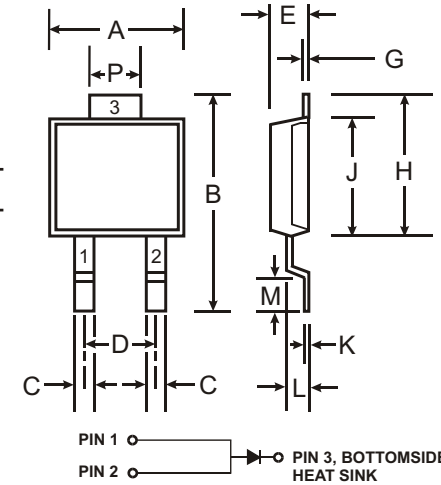


**Features**

- 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-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish). **(e3)**
- Polarity: See Diagram
- Marking: Type Number, See also Sheet 3
- Ordering Information, See Sheet 3
- Weight: 0.072 grams (approximate)



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

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>		

**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 Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	40	V
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>JS</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 0.45 0.59 0.56	0.52	V	I <sub>F</sub> = 5A, T <sub>S</sub> = 25 C I <sub>F</sub> = 5A, T <sub>S</sub> = 125 C I <sub>F</sub> = 10A, T <sub>S</sub> = 25 C I <sub>F</sub> = 10A, T <sub>S</sub> = 125 C
Reverse Current (Note 1)	I <sub>RM</sub>		0.05 2.5	0.5 20	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 test pulse used to minimize self-heating effect.  
2. RoHS revision 13.2.2003. High Temperature Solder Exemption Applied, see EU Directive Annex Note 7.

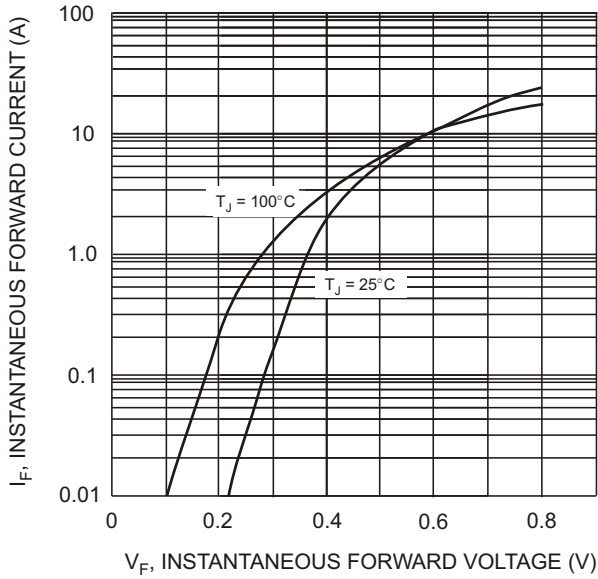


Fig. 1 Typical Forward Characteristics

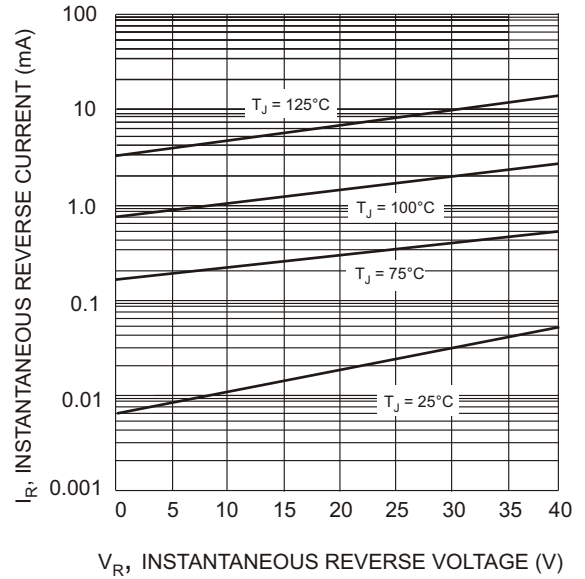


Fig. 2 Typical Reverse Characteristics

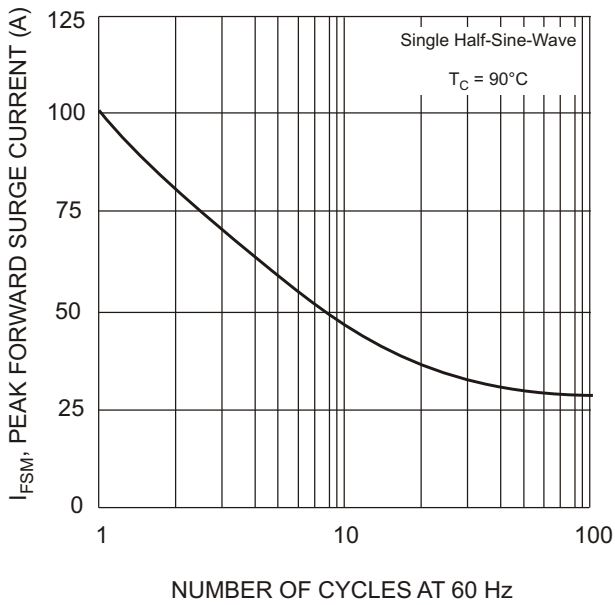


Fig. 3 Max Non-Repetitive Peak Forward Surge Current

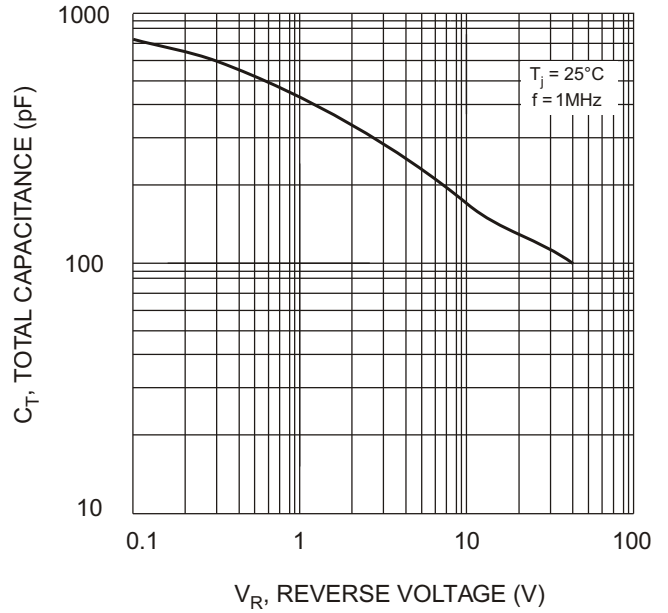


Fig. 4 Typical Total Capacitance vs. Reverse Voltage

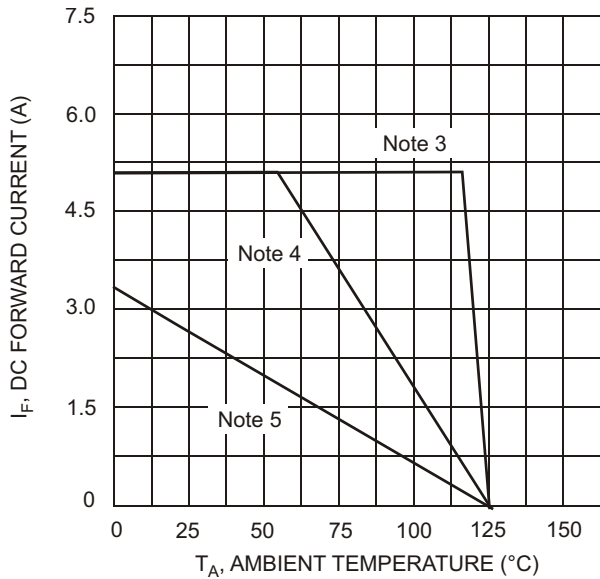


Fig. 5 DC Forward Current Derating

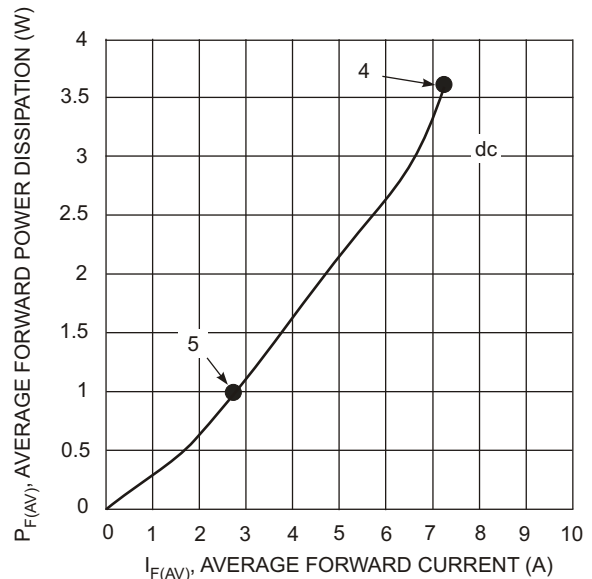


Fig. 6 Forward Power Dissipation

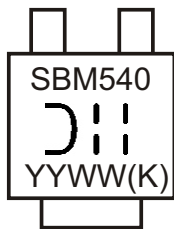
- Notes:
- $T_A = T_{\text{SOLDERING POINT}}$ ,  $R_{\text{JS}} = 3.2 \text{ C/W}$ ,  $R_{\text{SA}} = 0 \text{ C/W}$ .
  - Device mounted on GETEK substrate, 2"x2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0".  $R_{\text{JA}}$  in range of 15-30°C/W.
  - Device mounted on FR-4 substrate, 2"x2", 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>.  $R_{\text{JA}}$  in range of 60-75°C/W.

### Ordering Information (Note 6)

Device	Packaging	Shipping
SBM540-13-F	POWERMITE 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  
 DII = Manufacturers' code marking  
 YYWW = Date code marking  
 YY = Last digit of year ex: 02 for 2002  
 WW = Week code 01 to 52  
 (K) = Factory Designator

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