

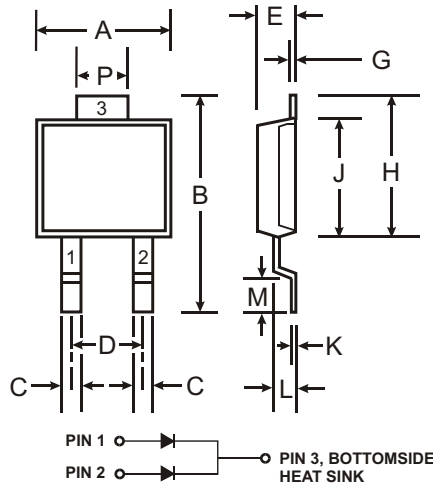
Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low Forward Voltage Drop
- Very Low Reverse Leakage Current
- For Use in Low Voltage, High Frequency Inverters, OR'ing, and Polarity Protection Applications

Mechanical Data

- Case: POWERMITE®3 Molded Plastic
- Plastic Material: UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking: See Page 4
- Weight: 0.072 grams (approx.)

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POWERMITE®3		
Dim	Min	Max
A	4.03	4.09
B	6.40	6.61
C	.864	.914
D	1.83 NOM	
E	1.10	1.14
G	.173	.203
H	5.01	5.17
J	4.37	4.43
K	.173	.203
L	.71	.77
M	.36	.46
P	1.73	1.83
All Dimensions in mm		

Maximum Ratings @ T_A = 25°C unless otherwise specified

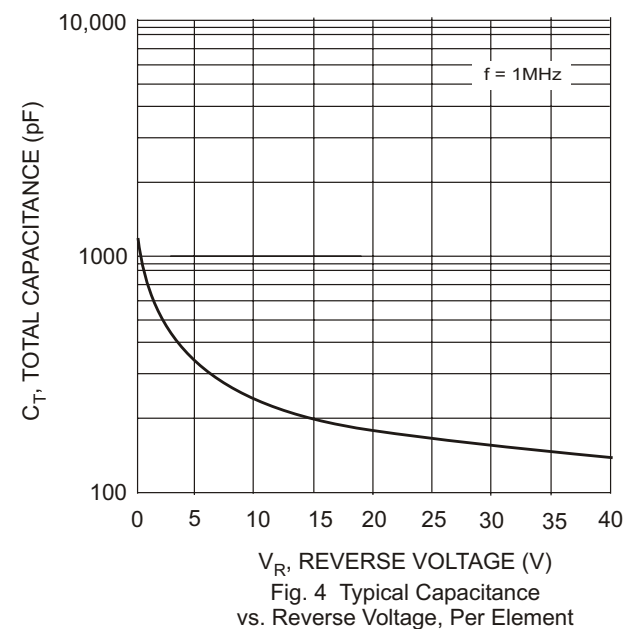
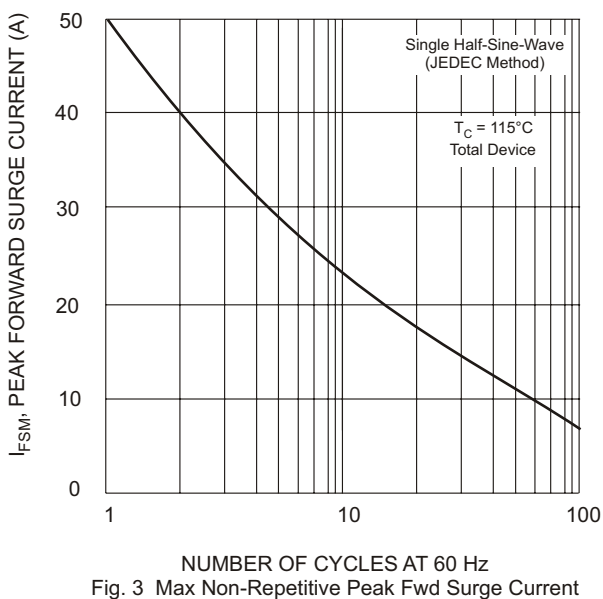
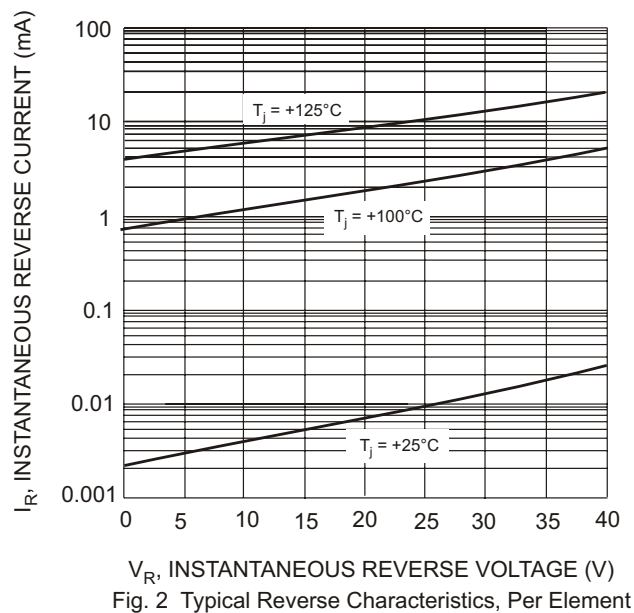
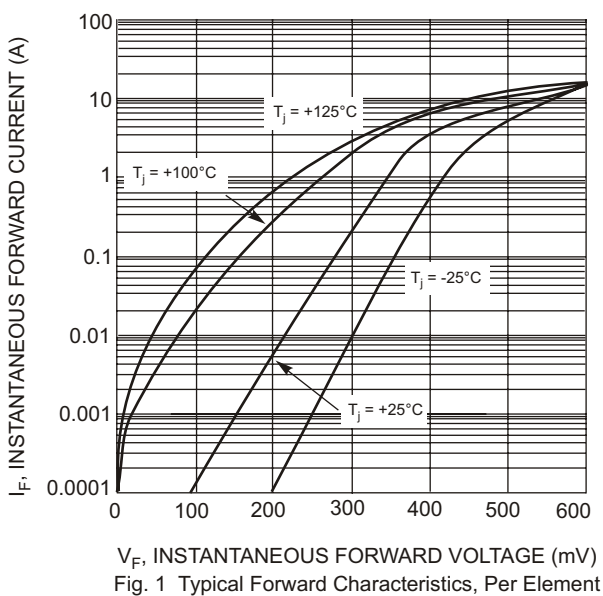
Single phase, half wave, 60Hz, resistive or inductive load.
 For capacitive load, derate current by 20%.

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 (Also see Figure 5)	I _O	5	A
		10	
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load Per Package (JEDEC Method), total device T _C = 115°C	I _{FSM}	50	A
Typical Thermal Resistance Junction to Soldering Point Per Element	R _{θJS}	2.5	°C/W
Operating Temperature Range	T _j	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 1)	$V_{(BR)R}$	40	—	—	V	$I_R = 500\mu\text{A}$
Forward Voltage (Note 1) Per Element	V_F	—	0.45 0.39 0.53 0.50	0.48 0.42 0.575 0.55	V	$I_F = 5\text{A}, T_j = 25^\circ\text{C}$ $I_F = 5\text{A}, T_j = 100^\circ\text{C}$ $I_F = 10\text{A}, T_j = 25^\circ\text{C}$ $I_F = 10\text{A}, T_j = 100^\circ\text{C}$
Reverse Current (Note 1) Per Element	I_R	—	35 4 10 2	150 10 80 5	μA mA μA mA	$V_R = 35\text{V}, T_j = 25^\circ\text{C}$ $V_R = 35\text{V}, T_j = 100^\circ\text{C}$ $V_R = 17.5\text{V}, T_j = 25^\circ\text{C}$ $V_R = 17.5\text{V}, T_j = 100^\circ\text{C}$
Total Capacitance Per Element	C_T	—	375	—	pF	$f = 1.0\text{MHz}, V_R = 4.0\text{V DC}$

Notes: 1. Short duration test pulse used to minimize self-heating effect.



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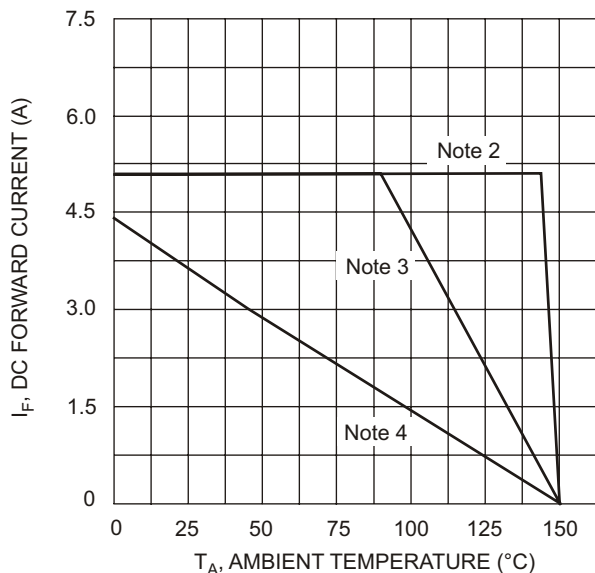


Fig. 5 DC Forward Current Derating, Per Element

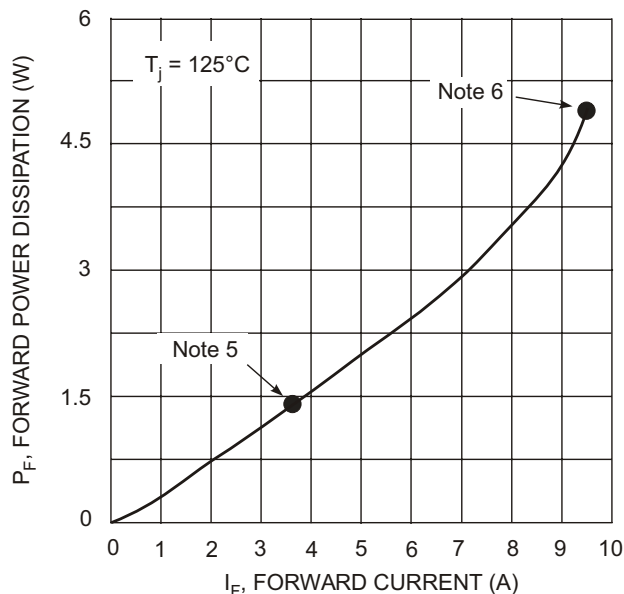


Fig. 6 Forward Power Dissipation, Per Element

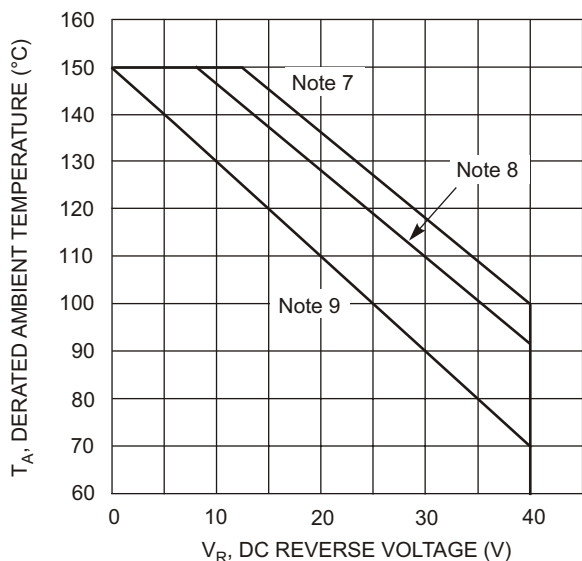


Fig. 7 Operating Temperature Derating, Per Element

- Notes:
- $T_A = T_{\text{SOLDERING POINT}}$, $R_{\theta JS} = 2.5^\circ\text{C/W}$, $R_{\theta SA} = 0^\circ\text{C/W}$.
 - 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". $R_{\theta JA}$ in range of 25-30°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>. $R_{\theta JA}$ in range of 95-100°C/W.
 - Maximum power dissipation when the device is mounted in accordance to the conditions described in Note 4.
 - Maximum power dissipation when the device is mounted in accordance to the conditions described in Note 3.
 - $R_{\theta JA} = 10\text{-}15^\circ\text{C/W}$ when mounted on 2"x2", single-sided, ceramic board with cathode pad dimensions 0.75"x1.0", anode pad dimensions 0.25"x1.0".
 - $R_{\theta JA} = 20\text{-}25^\circ\text{C/W}$ 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.
 - $R_{\theta JA} = 60\text{-}65^\circ\text{C/W}$ when mounted on 0.5"x0.625", single-sided, FR-4 board with minimum recommended pad layout.

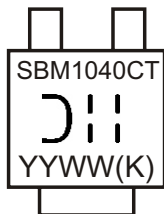
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Ordering Information (Note 10)

Device	Packaging	Shipping
SBM1040CT-13	POWERMITE®3	5000/Tape & Reel

Notes: 10. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



SBM1040CT = Product type marking code
 D||| = Manufacturers' code marking
 YYWW = Date code marking
 YY = Last digit of year ex: 2 for 2002
 WW = Week code 01 to 52
 (K) = Factory designator

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