

# International IR Rectifier

## 155CMQ015

### SCHOTTKY RECTIFIER

150 Amp

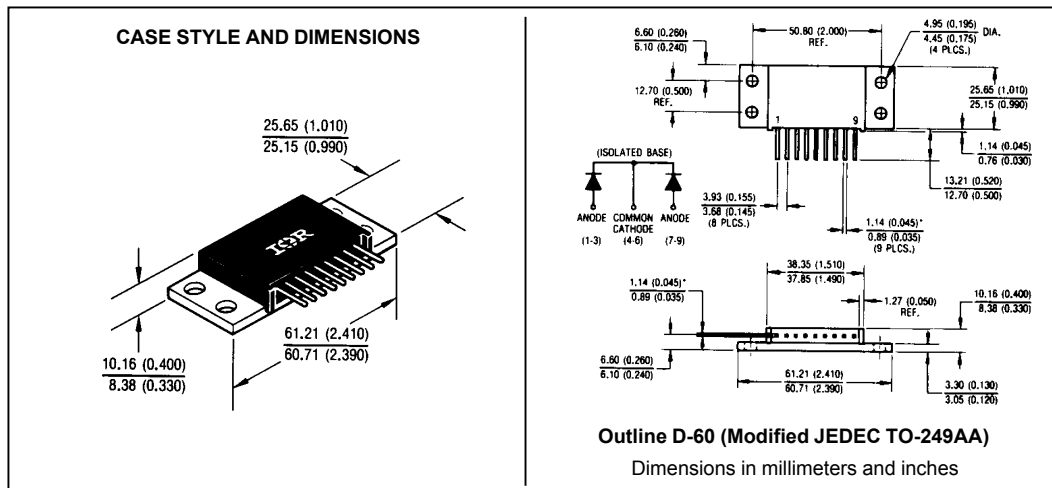
#### Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	150	A
$V_{RRM}$	15	V
$I_{FSM}$ @ tp = 5 $\mu$ s sine	8000	A
$V_F$ @ 75Apk, $T_J = 125^\circ\text{C}$	0.37	V
$T_J$ range	-55 to 125	$^\circ\text{C}$

#### Description/ Features

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 125 $^\circ\text{C}$  junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 125 $^\circ\text{C}$   $T_J$  operation ( $V_R < 5\text{V}$ )
- Isolated heatsink
- Center tap module
- Multiple leads per terminal for high frequency, high current PC board mounting
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



## Voltage Ratings

Parameters	155CMQ015
$V_R$ Max. DC Reverse Voltage (V) @ $T_J = 100^\circ\text{C}$	15
$V_{RWM}$ Max. DC Reverse Voltage (V) @ $T_J = 125^\circ\text{C}$	5

## Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current (Per Leg) (Per Device)	75	A	@ $T_C = 102^\circ\text{C}$ (Rated $V_R$ )
	150		
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg)	8000	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated $V_{RWM}$ applied
	1000		
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	9	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 2\text{Amps}$ , $L = 4.5\text{mH}$
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

## Electrical Specifications

Parameters	Values	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (1)	0.44	V	@ 75A $T_J = 25^\circ\text{C}$
	0.59	V	@ 150A
	0.37	V	@ 75A $T_J = 125^\circ\text{C}$
	0.57	V	@ 150A
$I_{RM}$ Max. Instantaneous Reverse Current (1)	20	mA	$T_J = 25^\circ\text{C}$ Rated DC voltage
	1000	mA	$T_J = 100^\circ\text{C}$
	1.2	A	$T_J = 125^\circ\text{C}$ $V_R = 5\text{V}$
$C_T$ Max. Junction Capacitance	3950	pF	$V_R = 5\text{V}_{DC}$ (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	9.2	nH	Measured from top of terminal to mounting plane
$dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )	10000	V/ $\mu\text{s}$	

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

## Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 125	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	1.0	$^\circ\text{C/W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance Case to Heatsink	0.1	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	56 (2.0)	g (oz.)	
T Mounting Torque	Min. 40 (35)	Kg-cm (lbf-in)	Non-lubricated threads
	Max. 58 (50)		
Case Style	D-60 (TO-249AA)		Modified JEDEC

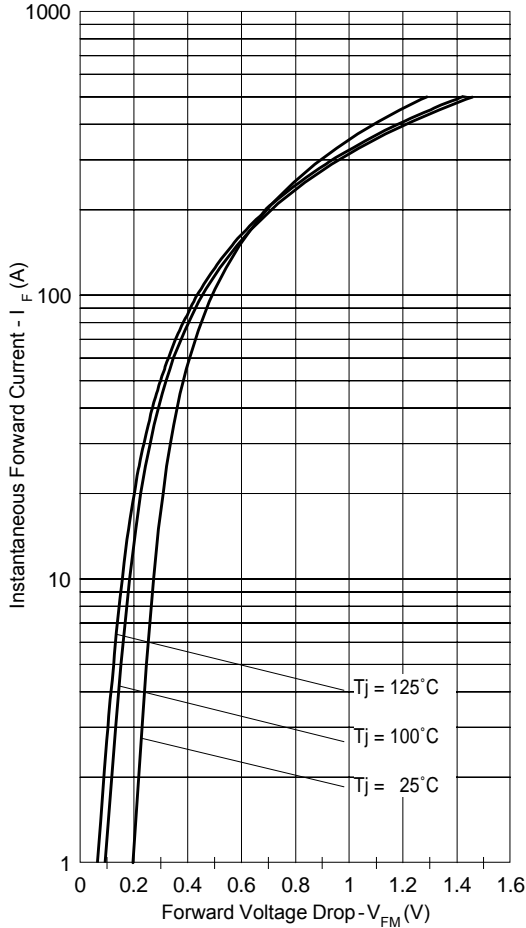


Fig. 1 - Maximum Forward Voltage Drop Characteristics

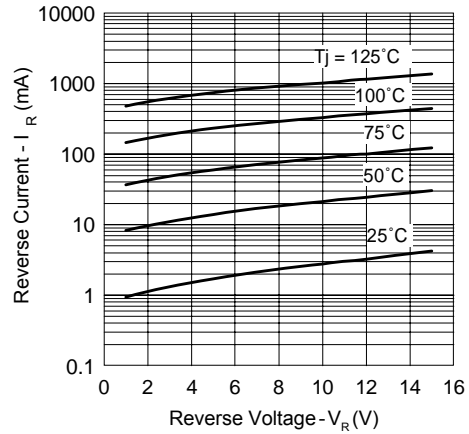


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

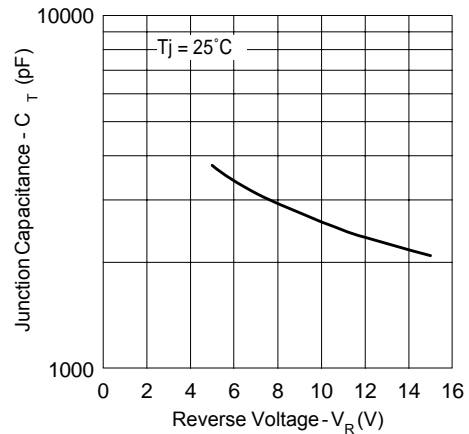


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

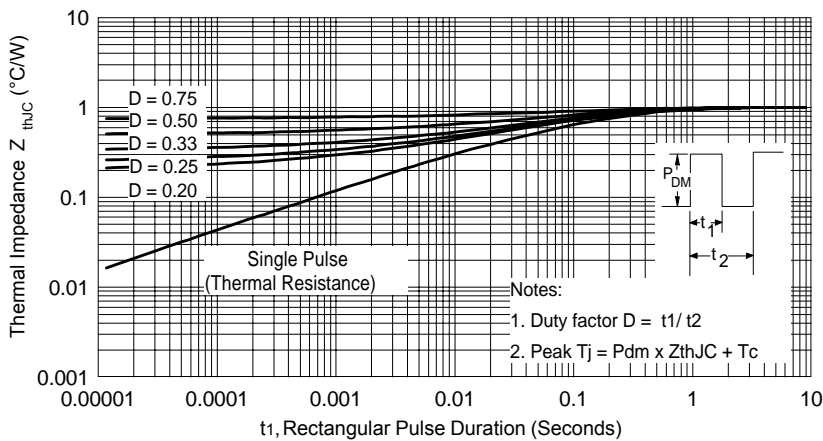
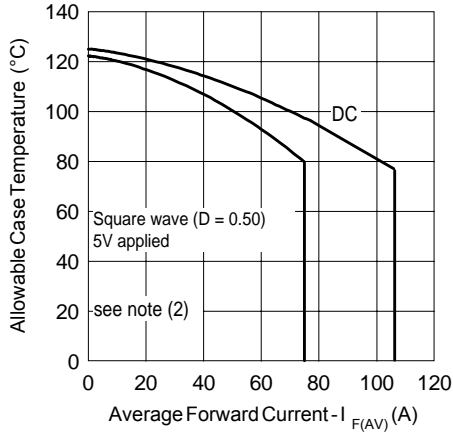
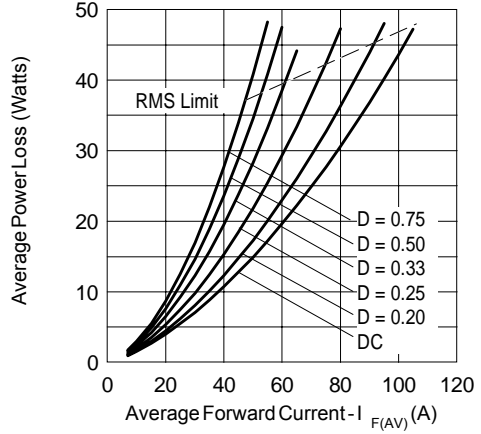


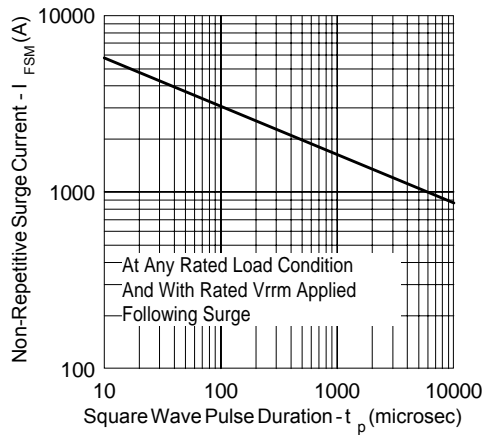
Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics



**Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current**



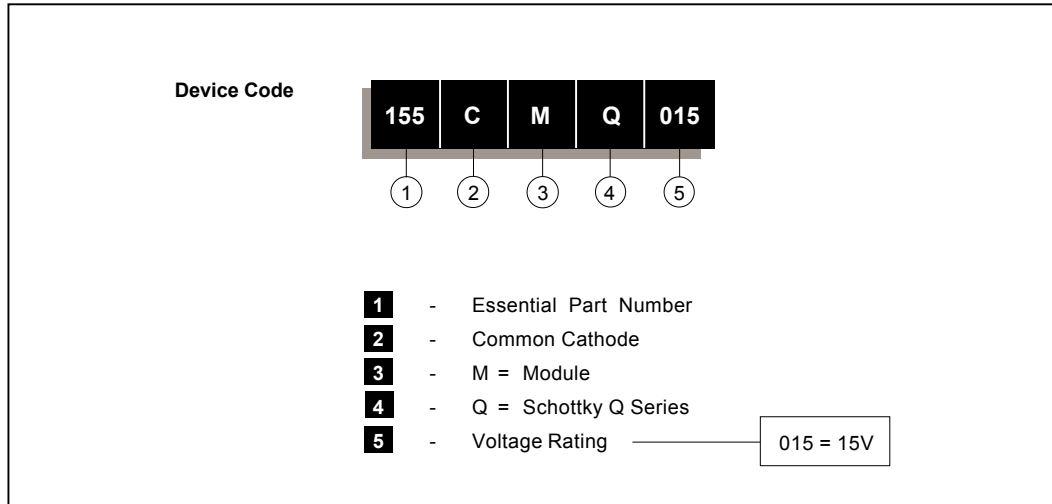
**Fig. 6 - Forward Power Loss Characteristics**



**Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)**

(2) Formula used:  $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$   
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);  
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D); I_R @ V_{R1} = 5V$

### Ordering Information Table



Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial Level.  
Qualification Standards can be found on IR's Web site.

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