

3918590 GENERAL SEMICONDUCTOR

95D 02033 D



**General
Semiconductor
Industries, Inc.**

SQUARE D COMPANY



**SURFACE MOUNT
TRANSZORB®
SMC SERIES
5.0 THRU 170.0 VOLTS
1500 WATTS
UNIDIRECTIONAL**

7-11-23

FEATURES

- 1500 Watts Peak Power
- Voltage Range: 5.0-170 Volts
- Low Inductance
- JEDEC Registered Low Profile Package for Surface Mounting

MAXIMUM RATINGS

- 1500 watts of Peak Power dissipation (10/1000us)
- $t_{clamping}$ (0 volts to BV min): less than 1×10^{-12} seconds (theoretical)
- Forward surge rating: 100 Amps, 1/120 sec @ 25°C
- Operating and Storage Temp.: -55° to +150°C

DESCRIPTION

This series of TransZorb® transient voltage suppressors, available in small outline mountable packages, is designed to optimize board space. Packaged for use with surface mount technology automated assembly equipment, these parts can be placed on printed circuit boards and ceramic substrates to protect sensitive components from transient voltage damage.

APPLICATION

This device is designed specifically for transient voltage suppression. The wide leads assure a large surface contact for good heat dissipation, and a low resistance path for surge current flow to ground.

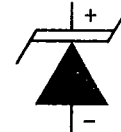
A 1500W (SMC) device is normally selected when the threat of transients is from lightning induced transients, conducted via external leads or I/O lines. It is also used to protect against switching transients induced by large coils or industrial motors. Source impedance at component level in a system is usually high enough to limit the current within the peak pulse current (I_{pp}) rating of this series.

CASES

Modified J-Bend
Leads (C-Bend)
DO-214AB



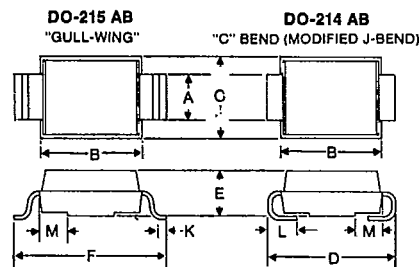
Gull-Wing Leads
DO-215AB



Schematic Symbol

MECHANICAL CHARACTERISTICS

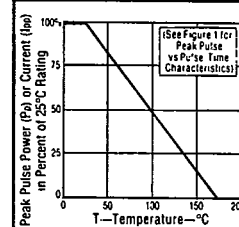
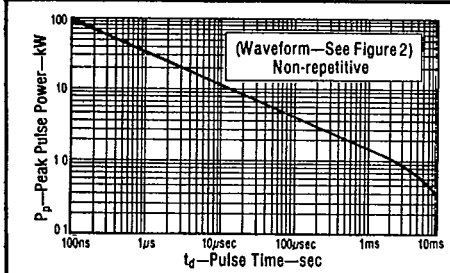
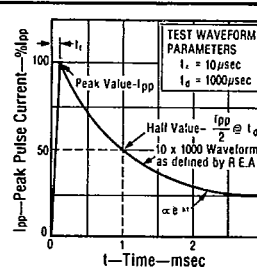
- Molded Surface Mountable Case
- Gull-wing or Modified J-bend leads
- Terminals: Tin/Lead Plated
- Positive end indicated by polarity band
- Body marked with type code (see part list) and Logo
- Standard Packaging: 16 mm tape (see EIA Std. RS-481)

SURFACE MOUNT CASE OUTLINES

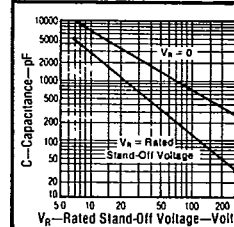
DIMENSIONS IN INCHES									
	A	B	C	D	E	F	K	L	M
MIN	.115	.260	.225	.305	.075	.380	.025	.030	.038
MAX	.121	.280	.245	.320	.085	.400	.040	.060	.053

DIMENSIONS IN MILLIMETERS									
	A	B	C	D	E	F	K	L	M
MIN	2.92	6.60	5.72	7.75	1.91	9.65	0.64	0.76	0.97
MAX	3.07	7.11	6.22	8.13	2.41	10.16	1.02	1.52	1.35

Typical Standoff Height: 0.004"-0.008" (0.1mm-0.2mm)

FIGURE 3—Derating Curve**FIGURE 1—Peak Pulse Power vs Pulse Time****FIGURE 2—Pulse Waveform****FIGURE 4**

**Typical Capacitance
vs Stand-Off Voltage**



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ELECTRICAL CHARACTERISTICS @ 25°C

GENERAL SEMICONDUCTOR PART NUMBER		DEVICE MARKING CODE	REVERSE STAND-OFF VOLTAGE [NOTE 1] VR VOLTS	BREAKDOWN VOLTAGE BV @ IT VOLTS	MAXIMUM CLAMPING VOLTAGE @ IPP VOLTS	PEAK PULSE CURRENT [See Fig. 2] IPP AMPS	MAXIMUM REVERSE LEAKAGE @ VR uA
GULL-WING LEAD	MODIFIED "J" BEND LEAD						
SMCG5.0	SMCJ5.0	GDD	5.0	6.40	10	9.6	158.2
SMCG5.0A	SMCJ5.0A	GDE	5.0	6.40	10	9.2	183.0
SMCG6.0	SMCJ6.0	GDF	6.0	6.67	10	11.4	131.6
SMCG6.0A	SMCJ6.0A	GDG	6.0	6.67	10	10.3	145.6
SMCG6.5	SMCJ6.5	GDH	6.5	7.22	10	12.3	122.0
SMCG6.5A	SMCJ6.5A	GDK	6.5	7.22	10	11.2	133.9
SMCG7.0	SMCJ7.0	GDL	7.0	7.78	10	13.3	112.8
SMCG7.0A	SMCJ7.0A	GDM	7.0	7.78	10	12.0	125.0
SMCG7.5	SMCJ7.5	GDN	7.5	8.33	1	14.3	104.9
SMCG7.5A	SMCJ7.5A	GDP	7.5	8.33	1	12.9	116.3
SMCG8.0	SMCJ8.0	GDO	8.0	8.89	1	15.0	100.0
SMCG8.0A	SMCJ8.0A	GDR	8.0	8.89	1	13.6	110.3
SMCG8.5	SMCJ8.5	GDS	8.5	9.44	1	15.9	94.3
SMCG8.5A	SMCJ8.5A	GDT	8.5	9.44	1	14.4	104.2
SMCG9.0	SMCJ9.0	GDU	9.0	10.0	1	16.9	88.7
SMCG9.0A	SMCJ9.0A	GDV	9.0	10.0	1	15.4	97.4
SMCG10	SMCJ10	GDW	10	11.1	1	18.8	79.8
SMCG10A	SMCJ10A	GDX	10	11.1	1	17.0	88.2
SMCG11	SMCJ11	GDY	11	12.2	1	20.1	74.6
SMCG11A	SMCJ11A	GDZ	11	12.2	1	18.2	82.4
SMCG12	SMCJ12	GED	12	13.3	1	22.0	68.2
SMCG12A	SMCJ12A	GEE	12	13.3	1	19.9	75.3
SMCG13	SMCJ13	GEF	13	14.4	1	23.9	63.0
SMCG13A	SMCJ13A	GEG	13	14.4	1	21.5	69.7
SMCG14	SMCJ14	GEH	14	15.6	1	26.8	58.1
SMCG14A	SMCJ14A	GEK	14	15.6	1	23.2	64.7
SMCG15	SMCJ15	GEL	15	16.7	1	26.9	55.8
SMCG15A	SMCJ15A	GEM	15	16.7	1	24.4	61.5
SMCG16	SMCJ16	GEN	16	17.8	1	28.8	52.1
SMCG16A	SMCJ16A	GEP	16	17.8	1	26.0	57.7
SMCG17	SMCJ17	GEQ	17	18.9	1	30.5	49.2
SMCG17A	SMCJ17A	GER	17	18.9	1	27.6	53.3
SMCG18	SMCJ18	GES	18	20.0	1	32.2	46.6
SMCG18A	SMCJ18A	GET	18	20.0	1	29.2	51.4
SMCG20	SMCJ20	GEU	20	22.2	1	35.8	41.9
SMCG20A	SMCJ20A	GEV	20	22.2	1	32.4	46.3
SMCG22	SMCJ22	GEW	22	24.4	1	39.4	38.1
SMCG22A	SMCJ22A	GEX	22	24.4	1	35.5	42.2
SMCG24	SMCJ24	GEY	24	26.7	1	43.0	34.9
SMCG24A	SMCJ24A	GEZ	24	26.7	1	38.9	39.6
SMCG26	SMCJ26	GFD	26	28.9	1	46.6	32.2
SMCG26A	SMCJ26A	GFE	26	28.9	1	42.1	35.6
SMCG28	SMCJ28	GFF	28	31.1	1	50.0	30.0
SMCG28A	SMCJ28A	GFG	28	31.1	1	45.4	33.0
SMCG30	SMCJ30	GFI	30	33.3	1	53.5	28.0
SMCG30A	SMCJ30A	GFK	30	33.3	1	49.4	31.0
SMCG33	SMCJ33	GFL	33	36.7	1	59.0	25.2
SMCG33A	SMCJ33A	GFM	33	36.7	1	53.3	28.1
SMCG36	SMCJ36	GFN	36	40.0	1	64.3	23.3
SMCG36A	SMCJ36A	GFP	36	40.0	1	58.1	25.8
SMCG40	SMCJ40	GFQ	40	44.4	1	71.4	21.0
SMCG40A	SMCJ40A	GFR	40	44.4	1	64.5	23.2
SMCG43	SMCJ43	GFS	43	47.8	1	78.7	19.6
SMCG43A	SMCJ43A	GFT	43	47.8	1	69.4	21.6
SMCG45	SMCJ45	GFU	45	50.0	1	80.3	18.7
SMCG45A	SMCJ45A	GFV	45	50.0	1	72.7	20.6
SMCG48	SMCJ48	GFW	48	53.3	1	85.5	17.5
SMCG48A	SMCJ48A	GFX	48	53.3	1	77.4	19.4
SMCG51	SMCJ51	GFY	51	56.7	1	91.1	15.5
SMCG51A	SMCJ51A	GFZ	51	56.7	1	82.4	18.2
SMCG54	SMCJ54	GGD	54	60.0	1	96.3	15.6
SMCG54A	SMCJ54A	GGE	54	60.0	1	87.1	17.2
SMCG58	SMCJ58	GGF	58	64.4	1	103.0	14.6
SMCG58A	SMCJ58A	GGG	58	64.4	1	93.6	16.0
SMCG60	SMCJ60	GGH	60	66.7	1	107.0	14.0
SMCG60A	SMCJ60A	GGL	60	66.7	1	96.8	15.5
SMCG64	SMCJ64	GGM	64	71.1	1	114.0	13.2
SMCG64A	SMCJ64A	GGM	64	71.1	1	103.0	14.6
SMCG70	SMCJ70	GGN	70	77.8	1	125	12.0
SMCG70A	SMCJ70A	GGP	70	77.8	1	113	13.3
SMCG75	SMCJ75	GGQ	75	83.3	1	134	11.2
SMCG75A	SMCJ75A	GGR	75	83.3	1	121	12.4
SMCG78	SMCJ78	GGS	78	86.7	1	139	10.8
SMCG78A	SMCJ78A	GGT	78	86.7	1	126	11.4
SMCG85	SMCJ85	GGU	85	94.4	1	151	9.9
SMCG85A	SMCJ85A	GGV	85	94.4	1	137	10.4
SMCG90	SMCJ90	GGW	90	100	1	160	9.4
SMCG90A	SMCJ90A	GGX	90	100	1	146	10.3
SMCG100	SMCJ100	GGY	100	111	1	179	8.4
SMCG100A	SMCJ100A	GGZ	100	111	1	162	9.3
SMCG110	SMCJ110	GHD	110	122	1	196	7.7
SMCG110A	SMCJ110A	GHE	110	122	1	177	8.4
SMCG120	SMCJ120	GHF	120	133	1	214	7.0
SMCG120A	SMCJ120A	GHG	120	133	1	183	7.8
SMCG130	SMCJ130	GHI	130	144	1	231	6.5
SMCG130A	SMCJ130A	GHI	130	144	1	209	7.2
SMCG150	SMCJ150	GHL	150	167	1	288	5.6
SMCG150A	SMCJ150A	GHI	150	167	1	243	6.2
SMCG160	SMCJ160	GHN	160	178	1	287	5.2
SMCG160A	SMCJ160A	GHP	160	178	1	259	5.8
SMCG170	SMCJ170	GHO	170	189	1	304	4.9
SMCG170A	SMCJ170A	GHR	170	189	1	275	5.5

Note: Bold face lines are stocking items—short delivery lead time.

SURFACE MOUNT

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SMC SERIES
 5.0 THRU 170.0 VOLTS
 1500 WATTS
 UNIDIRECTIONAL

TRANSZORB®
 VOLTAGE
 SUPPRESSORS

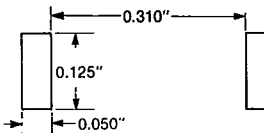
RECOMMENDED PAD SIZES

The pad dimensions should be 0.010" longer than the contact size, in the lead axis. This allows a solder fillet to form, see figure below.

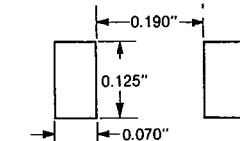
Contact factory for soldering methods.

GULL-WING

(Pad distances equal layout for SO-28.)



MODIFIED J-BEND



ABBREVIATIONS & SYMBOLS

VR	Stand Off Voltage. Applied Reverse Voltage to assure a non-conductive condition. (See Note 1)
BV (min)	This is the minimum Breakdown Voltage the device will exhibit and is used to assure that conduction does not occur prior to this voltage level at 25°C
VC	Maximum Clamping Voltage. The maximum peak voltage appearing across the TransZorb when subjected to the peak pulse current in a one millisecond time interval. The peak pulse voltages are the combination of voltage rise due to both the series resistance and thermal rise
IPP	Peak Pulse Current - See Figure 2
PP	Peak Pulse Power
IR	Reverse Leakage

NOTES

Note 1:

A TransZorb TVS is normally selected according to the reverse "Stand Off Voltage" (VR) which should be equal to or greater than the DC or continuous peak operating voltage level.