

# GSESMCJ Series

## Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors

### Product Description

Peak Pulse Power Dissipation : 1500W  
Voltage Range : 5.0V to 440V

### Features

- Glass passivated chip
- 1500W 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

### Mechanical 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

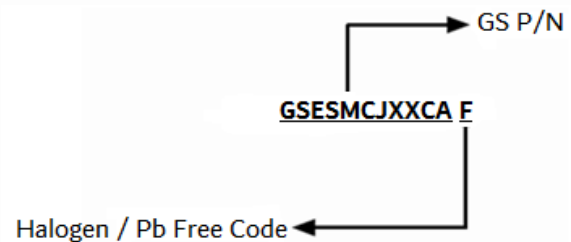
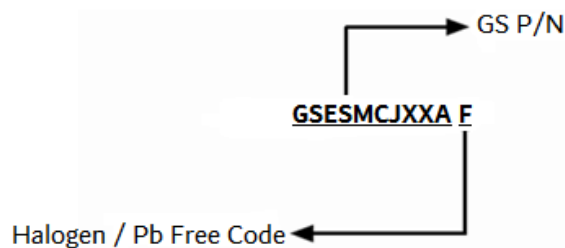
### Packages



SMC

### Ordering Information

Part Number	Package	Quantity Reel
GSESMCJXXAF/CAF	SMC	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 <sub>PP</sub>	Peak Power Dissipation with a 10/1000µs waveform(Note 1)	1500	W
I <sub>PP</sub>	Peak pulse current with a 10/1000µs waveform(Note 1)	See Next Table	A
P <sub>D</sub>	Power dissipation on infinite heatsink at TL = 75 °C	6.5	W
I <sub>FSM</sub>	Peak Forward Surge Current 8.3ms single half sine-wave Unidirectional only(Note 2)	200	A
V <sub>F</sub>	Maximum instantaneous forward voltage at 100A for Unidirectional only(Note 3)	3.5/5.0	V
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and 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<sub>F</sub> < 3.5V for devices of V<sub>BR</sub> < 200V and V<sub>F</sub> < 5.0V for devices of V<sub>BR</sub> > 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 <sub>BR</sub> @I <sub>T</sub>			V <sub>RWM</sub> (V)	V <sub>C</sub> @I <sub>PP</sub> (V)	I <sub>PP max</sub> (A)	I <sub>R</sub> @V <sub>RWM</sub> (µA)
		Uni	Bi	Min (V)	Max (V)	I <sub>T</sub> (mA)				
GSESMCJ5.0AF	GSESMCJ5.0CAF	SMCJ 5.0A	SMCJ 5.0CA	6.40	7.0	10	5.0	9.2	163.04	1000
GSESMCJ6.0AF	GSESMCJ6.0CAF	SMCJ 6.0A	SMCJ 6.0CA	6.67	7.37	10	6.0	10.3	145.63	1000
GSESMCJ6.5AF	GSESMCJ6.5CAF	SMCJ 6.5A	SMCJ 6.5CA	7.22	7.98	10	6.5	11.2	133.93	500
GSESMCJ7.0AF	GSESMCJ7.0CAF	SMCJ 7.0A	SMCJ 7.0CA	7.78	8.60	10	7.0	12.0	125.0	200
GSESMCJ7.5AF	GSESMCJ7.5CAF	SMCJ 7.5A	SMCJ 7.5CA	8.33	9.21	1.0	7.5	12.9	116.28	100
GSESMCJ8.0AF	GSESMCJ8.0CAF	SMCJ 8.0A	SMCJ 8.0CA	8.89	9.83	1.0	8.0	13.6	110.29	50
GSESMCJ8.5AF	GSESMCJ8.5CAF	SMCJ 8.5A	SMCJ 8.5CA	9.44	10.4	1.0	8.5	14.4	104.17	20
GSESMCJ9.0AF	GSESMCJ9.0CAF	SMCJ 9.0A	SMCJ 9.0CA	10.0	11.1	1.0	9.0	15.4	97.4	10
GSESMCJ10AF	GSESMCJ10CAF	SMCJ 10A	SMCJ 10CA	11.1	12.3	1.0	10	17.0	88.24	5
GSESMCJ11AF	GSESMCJ11CAF	SMCJ 11A	SMCJ 11CA	12.2	13.5	1.0	11	18.2	82.42	5
GSESMCJ12AF	GSESMCJ12CAF	SMCJ 12A	SMCJ 12CA	13.3	14.7	1.0	12	19.9	75.38	5
GSESMCJ13AF	GSESMCJ13CAF	SMCJ 13A	SMCJ 13CA	14.4	15.9	1.0	13	21.5	69.77	5
GSESMCJ14AF	GSESMCJ14CAF	SMCJ 14A	SMCJ 14CA	15.6	17.2	1.0	14	23.2	64.66	5
GSESMCJ15AF	GSESMCJ15CAF	SMCJ 15A	SMCJ 15CA	16.7	18.5	1.0	15	24.4	61.48	5
GSESMCJ16AF	GSESMCJ16CAF	SMCJ 16A	SMCJ 16CA	17.8	19.7	1.0	16	26.0	57.69	5
GSESMCJ17AF	GSESMCJ17CAF	SMCJ 17A	SMCJ 17CA	18.9	20.9	1.0	17	27.6	54.35	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)	$I_R@V_{RWM}$ ( $\mu$ A)
		Uni	Bi	Min (V)	Max (V)	$I_T$ (mA)				
GSESMCJ18AF	GSESMCJ18CAF	SMCJ 18A	SMCJ 18CA	20.0	22.1	1.0	18	29.2	51.37	5
GSESMCJ19AF	GSESMCJ19CAF	SMCJ 19A	SMCJ 19CA	21.1	23.3	1.0	19	30.8	48.73	5
GSESMCJ20AF	GSESMCJ20CAF	SMCJ 20A	SMCJ 20CA	22.2	24.5	1.0	20	32.4	46.3	5
GSESMCJ22AF	GSESMCJ22CAF	SMCJ 22A	SMCJ 22CA	24.4	26.9	1.0	22	35.5	42.25	5
GSESMCJ24AF	GSESMCJ24CAF	SMCJ 24A	SMCJ 24CA	26.7	29.5	1.0	24	38.9	38.56	5
GSESMCJ26AF	GSESMCJ26CAF	SMCJ 26A	SMCJ 26CA	28.9	31.9	1.0	26	42.1	35.63	5
GSESMCJ28AF	GSESMCJ28CAF	SMCJ 28A	SMCJ 28CA	31.1	34.4	1.0	28	45.4	33.04	5
GSESMCJ30AF	GSESMCJ30CAF	SMCJ 30A	SMCJ 30CA	33.3	36.8	1.0	30	48.4	30.99	5
GSESMCJ33AF	GSESMCJ33CAF	SMCJ 33A	SMCJ 33CA	36.7	40.6	1.0	33	53.3	28.14	5
GSESMCJ36AF	GSESMCJ36CAF	SMCJ 36A	SMCJ 36CA	40.0	44.2	1.0	36	58.1	25.82	5
GSESMCJ40AF	GSESMCJ40CAF	SMCJ 40A	SMCJ 40CA	44.4	49.1	1.0	40	64.5	23.26	5
GSESMCJ43AF	GSESMCJ43CAF	SMCJ 43A	SMCJ 43CA	47.8	52.8	1.0	43	69.4	21.61	5
GSESMCJ45AF	GSESMCJ45CAF	SMCJ 45A	SMCJ 45CA	50.0	55.3	1.0	45	72.7	20.63	5
GSESMCJ48AF	GSESMCJ48CAF	SMCJ 48A	SMCJ 48CA	53.3	58.9	1.0	48	77.4	19.38	5
GSESMCJ51AF	GSESMCJ51CAF	SMCJ 51A	SMCJ 51CA	56.7	62.7	1.0	51	82.4	18.2	5
GSESMCJ54AF	GSESMCJ54CAF	SMCJ 54A	SMCJ 54CA	60.0	66.3	1.0	54	87.1	17.22	5
GSESMCJ58AF	GSESMCJ58CAF	SMCJ 58A	SMCJ 58CA	64.4	71.2	1.0	58	93.6	16.03	5
GSESMCJ60AF	GSESMCJ60CAF	SMCJ 60A	SMCJ 60CA	66.7	73.7	1.0	60	96.8	15.5	5
GSESMCJ64AF	GSESMCJ64CAF	SMCJ 64A	SMCJ 64CA	71.1	78.6	1.0	64	103	14.56	5
GSESMCJ70AF	GSESMCJ70CAF	SMCJ 70A	SMCJ 70CA	77.8	86	1.0	70	113	13.27	5
GSESMCJ75AF	GSESMCJ75CAF	SMCJ 75A	SMCJ 75CA	83.3	92.1	1.0	75	121	12.4	5
GSESMCJ78AF	GSESMCJ78CAF	SMCJ 78A	SMCJ 78CA	86.7	95.8	1.0	78	126	11.9	5
GSESMCJ80AF	GSESMCJ80CAF	SMCJ 80A	SMCJ 80CA	88.8	97.6	1.0	80	129.6	11.57	5
GSESMCJ85AF	GSESMCJ85CAF	SMCJ 85A	SMCJ 85CA	94.4	104	1.0	85	137	10.95	5
GSESMCJ90AF	GSESMCJ90CAF	SMCJ 90A	SMCJ 90CA	100	111	1.0	90	146	10.27	5
GSESMCJ100AF	GSESMCJ100CAF	SMCJ 100A	SMCJ 100CA	111	123	1.0	100	162	9.26	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)	$I_R@V_{RWM}$ ( $\mu$ A)
		Uni	Bi	Min (V)	Max (V)	$I_T$ (mA)				
GSESMCJ110AF	GSESMCJ110CAF	SMCJ 110A	SMCJ 110CA	122	135	1.0	110	177	8.47	5
GSESMCJ120AF	GSESMCJ120CAF	SMCJ 120A	SMCJ 120CA	133	147	1.0	120	193	7.77	5
GSESMCJ130AF	GSESMCJ130CAF	SMCJ 130A	SMCJ 130CA	144	159	1.0	130	209	7.18	5
GSESMCJ140AF	GSESMCJ140CAF	SMCJ 140A	SMCJ 140CA	155	171	1.0	140	226.8	6.61	5
GSESMCJ150AF	GSESMCJ150CAF	SMCJ 150A	SMCJ 150CA	167	185	1.0	150	243	6.17	5
GSESMCJ160AF	GSESMCJ160CAF	SMCJ 160A	SMCJ 160CA	178	197	1.0	160	259	5.79	5
GSESMCJ170AF	GSESMCJ170CAF	SMCJ 170A	SMCJ 170CA	189	209	1.0	170	275	5.45	5
GSESMCJ180AF	GSESMCJ180CAF	SMCJ 180A	SMCJ 180CA	200	220	1.0	180	291.6	5.14	5
GSESMCJ190AF	GSESMCJ190CAF	SMCJ 190A	SMCJ 190CA	211	232	1.0	190	307.8	4.87	5
GSESMCJ200AF	GSESMCJ200CAF	SMCJ 200A	SMCJ 200CA	224	247	1.0	200	324	4.6	5
GSESMCJ220AF	GSESMCJ220CAF	SMCJ 220A	SMCJ 220CA	246	272	1.0	220	356	4.2	5
GSESMCJ250AF	GSESMCJ250CAF	SMCJ 250A	SMCJ 250CA	279	309	1.0	250	405	3.7	5
GSESMCJ300AF	GSESMCJ300CAF	SMCJ 300A	SMCJ 300CA	335	371	1.0	300	486	3.1	5
GSESMCJ350AF	GSESMCJ350CAF	SMCJ 350A	SMCJ 350CA	391	432	1.0	350	567	2.6	5
GSESMCJ400AF	GSESMCJ400CAF	SMCJ 400A	SMCJ 400CA	447	494	1.0	400	648	2.3	5
GSESMCJ440AF	GSESMCJ440CAF	SMCJ 440A	SMCJ 440CA	492	543	1.0	440	713	2.1	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

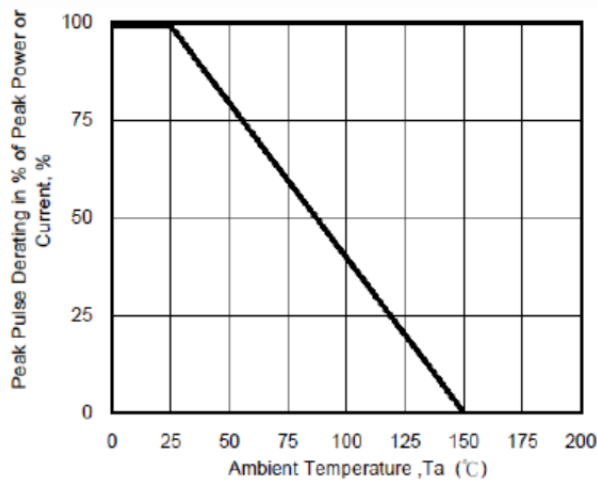


Fig. 1 - Pulse Derating Curve

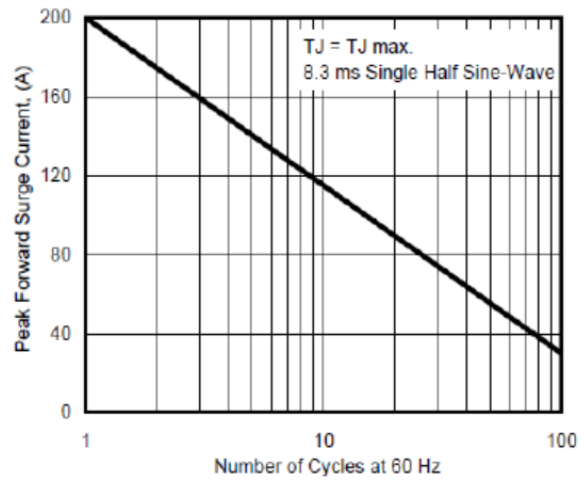


Fig. 2 - Maximum Non-Repetitive Surge Current

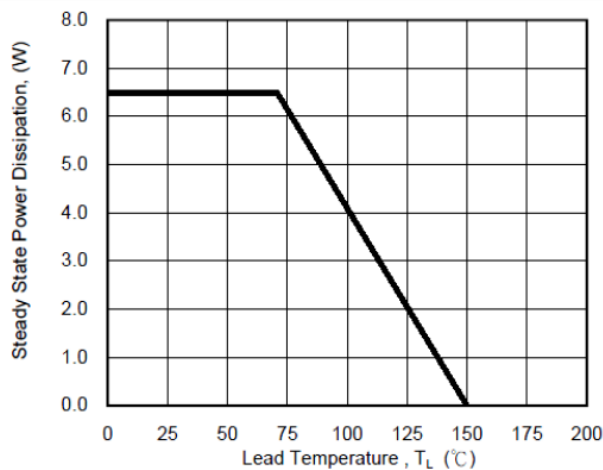


Fig. 3 - Steady State Power Derating Curve

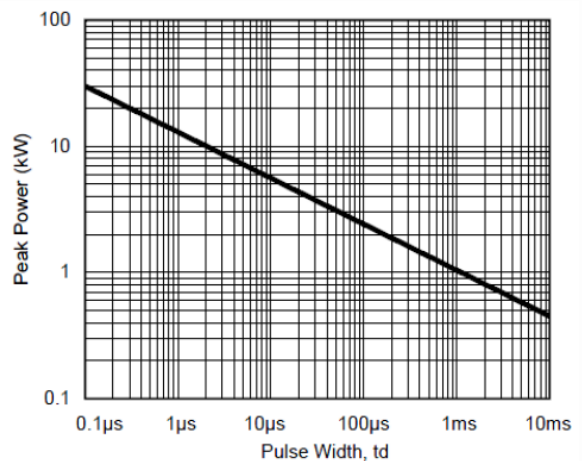


Fig. 4 - Peak Pulse Power Rating Curve

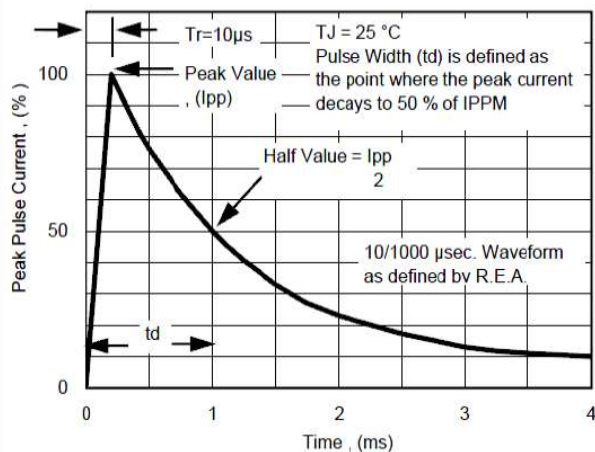


Fig. 5 - Pulse Waveform

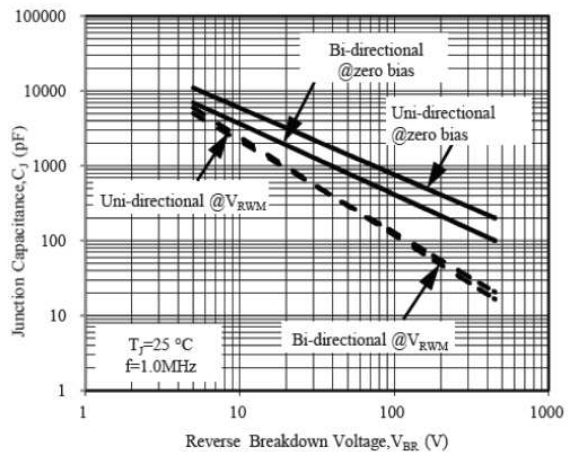
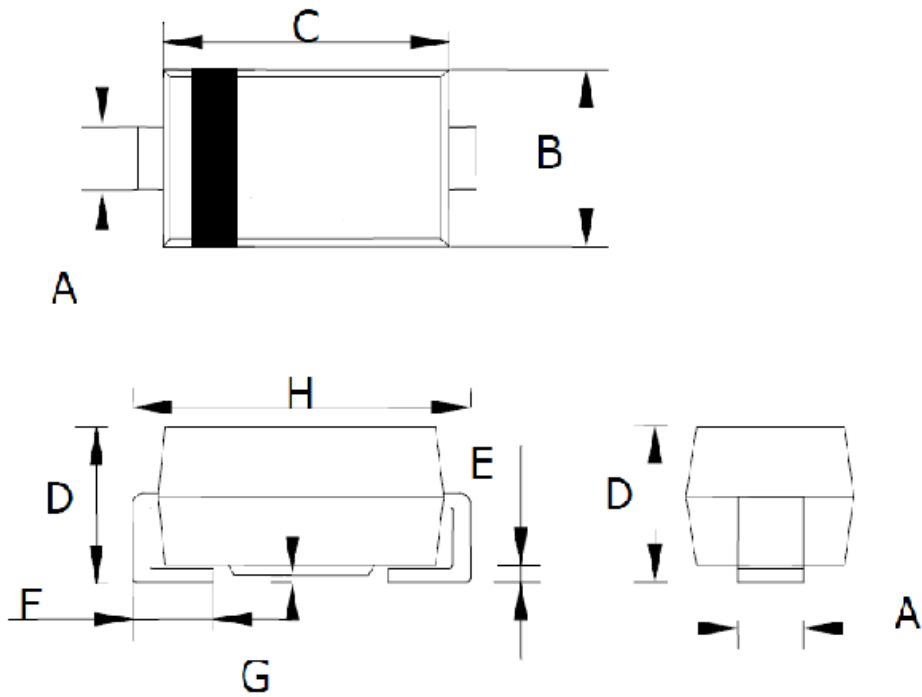


Fig. 6 - Typical Junction Capacitance

## Package Dimension

### SMC









Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.75	3.25	0.108	0.128
B	5.52	6.22	0.220	0.245
C	6.52	7.11	0.260	0.280
D	2.00	2.62	0.079	0.103
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	7.64	8.13	0.305	0.320

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