

International **IR** Rectifier

30CPQ080
30CPQ100

SCHOTTKY RECTIFIER

30 Amp

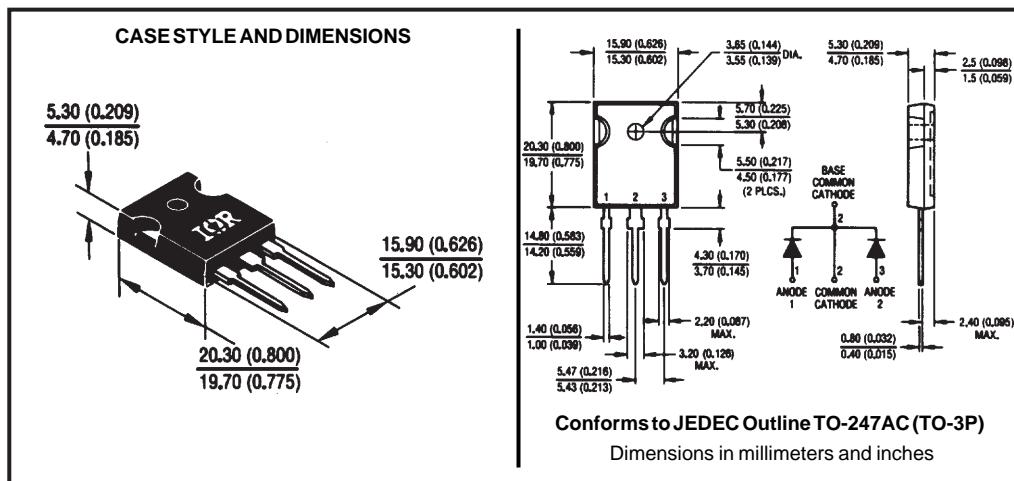
Major Ratings and Characteristics

Characteristics	30CPQ...	Units
$I_{F(AV)}$ Rectangular waveform	30	A
V_{RRM}	80/100	V
I_{FSM} @ $t_p=5\ \mu s$ sine	920	A
V_F @ $15\text{A}_{pk}, T_J=125^\circ C$ (per leg)	0.67	V
T_J	-55 to 175	°C

Description/Features

The 30CPQ... center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to $175^\circ C$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $175^\circ C T_J$ operation
- Center tap TO-247 package
- 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

Part number	30CPQ080	30CPQ100
V_R Max. DC Reverse Voltage (V)		
V_{RWM} Max. Working Peak Reverse Voltage (V)	80	100

Absolute Maximum Ratings

Parameters	30CPQ...	Units	Conditions
$I_{F(AV)}$ Max.AverageForwardCurrent * See Fig. 5	30	A	50%duty cycle @ $T_C = 140^\circ\text{C}$, rectangularwaveform
I_{FSM} Max.PeakOneCycleNon-Repetitive SurgeCurrent (Per Leg) * See Fig. 7	920	A	5μs Sine or 3μs Rect. pulse
	240		Following any rated load condition and with 10ms Sine or 6ms Rect. pulse rated V_{RWM} applied
E_{AS} Non-Repetitive AvalancheEnergy (Per Leg)	7.50	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.50$ Amps, $L = 60$ mH
I_{AR} Repetitive AvalancheCurrent (Per Leg)	0.50	A	Currentdecayinglinearlytozero in 1μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	30CPQ...	Units	Conditions		
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.86	V	@ 15A	$T_J = 25^\circ\text{C}$	
	1.05	V	@ 30A		
	0.67	V	@ 15A	$T_J = 125^\circ\text{C}$	
	0.81	V	@ 30A		
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.55	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$	
	7	mA	$T_J = 125^\circ\text{C}$		
C_T Max. Junction Capacitance (Per Leg)	500	pF	$V_R = 5V_{DC}$: (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 (Rated V_R)	10,000	V/ μs			

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

Thermal-Mechanical Specifications

Parameters	30CPQ...	Units	Conditions	
T_J Max.JunctionTemperatureRange	-55 to 175	°C		
T_{stg} Max.StorageTemperatureRange	-55 to 175	°C		
R_{thJC} Max.ThermalResistanceJunction to Case (Per Leg)	2.20	°C/W	DCoperation	* See Fig. 4
R_{thJC} Max.ThermalResistanceJunction to Case(Per Package)	1.10	°C/W	DCoperation	
R_{thCS} Typical ThermalResistance, Case to Heatsink	0.24	°C/W	Mountingsurface,smoothandgreased	
wt ApproximateWeight	6(0.21)	g(oz.)		
T MountingTorque	Min.	6(5)	Kg-cm	Non-lubricatedthreads
	Max.	12(10)	(lbf-in)	
Case Style	TO-247AC(TO-3P)		JEDEC	

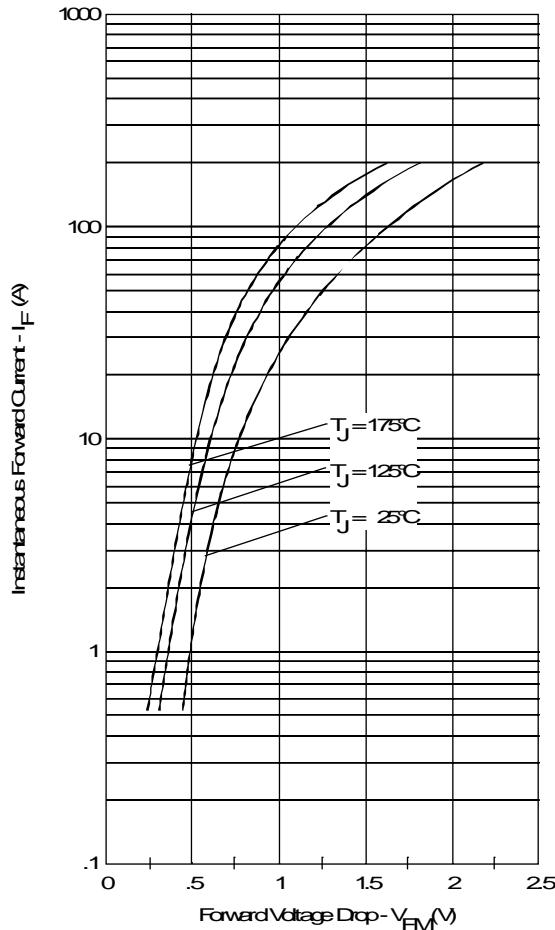


Fig. 1-Max. Forward Voltage Drop Characteristics
 (PerLeg)

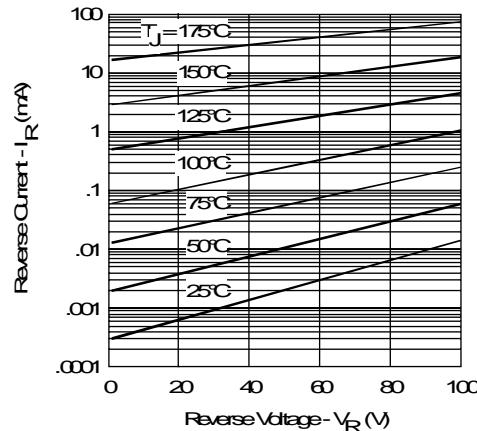


Fig. 2-Typical Values Of Reverse Current
 Vs. Reverse Voltage (PerLeg)

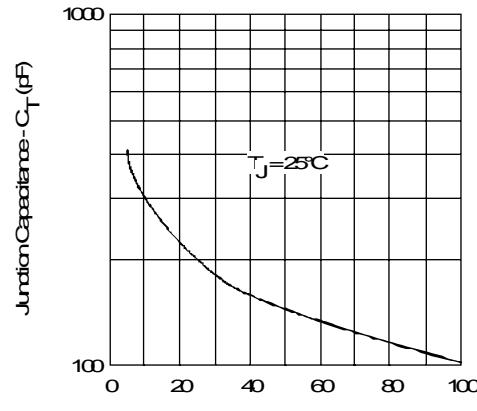


Fig. 3-Typical Junction Capacitance
 Vs. Reverse Voltage (PerLeg)

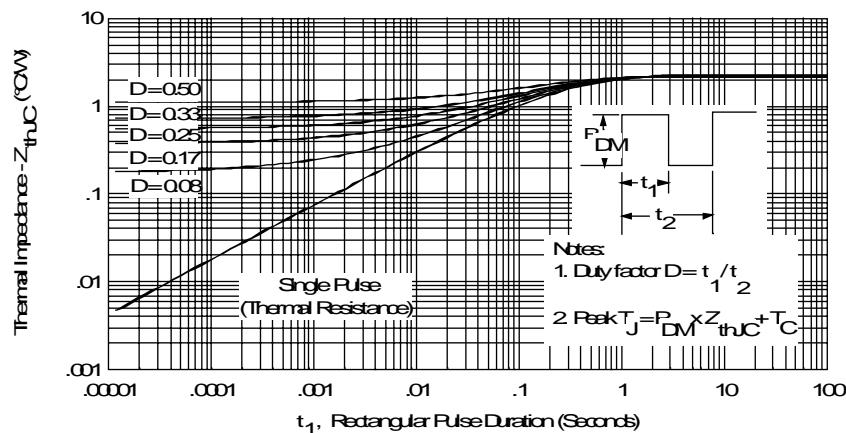


Fig. 4-Max. Thermal Impedance Z_{thJC} Characteristics (PerLeg)

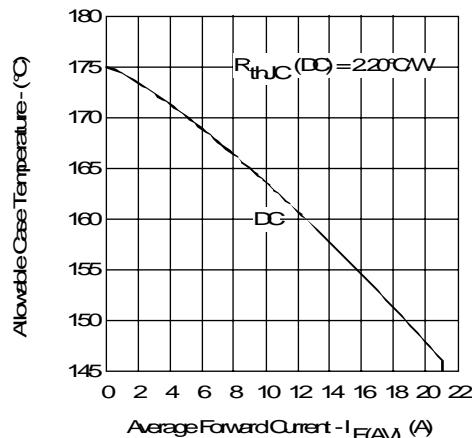


Fig.5-Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

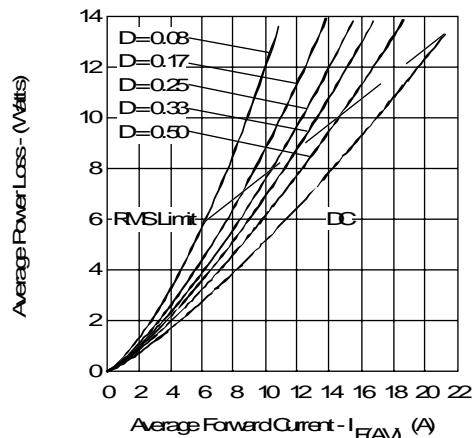


Fig.6-Forward Power Loss Characteristics (Per Leg)

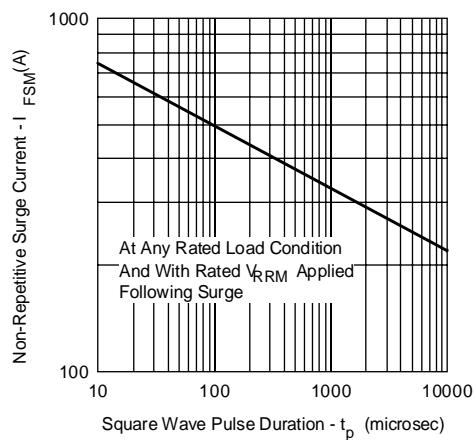


Fig.7-Max. Non-Repetitive Surge Current (Per Leg)

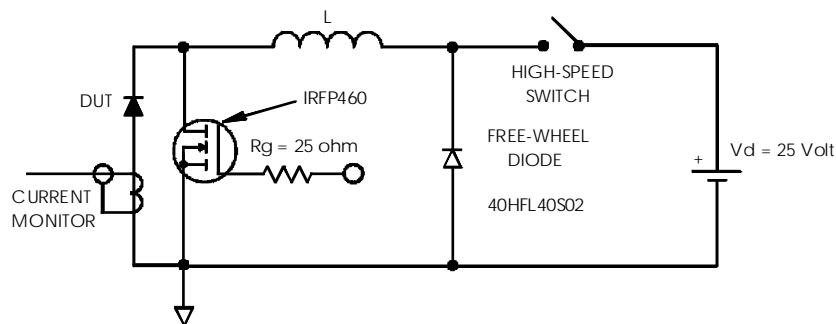


Fig.8-Unclamped Inductive Test Circuit