MBRF2545CT

Preferred Device

SWITCHMODE™ Schottky Power Rectifier

The SWITCHMODE Power Rectifier employs the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for use as rectifiers in very low-voltage, high-frequency switching power supplies, free wheeling diodes and polarity protection diodes.

Features

- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
- Matched Dual Die Construction
- High Junction Temperature Capability
- High dv/dt Capability
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guardring for Stress Protection
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Electrically Isolated
- No Isolation Hardware Required
- Pb-Free Package is Available*

Mechanical Characteristics:

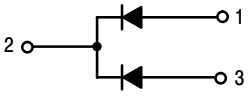
- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

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

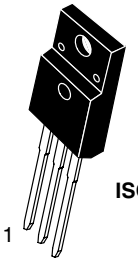
ON Semiconductor®

http://onsemi.com

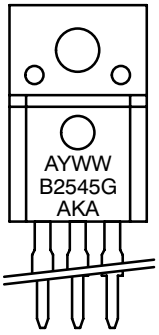
SCHOTTKY BARRIER RECTIFIER 25 AMPERES, 45 VOLTS



MARKING DIAGRAM



ISOLATED TO-220
CASE 221D
STYLE 3



A = Assembly Location
Y = Year
WW = Work Week
B2545 = Device Code
G = Pb-Free Package
AKA = Diode Polarity

ORDERING INFORMATION

Device	Package	Shipping
MBRF2545CT	TO-220	50 Units/Rail
MBRF2545CTG	TO-220 (Pb-Free)	50 Units/Rail

Preferred devices are recommended choices for future use and best overall value.

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 = 125°C Total Device	$I_{F(AV)}$	12.5 25	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz), T_C = 125°C	I_{FRM}	25	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
Operating Junction and Storage Temperature (Note 1)	T_J, T_{stg}	- 65 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10000	V/μs
RMS Isolation Voltage (t = 0.3 second, R.H. ≤ 30%, T_A = 25°C) (Note 2) Per Figure 3	V_{iso1}	4500	V

THERMAL CHARACTERISTICS (Per Leg)

Maximum Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.5	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8″ from Case for 5 Seconds	T_L	260	°C

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 3) (i_F = 12.5 A, T_C = 25°C) (i_F = 12.5 A, T_C = 125°C)	v_F	0.7 0.62	V
Maximum Instantaneous Reverse Current (Note 3) (Rated DC Voltage, T_C = 25°C) (Rated DC Voltage, T_C = 125°C)	i_R	0.2 40	mA

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: $dP_D/dT_J < 1/R_{\theta JA}$.
2. Proper strike and creepage distance must be provided.
3. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

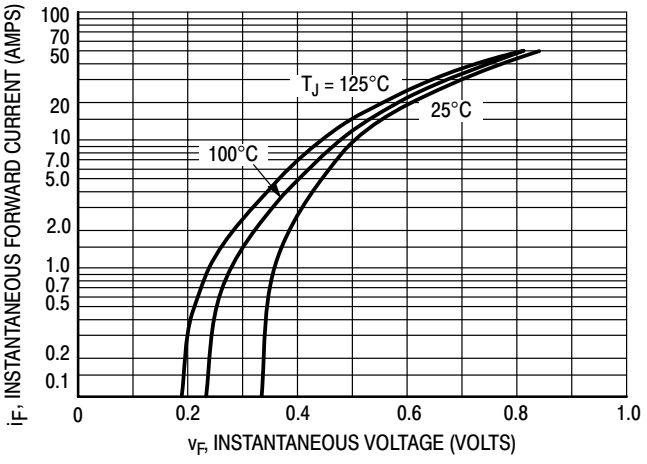


Figure 1. Typical Forward Voltage, Per Leg

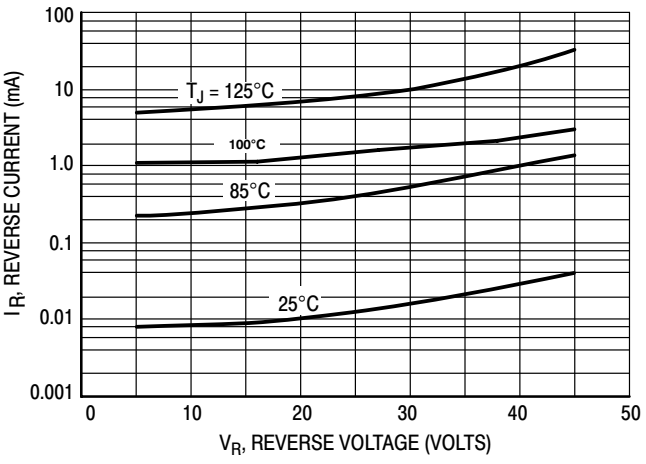


Figure 2. Typical Reverse Current, Per Leg

TEST CONDITIONS FOR ISOLATION TEST*

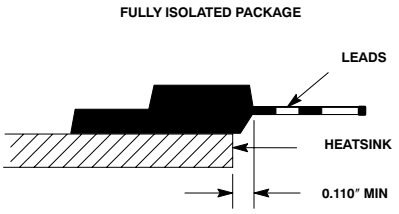
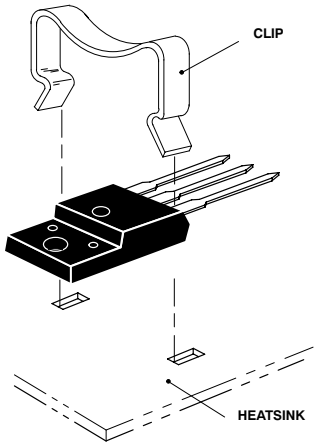


Figure 3. Mounting Position

* Measurement made between leads and heatsink with all leads shorted together.

MOUNTING INFORMATION

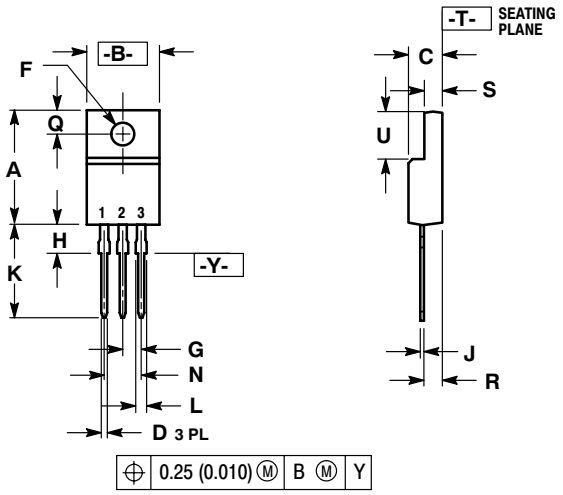


Clip-Mounted

Figure 4. Typical Mounting Technique

PACKAGE DIMENSIONS

TO-220 FULLPAK
CASE 221D-03
ISSUE J



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH
3. 221D-01 THRU 221D-02 OBSOLETE, NEW STANDARD 221D-03.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.617	0.635	15.67	16.12
B	0.392	0.419	9.96	10.63
C	0.177	0.193	4.50	4.90
D	0.024	0.039	0.60	1.00
F	0.116	0.129	2.95	3.28
G	0.100 BSC		2.54 BSC	
H	0.118	0.135	3.00	3.43
J	0.018	0.025	0.45	0.63
K	0.503	0.541	12.78	13.73
L	0.048	0.058	1.23	1.47
N	0.200 BSC		5.08 BSC	
Q	0.122	0.138	3.10	3.50
R	0.099	0.117	2.51	2.96
S	0.092	0.113	2.34	2.87
U	0.239	0.271	6.06	6.88

STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE

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PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
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