SWITCHMODE™ 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®

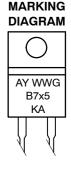
http://onsemi.com

SCHOTTKY BARRIER RECTIFIERS 7.5 AMPERES 35 and 45 VOLTS





TO-220AC CASE 221B STYLE 1



A = Assembly Location

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

KA = Diode A Polarity
G = 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.

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	Symbol	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: $dP_D/dT_J < 1/R_{\theta JA}$.

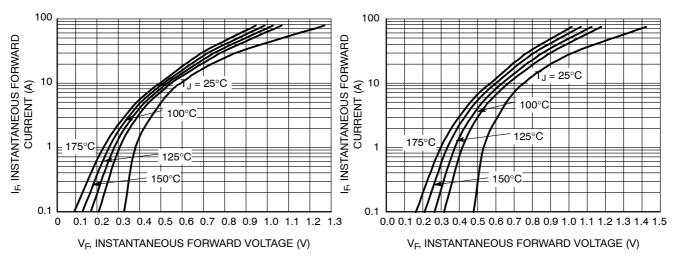


Figure 1. Typical Forward Voltage

Figure 2. Maximum Forward Voltage

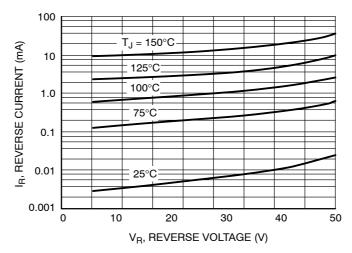


Figure 3. Typical Reverse Current

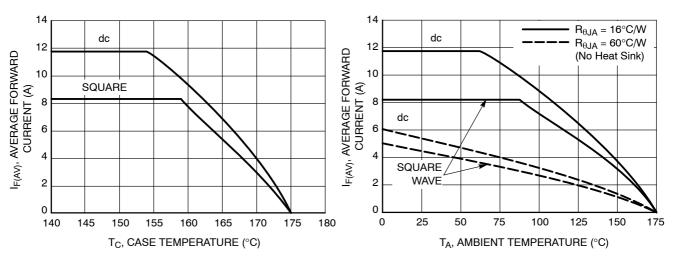


Figure 4. Current Derating, Case, Per Leg

Figure 5. Current Derating, Ambient, Per Leg

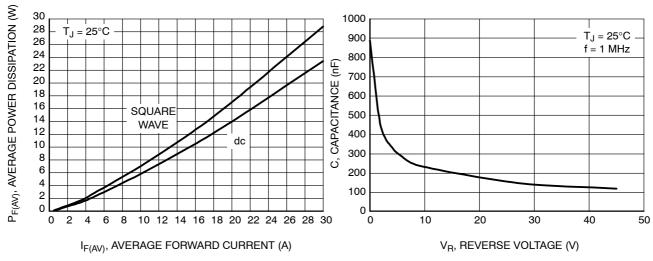
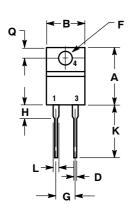


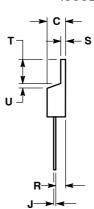
Figure 6. Forward Power Dissipation

Figure 7. Typical Capacitance

PACKAGE DIMENSIONS

TO-220 **PLASTIC** CASE 221B-04 **ISSUE E**





NOTES:

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

	INC	INCHES MILLIM		
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	0.035	0.64	0.89
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
T	0.235	0.255	5.97	6.48
U	0.000	0.050	0.000	1.27

PIN 1. CATHODE 2. N/A

- 3 ANODE
- 4. CATHODE

SWITCHMODE is a trademark of Semiconductor Components Industries, LLC.

ON Semiconductor and un are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice on semiconductor and war engineer trademarks of semiconductor components industries, Ite (SciLLC) solitate services are injective to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

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 Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

Europe, Middle East and Africa Technical Support: Phone: 421 33 790 2910

Japan Customer Focus Center Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative