SBM1040

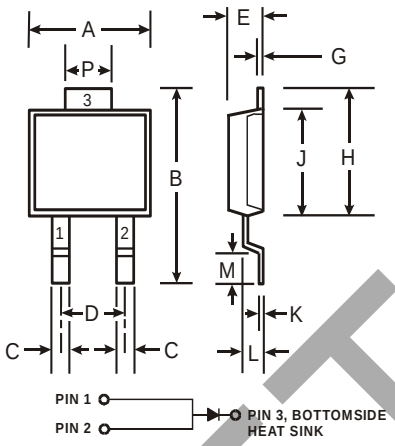
10A LOW V_F SCHOTTKY BARRIER RECTIFIER
POWERMITE®3

Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- High Surge Capability
- High Max Junction Temperature Rating
- Low Forward Voltage Drop
- Very Low Leakage Current
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Available in Lead Free Finish, RoHS Compliant Version (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
- Also available in Lead Free Plating (Matte Tin Finish) Please see Ordering Information, Note 12, on Page 3
- 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
All Dimensions in mm		

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

Maximum Ratings @T_A = 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_{RRM} V_{RWM} V_R	40	V
RMS Reverse Voltage	$V_{R(RMS)}$	28	V
Average Rectified Output Current (see also Figure 4)	I_O	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load @ T_C = 88°C	I_{FSM}	150	A
Typical Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	2.5	°C/W
Operating Temperature Range	T_J	-65 to +150	°C
Storage Temperature Range	T_{STG}	-65 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 1)	$V_{(BR)R}$	40	—	—	V	I_R = 1mA
Forward Voltage	V_{FM}	— — —	0.45 — 0.47	0.49 0.41 0.51	V	I_F = 8A, T_S = 25°C I_F = 8A, T_S = 125°C I_F = 10A, T_S = 25°C
Reverse Current (Note 1)	I_{RM}	— —	0.1 12.5	0.3 25	mA	T_S = 25°C, V_R = 35V T_S = 100°C, V_R = 35V
Total Capacitance	C_T	—	700	—	pF	f = 1.0MHz, V_R = 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.

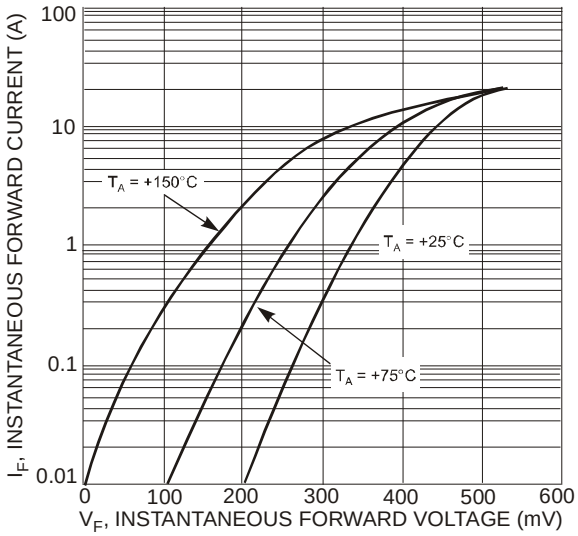


Fig. 1 Typical Forward Characteristics

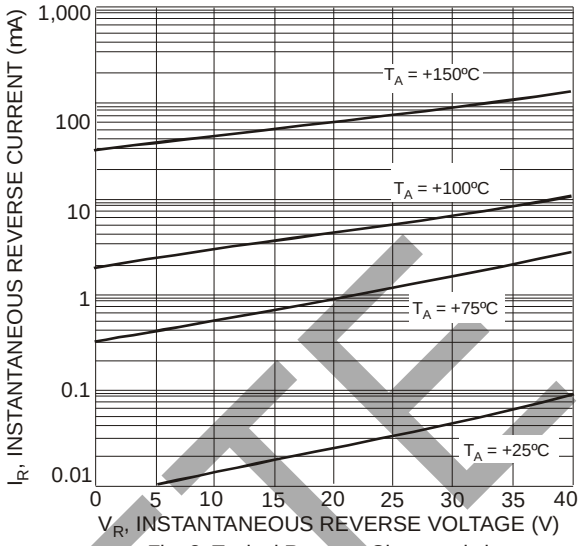


Fig. 2 Typical Reverse Characteristics

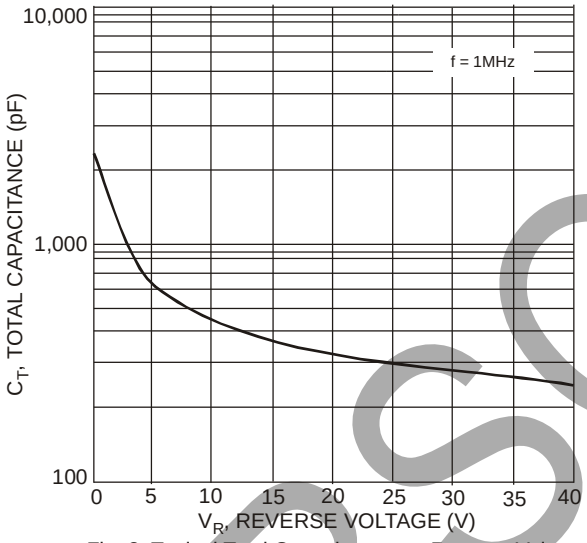


Fig. 3 Typical Total Capacitance vs. Reverse Voltage

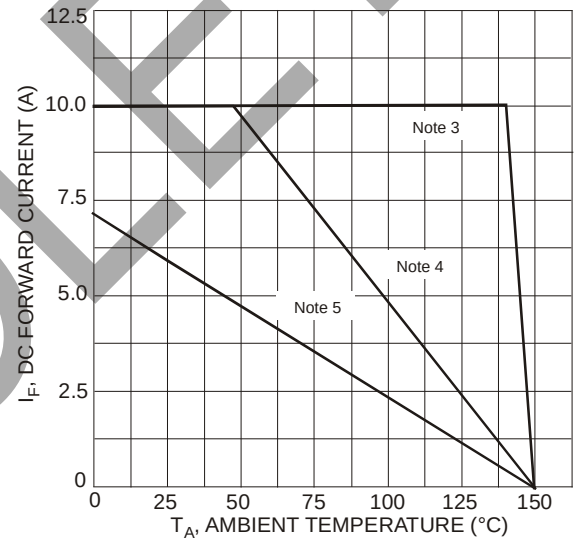


Fig. 4 DC Forward Current Derating

Notes:
3. $T_A = T_{SOLDERING\ POINT}$, $R_{\theta JS}$ = 2.5°C/W, $R_{\theta SA}$ = 0°C/W.
4. 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". $R_{\theta JA}$ in range of 15-30°C/W.
5. 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. $R_{\theta JA}$ in range of 60-75°C/W.

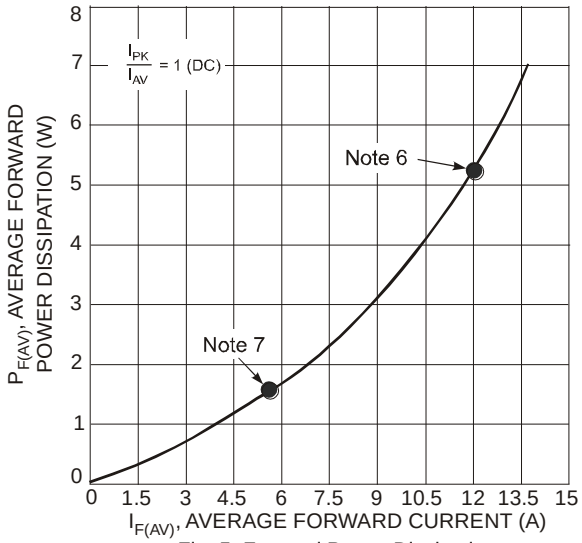


Fig. 5 Forward Power Dissipation

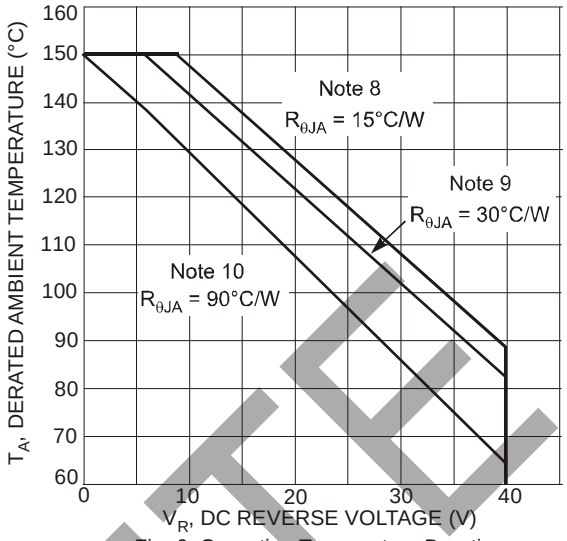


Fig. 6 Operating Temperature Derating

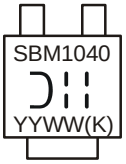
Notes:
6. Maximum power dissipation when device mounted on GETEK substrate, 2"x2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0". $R_{\theta JA}$ in range of 15-30°C/W.
7. Maximum power dissipation when device mounted on FR-4 substrate, 2"x2", 2 oz. 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. $R_{\theta JA}$ in range of 60-75°C/W.
8. $R_{\theta JA}$ = 15°C/W when mounted on 2"x2", single-sided, ceramic board with cathode pad dimensions 0.75"x1.0", anode pad dimensions 0.25"x1.0".
9. $R_{\theta JA}$ = 30°C/W when mounted on 2"x2", single-sided, FR-4 board with cathode pad dimensions 0.5"x1.0", anode pad dimensions 0.5"x1.0", 2 oz. copper pads.
10. $R_{\theta JA}$ = 90°C/W when mounted on 0.5"x0.625", single-sided, FR-4 board with minimum recommended pad layout.

Ordering Information (Note 11)

Device	Packaging	Shipping
SBM1040-13-F	POWERMITE®3	5000/Tape & Reel

Notes:
11. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.
12. For Lead Free Finish/RoHS Compliant version part number, please add "-F" suffix to the part number above. Example: SBM1040-13-F.

Marking Information



SBM1040 = Product type marking code
= Manufacturers' code marking
YYWW = Date code marking
YY = Last two digits of year (ex: 02 for 2002)
WW = Week code (01 to 53)
(K) = Factory designator

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