

## Surface Mount TRANSZORB® Transient Voltage Suppressors


**SMCG (DO-215AB)**


### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$V_{BR}$ unidirectional	6.40 V to 231 V
$V_{BR}$ bidirectional	6.40 V to 231 V
$V_{WM}$	5.0 V to 188 V
$P_{PPM}$	1500 W
$P_D$	6.5 W
$I_{FSM}$ (unidirectional only)	200 A
$T_J$ max.	150 °C
Polarity	Unidirectional, bidirectional
Package	SMCG (DO-215AB)

### DEVICES FOR BIDIRECTION APPLICATIONS

For bidirectional devices use CA suffix (e.g. SMCG188CA).  
Electrical characteristics apply in both directions.

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)(2)</sup>	$P_{PPM}$	1500	W
Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$I_{PPM}$	See next table	A
Peak forward surge current 8.3 ms single half sine-wave uni-directional only <sup>(2)</sup>	$I_{FSM}$	200	A
Power dissipation on infinite heatsink, $T_A = 50\text{ °C}$	$P_D$	6.5	W
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150	°C

#### Notes

- (1) Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25\text{ °C}$  per fig. 2
- (2) Mounted on 0.31" x 0.31" (8.0 mm x 8.0 mm) copper pads to each terminal

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in unidirectional and bidirectional
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

 AUTOMOTIVE  
GRADE

**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
Available

### TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication.

### MECHANICAL DATA

**Case:** SMCG (DO-215AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS compliant, industrial grade

Base P/N-M3 - halogen-free, RoHS compliant, and industrial grade

Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

Base P/NHM3 - halogen-free, RoHS compliant, and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** for unidirectional types the band denotes cathode end, no marking on bidirectional types



ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C unless otherwise noted)

Table with 10 columns: DEVICE TYPE MODIFIED GULL WING, DEVICE MARKING CODE (UNI, BI), BREAKDOWN VOLTAGE VBR AT IT (MIN., MAX.), TEST CURRENT IT (mA), STAND-OFF VOLTAGE VWM (V), MAXIMUM REVERSE LEAKAGE AT VWM ID (uA), MAXIMUM PULSE SURGE CURRENT IPPM (A), MAXIMUM CLAMPING VOLTAGE AT IPPM VC (V). Rows include device types from (+)SMCG5.0A to SMCG188A.

Notes

- (1) Pulse test: tp ≤ 50 ms
(2) Surge current waveform per fig. 3 and derate per fig. 2
(3) For bidirectional types having VWM of 10 V and less, the ID limit is doubled
(4) All terms and symbols are consistent with ANSI/IEEE C62.35
(5) For the bidirectional SMCG5.0CA, the maximum VBR is 7.25 V
(6) VF = 3.5 V at IF = 100 A (unidirectional only)
(+) Underwriters laboratory recognition for the classification of protectors (QVGG2) under the UL standard for safety 497B and file number E136766 for both unidirectional and bidirectional devices



THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient <sup>(1)</sup>	R <sub>θJA</sub>	75	°C/W
Typical thermal resistance, junction to lead	R <sub>θJL</sub>	15	

**Note**

<sup>(1)</sup> Measured on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMCG5.0A-E3/57T	0.211	57T	850	7" diameter plastic tape and reel
SMCG5.0A-M3/57T	0.211	57T	850	7" diameter plastic tape and reel
SMCG5.0A-E3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel
SMCG5.0A-M3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel
SMCG5.0AHE3/57T <sup>(1)</sup>	0.211	57T	850	7" diameter plastic tape and reel
SMCG5.0AHM3/57T <sup>(1)</sup>	0.211	57T	850	7" diameter plastic tape and reel
SMCG5.0AHE3/9AT <sup>(1)</sup>	0.211	9AT	3500	13" diameter plastic tape and reel
SMCG5.0AHM3/9AT <sup>(1)</sup>	0.211	9AT	3500	13" diameter plastic tape and reel

**Note**

<sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

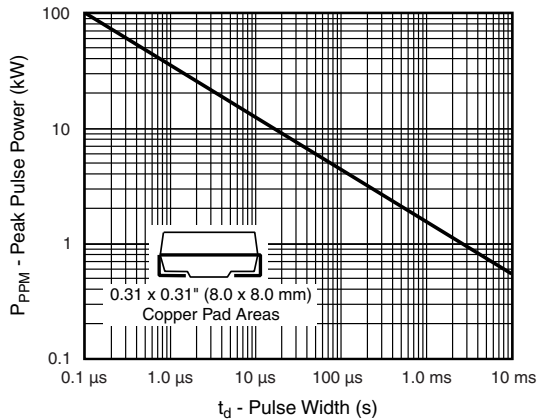


Fig. 1 - Peak Pulse Power Rating Curve

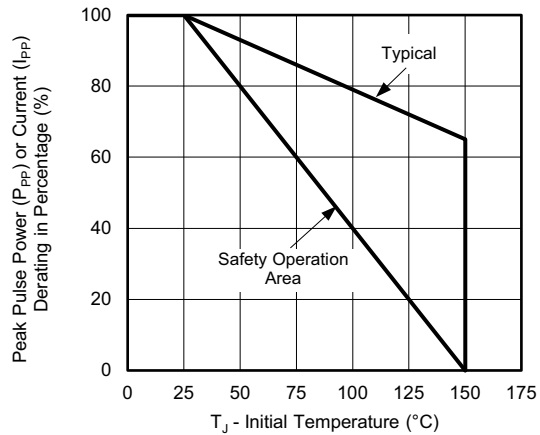


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

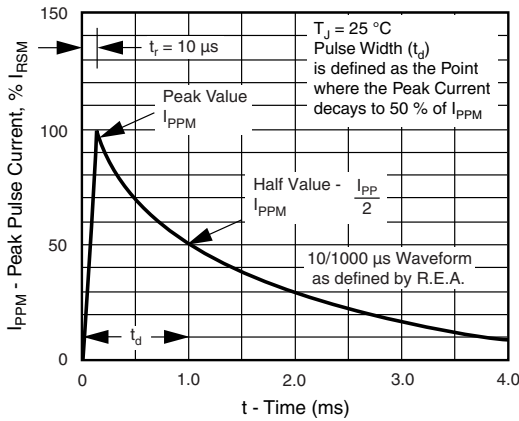


Fig. 3 - Pulse Waveform

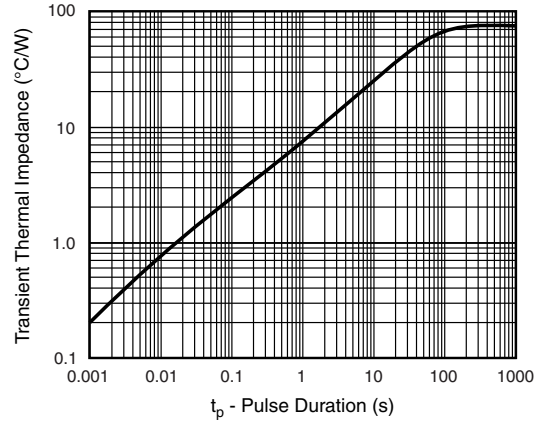


Fig. 5 - Typical Transient Thermal Impedance

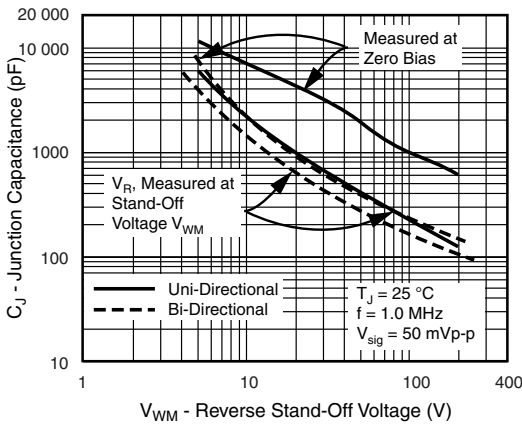


Fig. 4 - Typical Junction Capacitance Uni-Directional

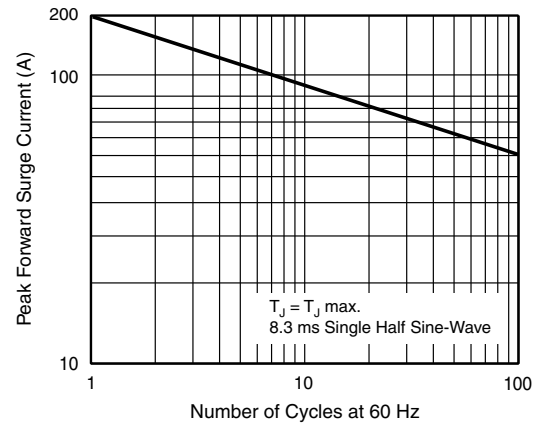
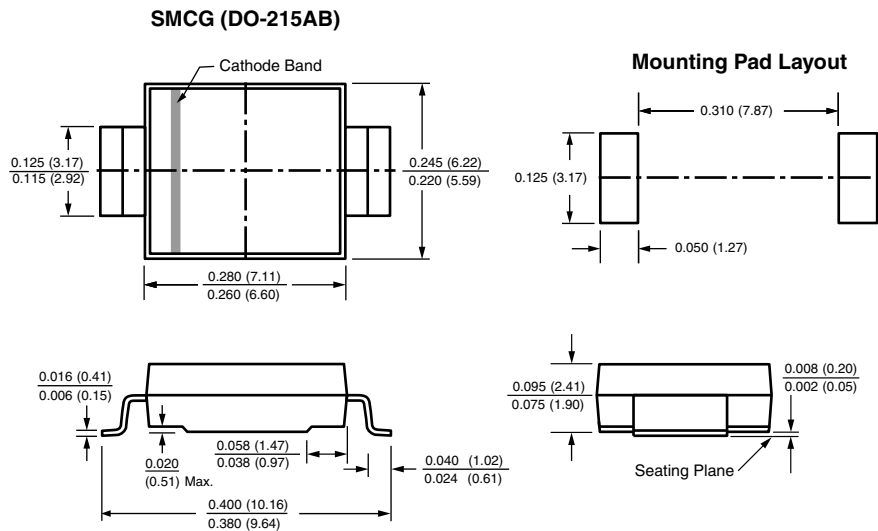


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current Unidirectional Use Only

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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