

GSESMBJ Series

Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors

Product Description

Voltage Range : 5.0V to 440V
Peak Pulse Power Dissipation : 600W

Features

- Glass passivated chip
- 600W peak pulse power capability with a 10/1000µs waveform, repetitive rate (duty cycle):0.01%
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant
- Halogen-free parts

Mechanic Data

Case : Molded plastic
Epoxy : UL 94V-0 rate flame retardant
Lead : Solderable per MIL-STD-750,Method 2026
Polarity : Color band denotes cathode end except Bipolar
Mounting position : Any

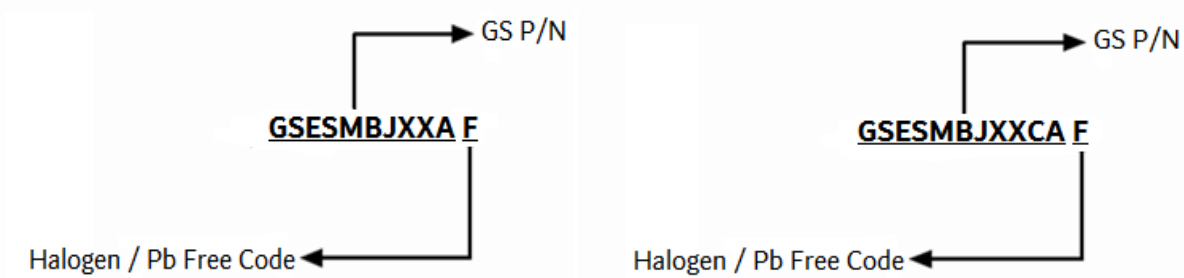
Packages



SMB

Ordering Information

Part Number	Package	Quantity Reel
GSESMBJXXAF/CAF	SMB	3000 PCS



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.
Single phase, half wave, 60Hz, resistive or inductive load.
For Capacitive Load, Derate Current By 20%.

Symbol	Characteristics	Values	Unit
P _{PP}	Peak power dissipation with a 10/1000µs waveform(Note 1)	600	W
I _{PP}	Peak pulse current with a 10/1000µs waveform(Note 1)	See Next Table	A
P _D	Power dissipation on infinite heatsink at TL = 75 °C	5.0	W
I _{FSM}	Peak Forward Surge Current 8.3ms single half sine-wave unidirectional only(Note 2)	100	A
V _F	Maximum instantaneous forward voltage at 50 A for unidirectional only(Note 3)	3.5/5.0	V
T _J	Operating Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

Note 1: Non-repetitive current pulse, per fig. 5 and derated above TA= 25 C per fig. 1.

Note 2: Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

Note 3: V_F < 3.5V for devices of V_{BR} < 200V and V_F < 5.0V for devices of V_{BR} > 201V.

Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Part Number (Uni-Polar)	Part Number (Bi-Polar)	MARKING CODE		Breakdown Voltage V _{BR} @I _T			V _{RWM} (V)	V _C @I _{PP} (V)	I _{PP max} (A)	I _R @V _{RWM} (µA)
		Uni	Bi	Min (V)	Max (V)	I _T (mA)				
GSESMBJ5.0AF	GSESMBJ5.0CAF	SMBJ 5.0A	SMBJ 5.0CA	6.40	7.00	10	5.0	9.2	65.22	800
GSESMBJ6.0AF	GSESMBJ6.0CAF	SMBJ 6.0A	SMBJ 6.0CA	6.67	7.37	10	6.0	10.3	58.25	800
GSESMBJ6.5AF	GSESMBJ6.5CAF	SMBJ 6.5A	SMBJ 6.5CA	7.22	7.98	10	6.5	11.2	53.57	500
GSESMBJ7.0AF	GSESMBJ7.0CAF	SMBJ 7.0A	SMBJ 7.0CA	7.78	8.60	10	7.0	12.0	50.0	200
GSESMBJ7.5AF	GSESMBJ7.5CAF	SMBJ 7.5A	SMBJ 7.5CA	8.33	9.21	1.0	7.5	12.9	46.51	100
GSESMBJ8.0AF	GSESMBJ8.0CAF	SMBJ 8.0A	SMBJ 8.0CA	8.89	9.83	1.0	8.0	13.6	44.12	50
GSESMBJ8.5AF	GSESMBJ8.5CAF	SMBJ 8.5A	SMBJ 8.5CA	9.44	10.4	1.0	8.5	14.4	41.67	10
GSESMBJ9.0AF	GSESMBJ9.0CAF	SMBJ 9.0A	SMBJ 9.0CA	10.0	11.1	1.0	9.0	15.4	38.96	5
GSESMBJ10AF	GSESMBJ10CAF	SMBJ 10A	SMBJ 10CA	11.1	12.3	1.0	10	17.0	35.29	5
GSESMBJ11AF	GSESMBJ11CAF	SMBJ 11A	SMBJ 11CA	12.2	13.5	1.0	11	18.2	32.97	5
GSESMBJ12AF	GSESMBJ12CAF	SMBJ 12A	SMBJ 12CA	13.3	14.7	1.0	12	19.9	30.15	5
GSESMBJ13AF	GSESMBJ13CAF	SMBJ 13A	SMBJ 13CA	14.4	15.9	1.0	13	21.5	27.91	5
GSESMBJ14AF	GSESMBJ14CAF	SMBJ 14A	SMBJ 14CA	15.6	17.2	1.0	14	23.2	25.86	5
GSESMBJ15AF	GSESMBJ15CAF	SMBJ 15A	SMBJ 15CA	16.7	18.5	1.0	15	24.4	24.59	5

Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Part Number (Uni-Polar)	Part Number (Bi-Polar)	MARKING CODE		Breakdown Voltage $V_{BR@I_T}$			V_{RWM} (V)	$V_C@I_{PP}$ (V)	$I_{PP\ max}$ (A)	$I_R@V_{RWM}$ (μ A)
		Uni	Bi	Min (V)	Max (V)	I_T (mA)				
GSESMBJ16AF	GSESMBJ16CAF	SMBJ 16A	SMBJ 16CA	17.8	19.7	1.0	16	26.0	23.08	5
GSESMBJ17AF	GSESMBJ17CAF	SMBJ 17A	SMBJ 17CA	18.9	20.9	1.0	17	27.6	21.74	5
GSESMBJ18AF	GSESMBJ18CAF	SMBJ 18A	SMBJ 18CA	20.0	22.1	1.0	18	29.2	20.55	5
GSESMBJ19AF	GSESMBJ19CAF	SMBJ 19A	SMBJ 19CA	21.1	23.3	1.0	19	30.8	19.49	5
GSESMBJ20AF	GSESMBJ20CAF	SMBJ 20A	SMBJ 20CA	22.2	24.5	1.0	20	32.4	18.52	5
GSESMBJ22AF	GSESMBJ22CAF	SMBJ 22A	SMBJ 22CA	24.4	26.9	1.0	22	35.5	16.9	5
GSESMBJ24AF	GSESMBJ24CAF	SMBJ 24A	SMBJ 24CA	26.7	29.5	1.0	24	38.9	15.42	5
GSESMBJ26AF	GSESMBJ26CAF	SMBJ 26A	SMBJ 26CA	28.9	31.9	1.0	26	42.1	14.25	5
GSESMBJ28AF	GSESMBJ28CAF	SMBJ 28A	SMBJ 28CA	31.1	34.4	1.0	28	45.4	13.22	5
GSESMBJ30AF	GSESMBJ30CAF	SMBJ 30A	SMBJ 30CA	33.3	36.8	1.0	30	48.4	12.4	5
GSESMBJ33AF	GSESMBJ33CAF	SMBJ 33A	SMBJ 33CA	36.7	40.6	1.0	33	53.3	11.26	5
GSESMBJ36AF	GSESMBJ36CAF	SMBJ 36A	SMBJ 36CA	44.2	46.0	1.0	36	58.1	10.33	5
GSESMBJ40AF	GSESMBJ40CAF	SMBJ 40A	SMBJ 40CA	44.4	49.1	1.0	40	64.5	9.3	5
GSESMBJ43AF	GSESMBJ43CAF	SMBJ 43A	SMBJ 43CA	47.8	52.8	1.0	43	69.4	8.65	5
GSESMBJ45AF	GSESMBJ45CAF	SMBJ 45A	SMBJ 45CA	50.0	55.3	1.0	45	72.7	8.25	5
GSESMBJ48AF	GSESMBJ48CAF	SMBJ 48A	SMBJ 48CA	53.3	58.9	1.0	48	77.4	7.75	5
GSESMBJ51AF	GSESMBJ51CAF	SMBJ 51A	SMBJ 51CA	56.7	62.7	1.0	51	82.4	7.28	5
GSESMBJ54AF	GSESMBJ54CAF	SMBJ 54A	SMBJ 54CA	60.0	66.3	1.0	54	87.1	6.89	5
GSESMBJ58AF	GSESMBJ58CAF	SMBJ 58A	SMBJ 58CA	64.4	71.2	1.0	58	93.6	6.41	5
GSESMBJ60AF	GSESMBJ60CAF	SMBJ 60A	SMBJ 60CA	66.7	73.7	1.0	60	96.8	6.2	5
GSESMBJ64AF	GSESMBJ64CAF	SMBJ 64A	SMBJ 64CA	71.1	78.6	1.0	64	103	5.83	5
GSESMBJ70AF	GSESMBJ70CAF	SMBJ 70A	SMBJ 70CA	77.8	86.0	1.0	70	113	5.31	5
GSESMBJ75AF	GSESMBJ75CAF	SMBJ 75A	SMBJ 75CA	83.3	92.1	1.0	75	121	4.96	5
GSESMBJ78AF	GSESMBJ78CAF	SMBJ 78A	SMBJ 78CA	86.7	95.8	1.0	78	126	4.76	5
GSESMBJ80AF	GSESMBJ80CAF	SMBJ 80A	SMBJ 80CA	88.8	97.6	1.0	80	129.6	4.63	5

Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Part Number (Uni-Polar)	Part Number (Bi-Polar)	MARKING CODE		Breakdown Voltage $V_{BR@I_T}$			V_{RWM} (V)	$V_C@I_{PP}$ (V)	$I_{PP\ max}$ (A)	$I_R@V_{RWM}$ (μ A)
		Uni	Bi	Min (V)	Max (V)	I_T (mA)				
GSESMBJ85AF	GSESMBJ85CAF	SMBJ 85A	SMBJ 85CA	94.4	104	1.0	85	137	4.38	5
GSESMBJ90AF	GSESMBJ90CAF	SMBJ 90A	SMBJ 90CA	100	111	1.0	90	146	4.11	5
GSESMBJ100AF	GSESMBJ100CAF	SMBJ 100A	SMBJ 100CA	111	123	1.0	100	162	3.7	5
GSESMBJ110AF	GSESMBJ110CAF	SMBJ 110A	SMBJ 110CA	122	135	1.0	110	177	3.39	5
GSESMBJ120AF	GSESMBJ120CAF	SMBJ 120A	SMBJ 120CA	133	147	1.0	120	193	3.11	5
GSESMBJ130AF	GSESMBJ130CAF	SMBJ 130A	SMBJ 130CA	144	159	1.0	130	209	2.87	5
GSESMBJ140AF	GSESMBJ140CAF	SMBJ 140A	SMBJ 140CA	155	171	1.0	140	226.8	2.65	5
GSESMBJ150AF	GSESMBJ150CAF	SMBJ 150A	SMBJ 150CA	167	185	1.0	150	243	2.47	5
GSESMBJ160AF	GSESMBJ160CAF	SMBJ 160A	SMBJ 160CA	178	197	1.0	160	259	2.32	5
GSESMBJ170AF	GSESMBJ170CAF	SMBJ 170A	SMBJ 170CA	189	209	1.0	170	275	2.18	5
GSESMBJ180AF	GSESMBJ180CAF	SMBJ 180A	SMBJ 180CA	200	220	1.0	180	291.6	2.06	5
GSESMBJ190AF	GSESMBJ190CAF	SMBJ 190A	SMBJ 190CA	211	232	1.0	190	307.8	1.95	5
GSESMBJ200AF	GSESMBJ200CAF	SMBJ 200A	SMBJ 200CA	224	247	1.0	200	324	1.85	5
GSESMBJ220AF	GSESMBJ220CAF	SMBJ 220A	SMBJ 220CA	246	272	1.0	220	356	1.69	5
GSESMBJ250AF	GSESMBJ250CAF	SMBJ 250A	SMBJ 250CA	279	309	1.0	250	405	1.48	5
GSESMBJ300AF	GSESMBJ300CAF	SMBJ 300A	SMBJ 300CA	335	371	1.0	300	486	1.23	5
GSESMBJ350AF	GSESMBJ350CAF	SMBJ 350A	SMBJ 350CA	391	432	1.0	350	567	1.06	5
GSESMBJ400AF	GSESMBJ400CAF	SMBJ 400A	SMBJ 400CA	447	494	1.0	400	648	0.93	5
GSESMBJ440AF	GSESMBJ440CAF	SMBJ 440A	SMBJ 440CA	492	543	1.0	440	713	0.84	5

Note

1. Suffix 'A' denotes 5% tolerance device.
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices.
3. For Bi-Directional devices having VR of 10 volts and under, the IR limit is double.

Typical Characteristics

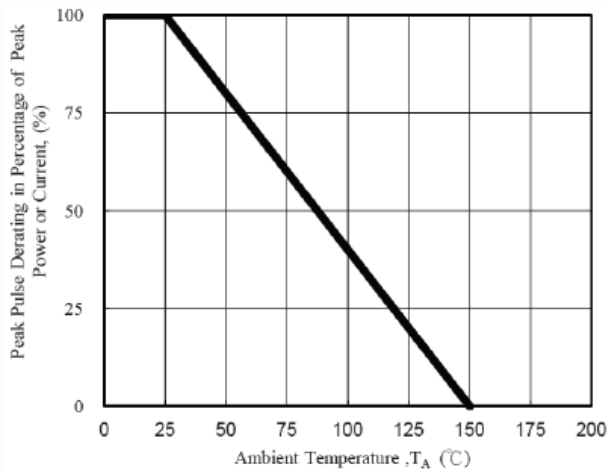


Fig. 1 - Pulse Derating Curve

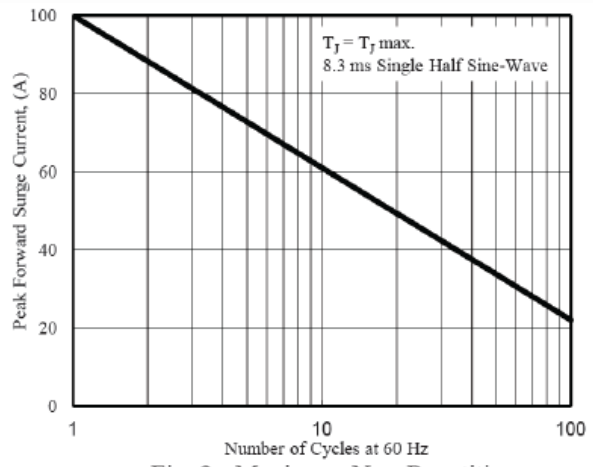


Fig. 2 - Maximum Non-Repetitive Surge Current

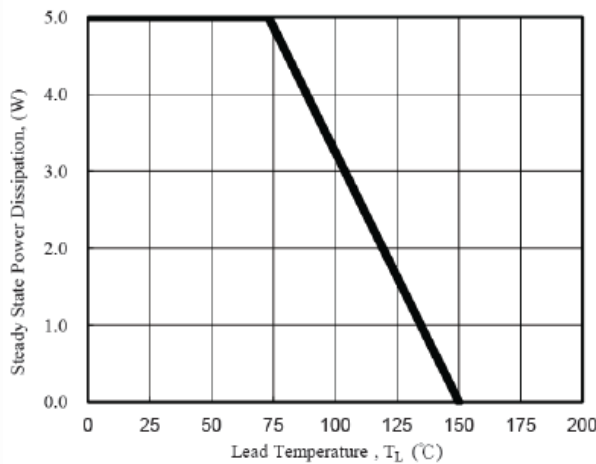


Fig. 3 - Steady State Power Derating Curve

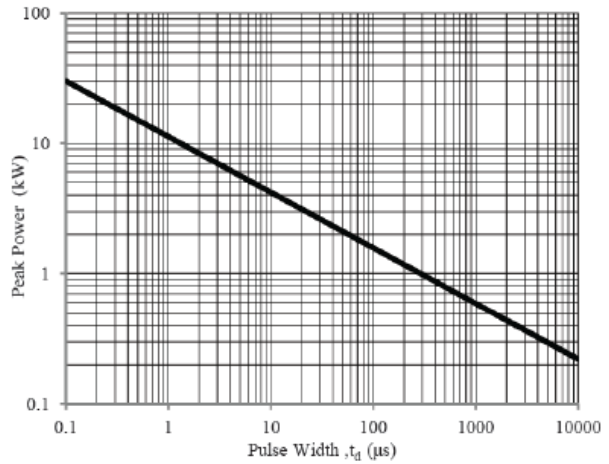


Fig. 4 - Peak Pulse Power Rating Curve

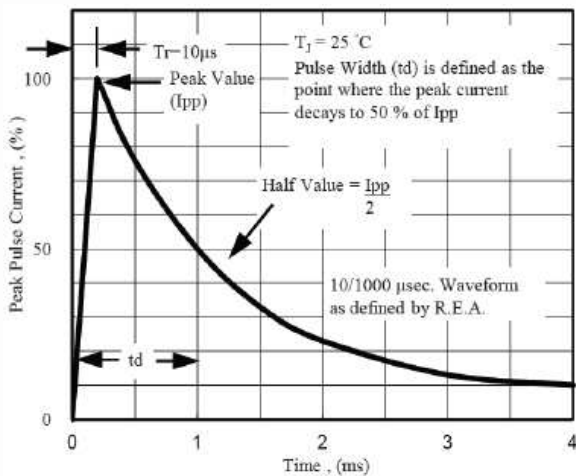


Fig. 5 - Pulse Waveform

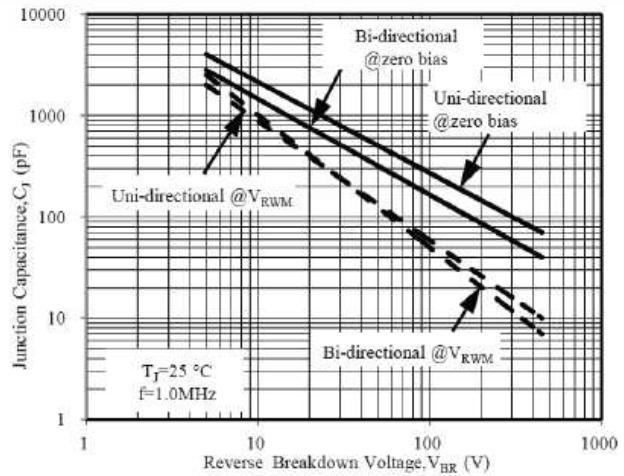
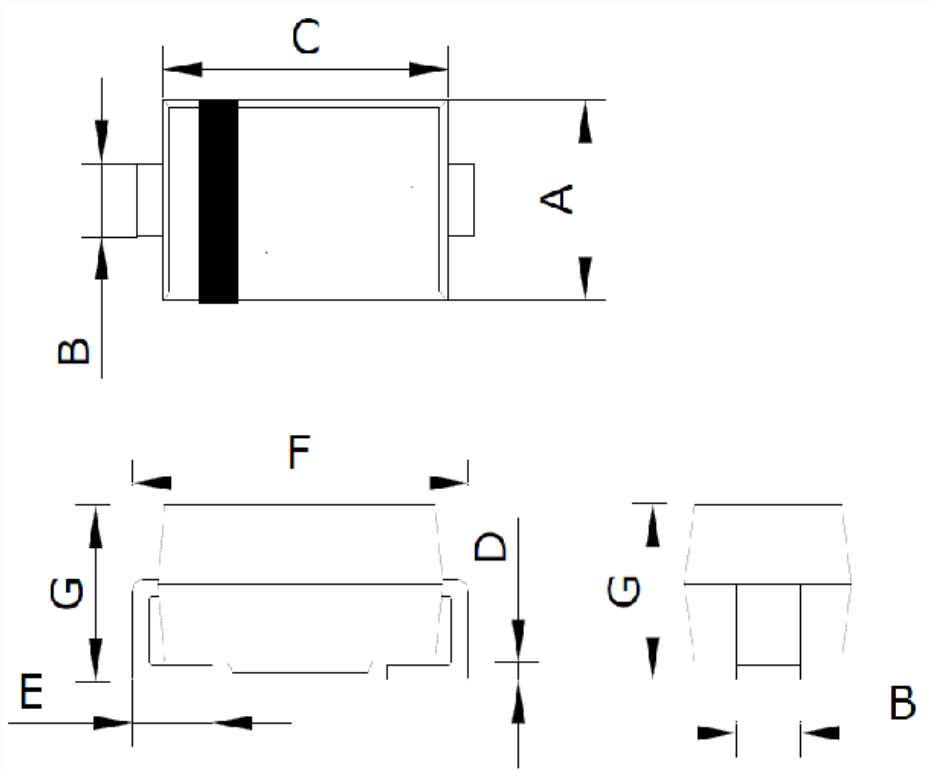


Fig. 6 - Typical Junction Capacitance

Package Dimension

SMB









Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	3.26	3.94	0.128	0.155
B	1.91	2.20	0.075	0.087
C	4.02	4.85	0.158	0.191
D	0.008	0.203	0.000	0.000
E	0.76	1.52	0.030	0.060
F	5.08	5.59	0.200	0.220
G	2.11	2.44	0.083	0.096

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