Bulletin PD-21047 05/05

International
IOR Rectifier

IRUD400CW60

FRED TM

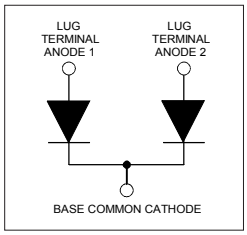
Ultrafast, Soft Recovery Diode

Features

- Ultrafast Recovery
- Lead-Free

Benefits

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



V_R = 600V
$I_{F(AV)}$ = 400A

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 significant portion of the total losses.

Absolute Maximum Ratings

Parameters (*)			Max	Units
V_R	Cathode-to-Anode Voltage		600	V
$I_{F(AV)}$	Continuous Forward Current	@ T_C = 25°C	330	A
		@ T_C = 85°C	230	
		@ T_C = 97°C	200	
I_{FSM}	Single Pulse Forward Current		1200	
P_D	Maximum Power Dissipation	@ T_C = 25°C	660	W
		@ T_C = 97°C	280	

Case Styles

IRUD400CW60

TO-244

(*) Per Leg unless otherwise specified

Electrical Characteristics (per Leg) @ T_J = 25°C (unless otherwise specified)

	Parameters	Min	Typ	Max	Units	Test Conditions
V_{BR}	Breakdown Voltage,	600	-	-	V	I_R = 100µA
V_{FM}	Forward Voltage	-	1.45	2.0		I_F = 200A
		-	1.67	2.3		I_F = 400A
		-	1.13	1.4		I_F = 200A @ T_J = 150°C
		-	1.39	1.8		I_F = 400A @ T_J = 150°C
I_{RM}	Reverse Leakage Current	-	0.3	1.38	mA	T_J = 150°C, V_R = V_R Rated
L_S	Series Inductance	-	5	-	nH	from top of terminal hole to mounting plane

Dynamic Recovery Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameters	Min	Typ	Max	Units	Test Conditions
t_{rr}	Reverse Recovery Time	-	90	-	ns	I_f = 200A, dif/dt = 200A/µs, Vr = 200V
		-	240	-		I_f = 200A, dif/dt =200A/µs, Vr =200V @ T_J = 150°C
I_{RRM}	Peak Recovery Current	-	8.3	-	A	I_f = 200A, dif/dt = 200A/µs, Vr = 200V
		-	24	-		I_f = 200A, dif/dt =200A/µs, Vr =200V @ T_J = 150°C
Q_{rr}	Reverse Recovery Charge	-	830	-	nC	I_f = 200A, dif/dt = 200A/µs, Vr = 200V
		-	4730	-		I_f = 200A, dif/dt =200A/µs, Vr =200V @ T_J = 150°C

Thermal - Mechanical Characteristics

	Parameters		Min	Typ	Max	Units
T_J	Max. Junction Temperature Range		- 40	-	150	°C
T_{Stg}	Max. Storage Temperature Range		- 40	-	150	
R_{thJC}	Thermal Resistance, Junction to Case	Per Leg	-	-	0.19	°C/W
	Thermal Resistance, Junction to Case	Per Module	-	-	0.095	
R_{thCS}	Thermal Resistance, Case to Heatsink		-	0.10	-	
Wt	Weight		-	68 (2.4)	-	g (oz)
T	Mounting Torque		30 (3.4)	-	40 (4.6)	lbf.in
	Mounting Torque Center Hole		12 (1.4)	-	18 (2.1)	(N.m)
	Terminal Torque		30 (3.4)	-	40 (4.6)	
	Vertical Pull		-	-	80	lbf.in
	2 inch. Lever Pull		-	-	35	

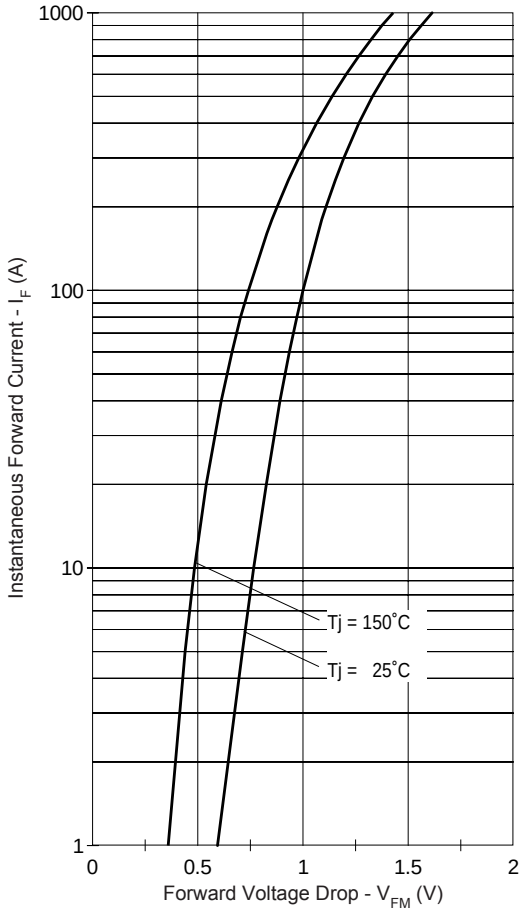


Fig. 1 - Typical Forward Voltage Drop
vs. Instantaneous Forward Current (per Leg)

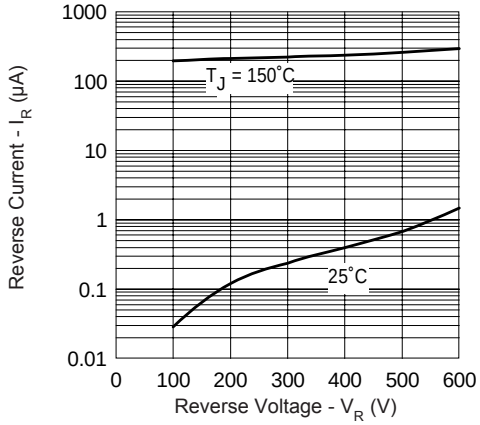


Fig. 2 - Typical Reverse Current vs. Reverse
Voltage (per Leg)

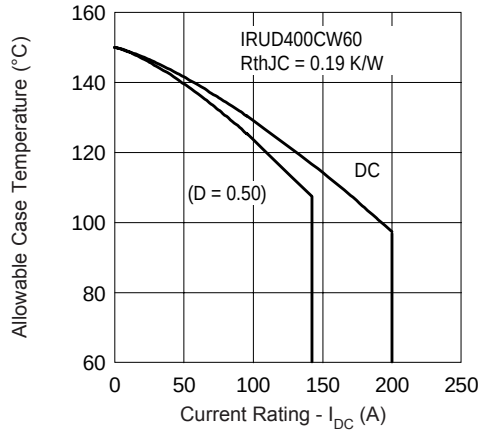


Fig. 3 - Max. Current Rating Capability
(per Leg)

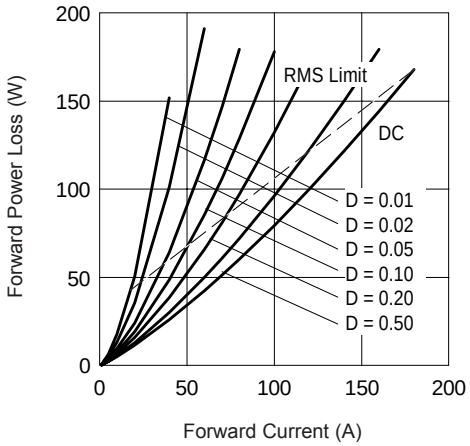


Fig. 4 - Typical Recovery Current vs. di_f/dt (per Leg)

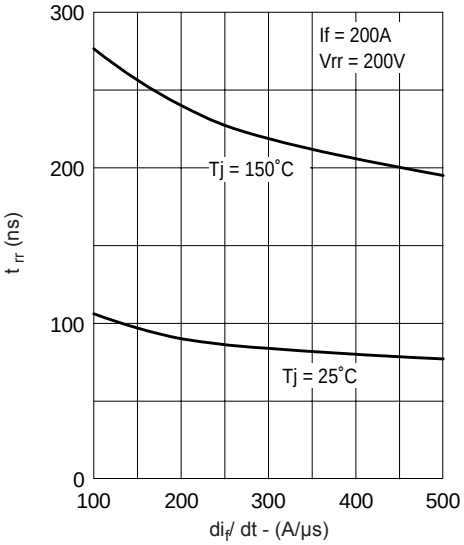


Fig. 5 - Typical Reverse Recovery Time vs. di_f/dt (per Leg)

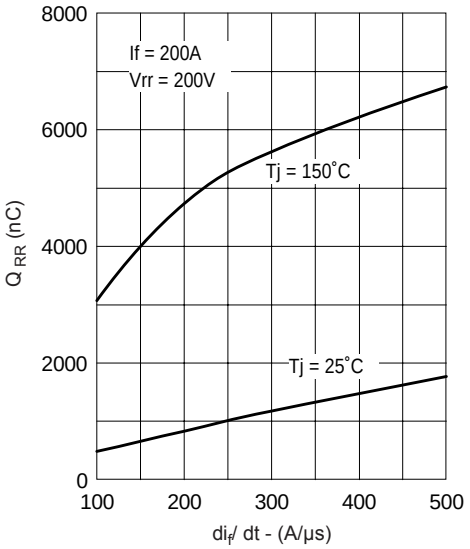


Fig. 6 - Typical Reverse Recovery Charge vs. di_f/dt (per Leg)

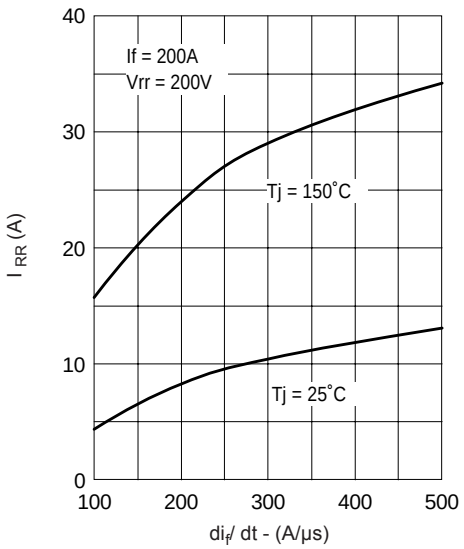


Fig. 7 - Typical Reverse Recovery Current vs. di_f/dt (per Leg)

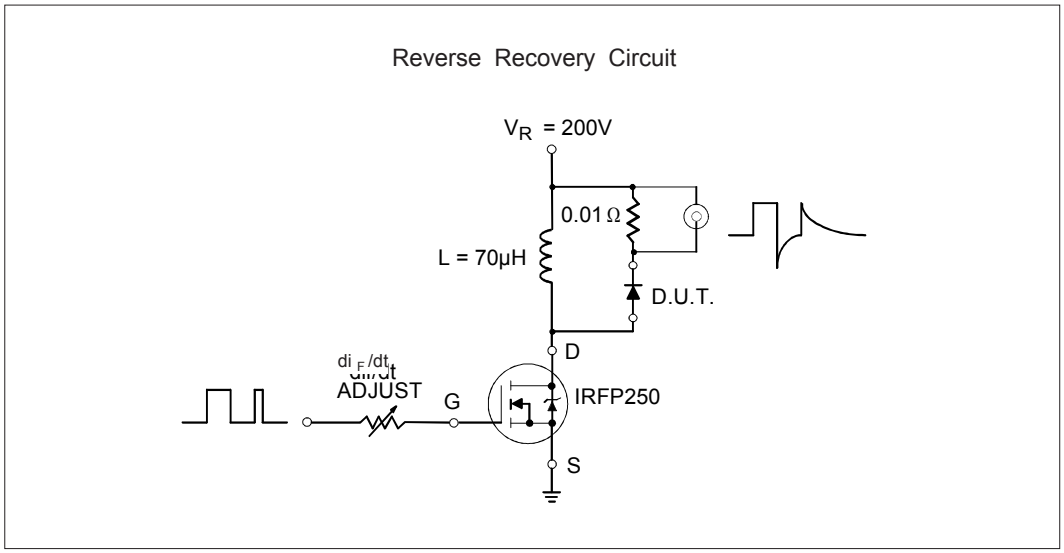
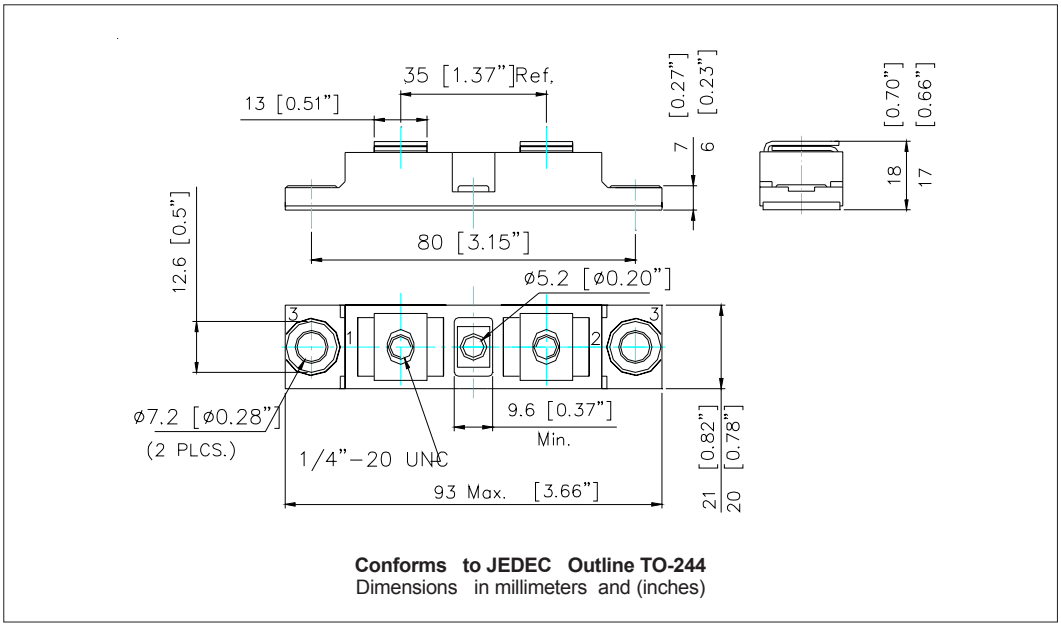


Fig. 8 - Reverse Recovery Parameter Test Circuit

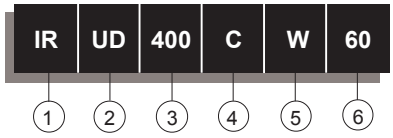
Outline Table



Conforms to JEDEC Outline TO-244
Dimensions in millimeters and (inches)

Ordering Information Table

Device Code



1	-	International Rectifier
2	-	UD = Fred
3	-	Current Rating (400 = 400A)
4	-	Circuit Configuration (C = Common Cathode)
5	-	W = TO-244 Wire Bondable not Isolated
6	-	Voltage Rating (60 = 600V)

Data and specifications subject to change without notice.
This product has been designed for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

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