

# GSESMBJ Series

## Transient Voltage Suppressor

### Product Description

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




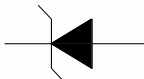
### Features

- 600W Peak Pulse Power Capability at 10/1000 $\mu$ s Waveform, Repetition Rate (Duty Cycle): 0.01%
- Uni- and Bi-Directional Type Selectable
- Glass Passivated Chip

### Mechanical Data

- SMB (DO-214AA) Package
- Lead: Solderable per MIL-STD-750, Method 2026
- Polarity : Color Band denotes Cathode End for Uni-directional Type only
- RoHS Compliant and Halogen Free

### Package and Pin Assignment

SMB (DO-214AA)	
	 <b>Bi-Directional</b>
 * Color Band denotes Cathode End	 <b>Uni-Directional</b>

## Ordering and Marking Information

Part Number	Package	Marking	Quantity/Reel
See Table	SMB (DO-214AA)	□□□	3000 PCS/Reel
Ordering Information			
<b>GSESMBJ</b> <span style="border: 1px solid black; padding: 0 2px;">1</span> <span style="border: 1px solid black; padding: 0 2px;">1</span> <span style="border: 1px solid black; padding: 0 2px;">1</span> <span style="border: 1px solid black; padding: 0 2px;">2</span> A F			
- <b>Product Code:</b> GSESMBJ	- <b>Voltage Code:</b> <span style="border: 1px solid black; padding: 0 2px;">1</span> <span style="border: 1px solid black; padding: 0 2px;">1</span> <span style="border: 1px solid black; padding: 0 2px;">1</span> is $V_{RWM}$ Voltage For examples 7.0 is 7V and 70 is 70V etc.	- <b>Type Code:</b> <span style="border: 1px solid black; padding: 0 2px;">2</span> for type of direction. Blank: Uni-direction C: Bi-direction	
- <b>Tolerance Code:</b> A for 5% $V_{BR}$ Voltage Tolerance	- <b>Green Level:</b> F for RoHS Compliant and Halogen Free		
Marking Information			
* Marking Code (PN Code) can be checked from the section of Electrical Characteristics for selected part number.			

## Absolute Maximum Ratings

( $T_A=25^\circ\text{C}$  Unless Otherwise Specified. Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.)

Symbol	Parameter	Rating	Unit
$P_{PP}$	Peak power dissipation with a 10/1000 $\mu\text{s}$ waveform <sup>(1), (2)</sup>	600	W
$I_{PP}$	Peak pulse current with a 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup>	See Next Table	A
$I_{FSM}$	Peak Forward Surge Current 8.3ms single half sine-wave for unidirectional only <sup>(3)</sup>	100	A
$P_D$	Steady state power dissipation at $T_A=50^\circ\text{C}$ (Fig.5)	5.0	W
$T_J$	Operating Temperature Range	-55 to +150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to +150	$^\circ\text{C}$

### Note :

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.2.
2. Mounted on 8.0mm $\times$ 8.0mm copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

## Electrical Characteristics ( $T_A=25^\circ\text{C}$ Unless Otherwise Specified)

Part Number (Uni-Directional)	Part Number (Bi-Directional)	MARKING CODE		Breakdown Voltage $V_{BR}@I_T$			$V_{RWM}$ (V)	$I_R@V_{RWM}$ ( $\mu\text{A}$ )	$V_C@I_{PP}$ (V)	$I_{PP\ max}$ (A)
		Uni	Bi	Min (V)	Max (V)	$I_T$ (mA)				
GSESMBJ5.0AF	GSESMBJ5.0CAF	KE	AE	6.40	7.00	10	5.0	800	9.2	65.3
GSESMBJ6.0AF	GSESMBJ6.0CAF	KG	AG	6.67	7.37	10	6.0	800	10.3	58.3
GSESMBJ6.5AF	GSESMBJ6.5CAF	KK	AK	7.22	7.98	10	6.5	500	11.2	53.6
GSESMBJ7.0AF	GSESMBJ7.0CAF	KM	AM	7.78	8.60	10	7.0	200	12.0	50.0
GSESMBJ7.5AF	GSESMBJ7.5CAF	KP	AP	8.33	9.21	1.0	7.5	100	12.9	46.6
GSESMBJ8.0AF	GSESMBJ8.0CAF	KR	AR	8.89	9.83	1.0	8.0	50	13.6	44.2
GSESMBJ8.5AF	GSESMBJ8.5CAF	KT	AT	9.44	10.40	1.0	8.5	20	14.4	41.7
GSESMBJ9.0AF	GSESMBJ9.0CAF	KV	AV	10.0	11.10	1.0	9.0	10	15.4	39.0
GSESMBJ10AF	GSESMBJ10CAF	KX	AX	11.1	12.3	1.0	10	5	17.0	35.3
GSESMBJ11AF	GSESMBJ11CAF	KZ	AZ	12.2	13.5	1.0	11	1	18.2	33.0
GSESMBJ12AF	GSESMBJ12CAF	LE	BE	13.3	14.7	1.0	12	1	19.9	30.2
GSESMBJ13AF	GSESMBJ13CAF	LG	BG	14.4	15.9	1.0	13	1	21.5	28.0
GSESMBJ14AF	GSESMBJ14CAF	LK	BK	15.6	17.2	1.0	14	1	23.3	25.9
GSESMBJ15AF	GSESMBJ15CAF	LM	BM	16.7	18.5	1.0	15	1	24.4	24.6
GSESMBJ16AF	GSESMBJ16CAF	LP	BP	17.8	19.7	1.0	16	1	26.0	23.1
GSESMBJ17AF	GSESMBJ17CAF	LR	BR	18.9	20.9	1.0	17	1	27.6	21.8
GSESMBJ18AF	GSESMBJ18CAF	LT	BT	20.0	22.1	1.0	18	1	29.2	20.6
GSESMBJ20AF	GSESMBJ20CAF	LV	BV	22.2	24.5	1.0	20	1	32.4	18.6
GSESMBJ22AF	GSESMBJ22CAF	LX	BX	24.4	26.9	1.0	22	1	35.5	16.9
GSESMBJ24AF	GSESMBJ24CAF	LZ	BZ	26.7	29.5	1.0	24	1	38.9	25.5

Part Number (Uni-Directional)	Part Number (Bi-Directional)	MARKING CODE		Breakdown Voltage $V_{BR}@I_T$			$V_{RWM}$ (V)	$I_R@V_{RWM}$ ( $\mu$ A)	$V_C@I_{PP}$ (V)	$I_{PP\ max}$ (A)
		Uni	Bi	Min (V)	Max (V)	$I_T$ (mA)				
GSESMBJ26AF	GSESMBJ26CAF	ME	CE	28.9	31.9	1.0	26	1	42.1	14.3
GSESMBJ28AF	GSESMBJ28CAF	MG	CG	31.1	34.4	1.0	28	1	45.4	13.3
GSESMBJ30AF	GSESMBJ30CAF	MK	CK	33.3	36.8	1.0	30	1	48.4	12.4
GSESMBJ33AF	GSESMBJ33CAF	MM	CM	36.7	40.6	1.0	33	1	53.3	11.3
GSESMBJ36AF	GSESMBJ36CAF	MP	CP	40.0	44.2	1.0	36	1	58.1	10.4
GSESMBJ40AF	GSESMBJ40CAF	MR	CR	44.4	49.1	1.0	40	1	64.5	9.3
GSESMBJ43AF	GSESMBJ43CAF	MT	CT	47.8	52.8	1.0	43	1	69.4	8.7
GSESMBJ45AF	GSESMBJ45CAF	MV	CV	50.0	55.3	1.0	45	1	72.7	8.3
GSESMBJ48AF	GSESMBJ48CAF	MX	CX	53.3	58.9	1.0	48	1	77.4	7.8
GSESMBJ51AF	GSESMBJ51CAF	MZ	CZ	56.7	62.7	1.0	51	1	82.4	7.3
GSESMBJ54AF	GSESMBJ54CAF	NE	DE	60.0	66.3	1.0	54	1	87.1	6.9
GSESMBJ58AF	GSESMBJ58CAF	NG	DG	64.4	71.2	1.0	58	1	93.6	6.5
GSESMBJ60AF	GSESMBJ60CAF	NK	DK	66.7	73.7	1.0	60	1	96.8	6.2
GSESMBJ64AF	GSESMBJ64CAF	NM	DM	71.1	78.6	1.0	64	1	103	5.9
GSESMBJ70AF	GSESMBJ70CAF	NP	DP	77.8	86.0	1.0	70	1	113	5.3
GSESMBJ75AF	GSESMBJ75CAF	NR	DR	83.3	92.1	1.0	75	1	121	5.0
GSESMBJ78AF	GSESMBJ78CAF	NT	DT	86.7	95.8	1.0	78	1	126	4.8
GSESMBJ85AF	GSESMBJ85CAF	NV	DV	94.4	104	1.0	85	1	137	4.4
GSESMBJ90AF	GSESMBJ90CAF	NX	DX	100	111	1.0	90	1	146	4.1
GSESMBJ100AF	GSESMBJ100CAF	NZ	DZ	111	123	1.0	100	1	162	3.7
GSESMBJ110AF	GSESMBJ110CAF	PE	EE	122	135	1.0	110	1	177	3.4
GSESMBJ120AF	GSESMBJ120CAF	PG	EG	133	147	1.0	120	1	193	3.1
GSESMBJ130AF	GSESMBJ130CAF	PK	EK	144	159	1.0	130	1	209	2.9
GSESMBJ150AF	GSESMBJ150CAF	PM	EM	167	185	1.0	150	1	243	2.5
GSESMBJ160AF	GSESMBJ160CAF	PP	EP	178	197	1.0	160	1	259	2.3
GSESMBJ170AF	GSESMBJ170CAF	PR	ER	189	209	1.0	170	1	275	2.2
GSESMBJ180AF	GSESMBJ180CAF	PT	ET	200	220	1.0	180	1	292	2.1
GSESMBJ190AF	GSESMBJ190CAF	PA	EC	211	232	1.0	190	1	308	2.0
GSESMBJ200AF	GSESMBJ200CAF	PV	EV	224	247	1.0	200	1	324	1.9
GSESMBJ210AF	GSESMBJ210CAF	PB	ED	237	263	1.0	210	1	340	1.8
GSESMBJ220AF	GSESMBJ220CAF	PX	EX	246	272	1.0	220	1	356	1.7
GSESMBJ250AF	GSESMBJ250CAF	PZ	EZ	279	309	1.0	250	1	405	1.5
GSESMBJ300AF	GSESMBJ300CAF	QE	FE	335	371	1.0	300	1	486	1.3
GSESMBJ350AF	GSESMBJ350CAF	QG	FG	391	432	1.0	350	1	567	1.1
GSESMBJ400AF	GSESMBJ400CAF	QK	FK	447	494	1.0	400	1	648	0.9
GSESMBJ440AF	GSESMBJ440CAF	QM	FM	492	543	1.0	440	1	713	0.9

**Note :**

4. Suffix 'A' denotes  $V_{BR}$  5% tolerance device.

**Typical Characteristics** ( $T_A=25^\circ\text{C}$  Unless Otherwise Specified)

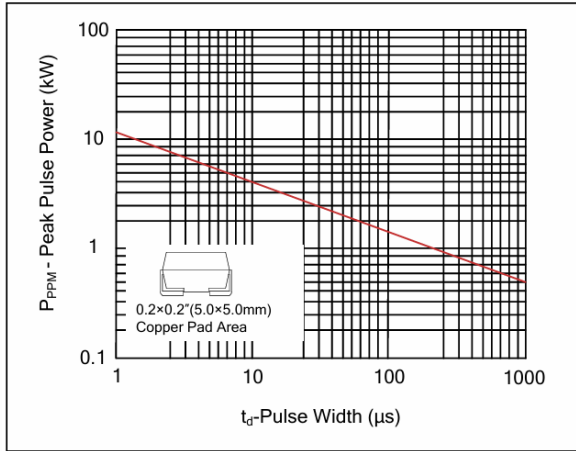


Figure 1. Peak Pulse Power Rating Curve

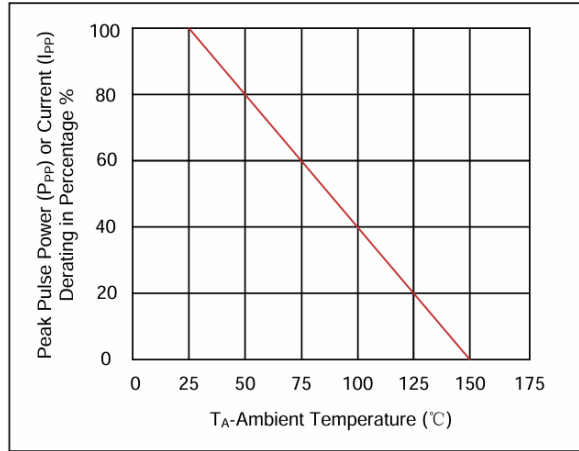


Figure 2. Pulse Derating Curve

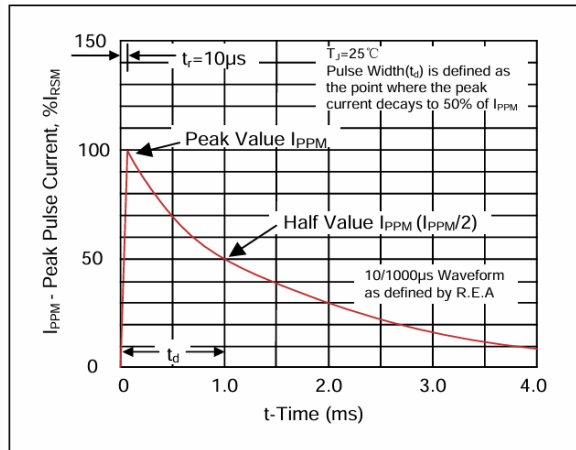


Figure 3. Pulse Waveform

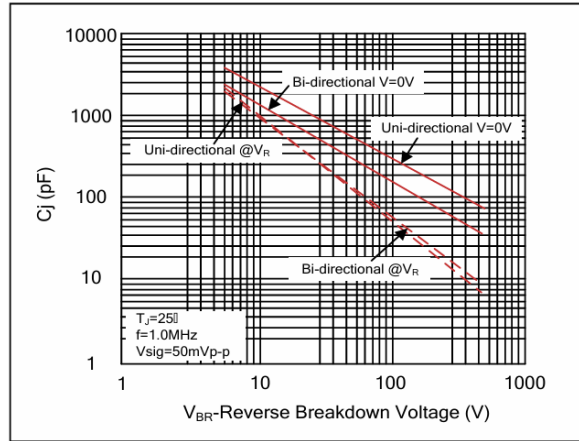


Figure 4. Typical Junction Capacitance

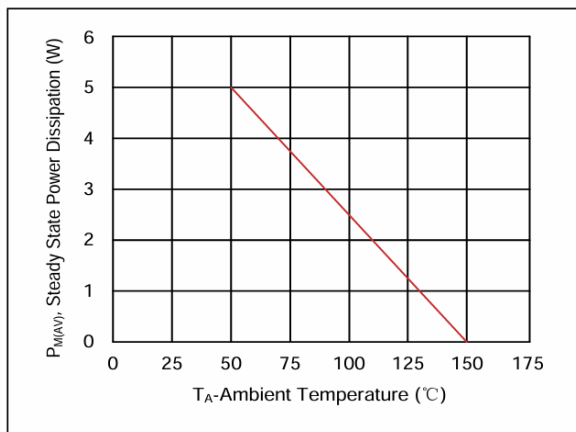


Figure 5. Steady State Power Dissipation Derating Curve

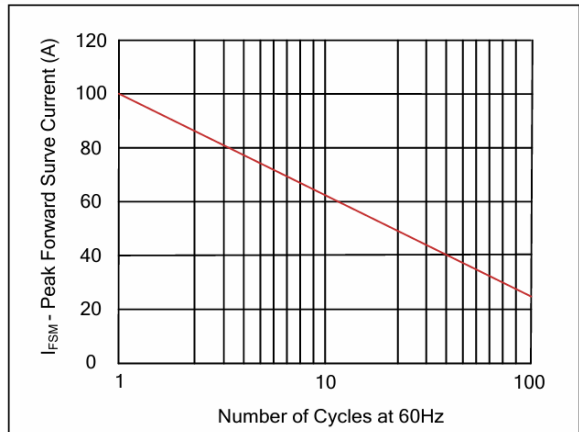
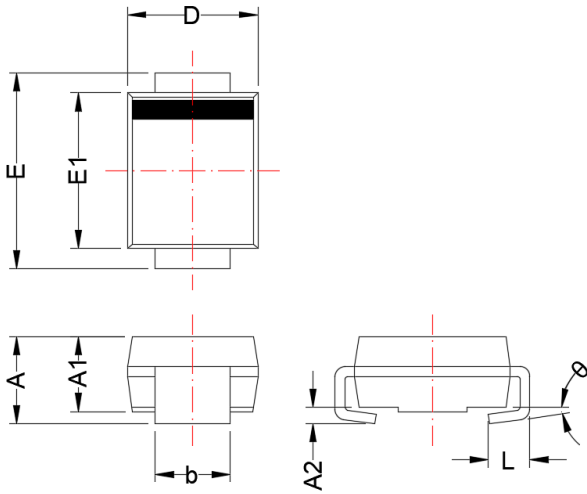


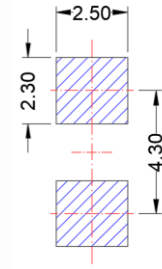
Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

# SMB (DO-214AA)

## Package Dimension



## Recommended Land Pattern



## Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.95	2.65	0.077	0.104
A1	1.90	---	0.075	---
A2	0.00	0.30	0.000	0.012
b	1.90	2.20	0.075	0.087
D	3.20	4.00	0.126	0.157
E	5.00	6.00	0.197	0.236
E1	4.00	4.90	0.157	0.193
L	0.75	1.60	0.030	0.063
$\theta$	0°	8°	0°	8°





**NOTE:**

Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.



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