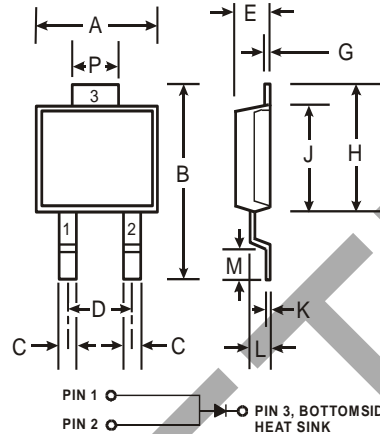


### Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low Forward Voltage Drop
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 2)**

### Mechanical Data

- Case: POWERMITE®3
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish). (e3)
- Polarity: See Diagram
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.072 grams (approximate)



POWERMITE®3		
Dim	Min	Max
A	4.03	4.09
B	6.40	6.61
C	.889 NOM	
D	1.83 NOM	
E	1.10	1.14
G	.178 NOM	
H	5.01	5.17
J	4.37	4.43
K	.178 NOM	
L	.71	.77
M	.36	.46
P	1.73	1.83
<b>All Dimensions in mm</b>		

Note: Pins 1 & 2 must be electrically connected at the printed circuit board.

### Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	40	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	28	V
Average Rectified Output Current (see also Figure 5)	I <sub>O</sub>	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load @ T <sub>C</sub> = 90°C	I <sub>FSM</sub>	100	A
Typical Thermal Resistance Junction to Soldering Point	R <sub>θJS</sub>	3.2	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 1)	V <sub>(BR)R</sub>	40	—	—	V	I <sub>R</sub> = 0.5mA
Forward Voltage	V <sub>FM</sub>	—	0.48	0.52	V	I <sub>F</sub> = 5A, T <sub>S</sub> = 25°C
		—	0.45	—		I <sub>F</sub> = 5A, T <sub>S</sub> = 125°C
		—	0.59	—		I <sub>F</sub> = 10A, T <sub>S</sub> = 25°C
		—	0.56	—		I <sub>F</sub> = 10A, T <sub>S</sub> = 125°C
Reverse Current (Note 1)	I <sub>RM</sub>	—	0.05	0.5	mA	T <sub>S</sub> = 25°C, V <sub>R</sub> = 40V T <sub>S</sub> = 100°C, V <sub>R</sub> = 40V
Total Capacitance	C <sub>T</sub>	—	250	—	pF	f = 1.0MHz, V <sub>R</sub> = 4.0V DC

- Notes:
1. Short duration pulse test used to minimize self-heating effect.
  2. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.

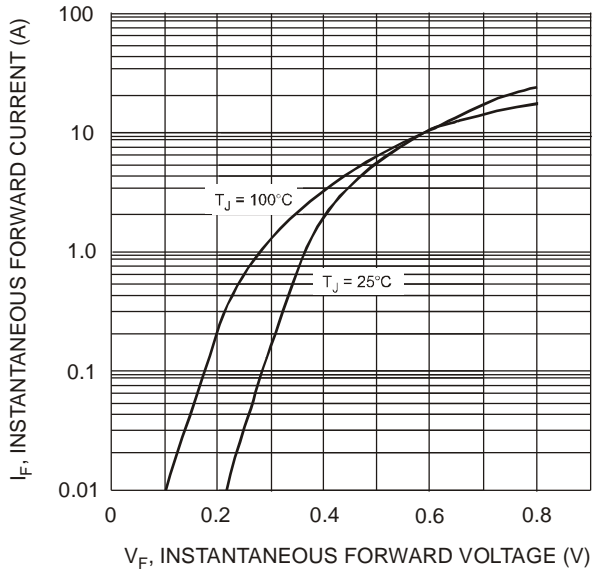


Fig. 1 Typical Forward Characteristics

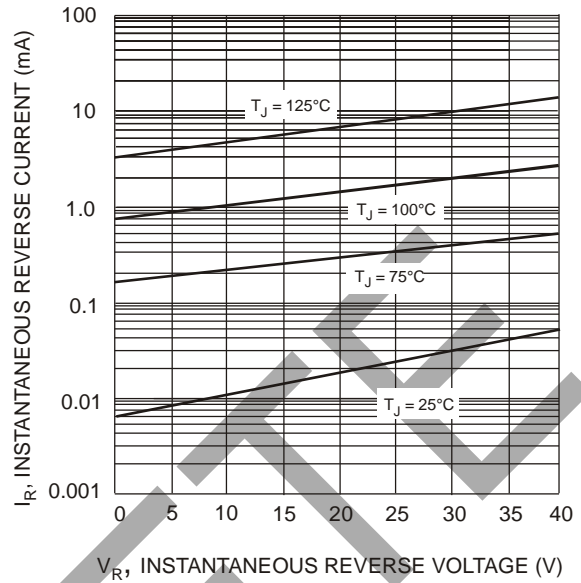


Fig. 2 Typical Reverse Characteristics

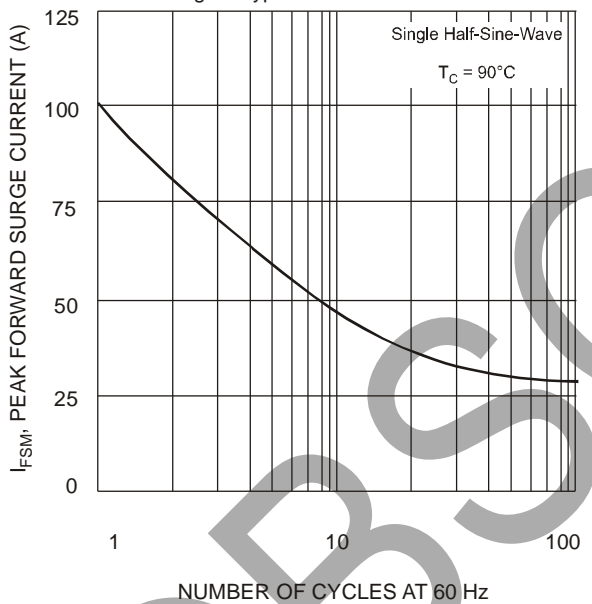


Fig. 3 Max Non-Repetitive Peak Forward Surge Current

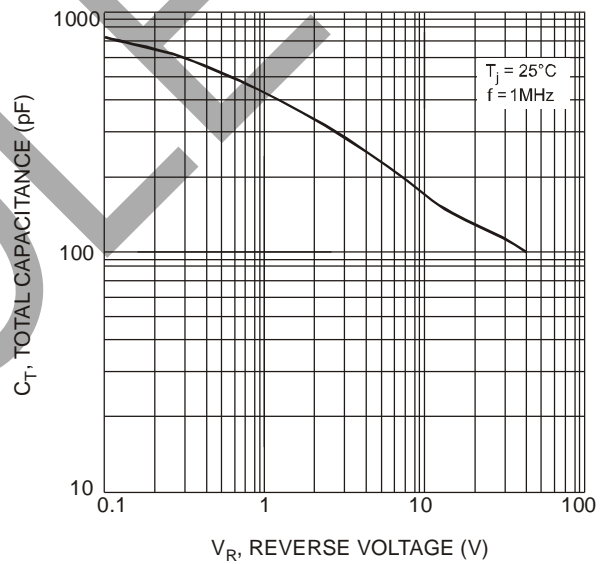


Fig. 4 Typical Total Capacitance vs. Reverse Voltage

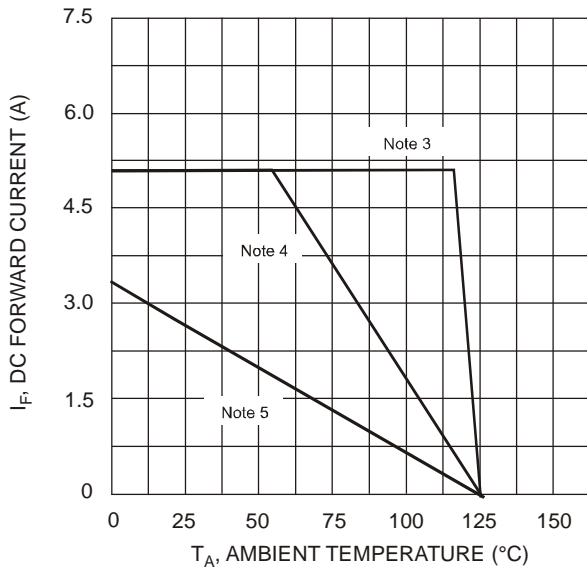


Fig. 5 DC Forward Current Derating

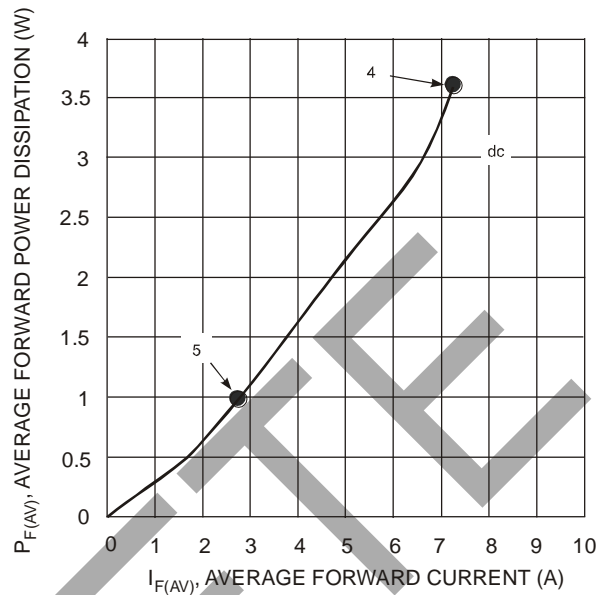


Fig. 6 Forward Power Dissipation

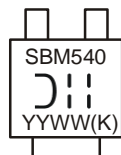
- Notes:
3.  $T_A = T_{SOLDERING\ POINT}$ ,  $R_{\theta JS} = 3.2^{\circ}C/W$ ,  $R_{\theta SA} = 0^{\circ}C/W$ .
  4. Device mounted on GETEK substrate, 2"x 2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0".  $R_{\theta JA}$  in range of 15-30°C/W.
  5. Device mounted on FR-4 substrate, 2"x 2", 2 oz. copper, single-sided, pad layout as per Diodes Inc. suggested pad layout document AP02001 which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.  $R_{\theta JA}$  in range of 60-75°C/W.

### Ordering Information (Note 6)

Device	Packaging	Shipping
SBM540-13-F	POWERMITE <sup>®</sup> 3	5000/Tape & Reel

Notes: 6. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

### Marking Information



SBM540 = Product type marking code  
 J11 = Manufacturers' code marking  
 YYWW = Date code marking  
 YY = Last digit of year (ex: 02 for 2002)  
 WW = Week code (01 to 53)  
 (K) = Factory Designator

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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