

Surface Mount Transient Voltage Suppressor

Uni-directional



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional
- 150 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

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-323HE
Molding compound meets UL 94 V-0 flammability rating, -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°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	Max
Peak power dissipation ⁽¹⁾ (2) (Fig.1)	P _{PPM}	W	with a 10/1000us waveform	150
Peak pulse current ⁽¹⁾	I _{PPM}	A	with a 10/1000us waveform	(See Next Table)
Power dissipation, on infinite heat sink	P _D	W	TL=75°C	1
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only	I _{FSM}	A		20
Maximum instantaneous forward voltage	V _F	V	IF=1A	1.2
Operating junction and storage temperature range	T _J , T _{STG}	°C		-55 to +150
Electrostatic Discharge	ESD	KV	IEC61000-4-2 air discharge	±30
Electrostatic Discharge			IEC61000-4-2 contact discharge	
Thermal resistance ⁽³⁾	R _{θJL}	°C/W	Between junction and lead	100
	R _{θJA}		Between junction and Ambient	300

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)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMHE SERIES	F1	Approximate 0.008	3000	120000	7" reel

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

Part Number	Marking Code	Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R^{(3)}$ @ V_{RWM} (μA)	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)				
SMHE5.0A	AE	6.4	7.07	10	400	5	16.3	9.2
SMHE6.0A	AG	6.67	7.37	10	400	6	14.56	10.3
SMHE6.5A	AK	7.22	7.98	10	250	6.5	13.39	11.2
SMHE7.0A	AM	7.78	8.6	10	100	7	12.5	12
SMHE7.5A	AP	8.33	9.21	1	50	7.5	11.63	12.9
SMHE8.0A	AR	8.89	9.83	1	25	8	11.03	13.6
SMHE8.5A	AT	9.44	10.4	1	10	8.5	10.42	14.4
SMHE9.0A	AV	10	11.1	1	5	9	9.74	15.4
SMHE10A	AX	11.1	12.3	1	2.5	10	8.82	17
SMHE11A	AZ	12.2	13.5	1	2.5	11	8.24	18.2
SMHE12A	BE	13.3	14.7	1	2.5	12	7.54	19.9
SMHE13A	BG	14.4	15.9	1	1	13	6.98	21.5
SMHE14A	BK	15.6	17.2	1	1	14	6.47	23.2
SMHE15A	BM	16.7	18.5	1	1	15	6.15	24.4
SMHE16A	BP	17.8	19.7	1	1	16	5.77	26
SMHE17A	BR	18.9	20.9	1	1	17	5.43	27.6
SMHE18A	BT	20	22.1	1	1	18	5.13	29.2
SMHE19A	BV	21.1	23.3	1	1	19	4.90	30.6
SMHE20A	BX	22.2	24.5	1	1	20	4.63	32.4
SMHE22A	BZ	24.4	26.9	1	1	22	4.23	35.5
SMHE24A	CE	26.7	29.5	1	1	24	3.86	38.9
SMHE26A	CG	28.9	31.9	1	1	26	3.56	42.1
SMHE28A	CK	31.1	34.4	1	1	28	3.30	45.4
SMHE30A	CM	33.3	36.8	1	1	30	3.10	48.4
SMHE33A	CP	36.7	40.6	1	1	33	2.81	53.3
SMHE36A	CR	40	44.2	1	1	36	2.55	58.1
SMHE40A	CT	44.4	49.1	1	1	40	2.32	64.5
SMHE43A	CV	47.8	52.8	1	1	43	2.16	69.4
SMHE45A	CX	50	55.3	1	1	45	2.06	72.7
SMHE48A	CZ	53.3	58.9	1	1	48	1.94	77.4
SMHE51A	DE	56.7	62.7	1	1	51	1.82	82.4
SMHE54A	DG	60	66.3	1	1	54	1.72	87.1
SMHE58A	DK	64.4	71.2	1	1	58	1.60	93.6

SMHE60A	DM	66.7	73.7	1	1	60	1.54	96.8
SMHE64A	DP	71.1	78.6	1	1	64	1.45	103
SMHE70A	DR	77.8	86	1	1	70	1.33	113
SMHE75A	DT	83.3	92.1	1	1	75	1.24	121
SMHE78A	DV	86.7	95.8	1	1	78	1.19	126
SMHE80A	DX	88.8	97.6	1	1	80	1.16	129
SMHE85A	DZ	94.4	104	1	1	85	1.09	137
SMHE90A	EG	100	111	1	1	90	1.03	146

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.

■ Characteristics(Typical)

FIG1: Peak Pulse Power Rating Curve

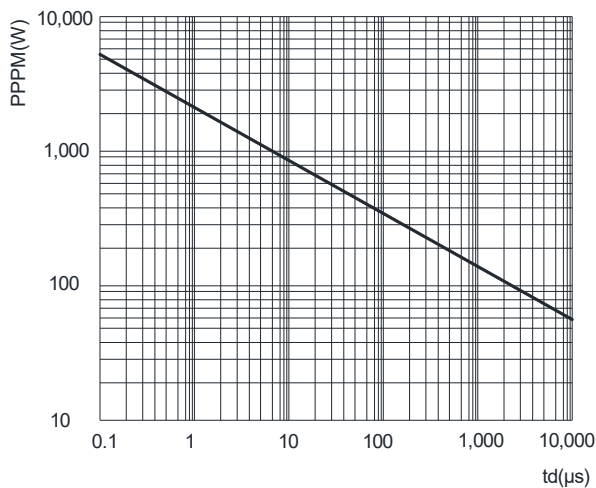


FIG2: Pulse Waveform

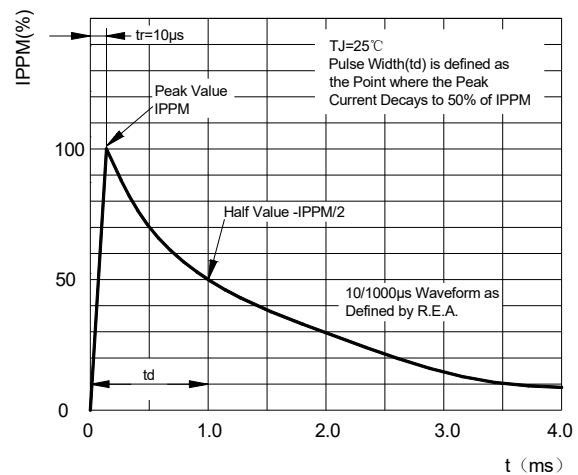


FIG3: Pulse Power or Current vs. Initial Junction Temperature

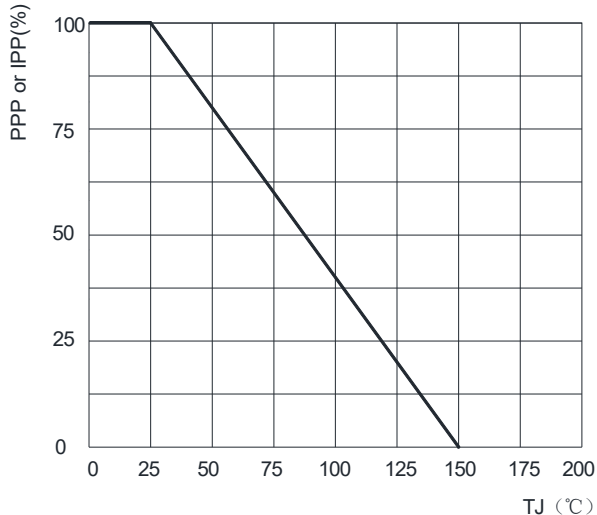
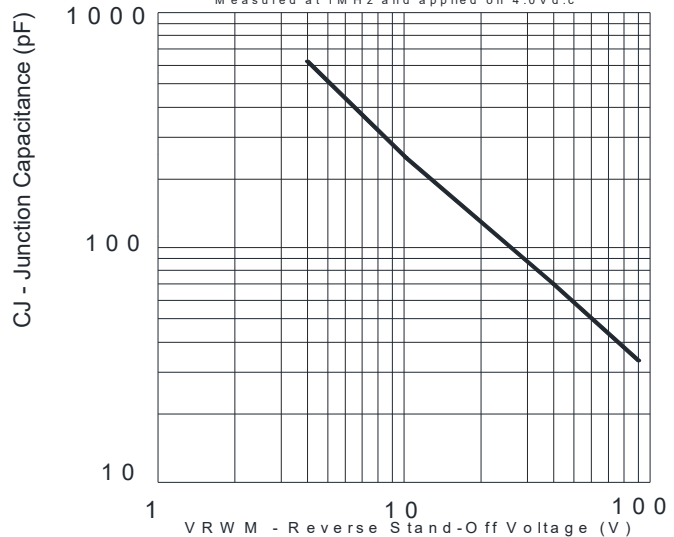
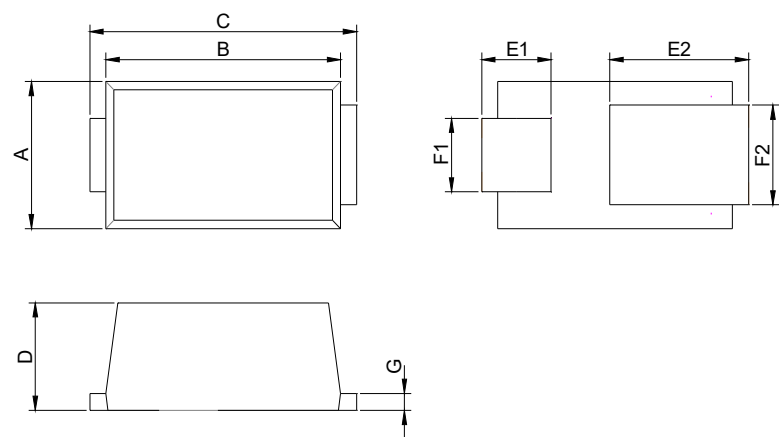


FIG 4: Typical Junction Capacitance
Measured at 1MHz and applied on 4.0Vd.c

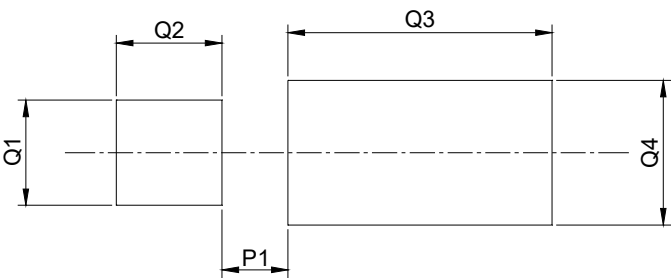


■ Outline Dimensions



SOD-323HE		
Dim	Millimeters	
	Min	Max
A	1.20	1.40
B	2.10	2.30
C	2.30	2.70
D	0.90	1.00
E1	0.55	0.75
E2	1.10	1.50
F1	0.55	0.75
F2	0.78	0.98
G	0.12	0.27

■ Suggested pad layout



SOD-323HE	
Dim	Millimeters
P1	0.50
Q1	0.80
Q2	0.80
Q3	2.00
Q4	1.10

Disclaimer

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