

International
IR Rectifier

80CPTN015

SCHOTTKY RECTIFIER

80 Amp

Major Ratings and Characteristics

Characteristics	80CPTN015	Units
$I_{F(AV)}$ Rectangular waveform	80	A
V_{RRM}	15	V
I_{FSM} @ tp = 5 μ s sine	2200	A
V_F @ 40 Apk, $T_J = 125^\circ\text{C}$ (typical) (per leg)	0.30	V
T_J range	-55 to 150	$^\circ\text{C}$

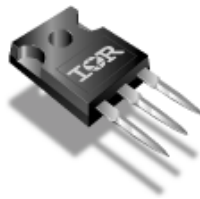
Description/ Features

This center tap Schottky rectifier series has been optimized for ultra low forward voltage drop specifically for 1.5V output power supplies. The proprietary sub-micron technology allows for low power loss in forward and reverse conduction.

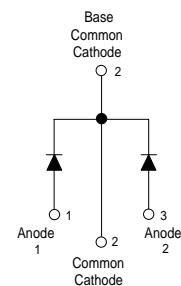
- 150 $^\circ\text{C}$ T_J operation
- Center tap configuration
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Ultra low forward voltage drop
- High frequency operation

Case Styles

80CPTN015



TO-247AC



Voltage Ratings

Part number	80CPTN015
V_R Max. DC Reverse Voltage (V)	15
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	Value	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	Per Device	80	50% duty cycle @ $T_C = 137^\circ\text{C}$, rectangular wave form
	Per Leg	40	
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7		2200	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse
		500	
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	9	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 2$ Amps, $L = 4.5$ 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	Typ.	Max.	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.39	0.42	V	@ 40A
	0.46	0.51	V	@ 80A
	0.30	0.34	V	@ 40A
	0.40	0.45	V	@ 80A
	0.27	0.30	V	@ 40A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.6	3.0	mA	$T_J = 25^\circ\text{C}$
	200	350	mA	$T_J = 125^\circ\text{C}$
	650	850	mA	$T_J = 150^\circ\text{C}$
C_T Max. Junction Capacitance (Per Leg)	-	2600	pF	$V_R = 10V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance (Per Leg)	-	7.5	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change	-	10000	V/ μs	(Rated V_R)

(1) Pulse Width < 300 μs , Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	Value	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	0.6	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.3	$^\circ\text{C}/\text{W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.25	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased
wt Approximate Weight	6 (0.21)	g (oz.)	
T Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)
	Max.	12 (10)	
Case Style	TO-247AC (TO-3P)	JEDEC	

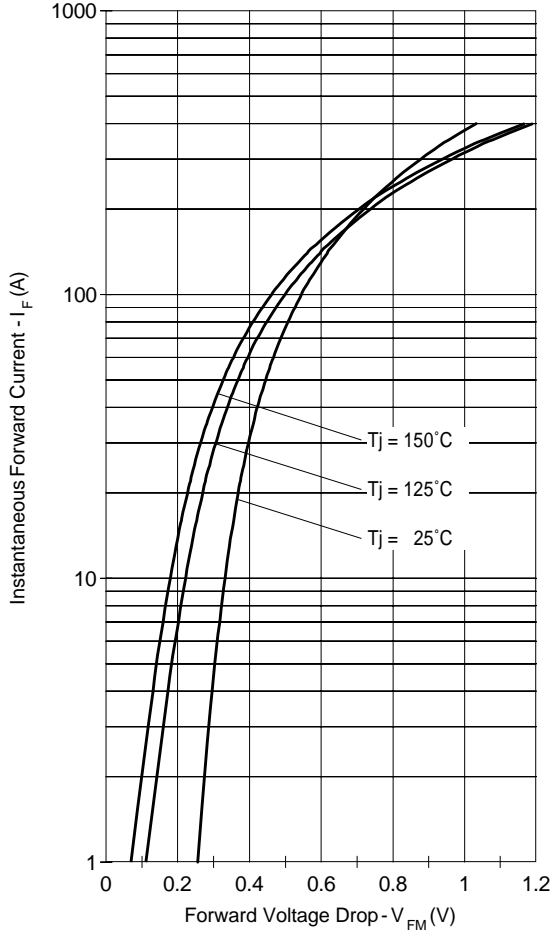


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

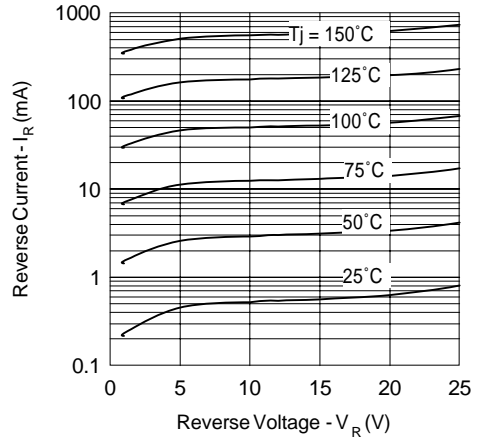


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

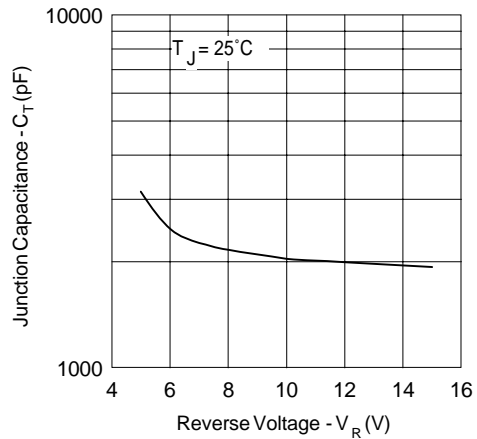


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

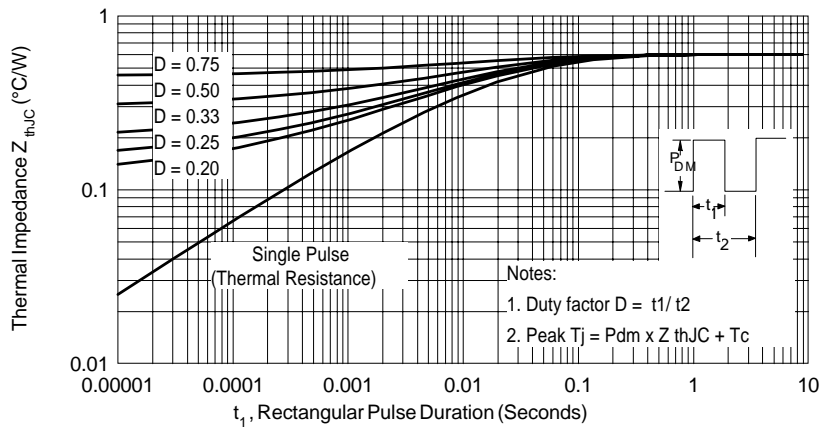


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

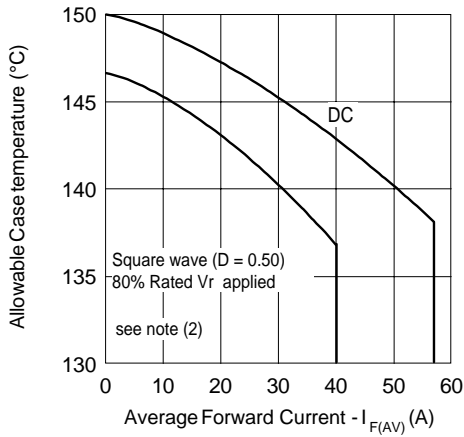


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

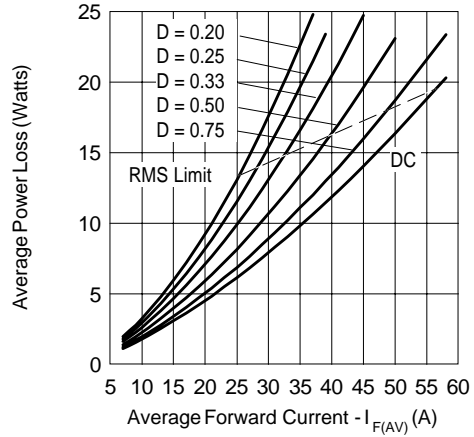


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

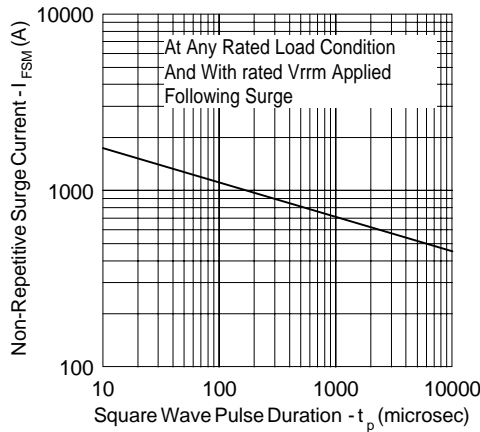


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

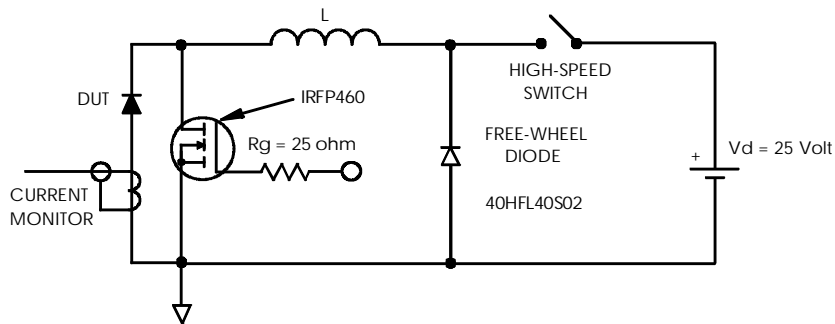


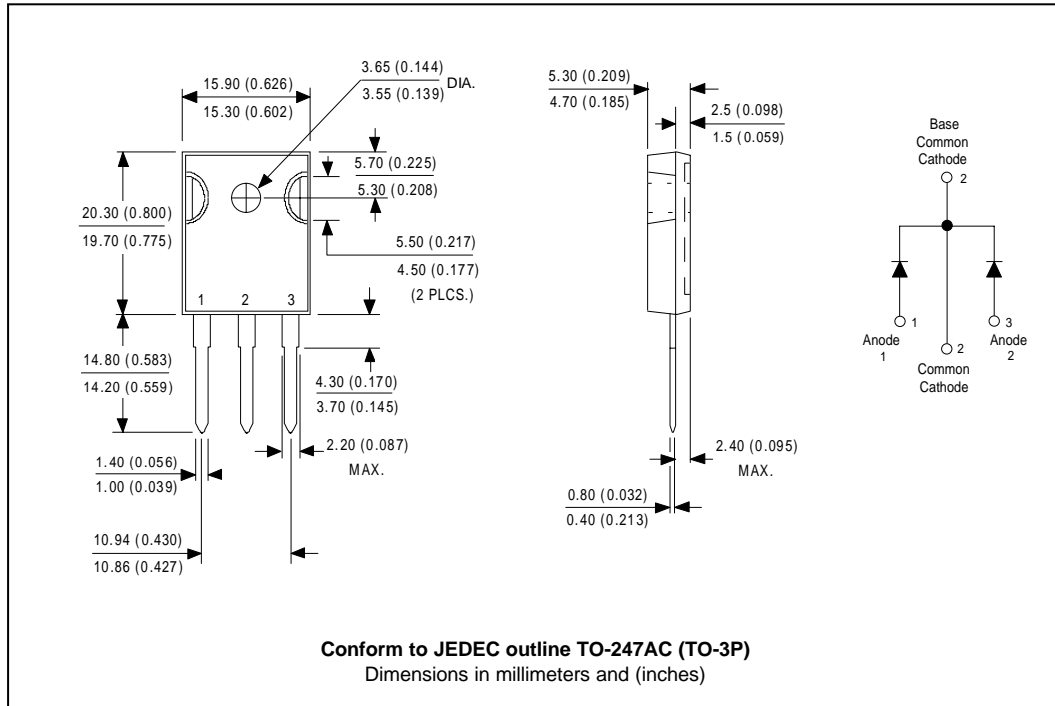
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$;

Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ $(I_{F(AV)}/D)$ (see Fig. 6);

Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_{R1} (1 - D)$; I_{R1} @ $V_{R1} = 80\%$ rated V_R

Outline 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.