Switch-mode Power Rectifiers

MBR735, MBR745

SCHOTTKY BARRIER RECTIFIERS 7.5 AMPERES 35 and 45 VOLTS

Features and Benefits

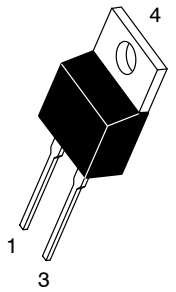
- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- Pb−Free Packages are Available*

Applications

- Power Supply − Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94, V−0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperatures for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Rating: Human Body Model 3B
  Machine Model C



TO−220AC
CASE 221B
STYLE 1



MARKINGDIAGRAM



A	= Assembly Location
Y	= Year
WW	= Work Week
B7x5	= Device Code
x	= 3 or 4
KA	= Diode A Polarity
G	= Pb−Free Package

See detailed ordering, marking and shipping information in the package dimensions section on page 4 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 4.

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

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MAXIMUM RATINGS

Symbol	Rating	Value	Unit
V_{RRM} V_{RWM} V_R	Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage MBR735 MBR745	 35 45	V
$I_{F(AV)}$	Average Rectified Forward Current (T_C = 164°C) Per Device	 7.5	A
I_{FRM}	Peak Repetitive Forward Current, (Square Wave, 20 kHz, T_C = 168°C)	7.5	A
I_{FSM}	Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	150	A
I_{RRM}	Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)	1.0	A
T_{stg}	Storage Temperature Range	−65 to +175	°C
T_J	Operating Junction Temperature (Note 1)	−65 to +175	°C
dv/dt	Voltage Rate of Change (Rated V_R)	10,000	V/μs

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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

Symbol	Characteristic	Value	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction−to−Case	3.0	°C/W
$R_{\theta JA}$	Maximum Thermal Resistance, Junction−to−Ambient	60	°C/W

ELECTRICAL CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Unit
v_F	Maximum Instantaneous Forward Voltage (Note 2) (i_F = 7.5 Amps, T_J = 125°C) (i_F = 15 Amps, T_J = 125°C) (i_F = 15 Amps, T_J = 25°C)	 − − −	 0.48 0.61 0.68	 0.57 0.72 0.84	V
i_R	Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, T_J = 125°C) (Rated dc Voltage, T_J = 25°C)	 − −	 10 0.03	 15 0.1	mA

2. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

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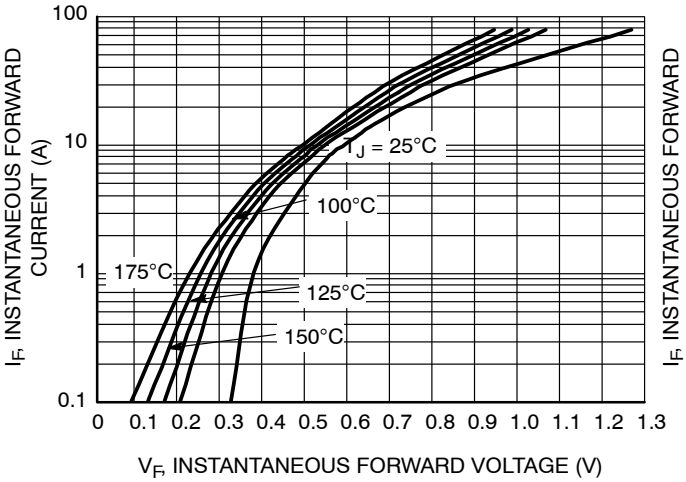


Figure 1. Typical Forward Voltage

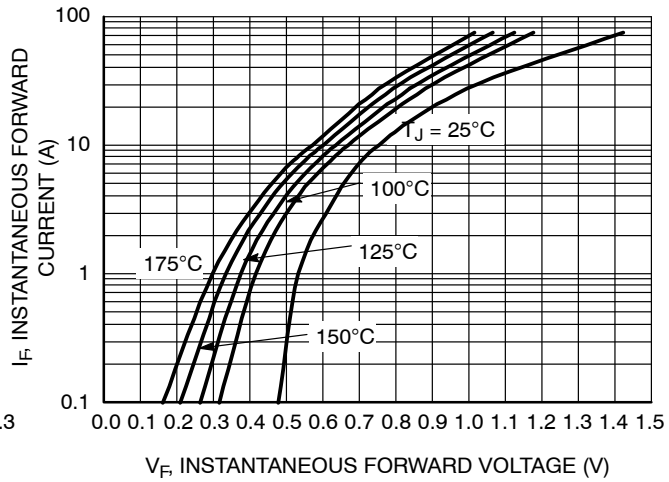


Figure 2. Maximum Forward Voltage

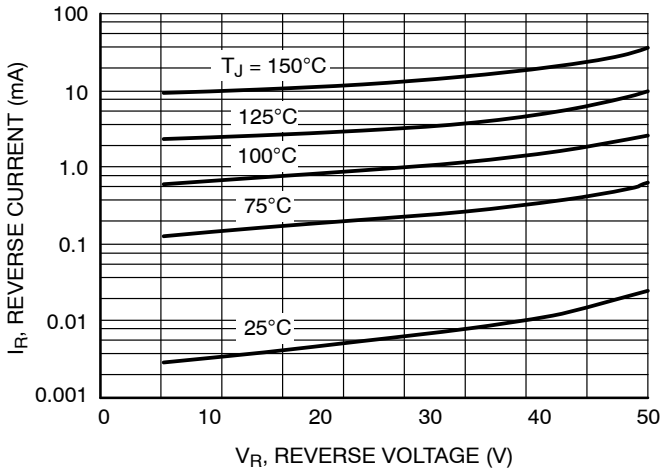


Figure 3. Typical Reverse Current

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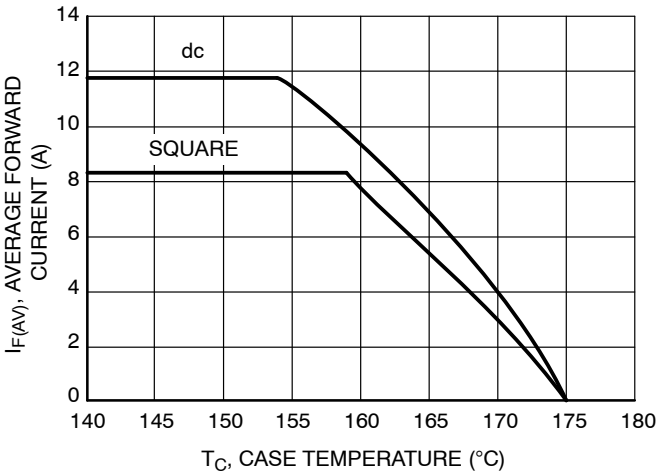


Figure 4. Current Derating, Case, Per Leg

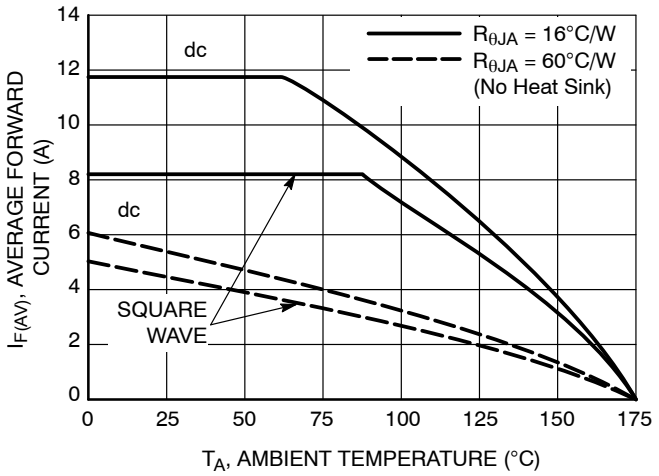


Figure 5. Current Derating, Ambient, Per Leg

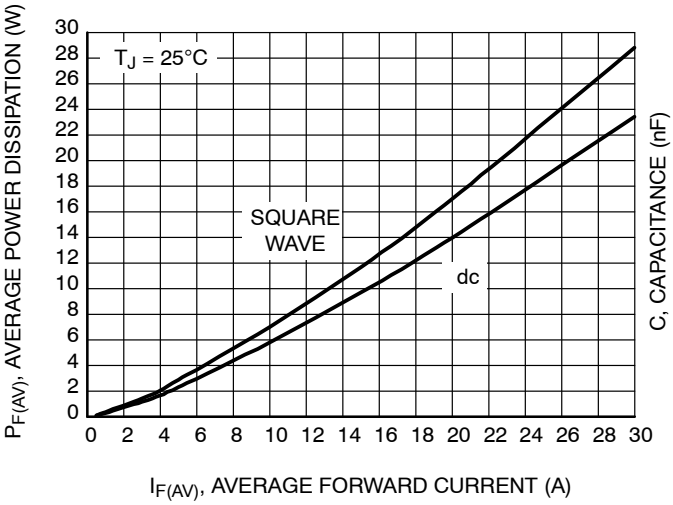


Figure 6. Forward Power Dissipation

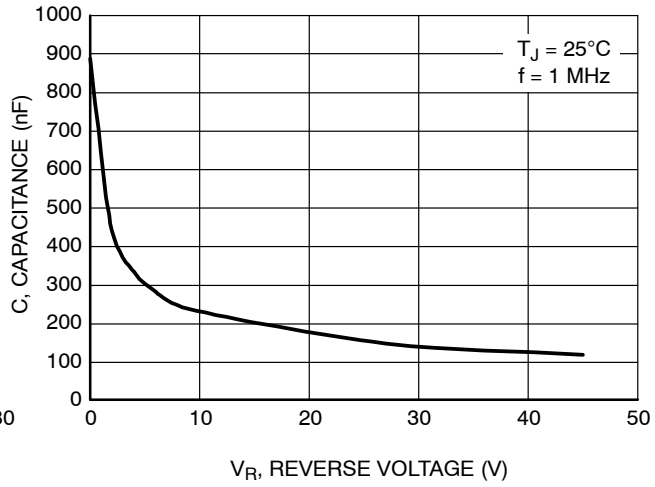


Figure 7. Typical Capacitance

DEVICE ORDERING INFORMATION

Device	Package	Shipping
MBR745G	TO−220 (Pb−Free)	50 Units/Rail

DISCONTINUED (Note 3)

MBR735	TO−220	50 Units/Rail
MBR735G	TO−220 (Pb−Free)	50 Units/Rail
MBR745	TO−220	50 Units/Rail

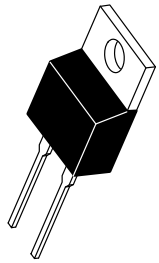
3. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

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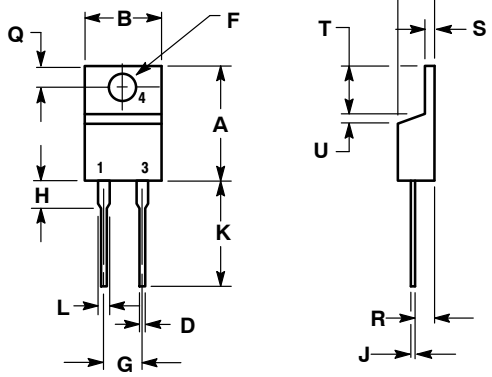
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TO−220, 2−LEAD
CASE 221B−04
ISSUE F

DATE 12 APR 2013



SCALE 1:1



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.595	0.620	15.11	15.75
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.82
D	0.025	0.039	0.64	1.00
F	0.142	0.161	3.61	4.09
G	0.190	0.210	4.83	5.33
H	0.110	0.130	2.79	3.30
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.14	1.52
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.14	1.39
T	0.235	0.255	5.97	6.48
U	0.000	0.050	0.000	1.27

STYLE 1:
PIN 1. CATHODE
2. N/A
3. ANODE
4. CATHODE

STYLE 2:
PIN 1. ANODE
2. N/A
3. CATHODE
4. ANODE

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