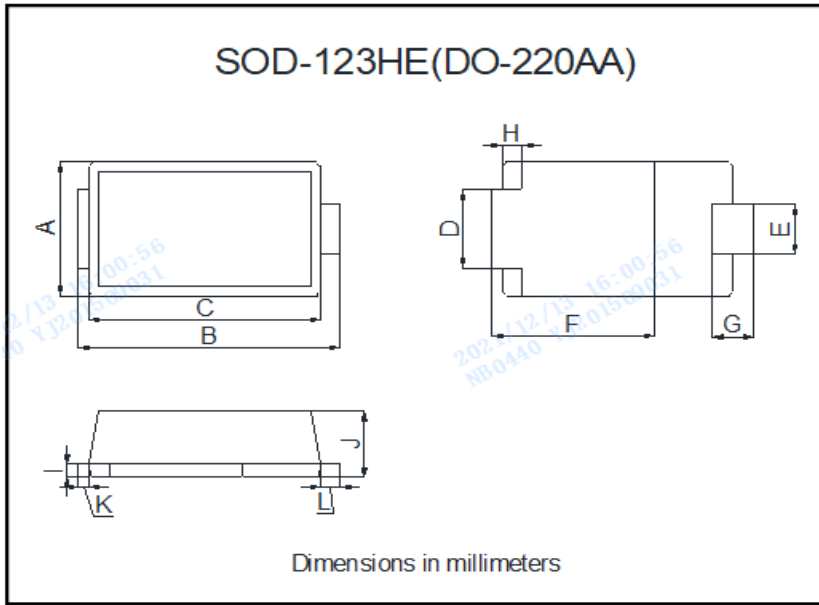
Fig.4 - Typical Junction Capacitance





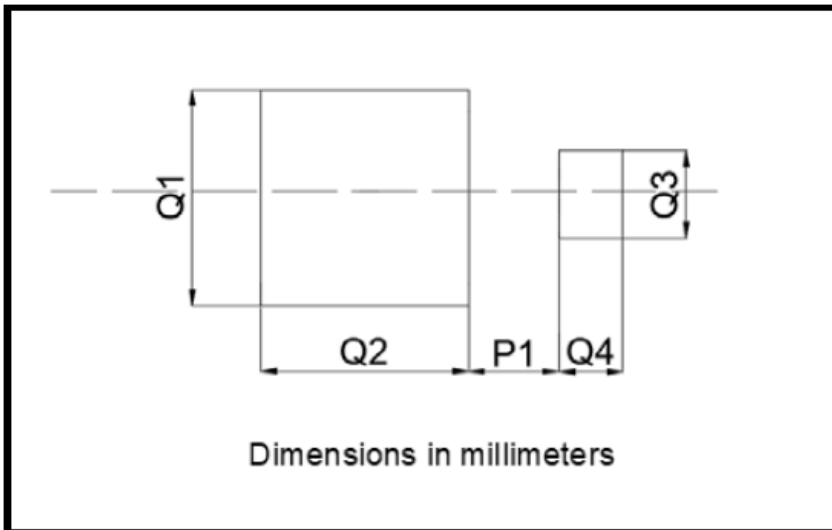
# SMFE SERIES

## ■ Outline Dimensions



SOD-123HE(DO-220AA)		
Dim	Min	Max
A	1.88	2.18
B	3.70	4.00
C	3.19	3.61
D	1.05	1.35
E	0.61	0.91
F	2.20	2.60
G	0.40	0.80
H	0.30 REF	
I	0.10	0.30
J	0.85	1.15
K	0.00	0.30
L	0.15	0.45

## ■ Suggested pad layout



Dim	Millimeters
P1	0.64
Q1	2.54
Q2	2.67
Q3	1.27
Q4	0.76



## SMFE SERIES

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