

DESCRIPTION

The AVSMCJ5.0-70A or AVSMCG5.0-70A series of 1500 W Transient Voltage Suppressors (TVSs) protects a variety of voltage-sensitive components. It is available in J-bend design (AVSMCJ) with the DO-214AB package for greater PC board mounting density or in a Gull-wing design (AVSMCG) in the DO-215AB for visible solder connections. Selections include unidirectional and bidirectional as well as RoHS Compliant designated with an e3 suffix. They can protect from secondary lightning effects per IEC61000-4-5 and class levels defined herein, or for inductive switching environments and induced RF protection. Since their response time is virtually instantaneous, they can also be used in protection from ESD and EFT per IEC61000-4-2 and IEC61000-4-4.

APPEARANCE



DO-214AB



NOTE: All SMC series are equivalent to prior SMM package identifications.

IMPORTANT: For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

FEATURES

- TEOS Passivation for improved reliability.
- Selections for 5.0 to 70 volts standoff voltages (V_{WM})
- **100% screened as follows for avionics applications:**
 1. Temperature Cycle (thermal shock) 20 Cycles -55°C to 125°C
 2. Solder Capability: Stress Tested at 260°C for 10 sec.
 3. Surge 1 pulse at 110% Ipp (Both Directions for Bidirectional)
 4. Surge 1 pulse at 100% Ipp (Both Directions for Bidirectional)
 5. Electrical Test
 6. Burn-in (HTRB) 48 hrs 125°C Polarity A for Bidirectional (96 hrs for Unidirectional)
 7. Electrical Test Delta I_D and $V_{(BR)}$ Polarity A
 8. Burn-in (HTRB) 48 hrs 125°C Polarity B for bidirectional (not required for Unidirectional)
 9. Electrical Test Delta I_D and $V_{(BR)}$ Polarity B (Not required for Unidirectional)
 10. Electrical Test GO-NO-GO
- Moisture classification is Level 1 with no dry pack required per IPC/JEDEC J-STD-020B
- RoHS Compliant devices available by adding an "e3" suffix

APPLICATIONS / BENEFITS

- Selections for 5.0 to 170 volts standoff voltages (V_{WM})
- Protection from switching transients and induced RF
- Protection from ESD, and EFT per IEC 61000-4-2 and IEC 61000-4-4
- Secondary lightning protection per IEC61000-4-5 with 42 Ohms source impedance:
 - Class 1: AVSMC 5.0 to AVSMC 70A or CA
 - Class 2: AVSMC 5.0 to AVSMC 70A or CA
 - Class 3: AVSMC 5.0 to AVSMC 70A or CA
 - Class 4: AVSMC 5.0 to AVSMC 36A or CA
- Secondary lightning protection per IEC61000-4-5 with 12 Ohms source impedance:
 - Class 1: AVSMC 5.0 to AVSMC 70A or CA
 - Class 2: AVSMC 5.0 to AVSMC 45A or CA
 - Class 3: AVSMC 5.0 to AVSMC 24A or CA
 - Class 4: AVSMC 5.0 to AVSMC 11A or CA
- Secondary lightning protection per IEC61000-4-5 with 2 Ohms source impedance:
 - Class 2: AVSMC 5.0 to AVSMC 22A or CA
 - Class 3: AVSMC 5.0 to AVSMC 10A or CA

MAXIMUM RATINGS

- Peak Pulse Power dissipation at 25°C: 1500 watts at 10/1000 μ s (also see Fig 1,2, and 3)
- Impulse repetition rate (duty factor): 0.01%
- $t_{clamping}$ (0 volts to $V_{(BR)}$ min.): < 100 ps theoretical for unidirectional and < 5 ns for bidirectional
- Operating and Storage temperature: -65°C to +150°C
- Thermal resistance: 20°C/W junction to lead, or 80°C/W junction to ambient when mounted on FR4 PC board (1oz Cu) with recommended footprint (see last page)
- Steady-State Power dissipation: 6 watts at $T_L = 30^\circ\text{C}$, or 1.56 watts at $T_A = 25^\circ\text{C}$ when mounted on FR4 PC board with recommended footprint
- Forward Surge: 200 Amps peak impulse of 8.3 ms half-sine wave at 25°C (unidirectional only)
- Solder temperatures: 260°C for 10 s (maximum)

MECHANICAL AND PACKAGING

- 2-Stage: Robust, High Reliability Lead Frame
- CASE: Void-free transfer molded thermosetting epoxy body meeting UL94V-0
- TERMINALS: Gull-wing or C-bend (modified J-bend) leads Tin-Lead or RoHS compliant annealed matte-Tin plating solderable per MIL-STD-750, method 2026
- POLARITY: Cathode indicated by band. No band on bi-directional devices.
- MARKING: See Page 2 marking column.
- TAPE & REEL option: Standard per EIA-481-2 with 16 mm tape, 750 per 7 inch reel or 2500 per 13 inch reel.
- WEIGHT: 0.25 grams

ELECTRICAL CHARACTERISTICS @ 25°C UNLESS OTHERWISE SPECIFIED

MICROSEMI PART NUMBER			REVERSE STANDOFF VOLTAGE V_{WM} Volts	BREAKDOWN VOLTAGE V_{BR} @ $I_{(BR)}$ Volts		MAXIMUM CLAMPING VOLTAGE @ I_{PP} Volts	PEAK PULSE CURRENT (See Fig. 2) I_{PP} Amps	MAXIMUM STANDBY CURRENT I_D @ V_{WM} μA
Gull-Wing Lead	Modified "J" Bend Lead	Marking		MIN.	$I_{(BR)}$ mA			
AVSMCG5.0A	AVSMCJ5.0A	AVC5.0A	5.0	6.40	10	9.2	163.1	800
AVSMCG6.0A	AVSMCJ6.0A	AVC6.0A	6.0	6.67	10	10.3	145.6	800
AVSMCG7.5A	AVSMCJ7.5A	AVC7.5A	7.5	8.33	1	12.9	116.3	100
AVSMCG10A	AVSMCJ10A	AVC10A	10	11.1	1	17.0	88.2	5
AVSMCG11A	AVSMCJ11A	AVC11A	11	12.2	1	18.2	82.4	5
AVSMCG12A	AVSMCJ12A	AVC12A	12	13.3	1	19.9	75.3	5
AVSMCG13A	AVSMCJ13A	AVC13A	13	14.4	1	21.5	69.7	1
AVSMCG15A	AVSMCJ15A	AVC15A	14	15.6	1	25.8	58.1	1
AVSMCG16A	AVSMCJ16A	AVC16A	16	17.8	1	26.0	57.7	1
AVSMCG18A	AVSMCJ18A	AVC18A	18	20.0	1	29.2	51.4	1
AVSMCG24A	AVSMCJ24A	AVC24A	24	26.7	1	38.9	38.6	1
AVSMCG26A	AVSMCJ26A	AVC26A	26	28.9	1	42.1	35.6	1
AVSMCG30A	AVSMCJ30A	AVC30A	30	33.3	1	48.4	31.0	1
AVSMCG40A	AVSMCJ40A	AVC40A	40	44.4	1	64.5	23.2	1
AVSMCG43A	AVSMCJ43A	AVC43A	43	47.8	1	69.4	21.6	1
AVSMCG48A	AVSMCJ48A	AVC48A	48	53.3	1	77.4	19.4	1
AVSMCG60A	AVSMCJ60A	AVC60A	60	66.7	1	96.8	15.5	1
AVSMCG64A	AVSMCJ64A	AVC64A	64	71.1	1	103	14.6	1
AVSMCG70A	AVSMCJ70A	AVC70A	70	77.8	1	113	13.3	1

“FOR OTHER VOLTAGES CONTACT THE FACTORY”

- For Bidirectional device types indicate a C or CA suffix after the part number. (e.g.: AVSMCG170CA). Bidirectional capacitance is half that shown in figure 4 at zero volts.
- Microsemi Corp's SMC series (1500 W) surface mountable packages are 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. These high speed transient voltage suppressors can be used to effectively protect sensitive components such as integrated circuits and MOS devices.

SYMBOLS & DEFINITIONS

Symbol	Definition	Symbol	Definition
V_{WM}	Working Peak (Standoff) Voltage	I_{PP}	Peak Pulse Current
P_{PP}	Peak Pulse Power	V_C	Clamping Voltage
$V_{(BR)}$	Breakdown Voltage	$I_{(BR)}$	Breakdown Current for $V_{(BR)}$
I_D	Standby Current		

GRAPHS

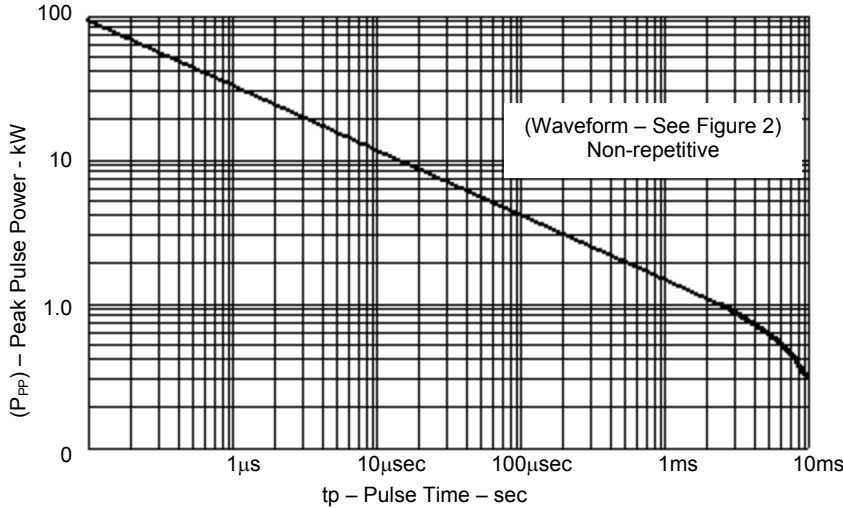


FIGURE 1 - Peak Pulse Power vs. Pulse Time

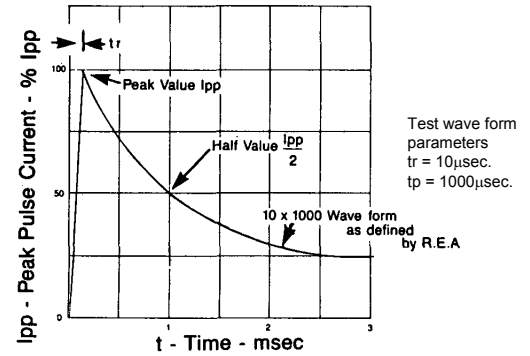


FIGURE 2 - PULSE WAVEFORM

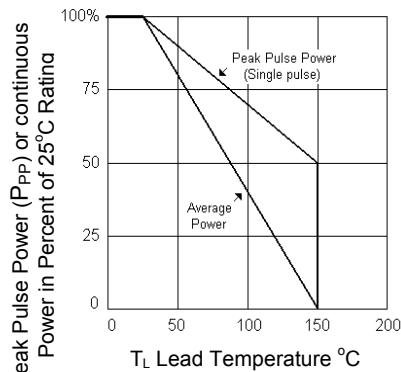
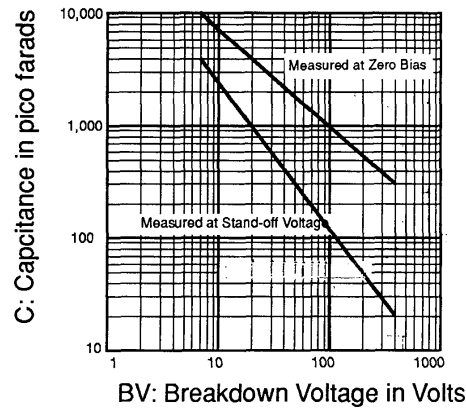
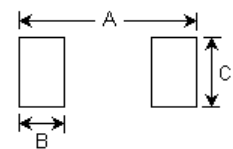


FIGURE 3 - Derating Curve



**FIGURE 4
Typical Capacitance vs.
Breakdown Voltage**

PAD LAYOUT



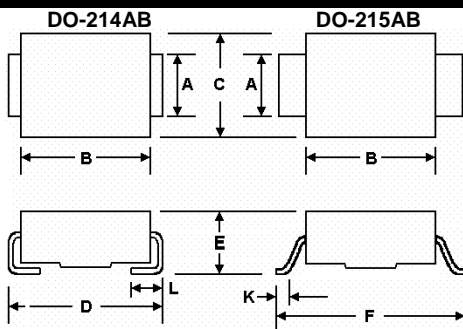
SMCJ

	INCHES	mm
A	.390	9.90
B	.110	2.79
C	.150	3.81

SMCG

	INCHES	mm
A	0.510	12.95
B	0.110	2.79
C	0.150	3.81

PACKAGE DIMENSIONS



DIMENSIONS IN INCHES								
	A	B	C	D	E	F	K	L
MIN	.115	.260	.220	.305	.077	.380	.025	.030
MAX	.121	.280	.245	.320	.104	.400	.040	.060
DIMENSIONS IN MILLIMETERS								
	A	B	C	D	E	F	K	L
MIN	2.92	6.60	5.59	7.75	1.95	9.65	0.635	.760
MAX	3.07	7.11	6.22	8.13	2.65	10.16	1.016	1.520

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