

$I_{F(AV)} = 30\text{Amp}$   
 $V_R = 150\text{V}$

**Major Ratings and Characteristics**

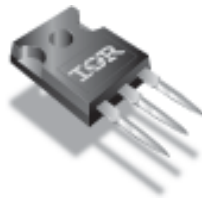
Characteristics	Value	Units
$I_{F(AV)}$ Rectangular waveform	30	A
$V_{RRM}$	150	V
$I_{FSM}$ @ tp = 5 $\mu$ s sine	1000	A
$V_F$ @ 15 Apk, $T_J=125^\circ\text{C}$ (per leg)	0.78	V
$T_J$	-55 to 175	$^\circ\text{C}$

**Description/ Features**

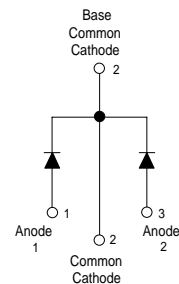
The 30CPQ150 center tap Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175° 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

**Case Styles**



TO-247AC



## 30CPQ150

Bulletin PD-2.299 rev. C 10/06

International  
**IOR** Rectifier

### Voltage Ratings

Part number	30CPQ150
$V_R$ Max. DC Reverse Voltage (V)	150
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)	

### Absolute Maximum Ratings

Parameters	30CPQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	30 15	A	50% duty cycle @ $T_C = 135^\circ\text{C}$ , rectangular wave form
Per Device Per Leg			
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	1000 340	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
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	11.25	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 0.50$ Amps, $L = 90$ mH
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	0.50	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	30CPQ	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	1.00	V	@ 15A $T_J = 25^\circ\text{C}$
	1.19	V	@ 30A
	0.78	V	@ 15A $T_J = 125^\circ\text{C}$
	0.93	V	@ 30A
$I_{RM}$ Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.1	mA	$T_J = 25^\circ\text{C}$
	15	mA	$T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
$C_T$ Max. Junction Capacitance (Per Leg)	340	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance (Per Leg)	7.5	nH	Measured lead to lead 5mm from package body
$dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )	10000	V/ $\mu\text{s}$	

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

### Thermal-Mechanical Specifications

Parameters	30CPQ	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 175	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	2.20	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Package)	1.10	$^\circ\text{C}/\text{W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.24	$^\circ\text{C}/\text{W}$	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	
Marking Device	30CPQ150		

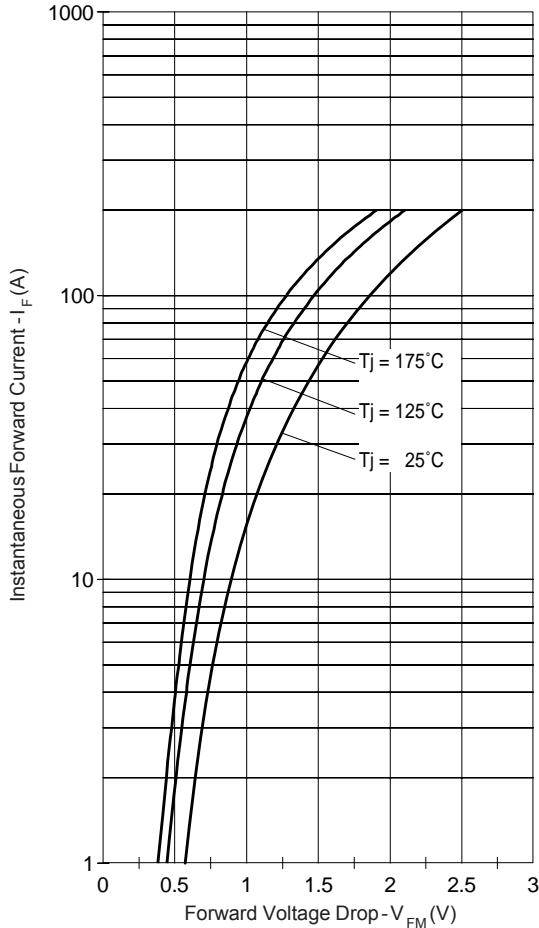


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

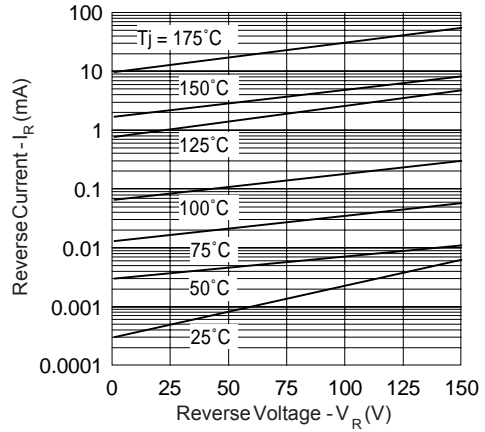


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

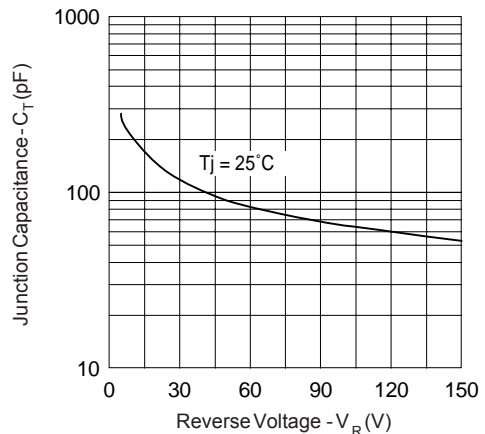


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

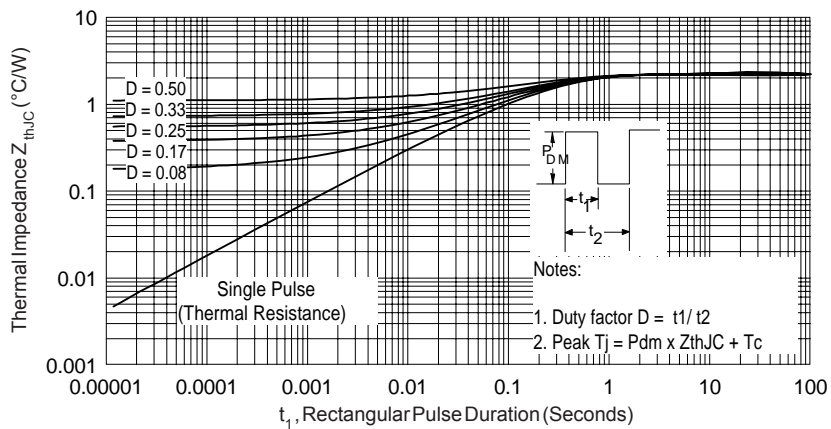


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

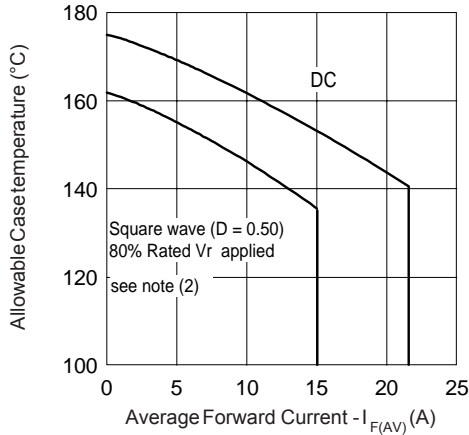


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

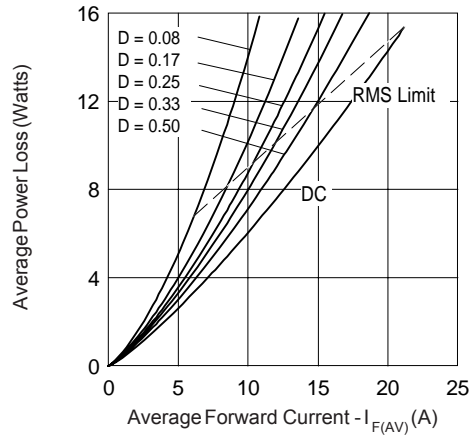


Fig. 6- Forward Power Loss Characteristics (Per Leg)

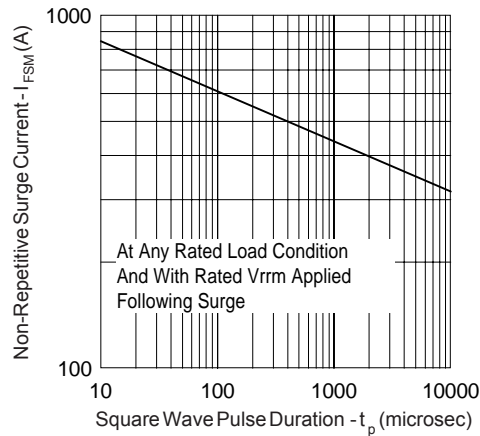


Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

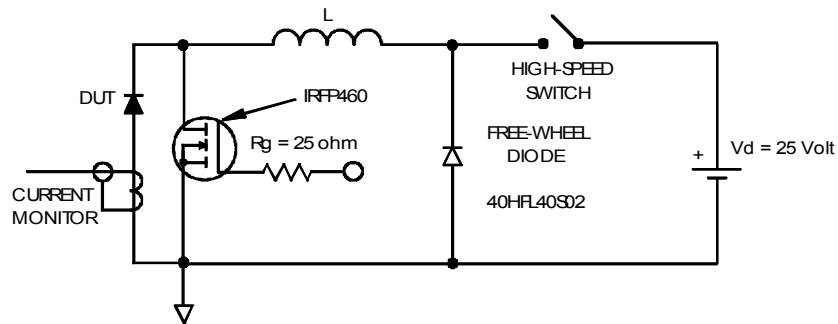


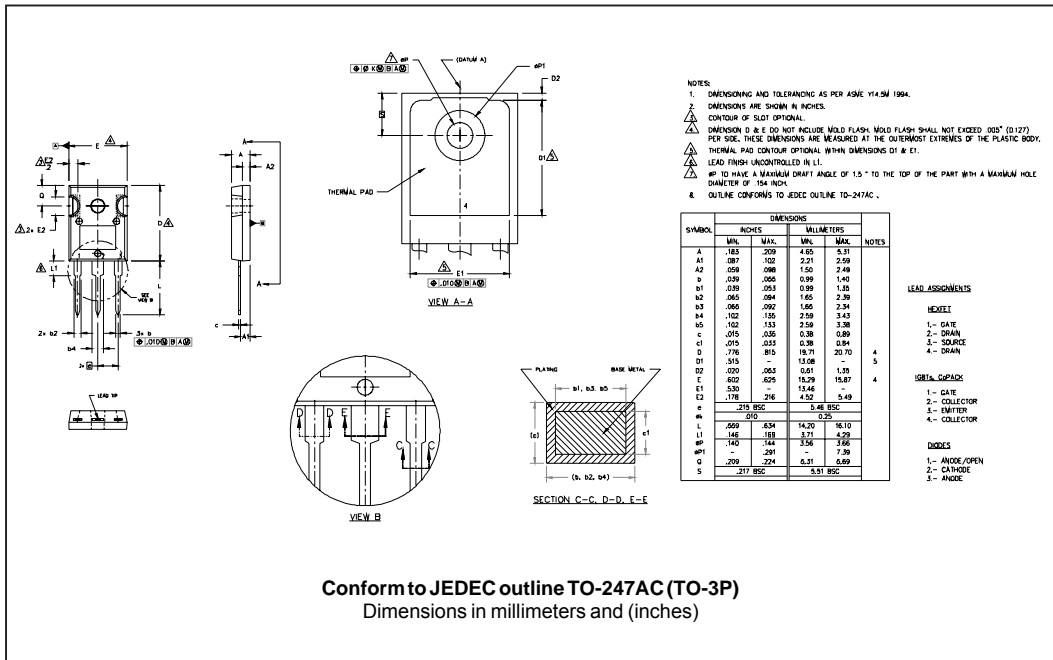
Fig. 8- Unclamped Inductive Test Circuit

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

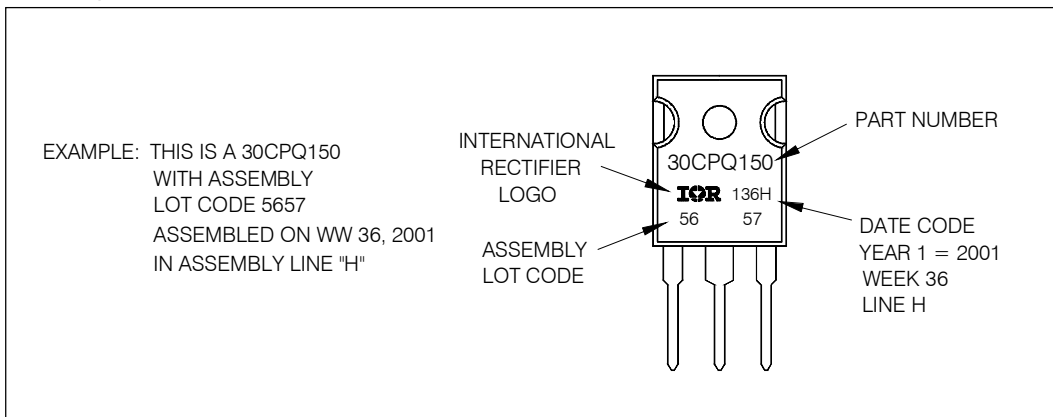
$Pd$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

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

Outline Table



Marking Information



## Ordering Information Table

Device Code												
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 5px;">30</td> <td style="padding: 5px;">C</td> <td style="padding: 5px;">P</td> <td style="padding: 5px;">Q</td> <td style="padding: 5px;">150</td> <td style="padding: 5px;">-</td> </tr> </table>	30	C	P	Q	150	-					
30	C	P	Q	150	-							
	<table style="display: inline-table; border: none;"> <tr> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 20px; height: 20px;">1</td> <td style="width: 10px;"></td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 20px; height: 20px;">2</td> <td style="width: 10px;"></td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 20px; height: 20px;">3</td> <td style="width: 10px;"></td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 20px; height: 20px;">4</td> <td style="width: 10px;"></td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 20px; height: 20px;">5</td> <td style="width: 10px;"></td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 20px; height: 20px;">6</td> </tr> </table>	1		2		3		4		5		6
1		2		3		4		5		6		
<b>1</b>	- Current Rating (30 = 30A)											
<b>2</b>	- Circuit Configuration C = Common Cathode											
<b>3</b>	- Package P = TO-247											
<b>4</b>	- Schottky "Q" Series											
<b>5</b>	- Voltage Code (150 = 150V)											
<b>6</b>	- <ul style="list-style-type: none"> <li>• none = Standard Production</li> <li>• PbF = Lead-Free</li> </ul>											
Tube Standard Pack Quantity : 25 pieces												

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.