# MBR4015CTLG

# Switch-mode Power Rectifier

#### **Features and Benefits**

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 150°C Operating Junction Temperature
- 40 A Total (20 A Per Diode Leg)
- This Device is Pb-Free and is RoHS Compliant\*

#### **Applications**

- Power Supply Output Rectification
- Power Management
- Instrumentation

#### **Mechanical Characteristics**

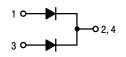
- Case: Epoxy, Molded
- Epoxy Meets UL 94, V-0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperatures for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Rating: Human Body Model 3B Machine Model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



## ON Semiconductor®

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# SCHOTTKY BARRIER RECTIFIER 40 AMPERES, 15 VOLTS





TO-220 STYLE 6 CASE 221A

#### **MARKING DIAGRAM**



A = Assembly Location

Y = Year
WW = Work Week
B4015L = Device Code
G = Pb-Free Package
AKA = Polarity Designator

#### **ORDERING INFORMATION**

Device	Package	Shipping
MBR4015CTLG	TO-220 (Pb-Free)	50 Units/Rail

<sup>\*</sup>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		Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	15	V
Average Rectified Forward Current (T <sub>C</sub> = 140°C per Diode) (T <sub>C</sub> = 140°C per Device)	I <sub>F(AV)</sub>	20 40	А
Peak Repetitive Forward Current, per Diode (Square Wave, 20 kHz, T <sub>C</sub> = 135°C)	I <sub>FRM</sub>	40	А
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz)	I <sub>FSM</sub>	150	А
Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)	I <sub>RRM</sub>	1.0	Α
Storage Temperature Range	T <sub>stg</sub>	-65 to +175	°C
Operating Junction Temperature (Note 1)	TJ	-65 to +150	°C
Voltage Rate of Change (Rated V <sub>R</sub> )	dv/dt	1,000	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.

#### THERMAL CHARACTERISTICS (Per Diode)

Characteristic	Conditions	Symbol	Max	Unit
Maximum Thermal Resistance, Junction-to-Case	Min. Pad	$R_{\theta JC}$	1.3	°C/W
Maximum Thermal Resistance, Junction-to-Ambient	Min. Pad	$R_{\theta JA}$	70	

#### **ELECTRICAL CHARACTERISTICS**

Characteristic	Symbol	Min	Typical	Max	Unit
Instantaneous Forward Voltage (Note 2) ( $i_F = 20 \text{ A}, T_j = 125^{\circ}\text{C}$ ) ( $i_F = 40 \text{ A}, T_j = 125^{\circ}\text{C}$ ) ( $i_F = 20 \text{ A}, T_j = 25^{\circ}\text{C}$ ) ( $i_F = 40 \text{ A}, T_j = 25^{\circ}\text{C}$ )	VF	- - - -	0.31 0.45 0.41 0.51	0.34 0.50 0.43 0.54	V
Instantaneous Reverse Current (Note 2) (Rated dc Voltage, Tj = 125°C) (Rated dc Voltage, Tj = 25°C)	i <sub>R</sub>	_ _	300 0.8	600 10	mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

<sup>2.</sup> Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

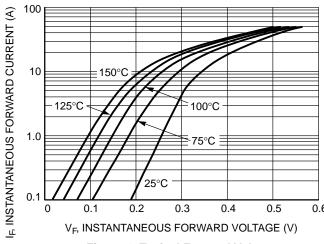


Figure 1. Typical Forward Voltage

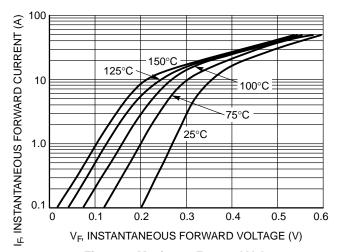


Figure 2. Maximum Forward Voltage

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

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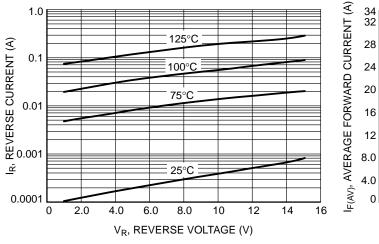
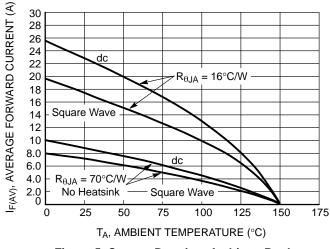


Figure 3. Typical Reverse Current

Figure 4. Current Derating, Case, Per Leg



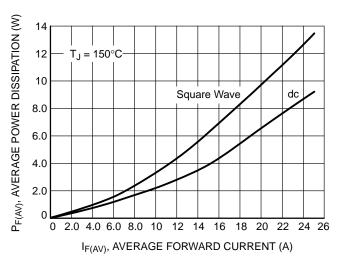


Figure 5. Current Derating, Ambient, Per Leg

Figure 6. Forward Power Dissipation

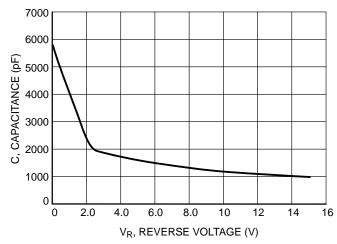


Figure 7. Typical Capacitance

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