

GSESMAJ Series

Transient Voltage Suppressors

Product Description

Peak Pulse Power Dissipation : 400W
Voltage Range : 5V to 440V

Features

- Glass passivated chip
- 400W peak pulse power capability with a 10/1000 μ s waveform repetitive rate(duty cycle):0.01%
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- Halogen-free parts.

Mechanical Data

Case : Molded plastic
Epoxy : UL94V-0 rate flame retardant
Lead : Solderable per MIL-STD-750,Method 2026
Polarity : Color band denotes cathode end except Bipolar
Mounting position : Any

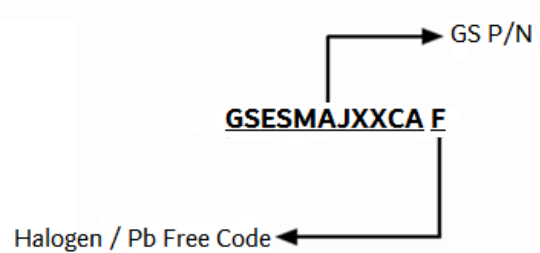
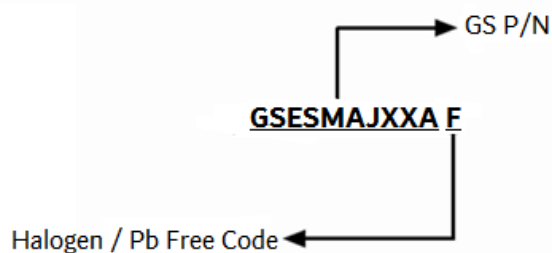
Packages



SMA

Ordering Information

Part Number	Package	Quantity Reel
GSESMAJXXAF/CAF	SMA	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)	400	W
I _{PP}	Peak pulse current with a 10/1000μs waveform (Note 1)	See Next Table	A
I _{FSM}	Peak Forward Surge Current 8.3ms single half sine-wave super (Note 2)	40	A
V _F	Maximum instantaneous forward voltage at 25 A for unidirectional only (Note 3)	3.5/5.0	V
P _D	Power dissipation on infinite heatsink at TL = 75 °C	1.0	W
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: VF< 3.5V for devices of VBR< 200V and VF< 5.0V for devices of VBR> 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)				
GSESMAJ5.0AF	GSESMAJ5.0CAF	SMAJ 5.0A	SMAJ 5.0CA	6.40	7.00	10	5.0	9.2	43.48	800
GSESMAJ6.0AF	GSESMAJ6.0CAF	SMAJ 6.0A	SMAJ 6.0CA	6.67	7.37	10	6.0	10.3	38.83	800
GSESMAJ6.5AF	GSESMAJ6.5CAF	SMAJ 6.5A	SMAJ 6.5CA	7.22	7.98	10	6.5	11.2	35.71	500
GSESMAJ7.0AF	GSESMAJ7.0CAF	SMAJ 7.0A	SMAJ 7.0CA	7.78	8.60	10	7.0	12.0	33.33	200
GSESMAJ7.5AF	GSESMAJ7.5CAF	SMAJ 7.5A	SMAJ 7.5CA	8.33	9.21	1.0	7.5	12.9	31.01	100
GSESMAJ8.0AF	GSESMAJ8.0CAF	SMAJ 8.0A	SMAJ 8.0CA	8.89	9.83	1.0	8.0	13.6	29.41	50
GSESMAJ8.5AF	GSESMAJ8.5CAF	SMAJ 8.5A	SMAJ 8.5CA	9.44	10.40	1.0	8.5	14.4	27.78	10
GSESMAJ9.0AF	GSESMAJ9.0CAF	SMAJ 9.0A	SMAJ 9.0CA	10.0	11.10	1.0	9.0	15.4	25.97	5
GSESMAJ10AF	GSESMAJ10CAF	SMAJ 10A	SMAJ 10CA	11.1	12.3	1.0	10	17.0	23.53	5
GSESMAJ11AF	GSESMAJ11CAF	SMAJ 11A	SMAJ 11CA	12.2	13.5	1.0	11	18.2	21.98	5
GSESMAJ12AF	GSESMAJ12CAF	SMAJ 12A	SMAJ 12CA	13.3	14.7	1.0	12	19.9	20.10	5
GSESMAJ13AF	GSESMAJ13CAF	SMAJ 13A	SMAJ 13CA	14.4	15.9	1.0	13	21.5	18.60	5
GSESMAJ14AF	GSESMAJ14CAF	SMAJ 14A	SMAJ 14CA	15.6	17.2	1.0	14	23.3	17.24	5
GSESMAJ15AF	GSESMAJ15CAF	SMAJ 15A	SMAJ 15CA	16.7	18.5	1.0	15	24.4	16.39	5

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)				
GSESMAJ16AF	GSESMAJ16CAF	SMAJ 16A	SMAJ 16CA	17.8	19.7	1.0	16	26.0	15.38	5
GSESMAJ17AF	GSESMAJ17CAF	SMAJ 17A	SMAJ 17CA	18.9	20.9	1.0	17	27.6	14.49	5
GSESMAJ18AF	GSESMAJ18CAF	SMAJ 18A	SMAJ 18CA	20.0	22.1	1.0	18	29.2	13.70	5
GSESMAJ19AF	GSESMAJ19CAF	SMAJ 19A	SMAJ 19CA	21.1	23.3	1.0	19	30.8	13.0	5
GSESMAJ20AF	GSESMAJ20CAF	SMAJ 20A	SMAJ 20CA	22.2	24.5	1.0	20	32.4	12.35	5
GSESMAJ22AF	GSESMAJ22CAF	SMAJ 22A	SMAJ 22CA	24.4	26.9	1.0	22	35.5	11.27	5
GSESMAJ24AF	GSESMAJ24CAF	SMAJ 24A	SMAJ 24CA	26.7	29.5	1.0	24	38.9	10.28	5
GSESMAJ26AF	GSESMAJ26CAF	SMAJ 26A	SMAJ 26CA	28.9	31.9	1.0	26	42.1	9.50	5
GSESMAJ28AF	GSESMAJ28CAF	SMAJ 28A	SMAJ 28CA	31.1	34.4	1.0	28	45.4	8.81	5
GSESMAJ30AF	GSESMAJ30CAF	SMAJ 30A	SMAJ 30CA	33.3	36.8	1.0	30	48.4	8.26	5
GSESMAJ33AF	GSESMAJ33CAF	SMAJ 33A	SMAJ 33CA	36.7	40.6	1.0	33	53.3	7.50	5
GSESMAJ36AF	GSESMAJ36CAF	SMAJ 36A	SMAJ 36CA	40.0	44.2	1.0	36	58.1	6.88	5
GSESMAJ40AF	GSESMAJ40CAF	SMAJ 40A	SMAJ 40CA	44.4	49.1	1.0	40	64.5	6.20	5
GSESMAJ43AF	GSESMAJ43CAF	SMAJ 43A	SMAJ 43CA	47.8	52.8	1.0	43	69.4	5.76	5
GSESMAJ45AF	GSESMAJ45CAF	SMAJ 45A	SMAJ 45CA	50.0	55.3	1.0	45	72.7	5.50	5
GSESMAJ48AF	GSESMAJ48CAF	SMAJ 48A	SMAJ 48CA	53.3	58.9	1.0	48	77.4	5.17	5
GSESMAJ51AF	GSESMAJ51CAF	SMAJ 51A	SMAJ 51CA	56.7	62.7	1.0	51	82.4	4.85	5
GSESMAJ54AF	GSESMAJ54CAF	SMAJ 54A	SMAJ 54CA	60.0	66.3	1.0	54	87.1	4.59	5
GSESMAJ58AF	GSESMAJ58CAF	SMAJ 58A	SMAJ 58CA	64.4	71.2	1.0	58	93.6	4.27	5
GSESMAJ60AF	GSESMAJ60CAF	SMAJ 60A	SMAJ 60CA	66.7	73.7	1.0	60	96.8	4.13	5
GSESMAJ64AF	GSESMAJ64CAF	SMAJ 64A	SMAJ 64CA	71.1	78.6	1.0	64	103	3.88	5
GSESMAJ70AF	GSESMAJ70CAF	SMAJ 70A	SMAJ 70CA	77.8	86.0	1.0	70	113	3.54	5
GSESMAJ75AF	GSESMAJ75CAF	SMAJ 75A	SMAJ 75CA	83.3	92.1	1.0	75	121	3.31	5
GSESMAJ78AF	GSESMAJ78CAF	SMAJ 78A	SMAJ 78CA	86.7	95.8	1.0	78	126	3.17	5
GSESMAJ80AF	GSESMAJ80CAF	SMAJ 80A	SMAJ 80CA	88.8	97.6	1.0	80	129.6	3.09	5
GSESMAJ85AF	GSESMAJ85CAF	SMAJ 85A	SMAJ 85CA	94.4	104	1.0	85	137	2.92	5

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)				
GSESMAJ90AF	GSESMAJ90CAF	SMAJ 90A	SMAJ 90CA	100	111	1.0	90	146	2.74	5
GSESMAJ100AF	GSESMAJ100CAF	SMAJ 100A	SMAJ 100CA	111	123	1.0	100	162	2.47	5
GSESMAJ110AF	GSESMAJ110CAF	SMAJ 110A	SMAJ 110CA	122	135	1.0	110	177	2.26	5
GSESMAJ120AF	GSESMAJ120CAF	SMAJ 120A	SMAJ 120CA	133	147	1.0	120	193	2.07	5
GSESMAJ130AF	GSESMAJ130CAF	SMAJ 130A	SMAJ 130CA	144	159	1.0	130	209	1.91	5
GSESMAJ140AF	GSESMAJ140CAF	SMAJ 140A	SMAJ 140CA	155	171	1.0	140	227	1.76	5
GSESMAJ150AF	GSESMAJ150CAF	SMAJ 150A	SMAJ 150CA	167	185	1.0	150	243	1.65	5
GSESMAJ160AF	GSESMAJ160CAF	SMAJ 160A	SMAJ 160CA	178	197	1.0	160	259	1.54	5
GSESMAJ170AF	GSESMAJ170CAF	SMAJ 170A	SMAJ 170CA	189	209	1.0	170	275	1.45	5
GSESMAJ180AF	GSESMAJ180CAF	SMAJ 180A	SMAJ 180CA	200	220	1.0	180	292	1.37	5
GSESMAJ190AF	GSESMAJ190CAF	SMAJ 190A	SMAJ 190CA	211	232	1.0	190	308	1.30	5
GSESMAJ200AF	GSESMAJ200CAF	SMAJ 200A	SMAJ 200CA	224	247	1.0	200	324	1.23	5
GSESMAJ220AF	GSESMAJ220CAF	SMAJ 220A	SMAJ 220CA	246	272	1.0	220	356	1.12	5
GSESMAJ250AF	GSESMAJ250CAF	SMAJ 250A	SMAJ 250CA	279	309	1.0	250	405	0.99	5
GSESMAJ300AF	GSESMAJ300CAF	SMAJ 300A	SMAJ 300CA	335	371	1.0	300	486	0.82	5
GSESMAJ350AF	GSESMAJ350CAF	SMAJ 350A	SMAJ 350CA	391	432	1.0	350	567	0.71	5
GSESMAJ400AF	GSESMAJ400CAF	SMAJ 400A	SMAJ 400CA	447	494	1.0	400	648	0.62	5
GSESMAJ440AF	GSESMAJ440CAF	SMAJ 440A	SMAJ 440CA	492	543	1.0	440	713	0.56	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

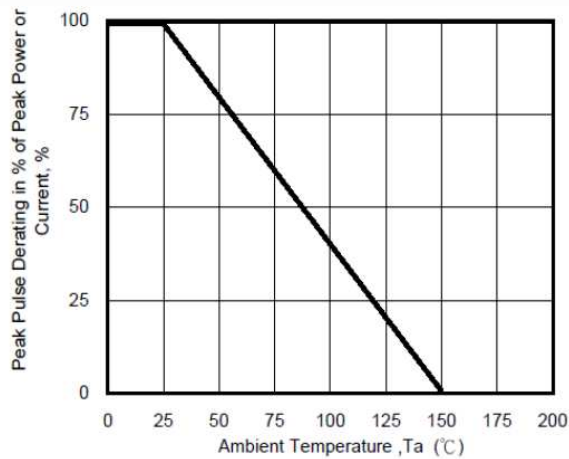


Fig. 1 - Pulse Derating Curve

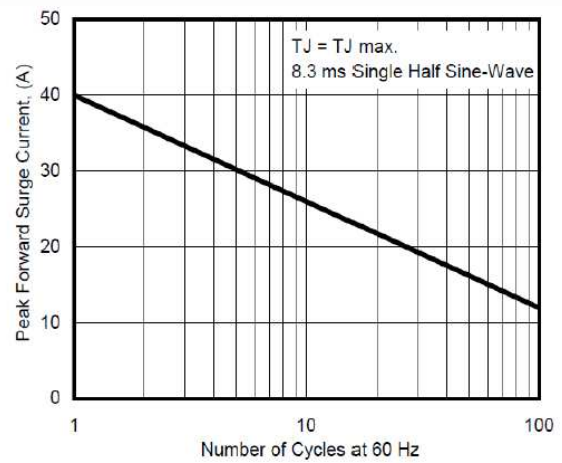


Fig. 2 - Maximum Non-Repetitive Surge Current

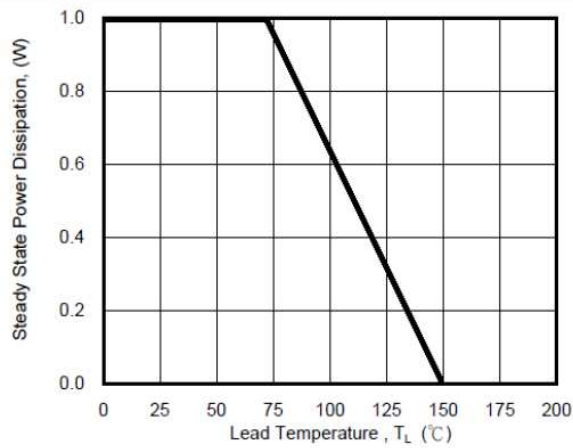


Fig. 3 - Steady State Power Derating Curve

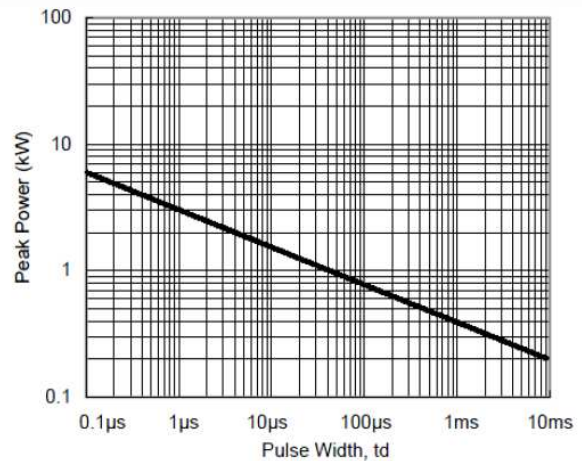


Fig. 4 - Peak Pulse Power Rating Curve

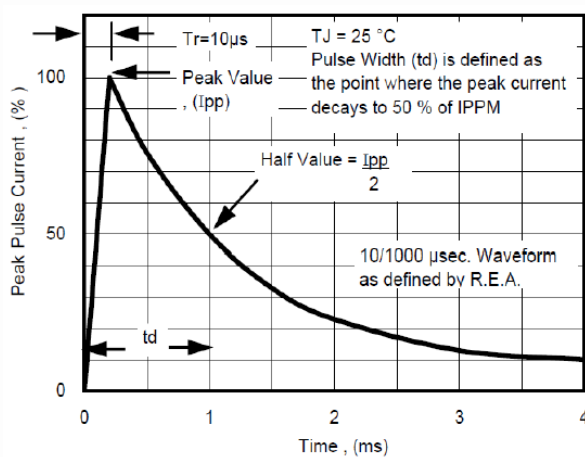


Fig. 5 - Pulse Waveform

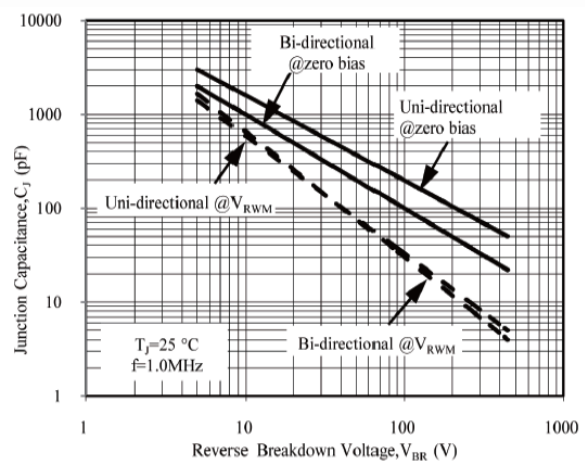
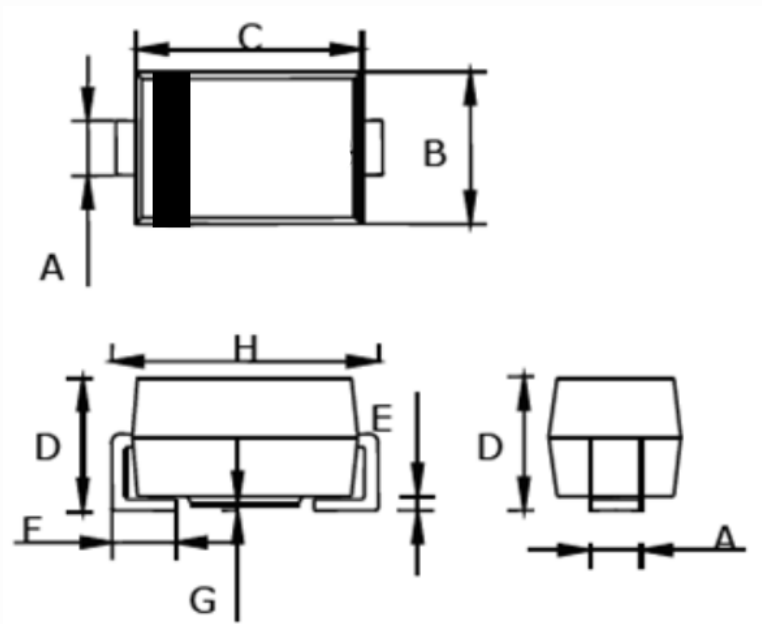


Fig. 6 - Typical Junction Capacitance

Package Dimension

SMA



Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.23	1.70	0.049	0.067
B	2.18	2.90	0.086	0.114
C	4.00	4.60	0.157	0.181
D	1.70	2.44	0.067	0.096
E	0.152	0.305	0.006	0.012
F	0.76	1.52	0.030	0.060
G	0.00	0.203	0.000	0.008
H	4.70	5.31	0.185	0.209

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