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80CPTN015

Vishay Semiconductors

SCHOTTKY RECTIFIER

Bulletin PD-20413 rev. B 09/02

International
IOR 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 µs sine	2200	A
V_F	@ 40 Apk, T_J=125°C (typical) (per leg)	0.30	V
T_J	range	- 55 to 150	°C

Description/ Features

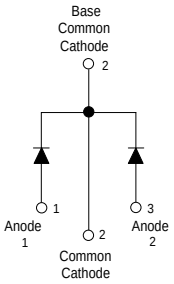
This center tap Schottky rectifier series has been optimized for ultra low forward voltage drop specifically for 1.5V output power supplies. The proprietary sub-micron technology allows for low power loss in forward and reverse conduction.

- 150° 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	A	50% duty cycle @ T_C = 137°C, rectangular wave form	
		Per Leg	40			
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7		2200	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
			500		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)		9	mJ	T_J = 25 °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 x 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	T_J = 25 °C
		0.46	0.51	V	@ 80A	
		0.30	0.34	V	@ 40A	T_J = 125 °C
		0.40	0.45	V	@ 80A	
		0.27	0.30	V	@ 40A	T_J = 150 °C
		0.38	0.41	V	@ 80A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.6	3.0	mA	T_J = 25 °C	V_R = rated V_R
		200	350	mA	T_J = 125 °C	
		650	850	mA	T_J = 150 °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 < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

	Parameters		Value	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		0.6	°C/W	DC operation * See Fig. 4
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.3	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.25	°C/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

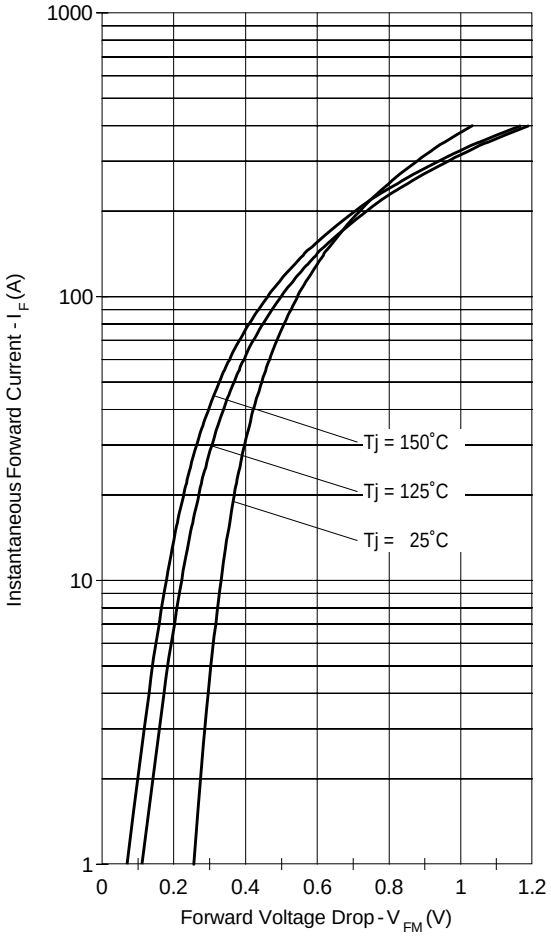


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

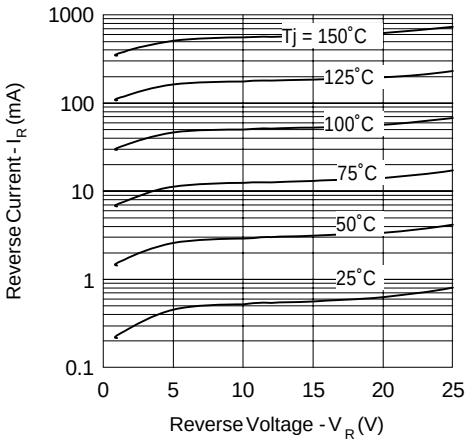


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

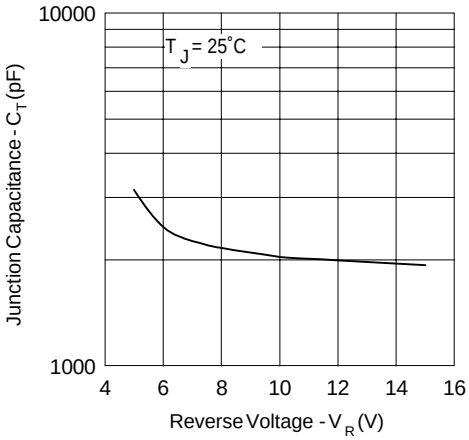


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

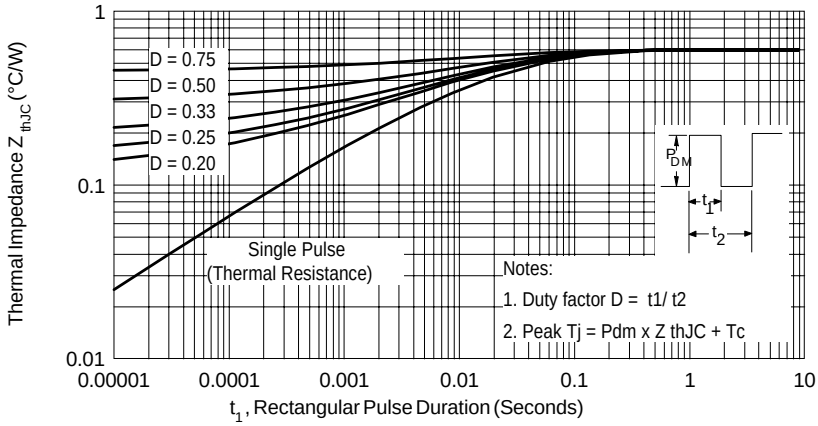


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

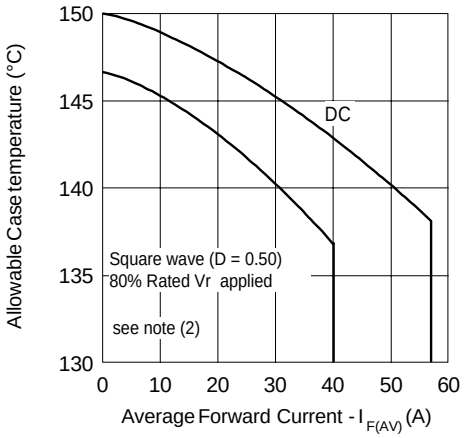


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

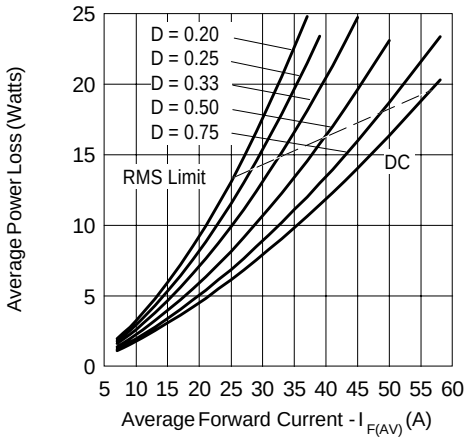


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

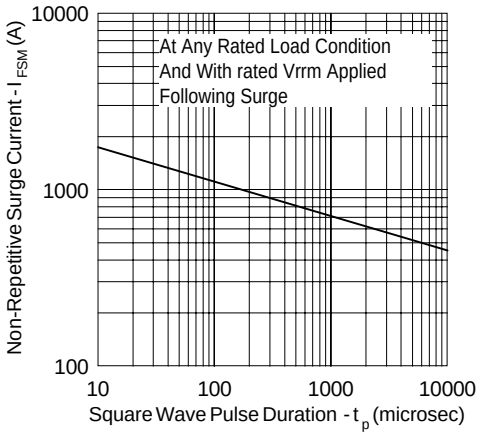


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

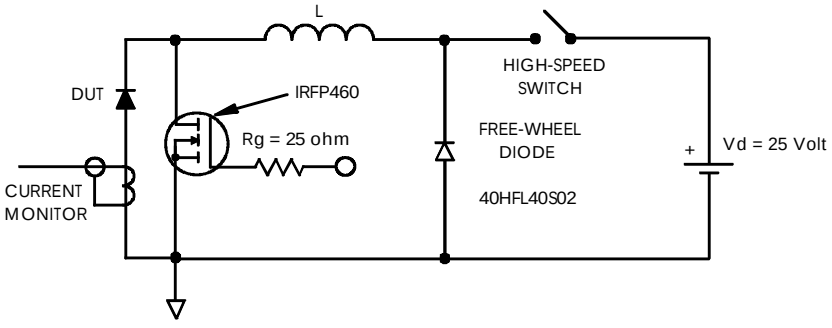
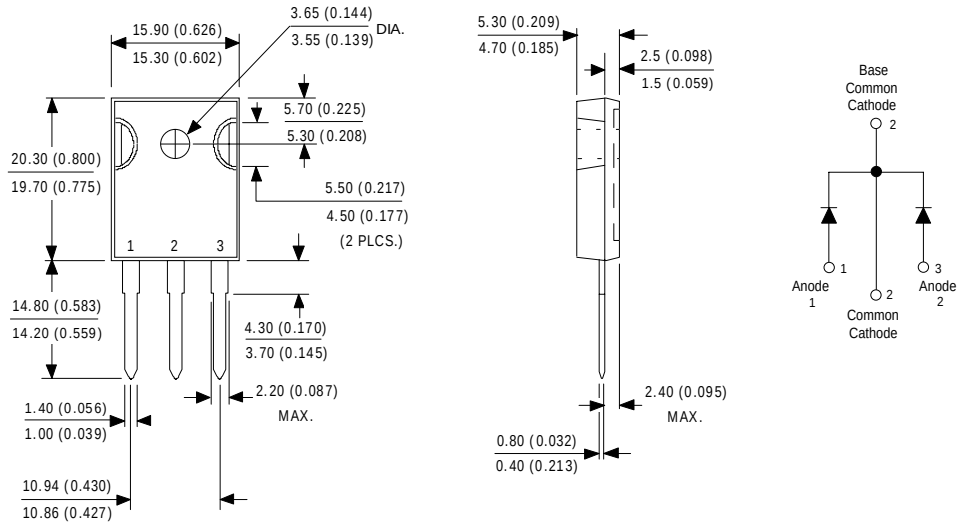


Fig. 8 - Unclamped Inductive Test Circuit

(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 = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = 80% rated V_R

Outline Table



Conform to JEDEC outline TO-247AC (TO-3P)
Dimensions in millimeters and (inches)

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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