

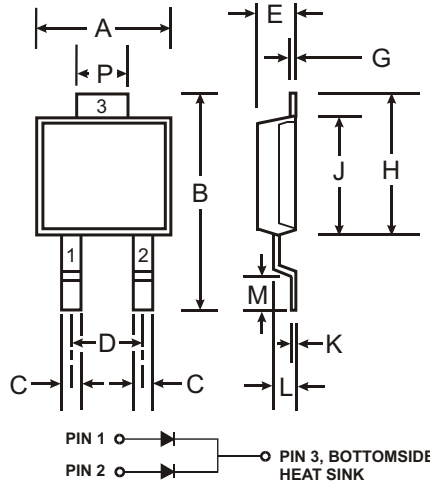
## Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- High Surge Capability
- Very Low Forward Voltage Drop
- For Use in Low Voltage, High Frequency Inverters, OR'ing, and Polarity Protection Applications
- Plastic Material: UL Flammability Classification Rating 94V-0

## Mechanical Data

- Case: POWERMITE®3 Molded Plastic
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking: See Sheet 2
- 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	.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		

## 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 10	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load Per Package (JEDEC Method), total device	I <sub>FSM</sub>	50	A
Typical Thermal Resistance Junction to Soldering Point Per Element	R <sub>θJS</sub>	2.5	°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** @  $T_A = 25^\circ\text{C}$  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	$I_F = 5\text{A}, T_j = 25^\circ\text{C}$ $I_F = 5\text{A}, T_j = 100^\circ\text{C}$ $I_F = 10\text{A}, T_j = 25^\circ\text{C}$ $I_F = 10\text{A}, T_j = 100^\circ\text{C}$
Peak Reverse Current (Note 1)	Per Element	$I_R$	—	35 4 10 2	150 10 80 5	$\mu\text{A}$ mA $\mu\text{A}$ 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	$f = 1.0\text{MHz}, V_R = 4.0\text{V DC}$

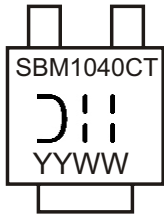
Notes: 1. Short duration test pulse used to minimize self-heating effect.

**Ordering Information** (Note 2)

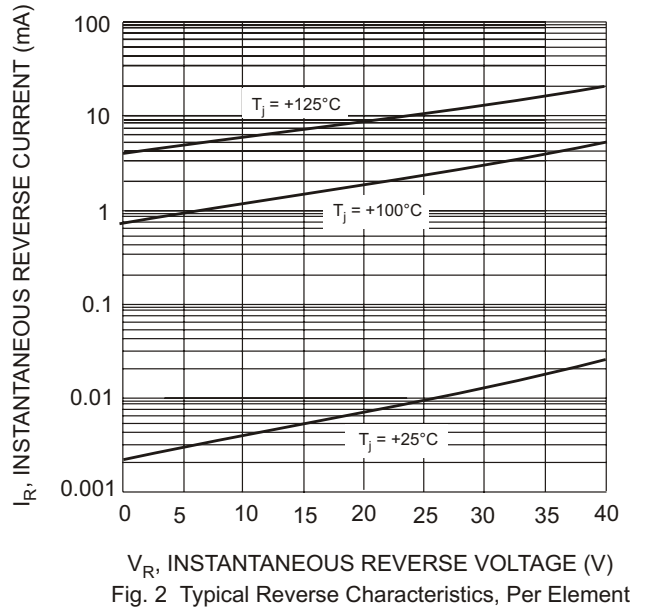
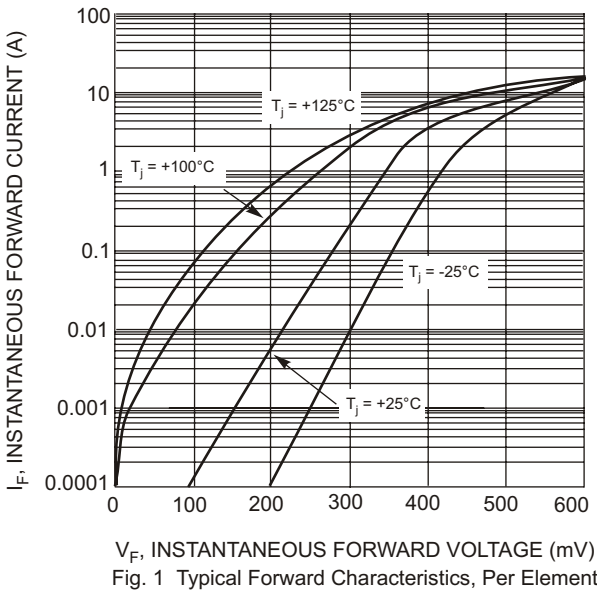
Device	Packaging	Shipping
SBM1040CT-13	POWERMITE®3	5000/Tape & Reel

Notes: 2. 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



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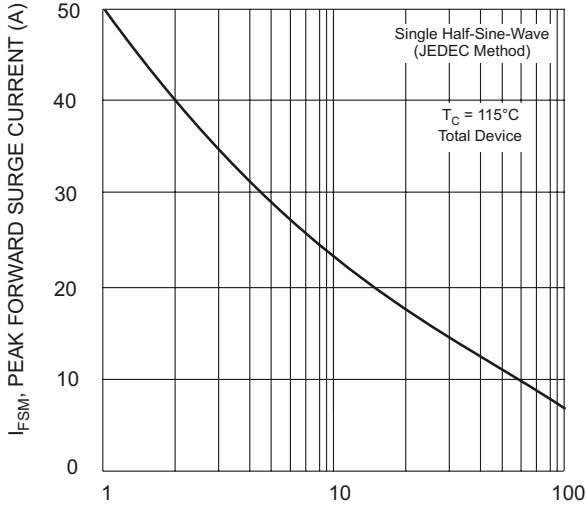


Fig. 3 Max Non-Repetitive Peak Fwd Surge Current

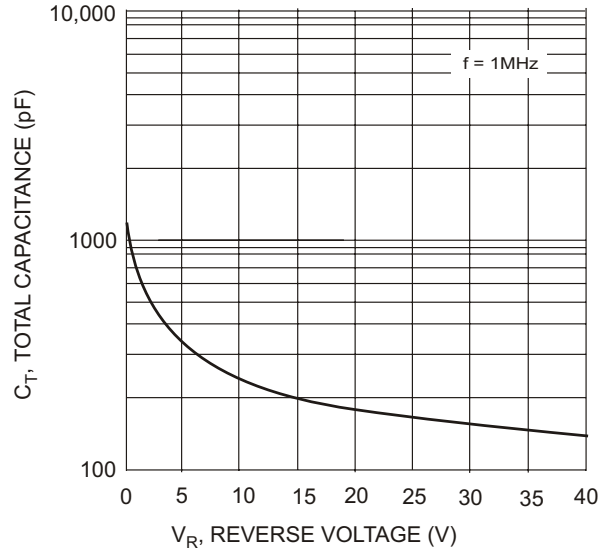


Fig. 4 Typical Capacitance vs. Reverse Voltage, Per Element

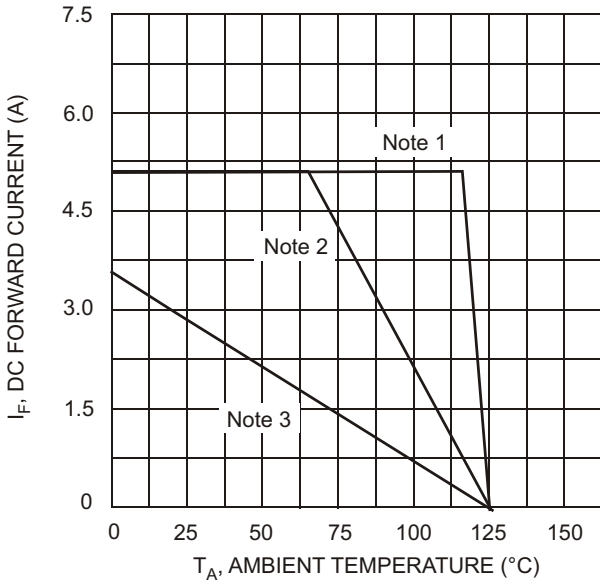


Fig. 5 DC Forward Current Derating

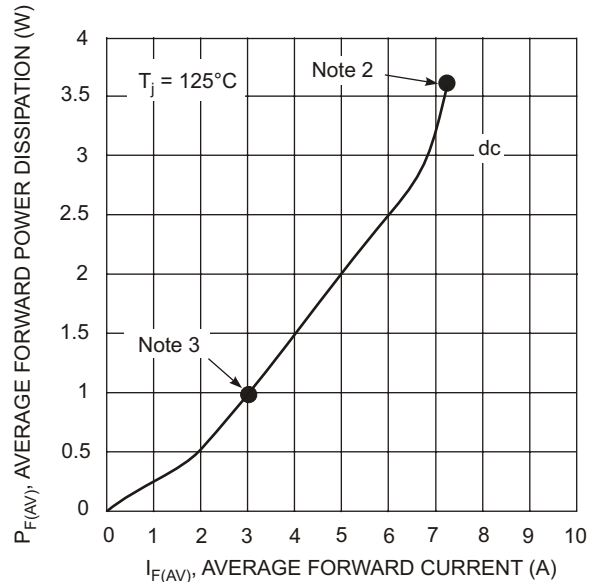


Fig. 6 Forward Power Dissipation

- Notes:
1.  $T_A = T_{\text{SOLDERING POINT}}$ ,  $R_{\theta JS} = 2.5^\circ\text{C/W}$ ,  $R_{\theta SA} = 0^\circ\text{C/W}$ .
  2. 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 20-40°C/W.
  3. 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 85-115°C/W.

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