

International  
**IOR** Rectifier

**IRUD360CW40**

FRED

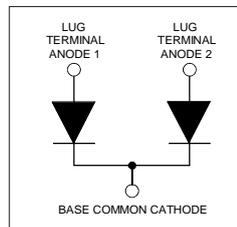
Ultrafast, Soft Recovery Diode

#### Features

- Ultrafast Recovery
- 150°C Operating Junction Temperature

#### Benefits

- Reduced RFI and EMI
- Higher Frequency Operation
- Reduced Snubbing
- Reduced Parts Count



$V_R = 400V$   
 $V_F(\text{typ.}) = 1.23V$   
 $I_{F(AV)} = 350A$

#### Description/ Applications

These diodes are optimized to reduce losses and EMI/ RFI in high frequency power conditioning systems. The softness of the recovery eliminates the need for a snubber in most applications. These devices are ideally suited for HF welding, power converters and other applications where switching losses are not a significant portion of the total losses.

#### Absolute Maximum Ratings

	Parameters (*)	Max	Units
$V_R$	Cathode-to-Anode Voltage	400	V
$I_{F(AV)}$ @ $T_C = 25^\circ C$	Continuous Forward Current	350	A
$I_{F(AV)}$ @ $T_C = 110^\circ C$	Continuous Forward Current	190	
$I_{FSM}$	Single Pulse Forward Current	1200	
$P_D$ @ $T_C = 25^\circ C$	Maximum Power Dissipation	570	W
$P_D$ @ $T_C = 110^\circ C$	Maximum Power Dissipation	180	

#### Case Styles

IRUD360CW40



TO-244

(\*) Per Leg unless otherwise specified

**Electrical Characteristics (per Leg) @ T<sub>J</sub> = 25°C (unless otherwise specified)**

Parameters		Min	Typ	Max	Units	Test Conditions
V <sub>BR</sub>	Breakdown Voltage,	400	-	-	V	I <sub>R</sub> = 100μA
V <sub>FM</sub>	Forward Voltage	-	1.09	1.27		I <sub>F</sub> = 180A
		-	1.23	1.50		I <sub>F</sub> = 360A
		-	0.88	0.96		I <sub>F</sub> = 180A @ T <sub>J</sub> = 150°C
		-	1.04	1.18		I <sub>F</sub> = 360A @ T <sub>J</sub> = 150°C
I <sub>RM</sub>	Reverse Leakage Current	-	-	65	μA	V <sub>R</sub> = V <sub>R</sub> Rated
		-	0.26	1.28	mA	T <sub>J</sub> = 150°C, V <sub>R</sub> = V <sub>R</sub> Rated
L <sub>S</sub>	Series Inductance	-	5	-	nH	from top of terminal hole to mounting plane

**Dynamic Recovery Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)**

Parameters		Min	Typ	Max	Units	Test Conditions
t <sub>rr</sub>	Reverse Recovery Time	-	42	69	ns	I <sub>f</sub> = 1.0A, dif/dt = 200A/μs, V <sub>r</sub> = 30V
		-	74	-		I <sub>f</sub> = 180A, dif/dt = 200A/μs, V <sub>r</sub> = 200V
		-	171	-		I <sub>f</sub> = 180A, dif/dt = 200A/μs, V <sub>r</sub> = 200V @ T <sub>J</sub> = 125°C
I <sub>RRM</sub>	Peak Recovery Current	-	5.1	-	A	I <sub>f</sub> = 1.0A, dif/dt = 200A/μs, V <sub>r</sub> = 30V
		-	6.6	-		I <sub>f</sub> = 180A, dif/dt = 200A/μs, V <sub>r</sub> = 200V
		-	15.2	-		I <sub>f</sub> = 180A, dif/dt = 200A/μs, V <sub>r</sub> = 200V @ T <sub>J</sub> = 125°C
Q <sub>rr</sub>	Reverse Recovery Charge	-	126	-	nC	I <sub>f</sub> = 1.0A, dif/dt = 200A/μs, V <sub>r</sub> = 30V
		-	243	-		I <sub>f</sub> = 180A, dif/dt = 200A/μs, V <sub>r</sub> = 200V
		-	1295	-		I <sub>f</sub> = 180A, dif/dt = 200A/μs, V <sub>r</sub> = 200V @ T <sub>J</sub> = 125°C

**Thermal - Mechanical Characteristics**

Parameters		Min	Typ	Max	Units
T <sub>J</sub>	Max. Junction Temperature Range	-40	-	150	°C
T <sub>Stg</sub>	Max. Storage Temperature Range	-40	-	150	
R <sub>thJC</sub>	Thermal Resistance, Junction to Case	-	-	0.22	°C/W
	Thermal Resistance, Junction to Case			0.11	
R <sub>thCS</sub>	Thermal Resistance, Case to Heatsink flat greased surface	-	0.10	-	
Wt	Weight	-	68 (2.4)	-	g (oz)
T	Mounting Torque	30 (3.4)	-	40 (4.6)	lbf.in (N.m)
	Mounting Torque Center Hole	12 (1.4)	-	18 (2.1)	
	Terminal Torque	30 (3.4)	-	40 (4.6)	
	Vertical Pull	-	-	80	lbf.in
	2 inch. Lever Pull	-	-	35	

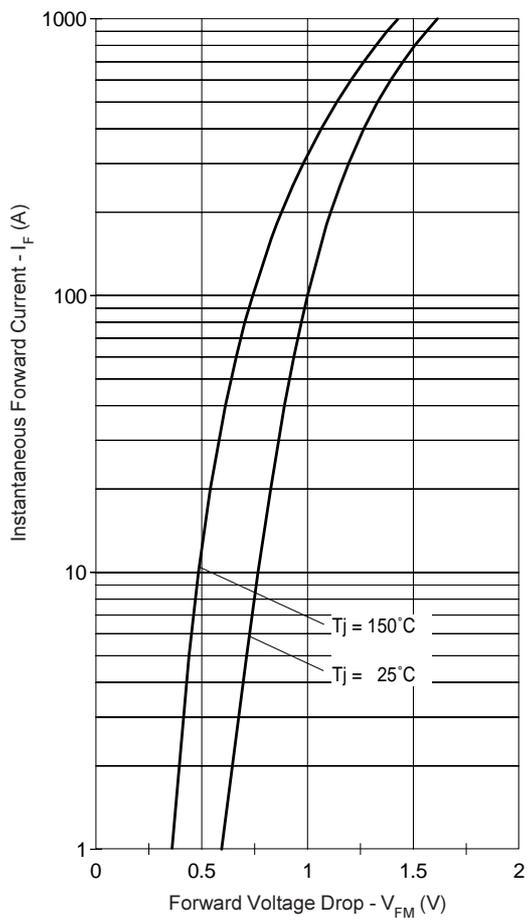


Fig. 1 - Typical Forward Voltage Drop vs. Instantaneous Forward Current (per Leg)

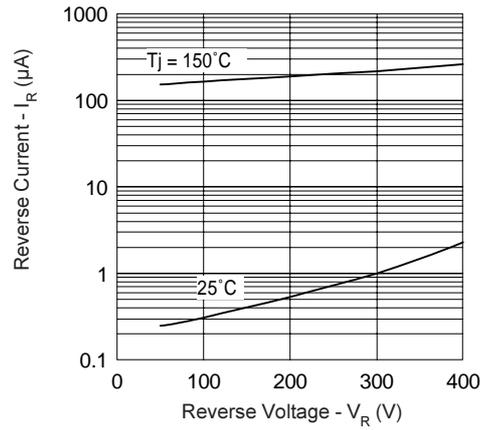


Fig. 2 - Typical Reverse Current vs. Reverse Voltage (per Leg)

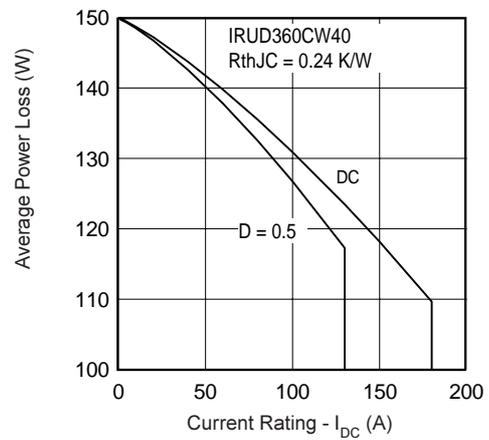


Fig. 3 - Max. Current Rating Capability (per Module)

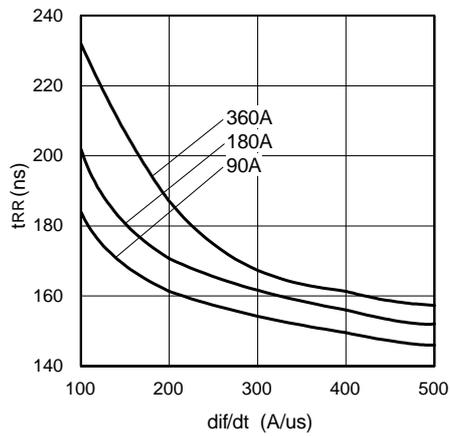


Fig. 4 - Typical Reverse Recovery vs.  $di_F/dt$   
 $T_j = 125^\circ\text{C}$  (per Leg)

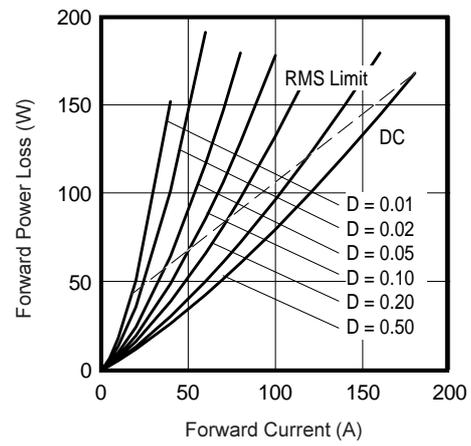


Fig. 5 - Forward Power Loss Characteristics

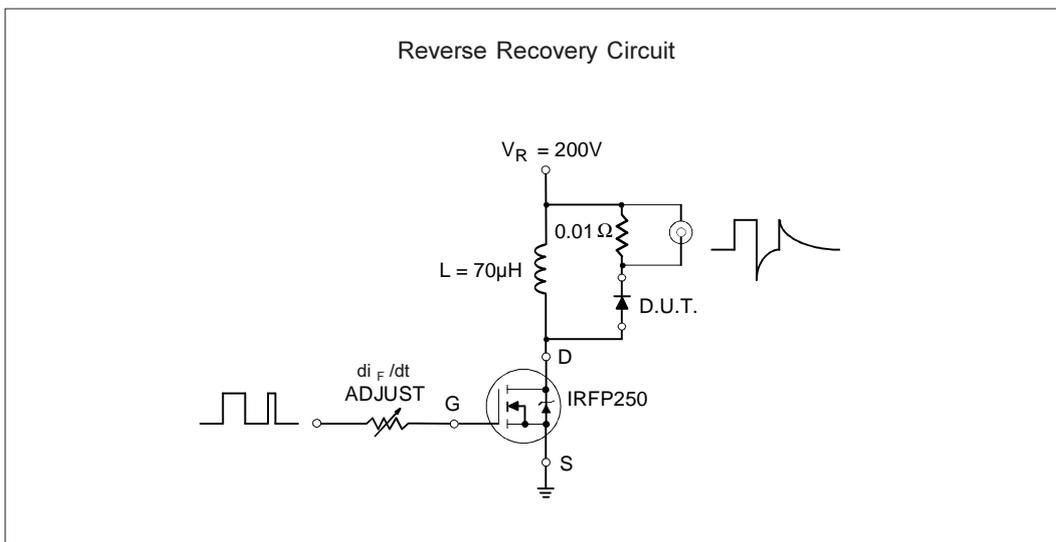
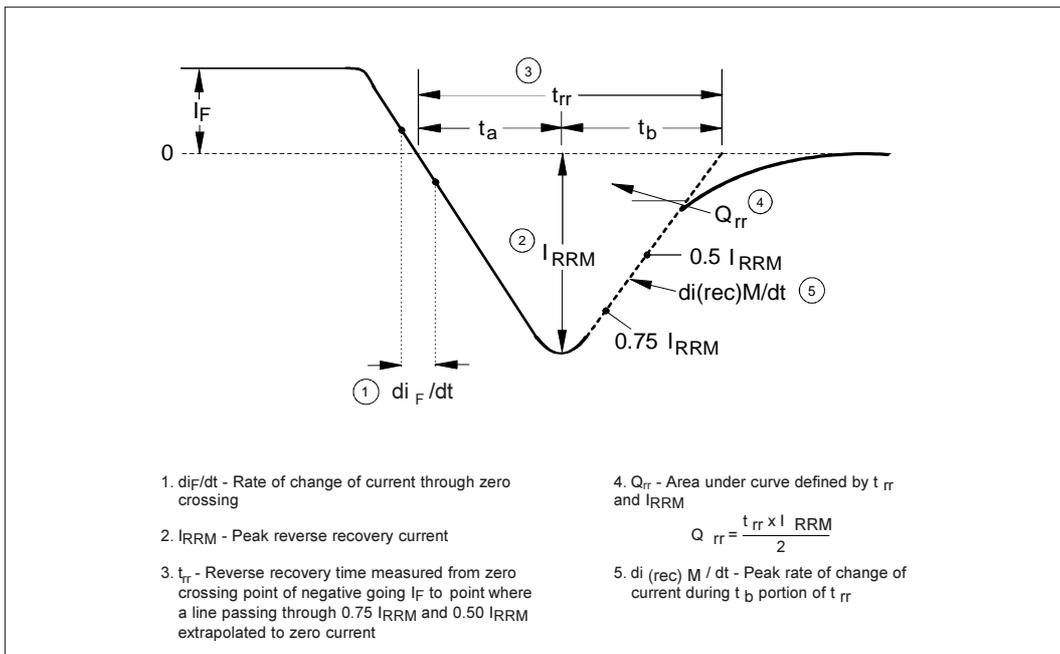
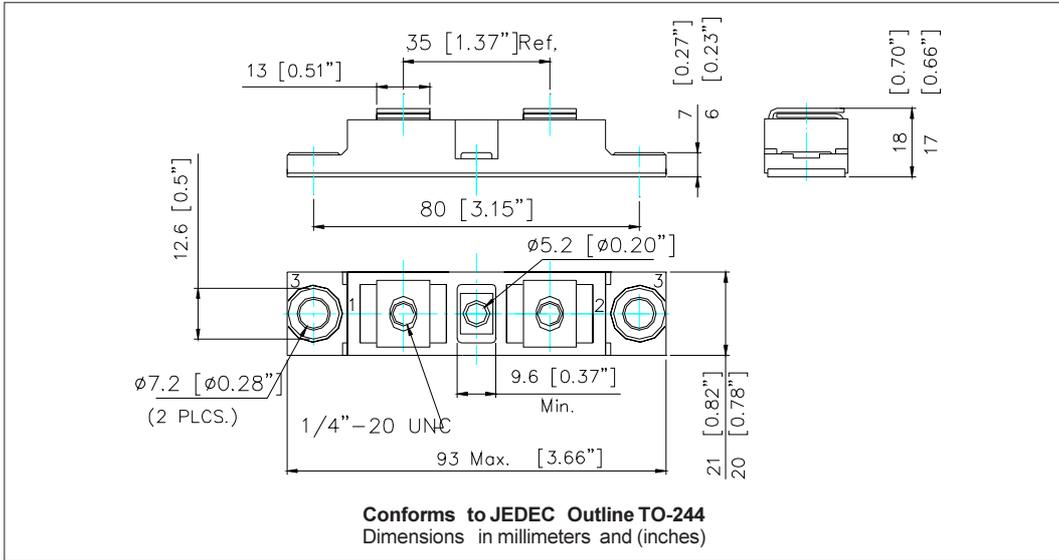


Fig. 6- Reverse Recovery Parameter Test Circuit



**Fig. 7 - Reverse Recovery Waveform and Definitions**

Outline Table



Ordering Information Table

Device Code													
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 5px;">IR</td> <td style="padding: 2px 5px;">UD</td> <td style="padding: 2px 5px;">360</td> <td style="padding: 2px 5px;">C</td> <td style="padding: 2px 5px;">W</td> <td style="padding: 2px 5px;">40</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> </tr> </table>	IR	UD	360	C	W	40	①	②	③	④	⑤	⑥
IR	UD	360	C	W	40								
①	②	③	④	⑤	⑥								
<b>1</b>	- International Rectifier												
<b>2</b>	- Type of Device Indicator: <b>UD = HEXFRED Gen.2</b>												
<b>3</b>	- Current Rating indicator x1 : <b>360 = 360A</b>												
<b>4</b>	- Circuit Configuration Indicator: <b>C = Common Cathode</b>												
<b>5</b>	- Type of Device Indicator: <b>W = TO-244 Wire Bondable Not Isolated</b>												
<b>6</b>	- Voltage Rating indicator x10 : <b>40 = 400V</b>												

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.