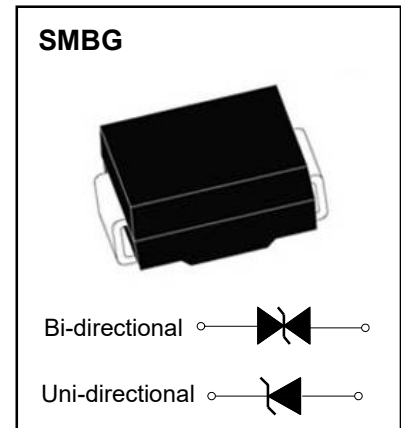


## SMBG Plastic-Encapsulate Diodes

### SMBJ SERIES Transient Voltage Suppressor Diodes

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_{RWM}$	5-440	V
$I_R$	800-5	uA
$I_{PP}$	65.22-0.84	A
$V_C$	9.2-713	V
$P_{PPM}$	600	W



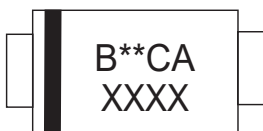
### Features

- For surface mounted applications in order to optimize board space
- Glass passivated chip junction
- Excellent clamping capability
- Low reverse leakage
- Very fast response time
- 600 W peak pulse power capability with a 10/1000 us waveform by 0.01% duty cycle
- RoHS Compliant
- ESD protection of data lines in accordance with IEC 61000-4-2, 30 kV(Air),30 kV (Contact)

### Mechanical Data

- Case: SMB(DO-214)
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Polarity: Color band denotes cathode end

### Marking



Cathode Band:for uni-directional products only

B\*\*CA = Device code, \*\*=Voltage

C:Bi-directional or not

XXXX=Data Code

## Electrical Characteristics( $T_A=25$ unless otherwise noted)

### Limiting Values (Absolute Maximum Rating)

Item	Symbol	Unit	Conditions	Max
Peak pulse power dissipation	$P_{PPM}$	W	with a 10/1000us waveform	600
Peak pulse current(note 1)	$I_{PPM}$	A	with a 10/1000us waveform	See Next Table
Power dissipation	$P_D$	W	On infinite heat sink at $T_L=50$	5.0
Peak forward surge current	$I_{FSM}$	A	8.3 ms single half sine-wave uni-directional only (note 2)	100
Operating junction and storage temperature range	$T_J, T_{STG}$			-55 to +150

### Electrical Characteristics $T_A=25$ Unless otherwise specified

Item	Symbol	Unit	Conditions	Max
Maximum instantaneous forward Voltage	$V_F$	V	at 50A for uni-directional only	3.5/5.0
Thermal resistance	$R_{\theta JL}$	/W	junction to lead $T_L=50^\circ\text{C}$	20
	$R_{\theta JA}$	/W	junction to ambient $T_A=25^\circ\text{C}$	100

#### Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig.2
- (2) 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum
- (3)  $V_F<3.5\text{V}$  for devices of  $V_{BR}<200\text{V}$  and  $V_F<5.0\text{V}$  for devices of  $V_{BR}>201\text{V}$

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

Part Number		Device Marking Code		Breakdown Voltage VBR@IT		Test Current	Max Reverse Leakage @ $V_{RWM}$	Reverse Standoff Voltage	Max Peak Pulse Current <sup>(1)</sup>	Max Clamping Voltage @ $I_{PP}$
UNI	BI	UNI	BI	Min.(V)	Max.(V)	IT(mA)	$I_R$ (uA)	$V_{RWM}$ (V)	$I_{PP}$ (A)	$V_C$ (V)
SMBJ5.0A	SMBJ5.0CA	B5.0A XXXX	B5.0CA XXXX	6.4	7.0	10	800	5.0	65.22	9.2
SMBJ6.0A	SMBJ6.0CA	B6.0A XXXX	B6.0CA XXXX	6.7	7.4	10	800	6.0	58.25	10.3
SMBJ6.5A	SMBJ6.5CA	B6.5A XXXX	B6.5CA XXXX	7.2	8.0	10	500	6.5	53.57	11.2
SMBJ7.0A	SMBJ7.0CA	B7.0A XXXX	B7.0CA XXXX	7.8	8.6	10	200	7.0	50.00	12.0
SMBJ7.5A	SMBJ7.5CA	B7.5A XXXX	B7.5CA XXXX	8.3	9.2	1	100	7.5	46.51	12.9
SMBJ8.0A	SMBJ8.0CA	B8.0A XXXX	B8.0CA XXXX	8.9	9.8	1	50	8.0	44.12	13.6
SMBJ8.5A	SMBJ8.5CA	B8.5A XXXX	B8.5CA XXXX	9.4	10.4	1	20	8.5	41.67	14.4
SMBJ9.0A	SMBJ9.0CA	B9.0A XXXX	B9.0CA XXXX	10.0	11.1	1	10	9.0	38.96	15.4
SMBJ10A	SMBJ10CA	B10A XXXX	B10CA XXXX	11.1	12.3	1	5	10.0	35.29	17.0
SMBJ11A	SMBJ11CA	B11A XXXX	B11CA XXXX	12.2	13.5	1	5	11.0	32.97	18.2
SMBJ12A	SMBJ12CA	B12A XXXX	B12CA XXXX	13.3	14.7	1	5	12.0	30.15	19.9
SMBJ13A	SMBJ13CA	B13A XXXX	B13CA XXXX	14.4	15.9	1	5	13.0	27.91	21.5
SMBJ14A	SMBJ14CA	B14A XXXX	B14CA XXXX	15.6	17.2	1	5	14.0	25.86	23.2
SMBJ15A	SMBJ15CA	B15A XXXX	B15CA XXXX	16.7	18.5	1	5	15.0	24.59	24.4
SMBJ16A	SMBJ16CA	B16A XXXX	B16CA XXXX	17.8	19.7	1	5	16.0	23.08	26.0
SMBJ17A	SMBJ17CA	B17A XXXX	B17CA XXXX	18.9	20.9	1	5	17.0	21.74	27.6
SMBJ18A	SMBJ18CA	B18A XXXX	B18CA XXXX	20.0	22.1	1	5	18.0	20.55	29.2
SMBJ20A	SMBJ20CA	B20A XXXX	B20CA XXXX	22.2	24.5	1	5	20.0	18.52	32.4
SMBJ22A	SMBJ22CA	B22A XXXX	B22CA XXXX	24.4	26.9	1	5	22.0	16.90	35.5
SMBJ24A	SMBJ24CA	B24A XXXX	B24CA XXXX	26.7	29.5	1	5	24.0	15.42	38.9

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

Part Number		Device Marking Code		Breakdown Voltage VBR@IT		Test Current	Max Reverse Leakage @V <sub>RWM</sub>	Reverse Standoff Voltage	Max Peak Pulse Current <sup>(1)</sup>	Max Clamping Voltage @I <sub>PP</sub>
UNI	BI	UNI	BI	Min.(V)	Max.(V)	IT(mA)	I <sub>R</sub> (uA)	V <sub>RWM</sub> (V)	I <sub>PP</sub> (A)	V <sub>C</sub> (V)
SMBJ26A	SMBJ26CA	B26A XXXX	B26CA XXXX	28.9	31.9	1	5	26.0	14.25	42.1
SMBJ28A	SMBJ28CA	B28A XXXX	B28CA XXXX	31.1	34.4	1	5	28.0	13.22	45.4
SMBJ30A	SMBJ30CA	B30A XXXX	B30CA XXXX	33.3	36.8	1	5	30.0	12.40	48.4
SMBJ33A	SMBJ33CA	B33A XXXX	B33CA XXXX	36.7	40.6	1	5	33.0	11.26	53.3
SMBJ36A	SMBJ36CA	B36A XXXX	B36CA XXXX	40.0	44.2	1	5	36.0	10.33	58.1
SMBJ40A	SMBJ40CA	B40A XXXX	B40CA XXXX	44.4	49.1	1	5	40.0	9.30	64.5
SMBJ43A	SMBJ43CA	B43A XXXX	B43CA XXXX	47.8	52.8	1	5	43.0	8.65	69.4
SMBJ45A	SMBJ45CA	B45A XXXX	B45CA XXXX	50.0	55.3	1	5	45.0	8.25	72.7
SMBJ48A	SMBJ48CA	B48A XXXX	B48CA XXXX	53.3	58.9	1	5	48.0	7.75	77.4
SMBJ51A	SMBJ51CA	B51A XXXX	B51CA XXXX	56.7	62.7	1	5	51.0	7.28	82.4
SMBJ54A	SMBJ54CA	B54A XXXX	B54CA XXXX	60.0	66.3	1	5	54.0	6.89	87.1
SMBJ58A	SMBJ58CA	B58A XXXX	B58CA XXXX	64.4	71.2	1	5	58.0	6.41	93.6
SMBJ60A	SMBJ60CA	B60A XXXX	B60CA XXXX	66.7	73.7	1	5	60.0	6.20	96.8
SMBJ64A	SMBJ64CA	B64A XXXX	B64CA XXXX	71.1	78.6	1	5	64.0	5.83	103.0
SMBJ70A	SMBJ70CA	B70A XXXX	B70CA XXXX	77.8	86.0	1	5	70.0	5.31	113.0
SMBJ75A	SMBJ75CA	B75A XXXX	B75CA XXXX	83.3	92.1	1	5	75.0	4.96	121.0
SMBJ78A	SMBJ78CA	B78A XXXX	B78CA XXXX	86.7	95.8	1	5	78.0	4.76	126.0
SMBJ80A	SMBJ80CA	B80A XXXX	B80CA XXXX	88.8	97.6	1	5	80.0	4.63	129.6
SMBJ85A	SMBJ85CA	B85A XXXX	B85CA XXXX	94.4	104.0	1	5	85.0	4.38	137.0
SMBJ90A	SMBJ90CA	B90A XXXX	B90CA XXXX	100.0	111.0	1	5	90.0	4.11	146.0

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

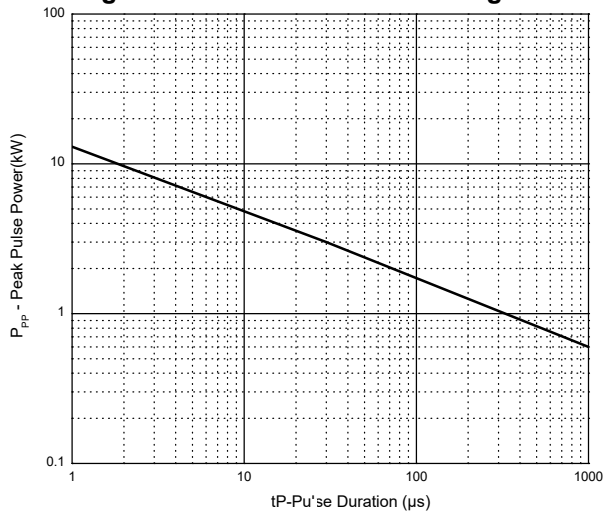
Part Number		Device Marking Code		Breakdown Voltage VBR@IT		Test Current	Max Reverse Leakage @V <sub>RWM</sub>	Reverse Standoff Voltage	Max Peak Pulse Current <sup>(1)</sup>	Max Clamping Voltage @I <sub>PP</sub>
UNI	BI	UNI	BI	Min.(V)	Max.(V)	IT(mA)	I <sub>R</sub> (uA)	V <sub>RWM</sub> (V)	I <sub>PP</sub> (A)	V <sub>C</sub> (V)
SMBJ100A	SMBJ100CA	B100A XXXX	B100CA XXXX	111.0	123.0	1	5	100.0	3.70	162.0
SMBJ110A	SMBJ110CA	B110A XXXX	B110CA XXXX	122.0	135.0	1	5	110.0	3.39	177.0
SMBJ120A	SMBJ120CA	B120A XXXX	B120CA XXXX	133.0	147.0	1	5	120.0	3.11	193.0
SMBJ130A	SMBJ130CA	B130A XXXX	B130CA XXXX	144.0	159.0	1	5	130.0	2.87	209.0
SMBJ150A	SMBJ150CA	B150A XXXX	B150CA XXXX	167.0	185.0	1	5	150.0	2.47	243.0
SMBJ160A	SMBJ160CA	B160A XXXX	B160CA XXXX	178.0	197.0	1	5	160.0	2.32	259.0
SMBJ170A	SMBJ170CA	B170A XXXX	B170CA XXXX	189.0	209.0	1	5	170.0	2.18	275.0
SMBJ180A	SMBJ180CA	B180A XXXX	B180CA XXXX	200.0	220.0	1	5	180.0	2.06	291.0
SMBJ190A	SMBJ190CA	B190A XXXX	B190CA XXXX	211.0	232.0	1	5	190.0	1.95	307.0
SMBJ200A	SMBJ200CA	B200A XXXX	B200CA XXXX	224.0	247.0	1	5	200.0	1.85	324.0
SMBJ220A	SMBJ220CA	B220A XXXX	B220CA XXXX	246.0	272.0	1	5	220.0	1.69	356.0
SMBJ250A	SMBJ250CA	B250A XXXX	B250CA XXXX	279.0	309.0	1	5	250.0	1.48	405.0
SMBJ300A	SMBJ300CA	B300A XXXX	B300CA XXXX	335.0	371.0	1	5	300.0	1.23	486.0
SMBJ350A	SMBJ350CA	B350A XXXX	B350CA XXXX	391.0	432.0	1	5	350.0	1.06	567.0
SMBJ400A	SMBJ400CA	B400A XXXX	B400CA XXXX	447.0	494.0	1	5	400.0	0.93	648.0
SMBJ440A	SMBJ440CA	B440A XXXX	B440CA XXXX	492.0	543.0	1	5	440.0	0.84	713.0

### Notes:

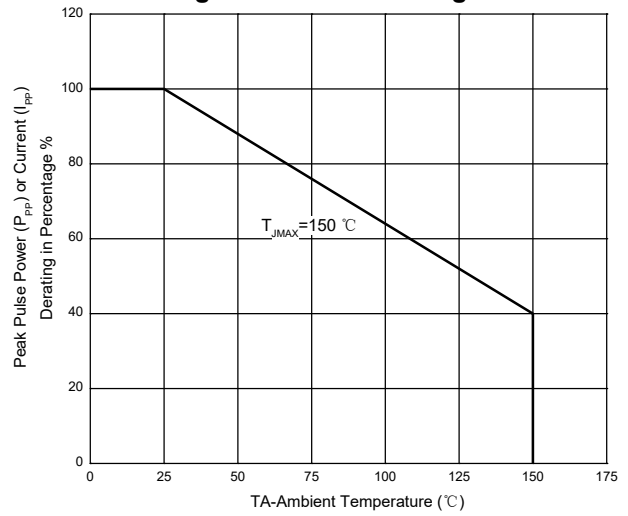
(1) Waveform of SMBJ5.0A -SMBJ440CA are defined as per fig.3

# Typical Characteristics

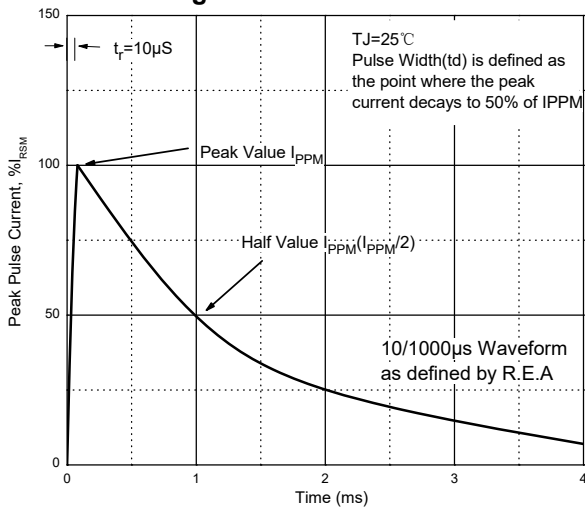
**Figure 1. Peak Pulse Power Rating Curve**



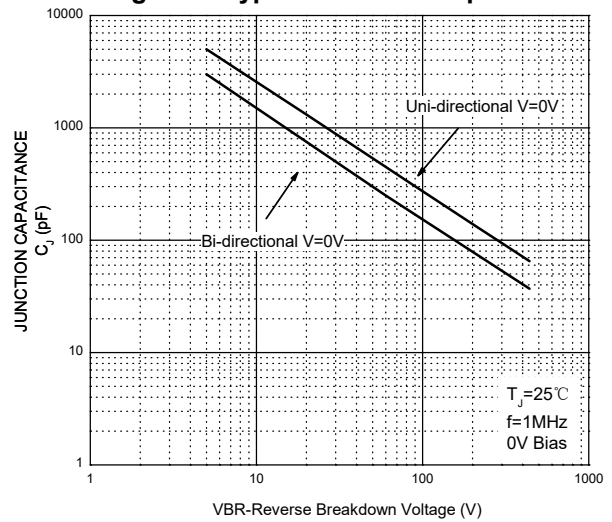
**Figure 2. Pulse Derating Curve**



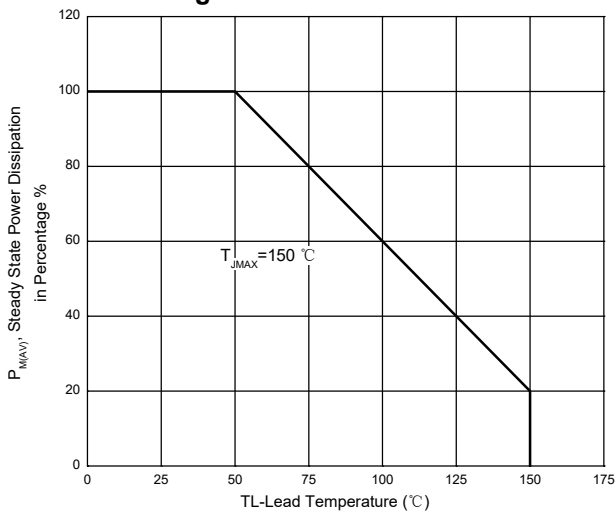
**Figure 3. Pulse Waveform**



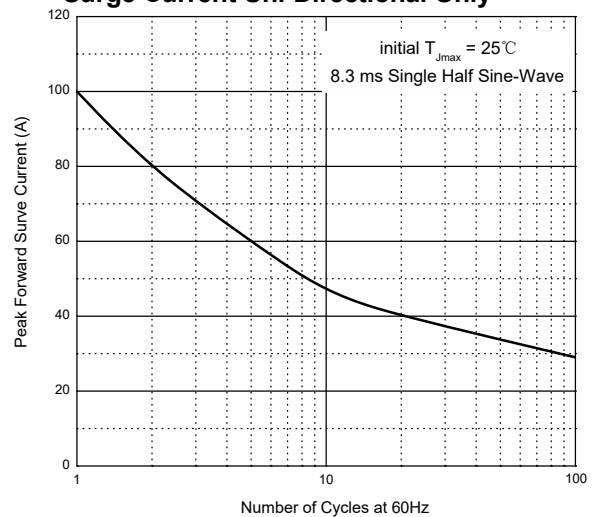
**Figure 4. Typical Junction Capacitance**



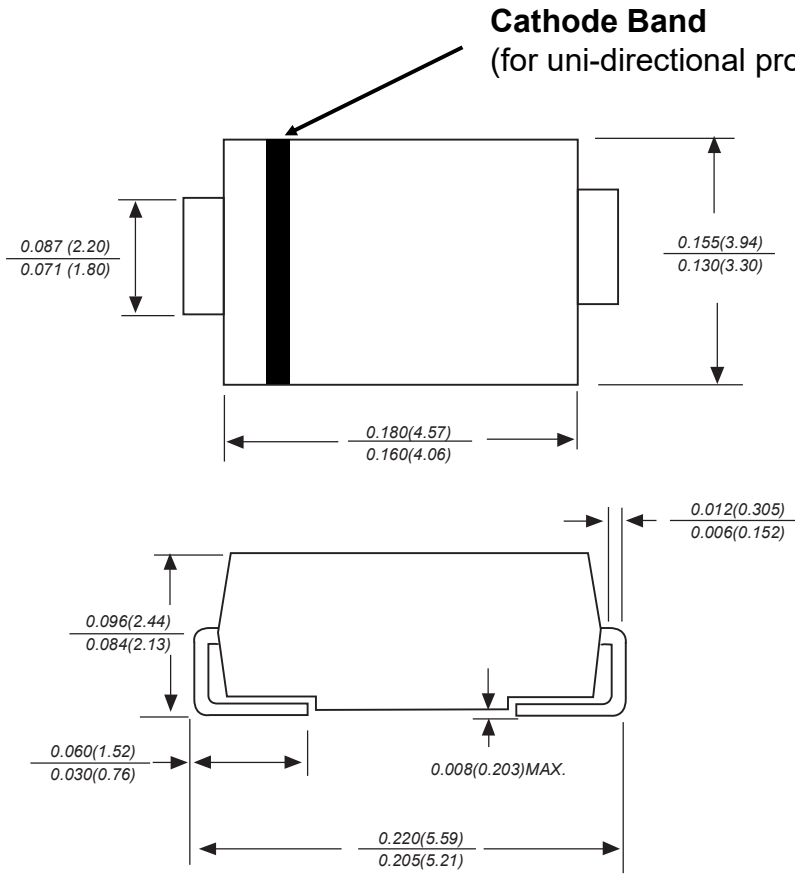
**Figure 5. Steady State Power Dissipation Derating Curve**



**Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**

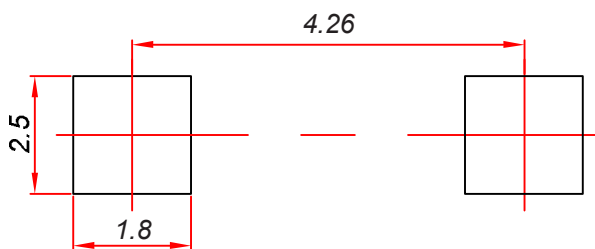


## SMBG Package Outline Dimensions



Dimensions in inches and (millimeters)

## SMBG Suggested Pad Layout



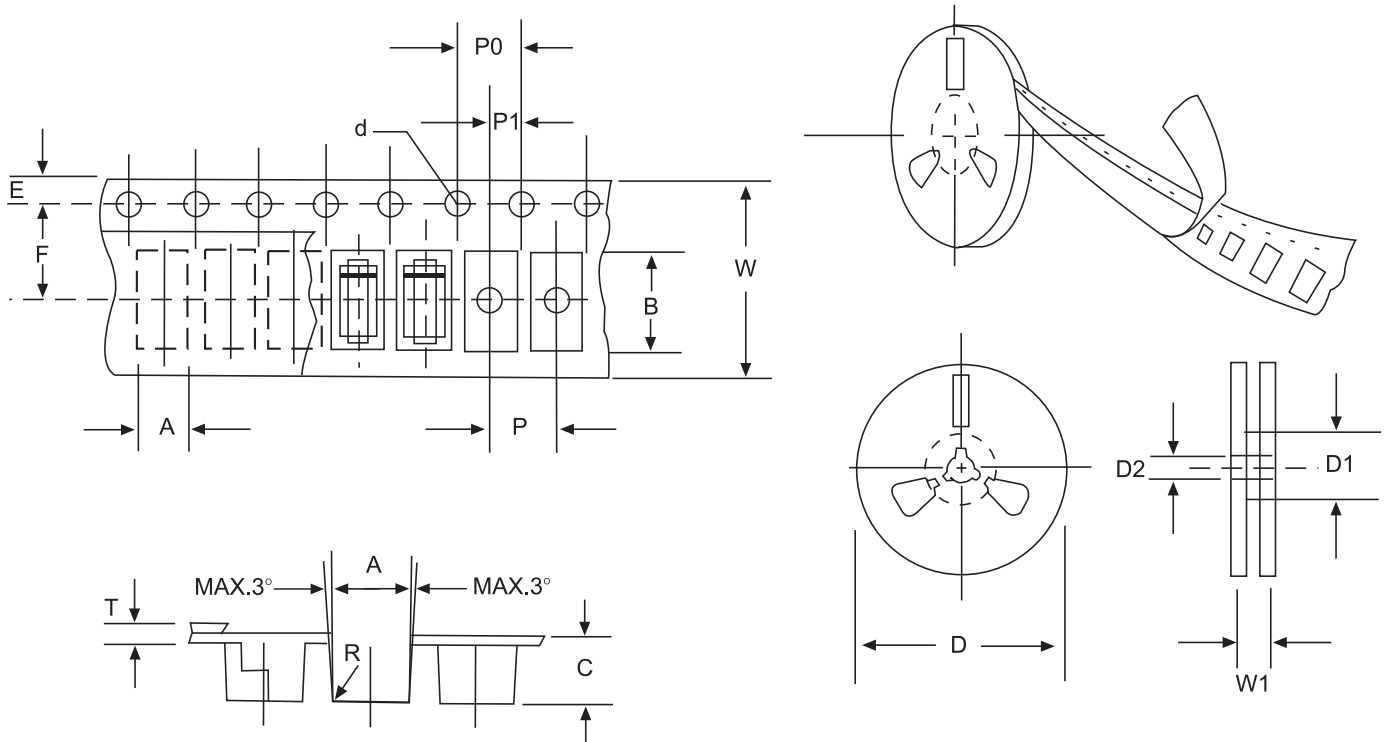
**Note:**

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

**NOTICE**

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

## 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	5.83±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 inside diameter	D1	75±1.0 (2.95±0.039)
Feed hole position	D2	13±0.5 (0.512±0.020)
Sprocket 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 (0.157±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)
Total 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 packed in accordance with EIA standard RS-481-A and specification given above.