

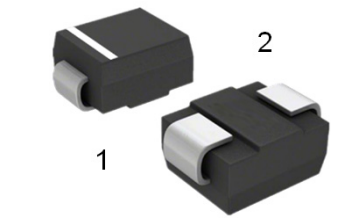
# 2000W Surface Mount Transient Voltage Suppressor

## Description

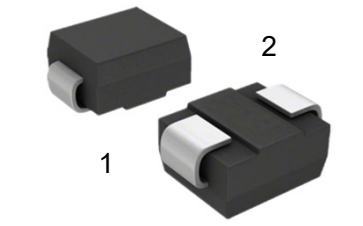
The 2.0SMBJ Series are designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

## Feature

- Glass passivated or planar junction
- Excellent clamping capability
- Repetition rate (duty cycle): 0.01%
- Low profile package and low inductance
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature soldering: 260°C/10s at terminals.
- For surface mounted applications in order to optimize board space.



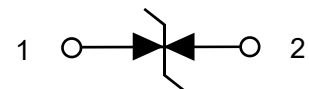
**SMB(Uni)**



**SMB(Bi)**

## Mechanical Characteristics

- Package: SMB
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Polarity: Color band denotes cathode except bi-directional models
- Approx. Weight: 0.1g / 0.0034oz

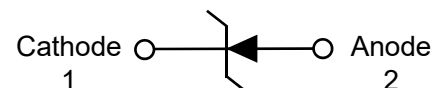


Bi-directional

**Circuit Diagram**

## Applications

- Power lines
- I/O Interface.
- Automotive and Telecommunication Industrial Electronics



Uni-directional

**Circuit Diagram**

## Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000µs Waveform	$P_{PP}$	2000	W
Steady State Power dissipation at $T_L=75^\circ\text{C}$	$P_{M(AV)}$	5.0	W
Operating Junction Temperature Range	$T_J$	-55~+125	°C
Storage Temperature Range	$T_{STG}$	-55~+150	°C

## Electrical characteristics per line@25°C(unless otherwise specified)

Part Number		Mark		$V_R$	$I_R@V_R$	$V_{BR}@I_T$		$I_T$	$V_C@I_{PP}$	$I_{PP}^{(1)}$
Uni	Bi	Uni	Bi	V	$\mu A$	min(V)	max(V)	mA	V	A
2.0SMBJ5.0A	2.0SMBJ5.0CA	2.0SMBJ5.0A	2.0SMBJ5.0CA	5	800	6.4	7	10	9.2	217.39
2.0SMBJ6.0A	2.0SMBJ6.0CA	2.0SMBJ6.0A	2.0SMBJ6.0CA	6	800	6.67	7.37	10	10.3	194.17
2.0SMBJ6.5A	2.0SMBJ6.5CA	2.0SMBJ6.5A	2.0SMBJ6.5CA	6.5	500	7.22	7.98	10	11.2	178.57
2.0SMBJ7.0A	2.0SMBJ7.0CA	2.0SMBJ7.0A	2.0SMBJ7.0CA	7	200	7.78	8.6	10	12	166.67
2.0SMBJ7.5A	2.0SMBJ7.5CA	2.0SMBJ7.5A	2.0SMBJ7.5CA	7.5	100	8.33	9.21	1	12.9	155.04
2.0SMBJ8.0A	2.0SMBJ8.0CA	2.0SMBJ8.0A	2.0SMBJ8.0CA	8	50	8.89	9.83	1	13.6	147.06
2.0SMBJ8.5A	2.0SMBJ8.5CA	2.0SMBJ8.5A	2.0SMBJ8.5CA	8.5	20	9.44	10.4	1	14.4	138.89
2.0SMBJ9.0A	2.0SMBJ9.0CA	2.0SMBJ9.0A	2.0SMBJ9.0CA	9	10	10	11.1	1	15.4	129.87
2.0SMBJ10A	2.0SMBJ10CA	2.0SMBJ10A	2.0SMBJ10CA	10	5	11.1	12.3	1	17	117.65
2.0SMBJ11A	2.0SMBJ11CA	2.0SMBJ11A	2.0SMBJ11CA	11	1	12.2	13.5	1	18.2	109.89
2.0SMBJ12A	2.0SMBJ12CA	2.0SMBJ12A	2.0SMBJ12CA	12	1	13.3	14.7	1	19.9	100.5
2.0SMBJ13A	2.0SMBJ13CA	2.0SMBJ13A	2.0SMBJ13CA	13	500	14.4	15.9	1	21.5	93.02
2.0SMBJ14A	2.0SMBJ14CA	2.0SMBJ14A	2.0SMBJ14CA	14	100	15.6	17.2	1	23.2	86.21
2.0SMBJ15A	2.0SMBJ15CA	2.0SMBJ15A	2.0SMBJ15CA	15	20	16.7	18.5	1	24.4	81.97
2.0SMBJ16A	2.0SMBJ16CA	2.0SMBJ16A	2.0SMBJ16CA	16	10	17.8	19.7	1	26	76.92
2.0SMBJ17A	2.0SMBJ17CA	2.0SMBJ17A	2.0SMBJ17CA	17	10	18.9	20.9	1	27.6	72.46
2.0SMBJ18A	2.0SMBJ18CA	2.0SMBJ18A	2.0SMBJ18CA	18	5	20	22.1	1	29.2	68.49
2.0SMBJ20A	2.0SMBJ20CA	2.0SMBJ20A	2.0SMBJ20CA	20	5	22.2	24.5	1	32.4	61.73
2.0SMBJ22A	2.0SMBJ22CA	2.0SMBJ22A	2.0SMBJ22CA	22	1	24.4	26.9	1	35.5	56.34
2.0SMBJ24A	2.0SMBJ24CA	2.0SMBJ24A	2.0SMBJ24CA	24	1	26.7	29.5	1	38.9	51.41
2.0SMBJ26A	2.0SMBJ26CA	2.0SMBJ26A	2.0SMBJ26CA	26	1	28.9	31.9	1	42.1	47.51
2.0SMBJ28A	2.0SMBJ28CA	2.0SMBJ28A	2.0SMBJ28CA	28	1	31.1	34.4	1	45.4	44.05
2.0SMBJ30A	2.0SMBJ30CA	2.0SMBJ30A	2.0SMBJ30CA	30	1	33.3	36.8	1	48.4	41.32
2.0SMBJ33A	2.0SMBJ33CA	2.0SMBJ33A	2.0SMBJ33CA	33	1	36.7	40.6	1	53.3	37.52
2.0SMBJ36A	2.0SMBJ36CA	2.0SMBJ36A	2.0SMBJ36CA	36	1	40	44.2	1	58.1	34.42
2.0SMBJ40A	2.0SMBJ40CA	2.0SMBJ40A	2.0SMBJ40CA	40	1	44.4	49.1	1	64.5	31.01
2.0SMBJ43A	2.0SMBJ43CA	2.0SMBJ43A	2.0SMBJ43CA	43	1	47.8	52.8	1	69.4	28.82
2.0SMBJ45A	2.0SMBJ45CA	2.0SMBJ45A	2.0SMBJ45CA	45	1	50	55.3	1	72.7	27.51
2.0SMBJ48A	2.0SMBJ48CA	2.0SMBJ48A	2.0SMBJ48CA	48	1	53.3	58.9	1	77.4	25.84
2.0SMBJ51A	2.0SMBJ51CA	2.0SMBJ51A	2.0SMBJ51CA	51	1	56.7	62.7	1	82.4	24.27
2.0SMBJ54A	2.0SMBJ54CA	2.0SMBJ54A	2.0SMBJ54CA	54	1	60	66.3	1	87.1	22.96
2.0SMBJ58A	2.0SMBJ58CA	2.0SMBJ58A	2.0SMBJ58CA	58	1	64.4	71.2	1	93.6	21.37
2.0SMBJ60A	2.0SMBJ60CA	2.0SMBJ60A	2.0SMBJ60CA	60	1	66.7	73.7	1	96.8	20.66
2.0SMBJ64A	2.0SMBJ64CA	2.0SMBJ64A	2.0SMBJ64CA	64	1	71.1	78.6	1	103	19.42
2.0SMBJ70A	2.0SMBJ70CA	2.0SMBJ70A	2.0SMBJ70CA	70	1	77.8	86	1	113	17.7
2.0SMBJ75A	2.0SMBJ75CA	2.0SMBJ75A	2.0SMBJ75CA	75	1	83.3	92.1	1	121	16.53
2.0SMBJ78A	2.0SMBJ78CA	2.0SMBJ78A	2.0SMBJ78CA	78	1	86.7	95.8	1	126	15.87

Part Number		Mark		$V_R$	$I_R@V_R$	$V_{BR}@I_T$		$I_T$	$V_C@I_{PP}$	$I_{PP}^{(1)}$
Uni	Bi	Uni	Bi	V	$\mu A$	min(V)	max(V)	mA	V	A
2.0SMBJ85A	2.0SMBJ85CA	2.0SMBJ85A	2.0SMBJ85CA	85	1	94.4	104	1	137	14.6
2.0SMBJ90A	2.0SMBJ90CA	2.0SMBJ90A	2.0SMBJ90CA	90	1	100	111	1	146	13.7
2.0SMBJ100A	2.0SMBJ100CA	2.0SMBJ100A	2.0SMBJ100CA	100	1	111	123	1	162	12.35
2.0SMBJ110A	2.0SMBJ110CA	2.0SMBJ110A	2.0SMBJ110CA	110	1	122	135	1	177	11.3
2.0SMBJ120A	2.0SMBJ120CA	2.0SMBJ120A	2.0SMBJ120CA	120	1	133	147	1	193	10.36
2.0SMBJ130A	2.0SMBJ130CA	2.0SMBJ130A	2.0SMBJ130CA	130	1	144	159	1	209	9.57
2.0SMBJ150A	2.0SMBJ150CA	2.0SMBJ150A	2.0SMBJ150CA	150	1	167	185	1	243	8.23
2.0SMBJ160A	2.0SMBJ160CA	2.0SMBJ160A	2.0SMBJ160CA	160	1	178	197	1	259	7.72
2.0SMBJ170A	2.0SMBJ170CA	2.0SMBJ170A	2.0SMBJ170CA	170	1	189	209	1	275	7.27
2.0SMBJ180A	2.0SMBJ180CA	2.0SMBJ180A	2.0SMBJ180CA	180	1	201	222	1	292	6.85
2.0SMBJ190A	2.0SMBJ190CA	2.0SMBJ190A	2.0SMBJ190CA	190	1	209	233	1	308	6.49
2.0SMBJ200A	2.0SMBJ200CA	2.0SMBJ200A	2.0SMBJ200CA	200	1	224	247	1	324	6.17
2.0SMBJ210A	2.0SMBJ210CA	2.0SMBJ210A	2.0SMBJ210CA	210	1	237	263	1	340	5.88
2.0SMBJ220A	2.0SMBJ220CA	2.0SMBJ220A	2.0SMBJ220CA	220	1	246	272	1	356	5.62
2.0SMBJ250A	2.0SMBJ250CA	2.0SMBJ250A	2.0SMBJ250CA	250	1	279	309	1	405	4.94
2.0SMBJ300A	2.0SMBJ300CA	2.0SMBJ300A	2.0SMBJ300CA	300	1	335	371	1	486	4.12
2.0SMBJ350A	2.0SMBJ350CA	2.0SMBJ350A	2.0SMBJ350CA	350	1	391	432	1	567	3.53
2.0SMBJ400A	2.0SMBJ400CA	2.0SMBJ400A	2.0SMBJ400CA	400	1	447	494	1	648	3.09
2.0SMBJ440A	2.0SMBJ440CA	2.0SMBJ440A	2.0SMBJ440CA	440	1	492	543	1	713	2.81

Note:  
1) Surge waveform: 10/1000 $\mu s$

## Electronics Parameter

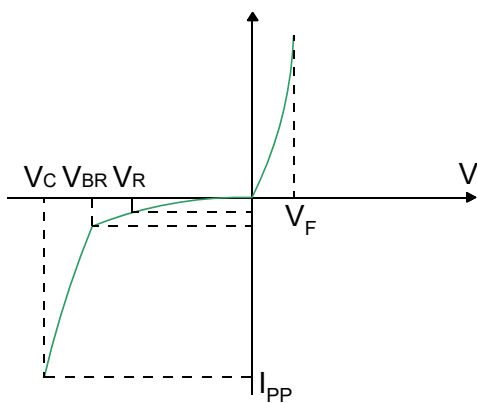


FIG.1: V- I curve characteristics (Uni-directional)

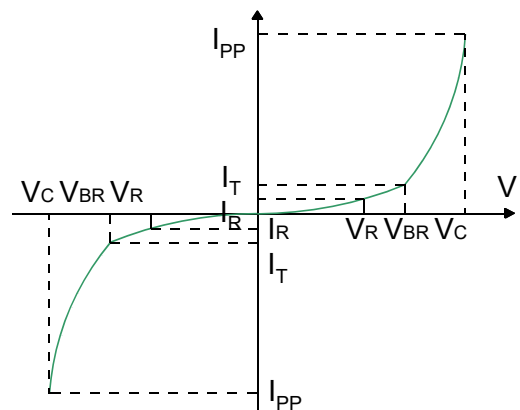


FIG.2: V- I curve characteristics (Bi-directional)

Symbol	Parameter	Symbol	Parameter
$I_F$	Mean Forward Current	$V_{BR}$	Breakdown Voltage @ $I_T$
$V_F$	Maximum Forward Voltage @ $I_F$	$I_T$	Test Current
$V_R$	Peak Reverse Working Voltage	$I_{PP}$	Maximum Reverse Peak Pulse Current
$I_R$	Reverse Leakage Current @ $V_R$	$V_C$	Clamping Voltage @ $I_{PP}$

## Typical Characteristics

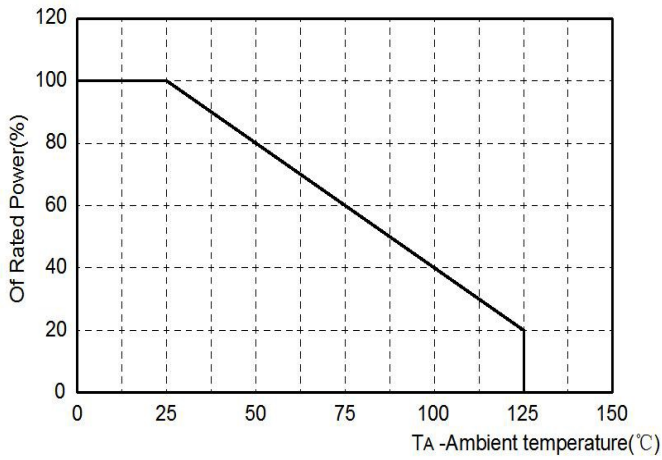


FIG.3: Pulse Derating Curve

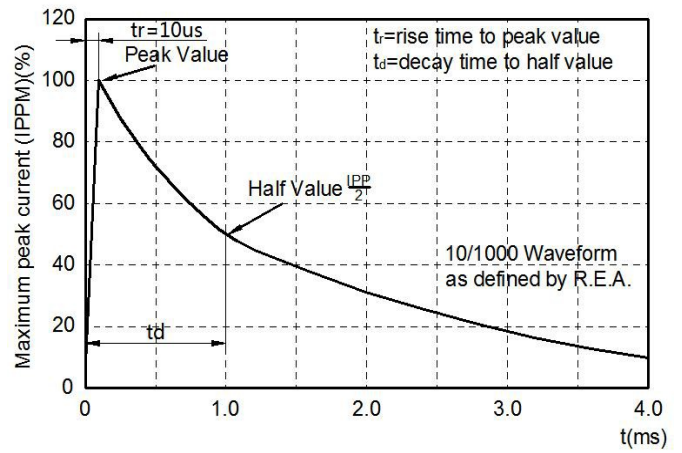


FIG.4: Pulse Waveform

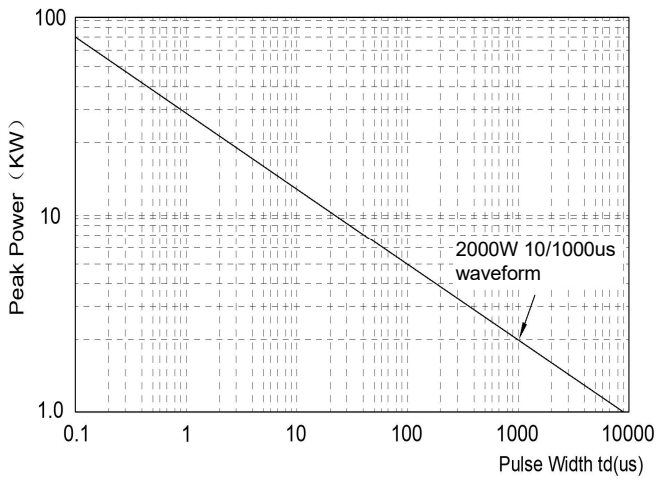


FIG.5: Peak Pulse Power Rating Curve

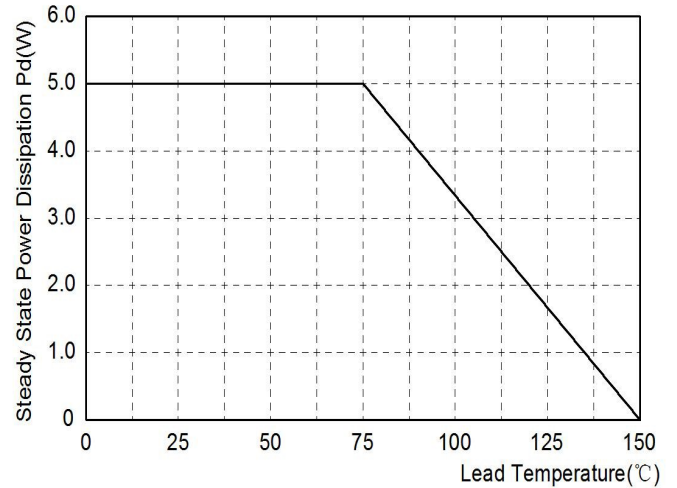
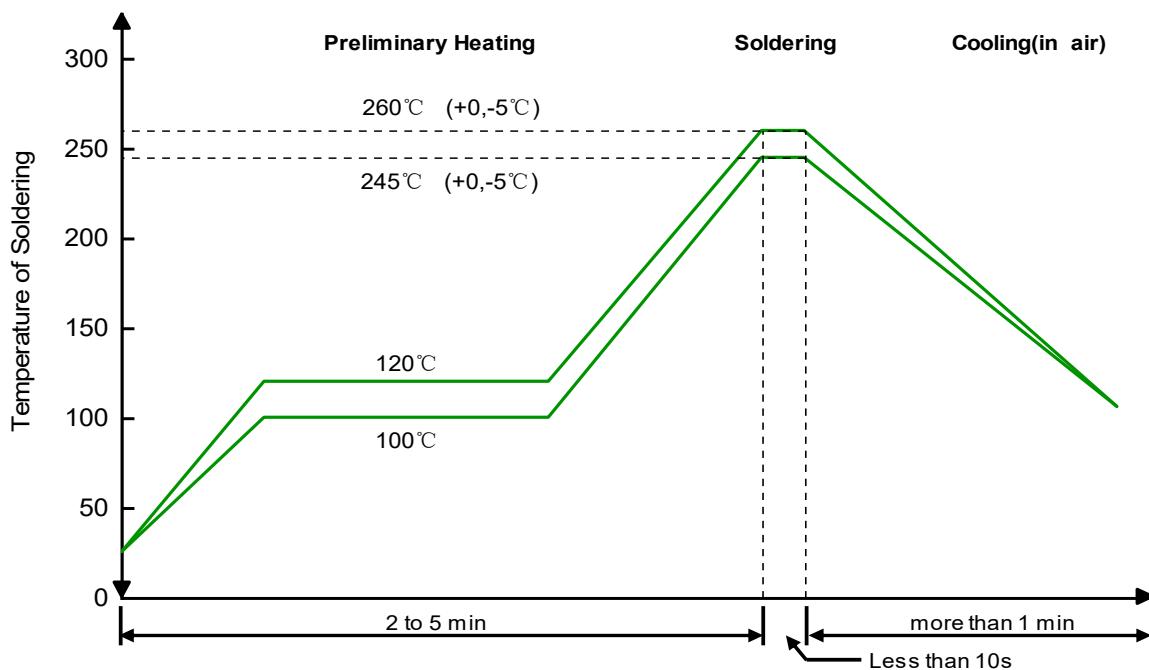


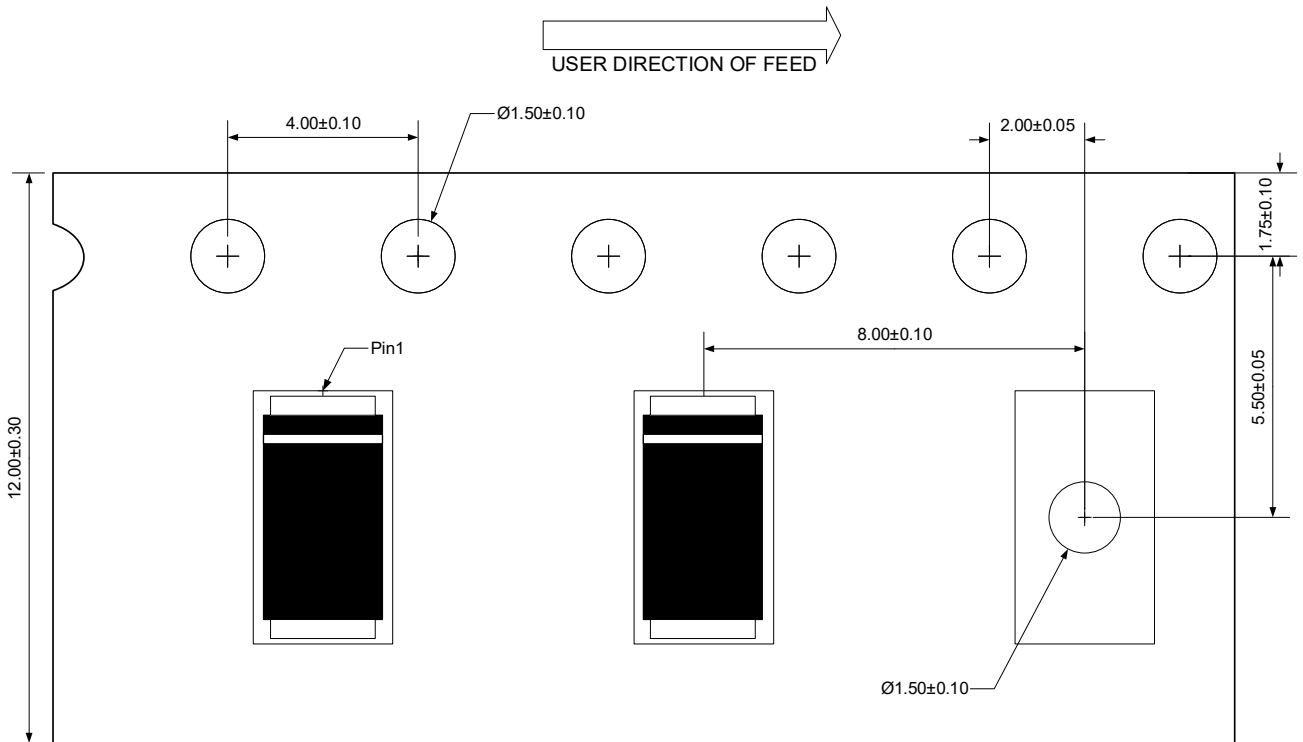
FIG.6: Steady State Power Dissipation

## Solder Reflow Recommendation



Remark: Pb free for 260°C; Pb for 245°C.

## Load with information

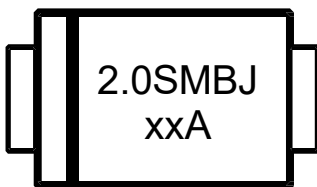


Unit:mm

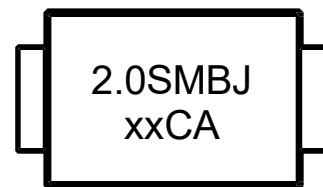
## Ordering information

Package	Reel	Shipping
SMB	13"	3000 / Tape & Reel

## Marking information



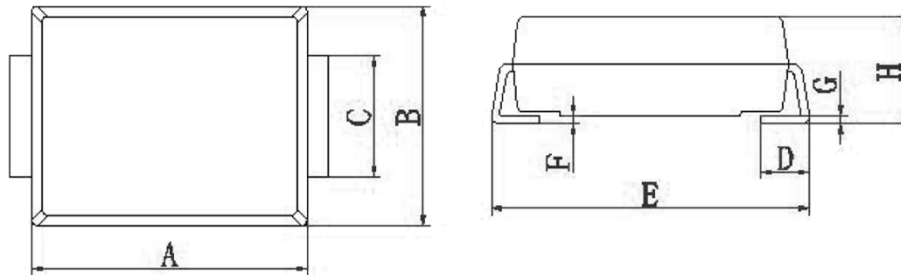
Uni-directional



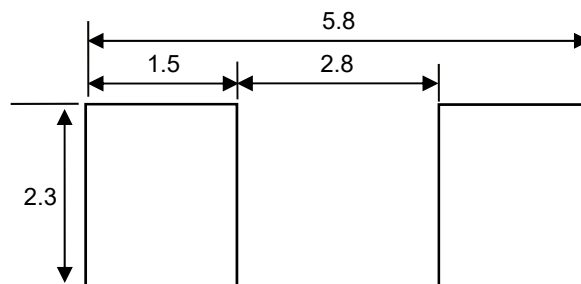
Bi-directional

Note: Detailed Marking See table above

Product Dimension (SMB)




Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	4.22	4.70	0.166	0.185
B	3.40	3.94	0.134	0.155
C	1.90	2.10	0.075	0.083
D	0.90	1.42	0.035	0.056
E	5.21	5.59	0.205	0.220
F	0.00	0.23	0.000	0.009
G	0.15	0.25	0.006	0.010
H	1.95	2.60	0.077	0.102



Unit: mm

Suggested PCB Layout


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