



Micro Commercial Components

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SMBG5.0(A)
THRU
SMBG170(A)

Transient
Voltage Suppressor
5.0 to 170 Volts
600 Watt

Features

- For surface mount applications (flat handing surface for accurate Placement)
Available as a unidirectional or bi-directional device
Fast response time: typical less than 1.0ps from 0 volts to VBR minimum
Suppresses transients up to 600W @1.0ms including ESD per Human body model test above 16kv (class 3)
Available on tape and reel

Mechanical Data

- CASE: JEDEC DO-215AA
Terminals: solderable per MIL-STD-750, Method 2026
Polarity: is indicated by cathode band. Bidirectional devices Have no polarity band
Maximum soldering temperature: 260°C for 10 seconds

Maximum Ratings @ 25°C Unless Otherwise Specified

Table with 4 columns: Parameter, Symbol, Value, Note. Rows include Peak Pulse Current, Peak Pulse Power Dissipation, Peak Forward Surge Current, Steady State Power Dissipation, Operation And Storage Temperature Range, Thermal Resistance.

DO-215AA
(SMBG) (Lead Frame)

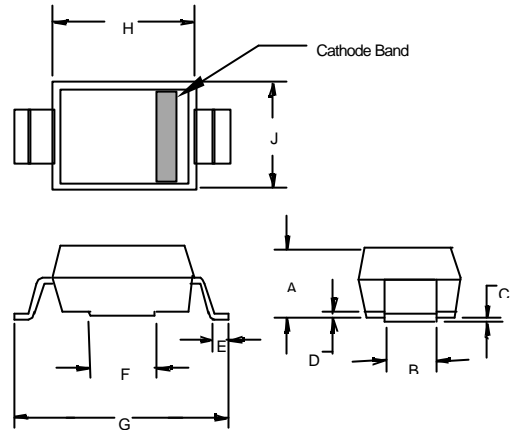
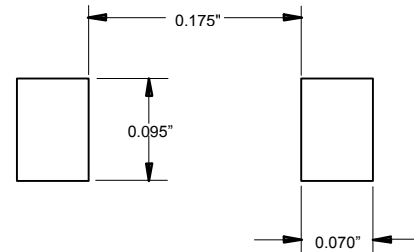


Table titled DIMENSIONS with columns for DIM, INCHES (MIN, MAX), MM (MIN, MAX), and NOTE. Rows A through J correspond to dimensions in the diagram.

NOTES:

- 1. Non-repetitive current pulse, per Fig.2 and derated above TA=25°C per Fig.1.
2. Mounted on 4.0mm² copper pads to each terminal.
3. 8.3ms, single half sine wave duty cycle=4 pulses per. Minute maximum. Peak forward voltage at 40A is 3.5 volts( unipolar only)
4. Lead temperature at 75°C=TL
5. Peak pulse current waveform is 10/1000us, with maximum duty Cycle of 0.01%.

SUGGESTED SOLDER PAD LAYOUT



# SMBG5.0(A) thru SMBG170(A)

Electrical Characteristics @ 25°C Unless Otherwise Specified

MCC PART NUMBER	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE			MAXIMUM CLAMPING VOLTAGE@I <sub>PP</sub>	PEAK PULSE CURRENT I <sub>PP</sub>	MAXIMUM REVERSE LEAKAGE @V <sub>WM</sub> I <sub>b</sub>	MARKING CODE
	V <sub>WM</sub>	V <sub>(BR)</sub> @I <sub>T</sub> (VOLTS)		I <sub>T</sub> (mA)				
	VOLTS	MIN	MAX					
SMBG5.0	5.0	6.40	7.30	10	9.6	62.5	800	5.0
SMBG5.0A	5.0	6.40	7.00	10	9.2	65.2	800	5.0A
SMBG6.0	6.0	6.67	8.15	10	11.4	52.6	800	6.0
SMBG6.0A	6.0	6.67	7.37	10	10.3	58.3	800	6.0A
SMBG6.5	6.5	7.22	8.82	10	12.3	48.7	500	6.5
SMBG6.5A	6.5	7.22	7.98	10	11.2	53.6	500	6.5A
SMBG7.0	7.0	7.78	9.51	10	13.3	45.1	200	7.0
SMBG7.0A	7.0	7.78	8.60	10	12.0	50.0	200	7.0A
SMBG7.5	7.5	8.33	10.2	1	14.3	42.0	100	7.5
SMBG7.5A	7.5	8.33	9.21	1	12.9	46.5	100	7.5A
SMBG8.0	8.0	8.89	10.9	1	15.0	40.0	50	8.0
SMBG8.0A	8.0	8.89	9.83	1	13.6	44.1	50	8.0A
SMBG8.5	8.5	9.44	11.5	1	15.9	37.7	10	8.5
SMBG8.5A	8.5	9.44	10.4	1	14.4	41.7	10	8.5A
SMBG9.0	9.0	10.0	12.2	1	16.9	35.5	5	9.0
SMBG9.0A	9.0	10.0	11.1	1	15.4	39.0	5	9.0A
SMBG10	10	11.1	13.6	1	18.8	31.9	5	10
SMBG10A	10	11.1	12.3	1	17.0	35.3	5	10A
SMBG11	11	12.2	14.9	1	20.1	29.9	5	11
SMBG11A	11	12.2	13.5	1	18.2	33.0	5	11A
SMBG12	12	13.3	16.3	1	22.0	27.3	5	12
SMBG12A	12	13.3	14.7	1	19.9	30.2	5	12A
SMBG13	13	14.4	17.6	1	23.8	25.2	5	13
SMBG13A	13	14.4	15.9	1	21.5	27.9	5	13A
SMBG14	14	15.6	19.1	1	25.8	23.3	5	14
SMBG14A	14	15.6	17.2	1	23.2	25.8	5	14A
SMBG15	15	16.7	20.4	1	26.9	22.3	5	15
SMBG15A	15	16.7	18.5	1	24.4	24.0	5	15A
SMBG16	16	17.8	21.8	1	28.8	20.8	5	16
SMBG16A	16	17.8	19.7	1	26.0	23.1	5	16A
SMBG17	17	18.9	23.1	1	30.5	19.7	5	17
SMBG17A	17	18.9	20.9	1	27.6	21.7	5	17A
SMBG18	18	20.0	24.4	1	32.2	18.6	5	18
SMBG18A	18	20.0	22.1	1	29.2	20.5	5	18A
SMBG20	20	22.2	27.1	1	35.8	16.7	5	20
SMBG20A	20	22.2	24.5	1	32.4	18.5	5	20A
SMBG22	22	24.4	29.8	1	39.4	15.2	5	22
SMBG22A	22	24.4	26.9	1	35.5	16.9	5	22A
SMBG24	24	26.7	32.6	1	43.0	14.0	5	24
SMBG24A	24	26.7	29.5	1	38.9	15.4	5	24A
SMBG26	26	28.9	35.3	1	46.6	12.4	5	26
SMBG26A	26	28.9	31.9	1	42.1	14.2	5	26A

# SMBG5.0(A) thru SMBG170(A)

Electrical Characteristics @ 25°C Unless Otherwise Specified

MCC PART NUMBER	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE			MAXIMUM CLAMPING VOLTAGE@I <sub>PP</sub>	PEAK PULSE CURRENT I <sub>PP</sub>	MAXIMUM REVERSE LEAKAGE @V <sub>WM</sub> I <sub>b</sub>	MARKING CODE
	V <sub>WM</sub>	V <sub>(BR)</sub> @I <sub>T</sub> (VOLTS)		I <sub>T</sub> (mA)				
	VOLTS	MIN	MAX					
SMBG28	28	31.1	38.0	1	50.0	12.0	5	28
SMBG28A	28	31.1	34.4	1	45.4	13.2	5	28A
SMBG30	30	33.3	40.7	1	53.5	11.2	5	30
SMBG30A	30	33.3	36.8	1	48.4	12.4	5	30A
SMBG33	33	36.7	44.9	1	59.0	10.2	5	33
SMBG33A	33	36.7	40.6	1	53.3	11.3	5	33A
SMBG36	36	40.0	48.9	1	64.3	9.3	5	36
SMBG36A	36	40.0	44.2	1	58.1	10.3	5	36A
SMBG40	40	44.4	54.3	1	71.4	8.4	5	40
SMBG40A	40	44.4	49.1	1	64.5	9.3	5	40A
SMBG43	43	47.8	58.4	1	76.7	7.8	5	43
SMBG43A	43	47.8	52.8	1	69.4	8.6	5	43A
SMBG45	45	50.0	61.1	1	80.3	7.5	5	45
SMBG45A	45	50.0	55.3	1	72.7	8.3	5	45A
SMBG48	48	53.3	65.1	1	85.5	7.0	5	48
SMBG48A	48	53.3	58.9	1	77.4	7.7	5	48A
SMBG51	51	56.7	69.3	1	91.1	6.6	5	51
SMBG51A	51	56.7	62.7	1	82.4	7.3	5	51A
SMBG54	54	60.0	73.3	1	96.3	6.2	5	54
SMBG54A	54	60.0	66.3	1	87.1	6.9	5	54A
SMBG58	58	64.4	78.7	1	103	5.8	5	58
SMBG58A	58	64.4	71.2	1	93.6	6.4	5	58A
SMBG60	60	66.7	81.5	1	107	5.6	5	60
SMBG60A	60	66.7	73.7	1	96.8	6.2	5	60A
SMBG64	64	71.1	86.9	1	114	5.3	5	64
SMBG64A	64	71.1	78.6	1	103	5.8	5	64A
SMBG70	70	77.8	95.1	1	125	4.8	5	70
SMBG70A	70	77.8	86.0	1	113	5.3	5	70A
SMBG75	75	83.3	102	1	134	4.5	5	75
SMBG75A	75	83.3	92.1	1	121	4.9	5	75A
SMBG78	78	86.7	106	1	139	4.3	5	78
SMBG78A	78	86.7	95.8	1	126	4.7	5	78A
SMBG85	85	94.4	115	1	151	3.9	5	85
SMBG85A	85	94.4	104	1	137	4.4	5	85A
SMBG90	90	100	122	1	160	3.8	5	90
SMBG90A	90	100	111	1	146	4.1	5	90A
SMBG100	100	111	136	1	179	3.4	5	100
SMBG100A	100	111	123	1	162	3.7	5	100A
SMBG110	110	122	149	1	196	3.0	5	110
SMBG110A	110	122	135	1	177	3.4	5	110A
SMBG120	120	133	163	1	214	2.8	5	120
SMBG120A	120	133	147	1	193	3.1	5	120A

# SMBG5.0(A) thru SMBG170(A)

Electrical Characteristics @ 25°C Unless Otherwise Specified

MCC PART NUMBER	REVERSE STAND-OFF VOLTAGE $V_{WM}$	BREAKDOWN VOLTAGE $V_{(BR)}$ @ $I_T$ (VOLTS)			MAXIMUM CLAMPING VOLTAGE @ $I_{PP}$	PEAK PULSE CURRENT $I_{PP}$	MAXIMUM REVERSE LEAKAGE @ $V_{WM}$ $I_b$	MARKING CODE
	VOLTS	MIN	MAX	$I_T$ (mA)	VOLTS	(AMPS)	( $\mu$ A)	
SMBG130	130	144	176	1	231	2.6	5	130
SMBG130A	130	144	159	1	209	2.9	5	130A
SMBG150	150	167	204	1	268	2.2	5	150
SMBG150A	150	167	185	1	243	2.5	5	150A
SMBG160	160	178	218	1	287	2.1	5	160
SMBG160A	160	178	197	1	259	2.3	5	160A
SMBG170	170	189	231	1	304	2.0	5	170
SMBG170A	170	189	209	1	275	2.2	5	170A

# MAXIMUM RATINGS AND CHARACTERISTIC CURVE SMBG SERIES



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Figure 1  
Derating Curve

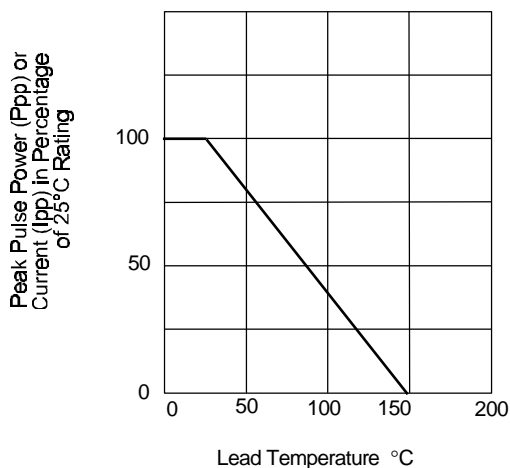


Figure 2  
Pulse Waveform For Exponential Surge

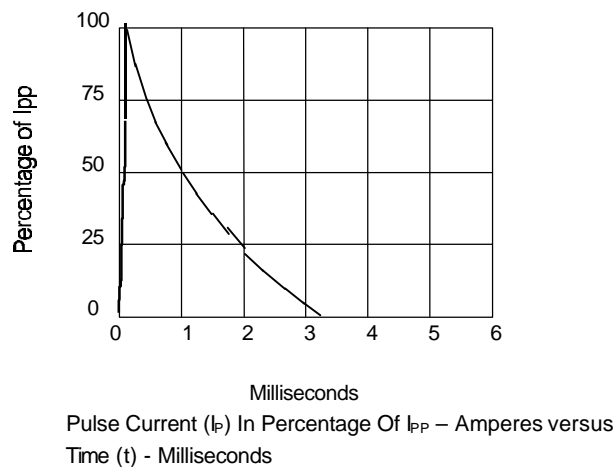
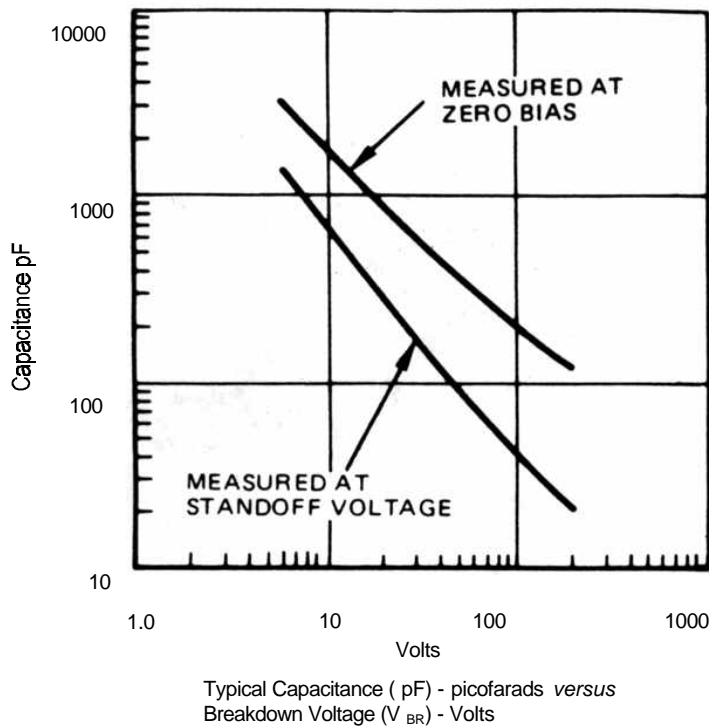
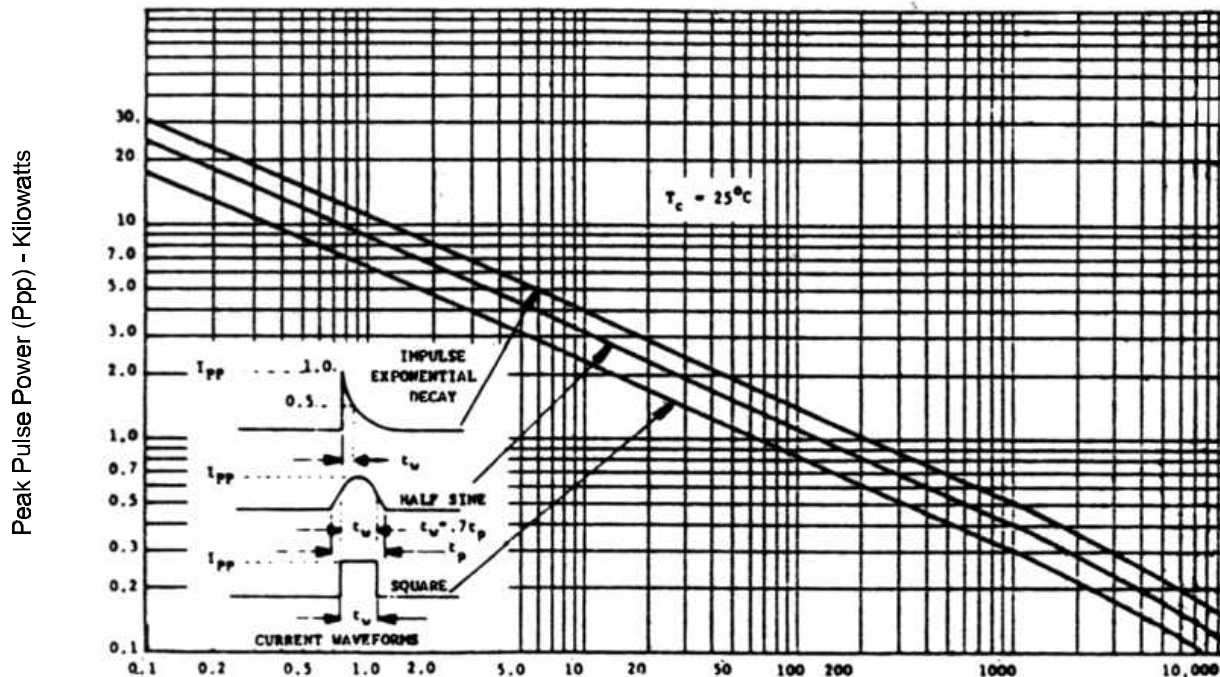


Figure 3  
Typical Capacitance versus Breakdown Voltage



# MAXIMUM RATINGS AND CHARACTERISTIC CURVE SMBG SERIES

Figure 4  
Peak Pulse Power versus Pulse Width



Peak Pulse Power ( $P_{pp}$ ) – Kilowatts versus  
Pulse Width ( $T_w$ ) - Microseconds