

International IR Rectifier

155CMQ015

SCHOTTKY RECTIFIER

150 Amp

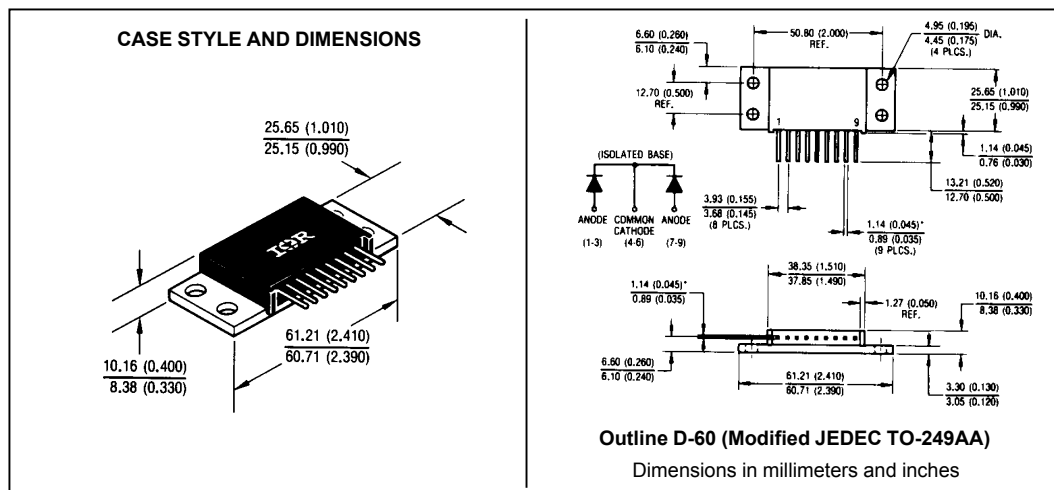
Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	150	A
V_{RRM}	15	V
I_{FSM} @ tp = 5 μ 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 μs Sine or 3 μs 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 μsec 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°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/ μs	

(1) Pulse Width < 300 μs , 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	$^\circ\text{C}/\text{W}$	DC operation
R_{thCS} Typical Thermal Resistance Case to Heatsink	0.1	$^\circ\text{C}/\text{W}$	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

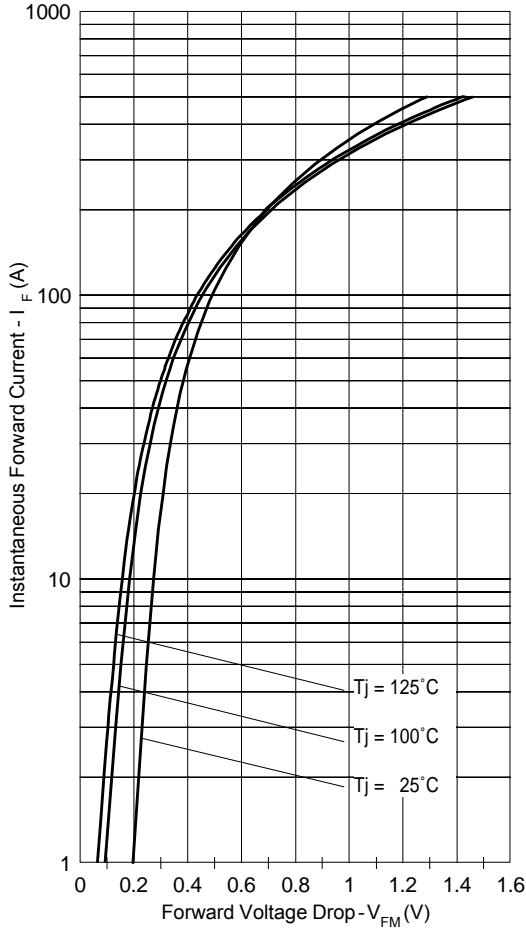


Fig. 1 - Maximum Forward Voltage Drop Characteristics

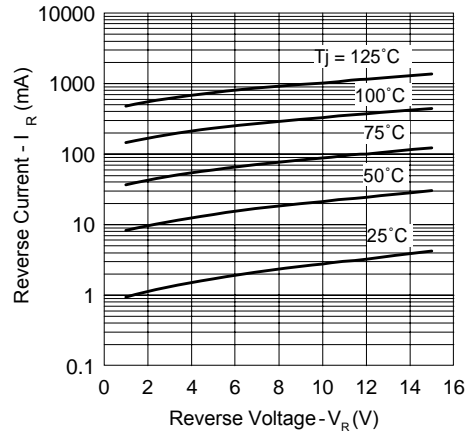


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

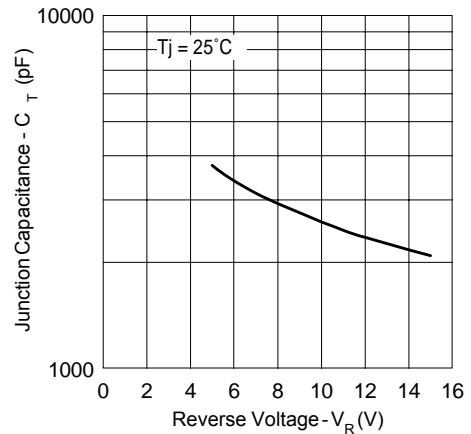


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

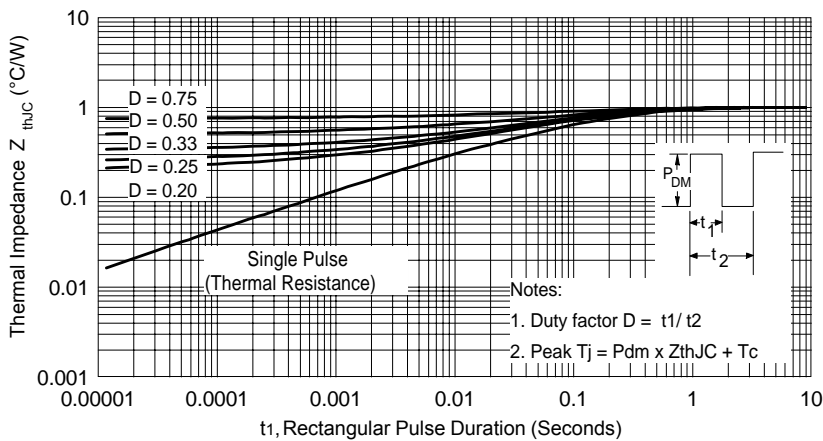


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

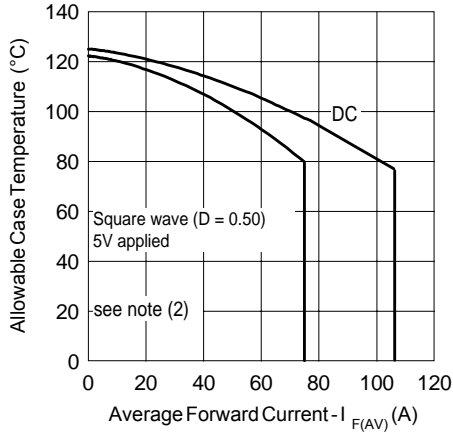


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

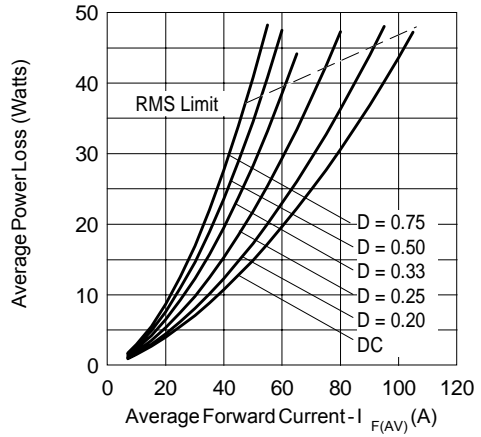


Fig. 6 - Forward Power Loss Characteristics

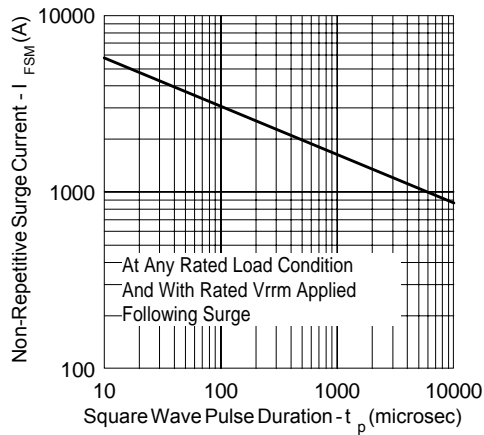
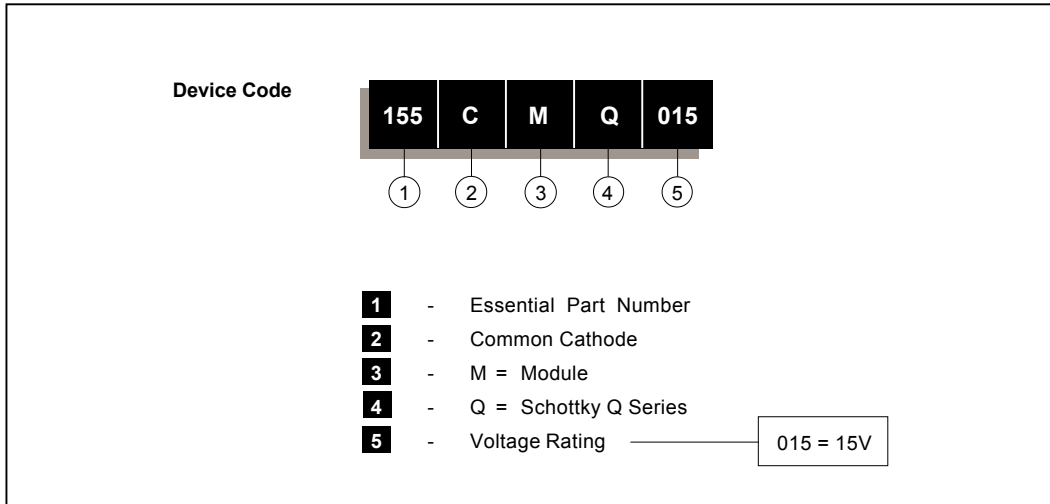


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

(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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Bulletin PD-20.595 11/01

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