Switch-mode Power Rectifiers

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



ON Semiconductor®

http://onsemi.com

SCHOTTKY BARRIER RECTIFIERS 7.5 AMPERES 35 and 45 VOLTS





TO-220AC



MARKING

A = Assembly Location

Y = Year WW = Work Week B7x5 = Device Code x = 3 or 4

CASE 221B

STYLE 1

KA = Diode A PolarityG = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping
MBR735	TO-220	50 Units/Rail
MBR735G	TO-220 (Pb-Free)	50 Units/Rail
MBR745	TO-220	50 Units/Rail
MBR745G	TO-220 (Pb-Free)	50 Units/Rail

^{*}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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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage MBR735 MBR745	V _{RRM} V _{RWM} V _R	35 45	V
Average Rectified Forward Current (T _C = 164°C) Per Device	I _{F(AV)}	7.5	А
Peak Repetitive Forward Current, (Square Wave, 20 kHz, T _C = 168°C)	I _{FRM}	7.5	Α
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I _{FSM}	150	А
Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)	I _{RRM}	1.0	Α
Storage Temperature Range	T _{stg}	-65 to +175	°C
Operating Junction Temperature (Note 1)	TJ	-65 to +175	°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.

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Тур	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 7.5 \text{ Amps}, T_J = 125^{\circ}\text{C}$) ($i_F = 15 \text{ Amps}, T_J = 125^{\circ}\text{C}$) ($i_F = 15 \text{ Amps}, T_J = 25^{\circ}\text{C}$)	v _F	- - -	0.48 0.61 0.68	0.57 0.72 0.84	V
Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, T_J = 125°C) (Rated dc Voltage, T_J = 25°C)	i _R	- -	10 0.03	15 0.1	mA

^{2.} Pulse Test: Pulse Width = 300 $\mu s,$ Duty Cycle \leq 2.0%.

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

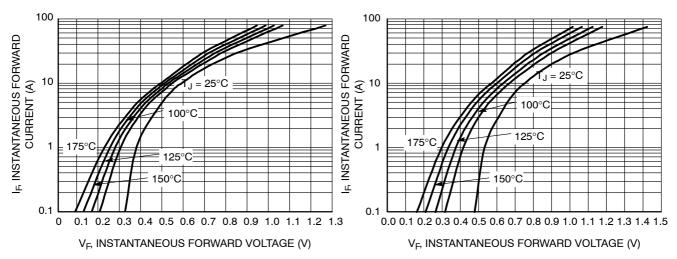


Figure 1. Typical Forward Voltage

Figure 2. Maximum Forward Voltage

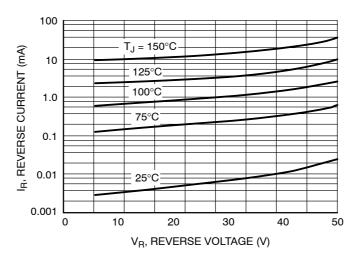


Figure 3. Typical Reverse Current

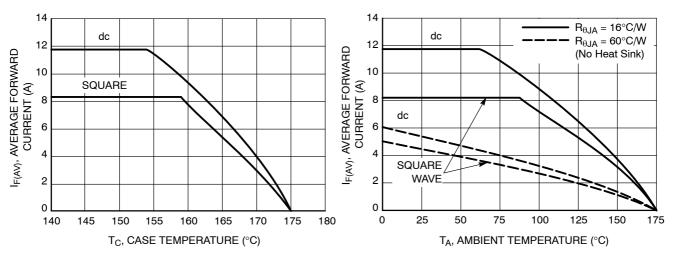


Figure 4. Current Derating, Case, Per Leg

Figure 5. Current Derating, Ambient, Per Leg

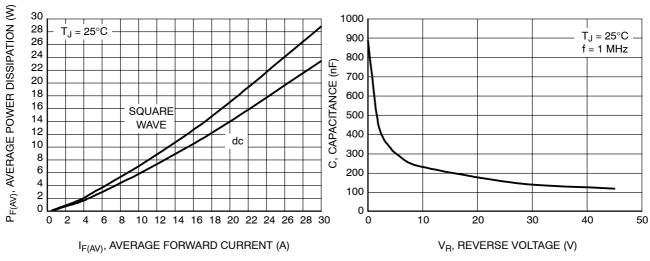


Figure 6. Forward Power Dissipation

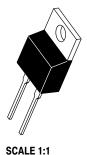
Figure 7. Typical Capacitance

MECHANICAL CASE OUTLINE

Q

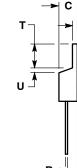
PACKAGE DIMENSIONS





TO-220, 2-LEAD CASE 221B-04 **ISSUE F**

DATE 12 APR 2013



NOTES:

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

	INCHES		MILLIN	IETERS
DIM	MIN	MAX	MIN	MAX
Α	0.595	0.620	15.11	15.75
В	0.380	0.405	9.65	10.29
С	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
Н	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
Т	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

PIN 1. ANODE 2. N/A 3. CATHODE

4. ANODE

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