

MBRB1545CT

SWITCHMODE™ Power Rectifier

D²PAK Surface Mount Power Package

The D²PAK Power Rectifier employs the Schottky Barrier principle with a platinum barrier metal. These state-of-the-art devices have the following features:

Features

- Center-Tap Configuration
- Guardring for Stress Protection
- Low Forward Voltage
- 175°C Operating Junction Temperature
- Epoxy Meets UL 94, V-0 @ 0.125 in
- Short Heatsink Tab Manufactured – Not Sheared
- Similar in Size to the Industry Standard TO220 Package
- Pb-Free Packages are Available

Mechanical Characteristics

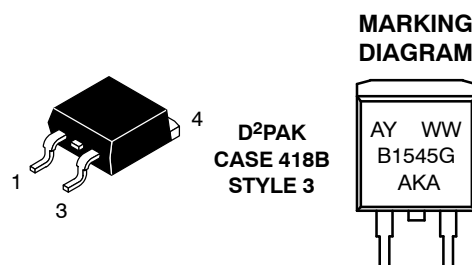
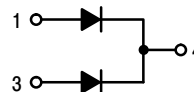
- Case: Epoxy, Molded, Epoxy Meets UL 94, V-0
- Weight: 1.7 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL1 Requirements
- ESD Ratings: Machine Model, C (>400 V)
Human Body Model, 3B (>8000 V)



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SCHOTTKY BARRIER RECTIFIER 15 AMPERES 45 VOLTS



B1545 = Device Code
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package
AKA = Diode Polarity

ORDERING INFORMATION

Device	Package	Shipping†
MBRB1545CT	D ² PAK	50 Units/Rail
MBRB1545CTG	D ² PAK (Pb-Free)	50 Units/Rail
MBRB1545CTT4	D ² PAK	800/Tape & Reel
MBRB1545CTT4G	D ² PAK (Pb-Free)	800 Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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MAXIMUM RATINGS (Per Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	45	V
Average Rectified Forward Current (Rated V_R , $T_C = 167^\circ\text{C}$) Total Device	$I_{F(AV)}$	7.5 15	A
Peak Repetitive Forward Current, (Rated V_R , Square Wave, 20 kHz, $T_C = 166^\circ\text{C}$)	I_{FRM}	15	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	150	A
Peak Repetitive Reverse Surge Current (2.0 μs , 1.0 kHz)	I_{RRM}	1.0	A
Storage Temperature Range	T_{stg}	-65 to +175	$^\circ\text{C}$
Operating Junction Temperature (Note 1)	T_J	-65 to +175	$^\circ\text{C}$
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/ μs

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Thermal Resistance – Junction to Case	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
– Junction to Ambient (Note 2)	$R_{\theta JA}$	50	

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 3) ($i_F = 7.5$ Amps, $T_J = 125^\circ\text{C}$) ($i_F = 15$ Amps, $T_J = 125^\circ\text{C}$) ($i_F = 15$ Amps, $T_J = 25^\circ\text{C}$)	V_F	0.57 0.72 0.84	V
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, $T_J = 125^\circ\text{C}$) (Rated dc Voltage, $T_J = 25^\circ\text{C}$)	i_R	15 0.1	mA

2. When mounted using minimum recommended pad size on FR-4 board.

3. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

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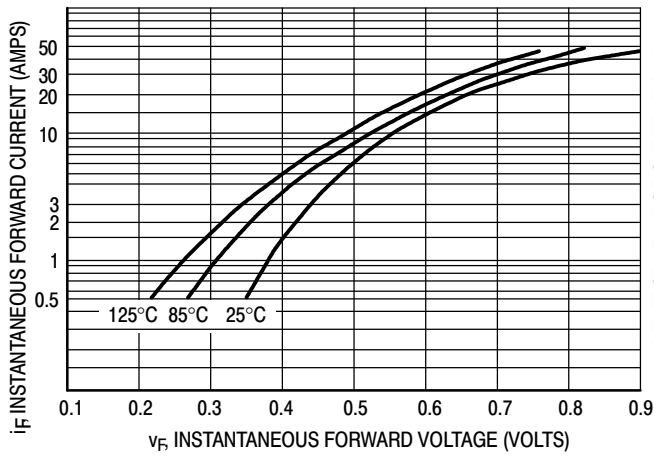


Figure 1. Typical Forward Voltage, Per Leg

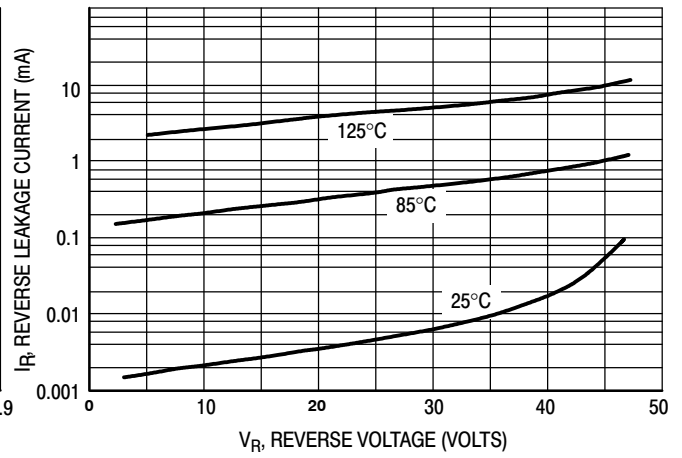


Figure 2. Typical Reverse Current, Per Leg

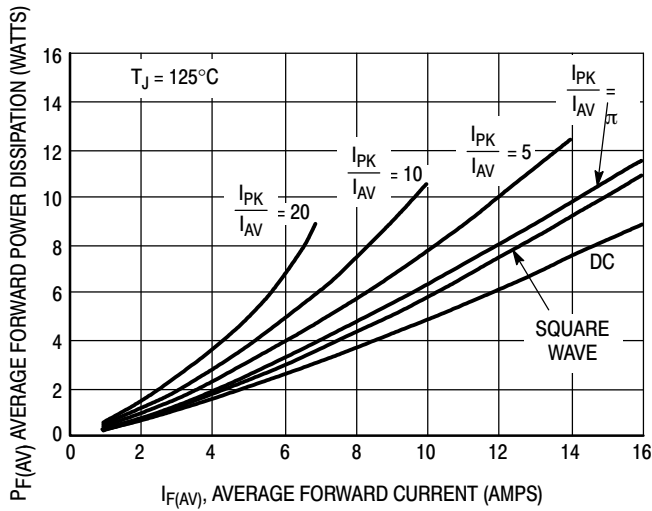


Figure 3. Typical Forward Power Dissipation

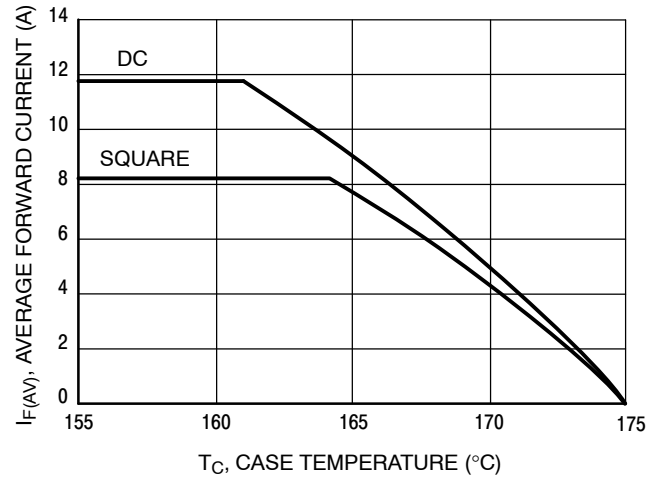
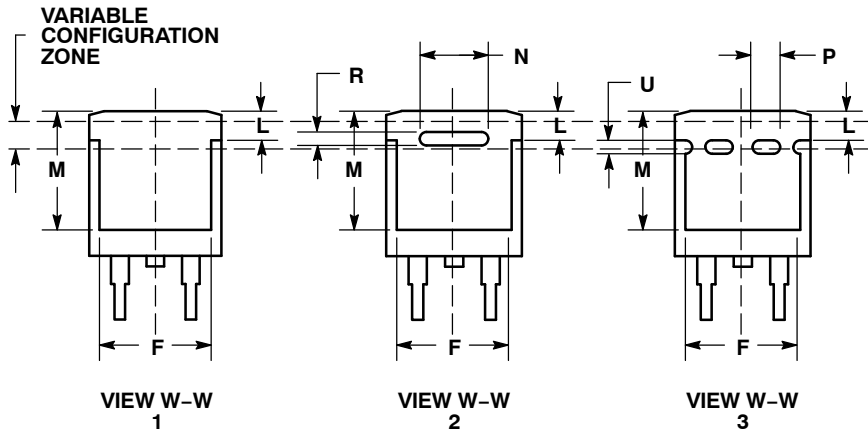
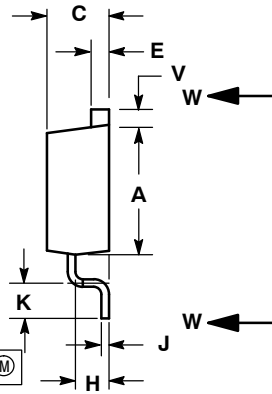
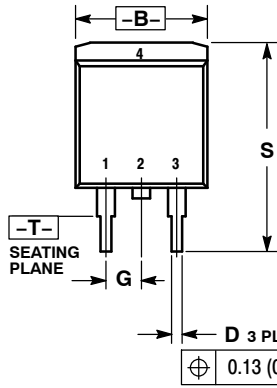


Figure 4. Current Derating, Case, Per Leg

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PACKAGE DIMENSIONS

D²PAK
CASE 418B-04
ISSUE K



NOTES:

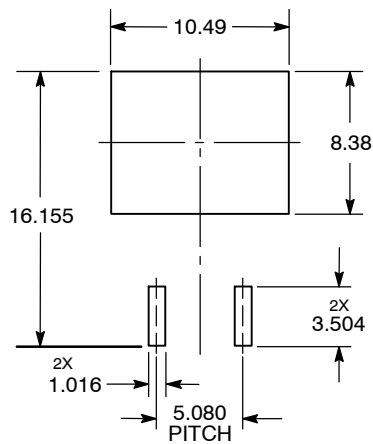
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.340	0.380	8.64	9.65
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
E	0.045	0.055	1.14	1.40
F	0.310	0.350	7.87	8.89
G	0.100 BSC		2.54 BSC	
H	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.090	0.110	2.29	2.79
L	0.052	0.072	1.32	1.83
M	0.280	0.320	7.11	8.13
N	0.197 REF		5.00 REF	
P	0.079 REF		2.00 REF	
R	0.039 REF		0.99 REF	
S	0.575	0.625	14.60	15.88
V	0.045	0.055	1.14	1.40

STYLE 3:


- PIN 1. ANODE
- CATHODE
- ANODE
- CATHODE

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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