MAXIMUM RATINGS

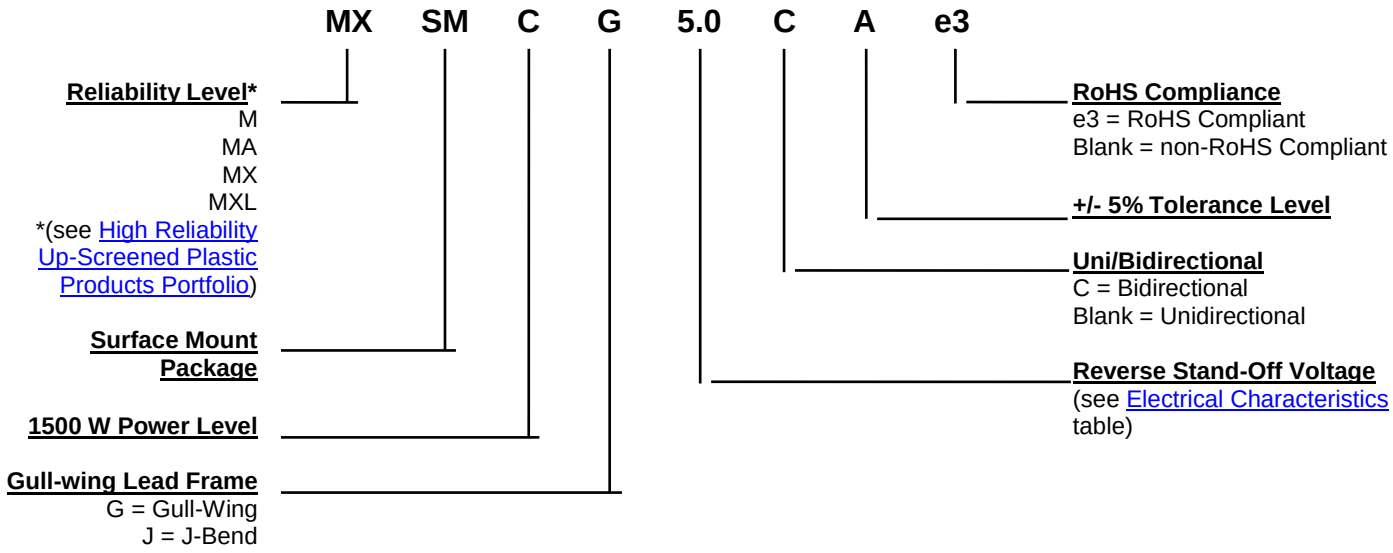
Parameters/Test Conditions		Symbol	Value	Unit
Junction and Storage Temperature		T_J and T_{STG}	-65 to +150	ºC
Thermal Resistance Junction-to-Lead		$R_{\Theta JL}$	20	ºC/W
Thermal Resistance Junction-to-Ambient (1)		$R_{\Theta JA}$	80	ºC/W
Peak Pulse Power Dissipation @ 25 ºC (at 10/1000 µs, see Figures 1, 2, and 3)		P_{PP}	1500	W
Impulse Repetition Rate (duty factor)		df	0.01	%
$t_{clamping}$ (0 volts to $V_{(BR)}$ min.)	Unidirectional Bidirectional	$t_{clamping}$	<100 <5	ps ns
Rated Average Power Dissipation	T_L = +30 ºC T_A = +25 ºC	$P_{M(AV)}$	6 1.56(1)	W
Maximum Forward Surge Current (2)		I_{FSM}	200	A (pk)
Solder Temperature @ 10 s		T_{SP}	260	ºC

Notes: 1. When mounted on FR4 PC board (1oz Cu) with recommended footprint (see last page).
2. Peak impulse of 8.3 ms half-sine wave at 25 ºC (unidirectional only).

MECHANICAL and PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy body meeting UL94V-0.
- TERMINALS: Tin-lead or RoHS compliant annealed matte-tin plating. Solderable to MIL-STD-750, method 2026.
- MARKING: Part number marked on package.
- POLARITY: Cathode indicated by band. No cathode band on bi-directional devices.
- TAPE & REEL option: Standard per EIA-481-2 with 16 mm tape (add "TR" suffix to part number). Consult factory for quantities.
- WEIGHT: Approximately 0.25 grams.
- See Package Dimensions on last page.

PART NOMENCLATURE



SYMBOLS & DEFINITIONS	
Symbol	**Definition**
$I_{(BR)}$	Breakdown Current: The current used for measuring breakdown voltage $V_{(BR)}$.
I_D	Standby Current: The current at the rated standoff voltage (V_{WM}).
I_F	Forward Current: The forward current dc value, no alternating component.
I_O	Average Rectified Output Current: The output current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180-degree conduction angle.
I_{PP}	Peak Impulse Current: The peak current during the impulse.
P_{PP}	Peak Pulse Power: The peak power dissipation resulting from the peak impulse current I_{PP}.
V_C	Clamping Voltage: Maximum clamping voltage at specified I_{PP} (Peak Pulse Current) at the specified pulse conditions.
$V_{(BR)}$	Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current.
V_{WM}	Working Peak Voltage: The maximum peak voltage that can be applied over the operating temperature range. This is also referred to as standoff voltage.

ELECTRICAL CHARACTERISTICS @ 25 ºC unless otherwise stated

MICROSEMI PART NUMBER		REVERSE STAND-OFF VOLTAGE V_{WM}	BREAKDOWN VOLTAGE $V_{(BR)}$ @ $I_{(BR)}$ Volts		MAXIMUM CLAMPING VOLTAGE @ I_{PP}	PEAK PULSE CURRENT (See Fig. 2) I_{PP}	MAXIMUM STANDBY CURRENT @ V_{WM} I_D
Gull-Wing	J-Bend	Volts	MIN. MAX.	$I_{(BR)}$ mA	Volts	Amps	µA
MSMCG5.0A	MSMCJ5.0A	5.0	6.40 – 7.00	10	9.2	163.0	1000
MSMCG6.0A	MSMCJ6.0A	6.0	6.67 – 7.37	10	10.3	145.6	1000
MSMCG6.5A	MSMCJ6.5A	6.5	7.22 – 7.98	10	11.2	133.9	500
MSMCG7.0A	MSMCJ7.0A	7.0	7.78 – 8.60	10	12.0	125.0	200
MSMCG7.5A	MSMCJ7.5A	7.5	8.33 – 9.21	1	12.9	116.3	100
MSMCG8.0A	MSMCJ8.0A	8.0	8.89 – 9.83	1	13.6	110.3	50
MSMCG8.5A	MSMCJ8.5A	8.5	9.44 – 10.4	1	14.4	104.2	20
MSMCG9.0A	MSMCJ9.0A	9.0	10.0 – 11.1	1	15.4	97.4	10
MSMCG10A	MSMCJ10A	10	11.1 – 12.3	1	17.0	88.2	5
MSMCG11A	MSMCJ11A	11	12.2 – 13.5	1	18.2	82.4	5
MSMCG12A	MSMCJ12A	12	13.3 – 14.7	1	19.9	75.3	5
MSMCG13A	MSMCJ13A	13	14.4 – 15.9	1	21.5	69.7	1
MSMCG14A	MSMCJ14A	14	15.6 – 17.2	1	23.2	64.7	1
MSMCG15A	MSMCJ15A	15	16.7 – 18.5	1	24.4	61.5	1
MSMCG16A	MSMCJ16A	16	17.8 – 19.7	1	26.0	57.7	1
MSMCG17A	MSMCJ17A	17	18.9 – 20.9	1	27.6	53.3	1
MSMCG18A	MSMCJ18A	18	20.0 – 22.1	1	29.2	51.4	1
MSMCG20A	MSMCJ20A	20	22.2 – 24.5	1	32.4	46.3	1
MSMCG22A	MSMCJ22A	22	24.4 – 26.9	1	35.5	42.2	1
MSMCG24A	MSMCJ24A	24	26.7 – 29.5	1	38.9	38.6	1
MSMCG26A	MSMCJ26A	26	28.9 – 31.9	1	42.1	35.6	1
MSMCG28A	MSMCJ28A	28	31.1 – 34.4	1	45.4	33.0	1
MSMCG30A	MSMCJ30A	30	33.3 – 36.8	1	48.4	31.0	1
MSMCG33A	MSMCJ33A	33	36.7 – 40.6	1	53.3	28.1	1
MSMCG36A	MSMCJ36A	36	40.0 – 44.2	1	58.1	25.8	1
MSMCG40A	MSMCJ40A	40	44.4 – 49.1	1	64.5	23.2	1
MSMCG43A	MSMCJ43A	43	47.8 – 52.8	1	69.4	21.6	1
MSMCG45A	MSMCJ45A	45	50.0 – 55.3	1	72.7	20.6	1
MSMCG48A	MSMCJ48A	48	53.3 – 58.9	1	77.4	19.4	1
MSMCG51A	MSMCJ51A	51	56.7 – 62.7	1	82.4	18.2	1
MSMCG54A	MSMCJ54A	54	60.0 – 66.3	1	87.1	17.2	1
MSMCG58A	MSMCJ58A	58	64.4 – 71.2	1	93.6	16.0	1
MSMCG60A	MSMCJ60A	60	66.7 – 73.7	1	96.8	15.5	1
MSMCG64A	MSMCJ64A	64	71.1 – 78.6	1	103.0	14.6	1
MSMCG70A	MSMCJ70A	70	77.8 – 86.0	1	113	13.3	1
MSMCG75A	MSMCJ75A	75	83.3 – 92.1	1	121	12.4	1

Continued.

ELECTRICAL CHARACTERISTICS @ 25 ºC unless otherwise stated (continued)

MICROSEMI PART NUMBER		REVERSE STAND-OFF VOLTAGE V_{WM}	BREAKDOWN VOLTAGE $V_{(BR)}$ @ $I_{(BR)}$ Volts		MAXIMUM CLAMPING VOLTAGE @ I_{PP}	PEAK PULSE CURRENT (See Fig. 2) I_{PP}	MAXIMUM STANDBY CURRENT @ V_{WM} I_D µA
Gull-Wing	J-Bend	Volts	MIN. MAX.	$I_{(BR)}$ mA	Volts	Amps	
MSMCG78A	MSMCJ78A	78	86.7 – 95.8	1	126	11.4	1
MSMCG85A	MSMCJ85A	85	94.4 – 104.0	1	137	10.4	1
MSMCG90A	MSMCJ90A	90	100 – 111	1	146	10.3	1
MSMCG100A	MSMCJ100A	100	111 – 123	1	162	9.3	1
MSMCG110A	MSMCJ110A	110	122 – 135	1	177	8.4	1
MSMCG120A	MSMCJ120A	120	133 – 147	1	193	7.8	1
MSMCG130A	MSMCJ130A	130	144 – 159	1	209	7.2	1
MSMCG150A	MSMCJ150A	150	167 – 185	1	243	6.2	1
MSMCG160A	MSMCJ160A	160	178 – 197	1	259	5.8	1
MSMCG170A	MSMCJ170A	170	189 – 209	1	275	5.5	1

GRAPHS

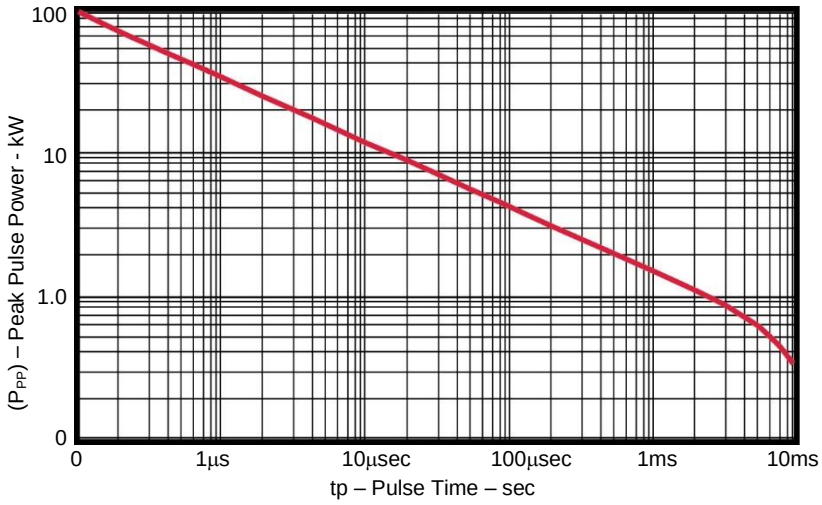


FIGURE 1 – Peak Pulse Power vs. Pulse Time

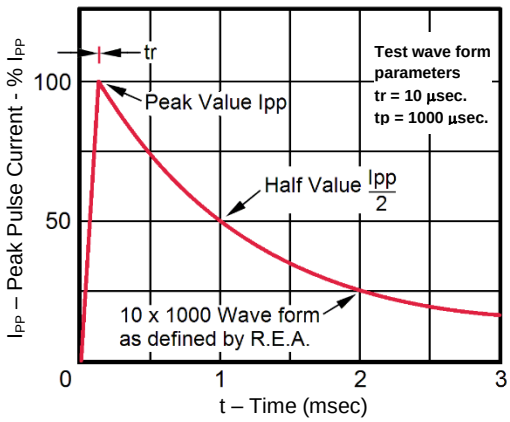


FIGURE 2 – Pulse Waveform

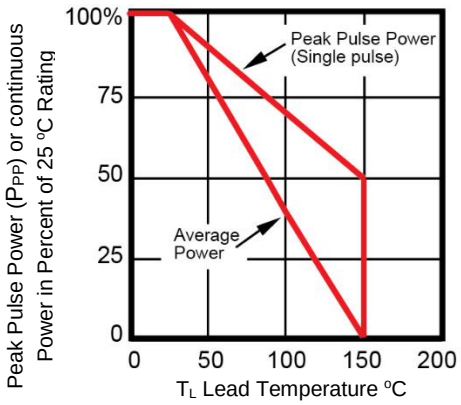


FIGURE 3 – Derating Curve

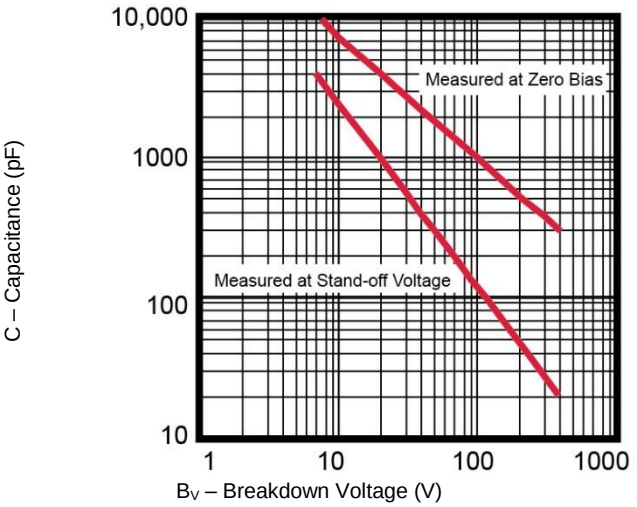
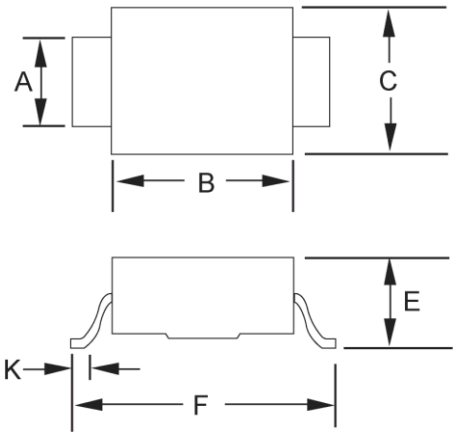


FIGURE 4
Typical Capacitance vs.
Breakdown Voltage (unidirectional configuration)
NOTE: Bidirectional capacitance is half that shown at zero volts.

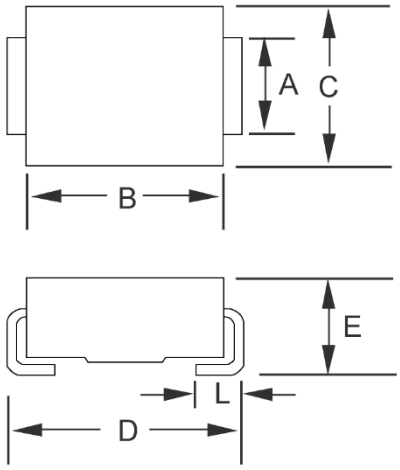
PACKAGE DIMENSIONS



SMCG (DO-215AB)

Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
A	.115	.121	2.92	3.07
B	.260	.280	6.60	7.11
C	.220	.245	5.59	6.22
E	.077	.110	1.95	2.80
F	.380	.400	9.65	10.16
K	.025	.040	0.635	1.016

NOTES: **Dimension "E" exceeds the JEDEC outline as shown.**
Typical Standoff Height: 0.004" – 0.008" (0.1 mm – 0.2 mm).

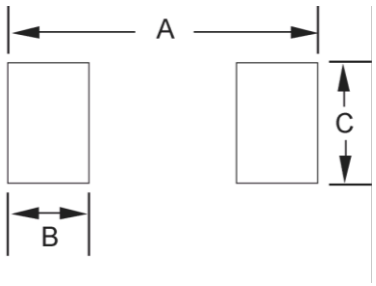


SMCJ (DO-214AB)

Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
A	.115	.121	2.92	3.07
B	.260	.280	6.60	7.11
C	.220	.245	5.59	6.22
D	.305	.320	7.75	8.13
E	.077	.110	1.95	2.80
L	.030	.060	.760	1.52

NOTES: **Dimension "E" exceeds the JEDEC outline in height as shown.**
Typical Standoff Height: 0.004" – 0.008" (0.1 mm – 0.2 mm).

PAD LAYOUT



SMCG (DO-215AB)		
Ltr	**Inch**	**Millimeters**
A	.510	12.95
B	.110	2.79
C	.150	3.81

SMCJ (DO-214AB)		
Ltr	**Inch**	**Millimeters**
A	.390	9.90
B	.110	2.79
C	.150	3.81