

SMBG Plastic-Encapsulate Diodes

Transient Voltage Suppressor Diodes

Features

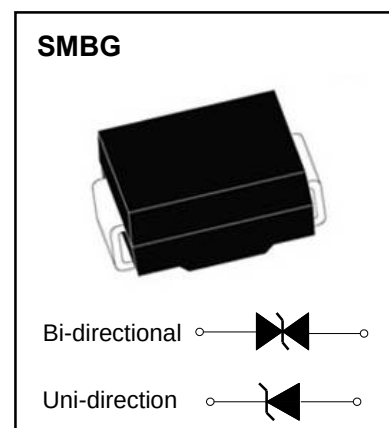
- P_{PPM} 1500W
- V_{RWM} 5.8V- 214V
- Low power loss, high efficiency
- Excellent clamping capability

Applications

- Protect sensitive circuit from damage by high voltage transients
- Lighting, ESD transient voltage protection of IC, system
- Inductive switching load protection of IC, system
- Electrical Fast Transient Immunity protection of IC, system

Mechanical Data

- Case: JEDEC DO-214AA molded plastic
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Solder plated, solderable per MIL- STD-202, Method 208
- Polarity: Color band denotes cathode end



Limiting Values (Absolute Maximum Rating)

Item	Symbol	Unit	Conditions	Max
Peak pulse power dissipation	P_{PPM}	W	with a 10/1000us waveform	1500
Peak pulse current(1)	I_{PPM}	A	with a 10/1000us waveform	See Next Table
Power dissipation	P_D	W	On infinite heat sink at $T_L=75^{\circ}\text{C}$	6.5
Peak forward surge current(2)	I_{FSM}	A	8.3 ms single half sine-wave unidirectional only	200
Operating junction and storage temperature range	T_J, T_{STG}	$^{\circ}\text{C}$		-55 to +150

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Max
Maximum instantaneous forward Voltage (2)	V_F	V	at 100A for unidirectional only	3.5/6.5
Thermal resistance	$R_{\theta JL}$	$^{\circ}\text{C/W}$	Between junction and lead	20
	$R_{\theta JA}$	$^{\circ}\text{C/W}$	Between junction and Ambient	100
	$R_{\theta JC}$	$^{\circ}\text{C/W}$	Between junction and Case	15

Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^{\circ}\text{C}$ per Fig.2.

(2) $V_F < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_F < 6.5\text{V}$ for devices of $V_{BR} > 201\text{V}$

Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number		Reverse Stand-off Voltage	Breakdown Voltage V _{BR} @ I _T		Test Current	Max. Clamping Voltage @ I _{PP}	Max. Peak Pulse Current	Max. Reverse Leakage @ V _{RWM}
UNI-POLAR	BI-POLAR	V _{RWM} (V)	Min.(V)	Max.(V)	I _T (mA)	V _{C MAX} (V)	I _{PP} (A)	I _R (uA)
1.5SMB6.8A	1.5SMB6.8CA	5.8	6.45	7.14	10	10.5	97.50	1000
1.5SMB7.5A	1.5SMB7.5CA	6.4	7.13	7.88	10	11.3	90.75	500
1.5SMB8.2A	1.5SMB8.2CA	7.0	7.79	8.61	10	12.1	84.75	200
1.5SMB9.1A	1.5SMB9.1CA	7.8	8.65	9.55	1	13.4	76.50	50
1.5SMB10A	1.5SMB10CA	8.6	9.50	10.50	1	14.5	70.75	10
1.5SMB11A	1.5SMB11CA	9.4	10.50	11.60	1	15.6	65.75	5
1.5SMB12A	1.5SMB12CA	10.2	11.40	12.60	1	16.7	61.50	5
1.5SMB13A	1.5SMB13CA	11.1	12.40	13.70	1	18.2	56.25	1
1.5SMB15A	1.5SMB15CA	12.8	14.30	15.80	1	21.2	48.25	1
1.5SMB16A	1.5SMB16CA	13.6	15.20	16.80	1	22.5	45.50	1
1.5SMB18A	1.5SMB18CA	15.3	17.10	18.90	1	25.5	40.25	1
1.5SMB20A	1.5SMB20CA	17.1	19.00	21.00	1	27.7	37.00	1
1.5SMB22A	1.5SMB22CA	18.8	20.90	23.10	1	30.6	33.50	1
1.5SMB24A	1.5SMB24CA	20.5	22.80	25.20	1	33.2	30.75	1
1.5SMB27A	1.5SMB27CA	23.1	25.70	28.40	1	37.5	27.25	1
1.5SMB30A	1.5SMB30CA	25.6	28.50	31.50	1	41.4	24.75	1
1.5SMB33A	1.5SMB33CA	28.2	31.40	34.70	1	45.7	22.50	1
1.5SMB36A	1.5SMB36CA	30.8	34.20	37.80	1	49.9	20.50	1
1.5SMB39A	1.5SMB39CA	33.3	37.10	41.00	1	53.9	19.00	1
1.5SMB43A	1.5SMB43CA	36.8	40.90	45.20	1	59.3	17.25	1
1.5SMB47A	1.5SMB47CA	40.2	44.70	49.40	1	64.8	15.75	1
1.5SMB51A	1.5SMB51CA	43.6	48.50	53.60	1	70.1	14.50	1
1.5SMB56A	1.5SMB56CA	47.8	53.20	58.80	1	77.0	13.25	1
1.5SMB62A	1.5SMB62CA	53.0	58.90	65.10	1	85.0	12.00	1
1.5SMB68A	1.5SMB68CA	58.1	64.60	71.40	1	92.0	11.25	1
1.5SMB75A	1.5SMB75CA	64.1	71.30	78.80	1	103.0	10.00	1
1.5SMB82A	1.5SMB82CA	70.1	77.90	86.10	1	113.0	9.00	1
1.5SMB91A	1.5SMB91CA	77.8	86.50	95.50	1	125.0	8.25	1
1.5SMB100A	1.5SMB100CA	85.5	95.0	105.0	1	137.0	7.50	1
1.5SMB110A	1.5SMB110CA	94.0	105.0	116.0	1	152.0	6.75	1
1.5SMB120A	1.5SMB120CA	102.0	114.0	126.0	1	165.0	6.25	1
1.5SMB130A	1.5SMB130CA	111.0	124.0	137.0	1	179.0	5.75	1
1.5SMB150A	1.5SMB150CA	128.0	143.0	158.0	1	207.0	5.00	1
1.5SMB160A	1.5SMB160CA	136.0	152.0	168.0	1	219.0	4.75	1
1.5SMB170A	1.5SMB170CA	145.0	162.0	179.0	1	234.0	4.50	1
1.5SMB180A	1.5SMB180CA	154.0	171.0	189.0	1	246.0	4.25	1
1.5SMB200A	1.5SMB200CA	171.0	190.0	210.0	1	274.0	3.75	1
1.5SMB220A	1.5SMB220CA	185.0	209.0	231.0	1	328.0	3.25	1
1.5SMB250A	1.5SMB250CA	214.0	237.0	263.0	1	344.0	3.00	1

Typical Characteristics

FIG1: Peak Pulse Power Rating Curve

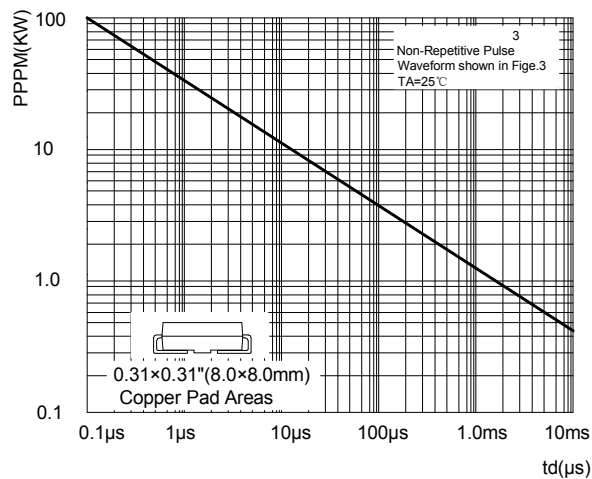


FIG2: Pulse Power or Current vs. Initial Junction Temperature

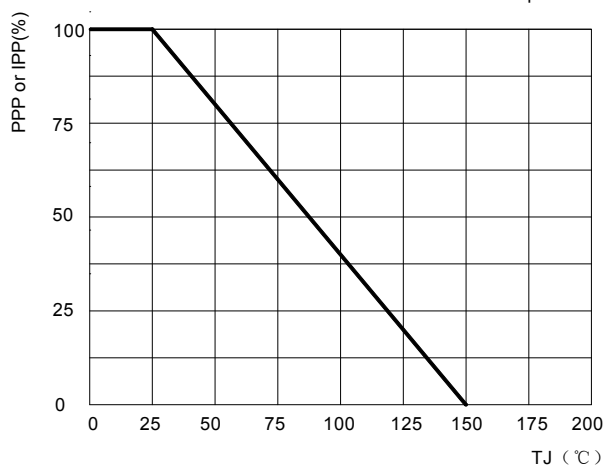


FIG3: Pulse Waveform

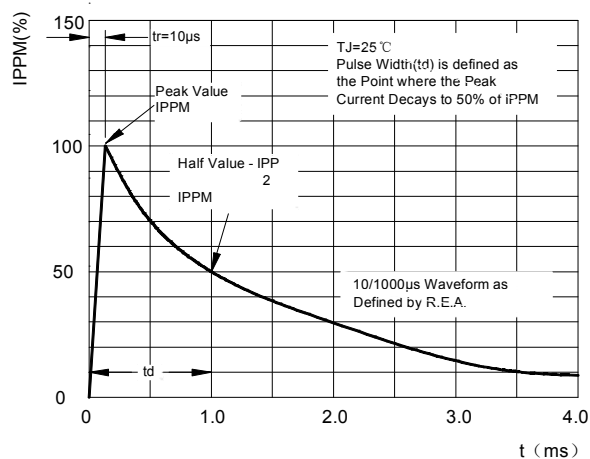


FIG4: Typical Transient Thermal Impedance

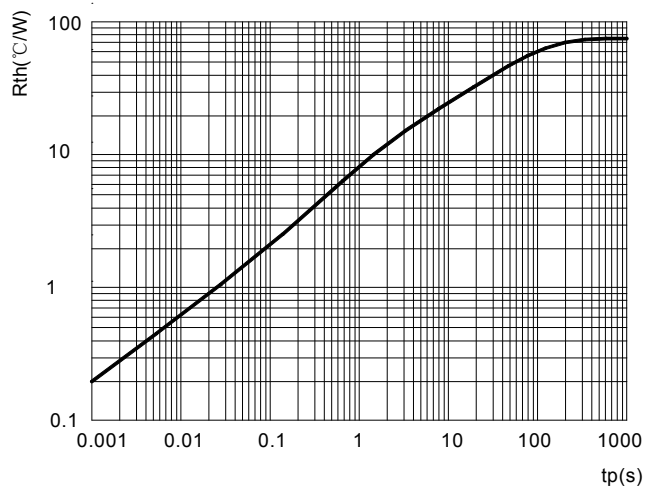


FIG5: Maximum Non-Repetitive Surge Current

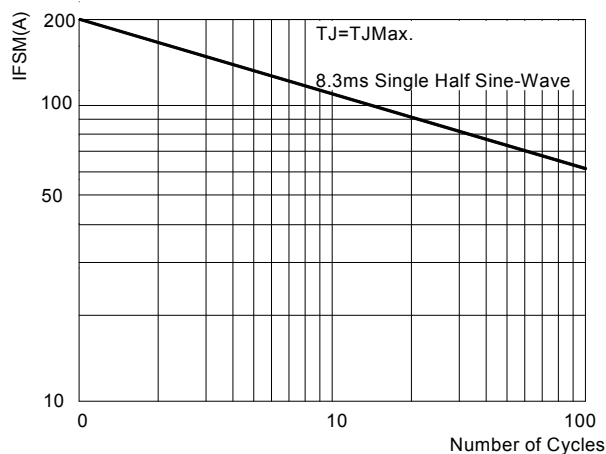
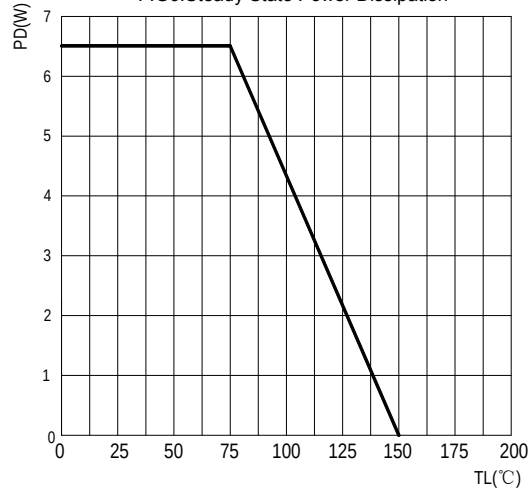
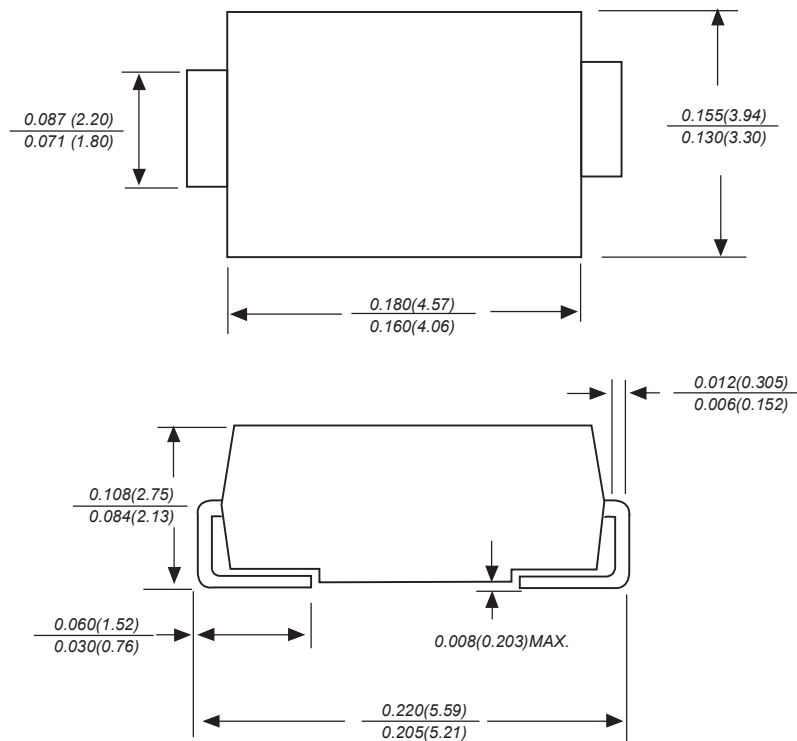


FIG6: Steady State Power Dissipation

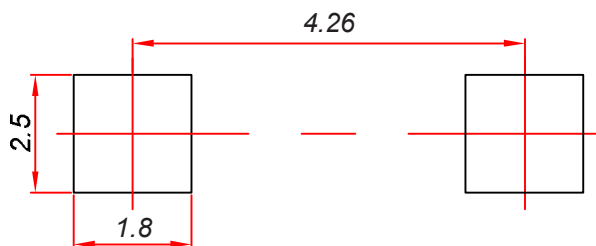


SMBG Package Outline Dimensions



Dimensions in inches and (millimeters)

SMBG Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

Ordering Information

Part Number	Package	Shipping Quantity
1.5SMB6.8(C)A- 1.5SMB250(C)A	SMBG	3000/tape&Reel

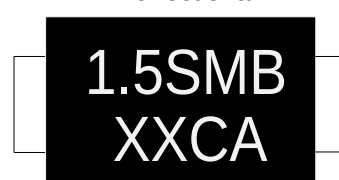
Marking Diagram

Uni-direction



XX: From 6.8 To 250

Bi-directional



Reel Taping Specifications For Surface Mount Devices–SMBG

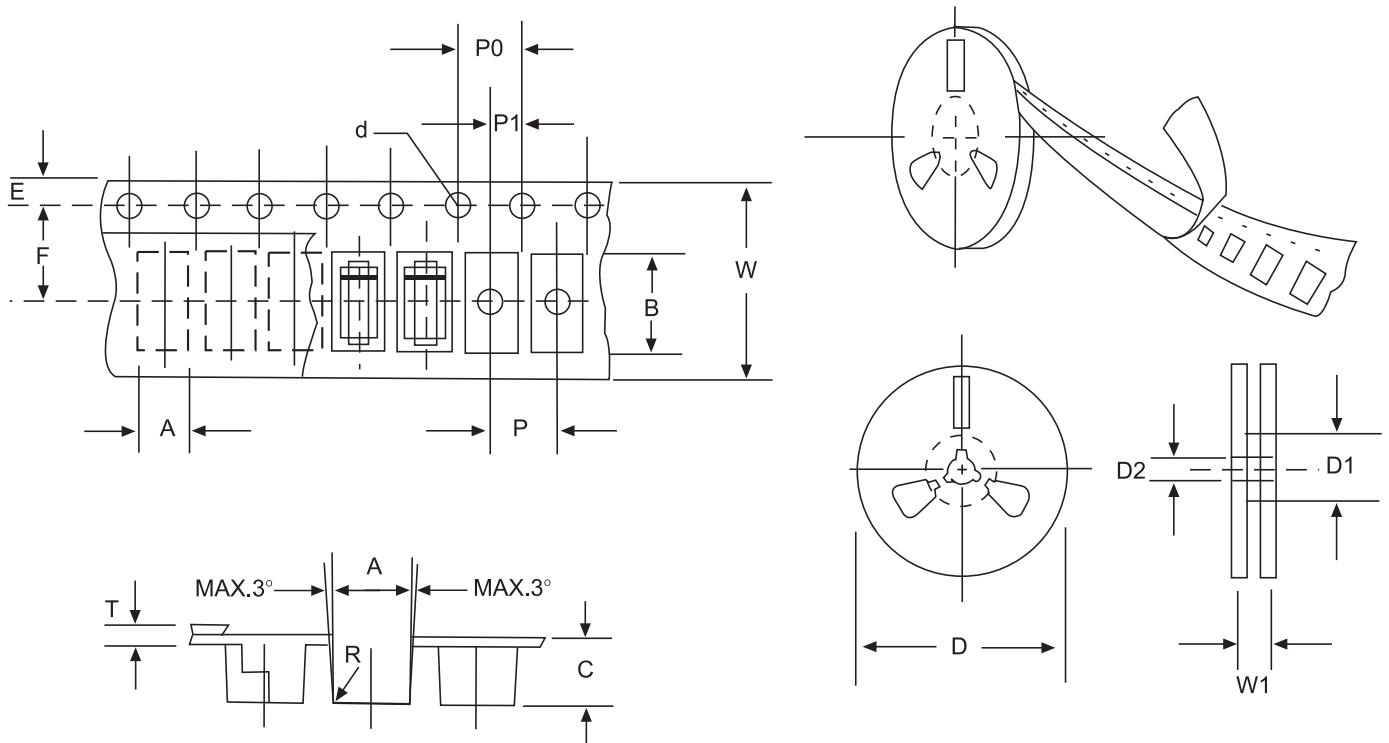


FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING

ITEM	SYMBOL	SMBG mm(inch)
Carrier width	A	4.09±0.1(0.161±0.004)
Carrier length	B	5.82±0.1(0.229±0.004)
Carrier depth	C	2.50±0.1(0.100±0.004)
Sprocket hole	d	1.55±0.05 (0.061±0.002)
Reel outside diameter	D	330±2.0(13±0.079)
Reel inner diameter	D1	75 ±1.0 (2.95 ±0.039)
Feed hole diameter	D2	13±0.5(0.512±0.020)
Stroket hole position	E	1.75±0.1(0.069±0.004)
Punch hole position	F	5.65±0.05(0.222±0.002)
Punch hole pitch	P	8.0±0.1(0.315±0.004)
Sprocket hole pitch	P0	4.0±0.1(0.157±0.004)
Embossment center	P1	2.0±0.1(0.079±0.004)
Totall tape thickness	T	0.32±0.1 (0.013±0.004)
Tape width	W	12.0±0.2(0.472±0.008)
Reel width	W1	16.8±2.0(0.661±0.079)

NOTE: Devices are packde in accordance with EIA standard RS-481-A and specification given above.