



IRUD360CW40

FRED

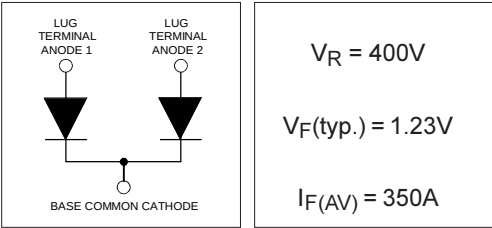
Ultrafast, Soft Recovery Diode

Features

- Ultrafast Recovery
- 150°C Operating Junction Temperature

Benefits

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



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	



(*) Per Leg unless otherwise specified

Electrical Characteristics (per Leg) @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Parameters	Min	Typ	Max	Units	Test Conditions
V_{BR} Breakdown Voltage,	400	-	-	V	$I_R = 100\mu\text{A}$
V_{FM} Forward Voltage	-	1.09	1.27		$I_F = 180\text{A}$
	-	1.23	1.50		$I_F = 360\text{A}$
	-	0.88	0.96		$I_F = 180\text{A} @ T_J = 150^\circ\text{C}$
	-	1.04	1.18		$I_F = 360\text{A} @ T_J = 150^\circ\text{C}$
I_{RM} Reverse Leakage Current	-	-	65	μA	$V_R = V_R \text{ Rated}$
	-	0.26	1.28	mA	$T_J = 150^\circ\text{C}, V_R = V_R \text{ Rated}$
L_S Series Inductance	-	5	-	nH	from top of terminal hole to mounting plane

Dynamic Recovery Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Parameters	Min	Typ	Max	Units	Test Conditions
t_{rr} Reverse Recovery Time	-	42	69	ns	$I_f = 1.0\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 30\text{V}$
	-	74	-		$I_f = 180\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 200\text{V}$
	-	171	-		$I_f = 180\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 200\text{V} @ T_J = 125^\circ\text{C}$
I_{RRM} Peak Recovery Current	-	5.1	-	A	$I_f = 1.0\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 30\text{V}$
	-	6.6	-		$I_f = 180\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 200\text{V}$
	-	15.2	-		$I_f = 180\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 200\text{V} @ T_J = 125^\circ\text{C}$
Q_{rr} Reverse Recovery Charge	-	126	-	nC	$I_f = 1.0\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 30\text{V}$
	-	243	-		$I_f = 180\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 200\text{V}$
	-	1295	-		$I_f = 180\text{A}, \text{dif}/\text{dt} = 200\text{A}/\mu\text{s}, V_r = 200\text{V} @ T_J = 125^\circ\text{C}$

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	-	-	0.22	°C/W
	Thermal Resistance, Junction to Case	Per Module	-	-	0.11	
R _{thCS}	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
	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	

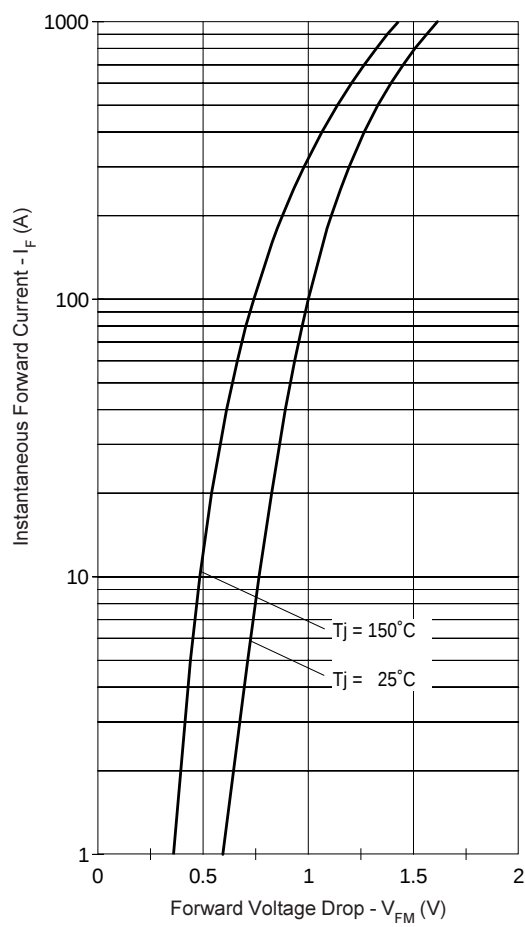


Fig. 1 - Typical Forward Voltage Drop
vs. Instantaneous Forward Current (per Leg)

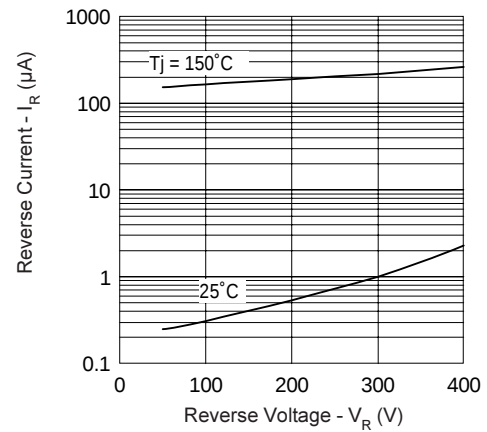


Fig. 2 - Typical Reverse Current vs. Reverse
Voltage (per Leg)

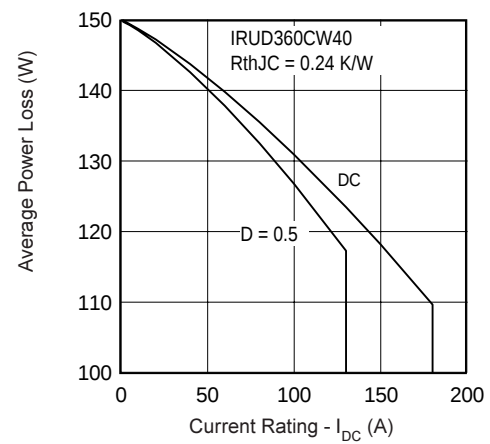


Fig. 3 - Max. Current Rating Capability
(per Module)

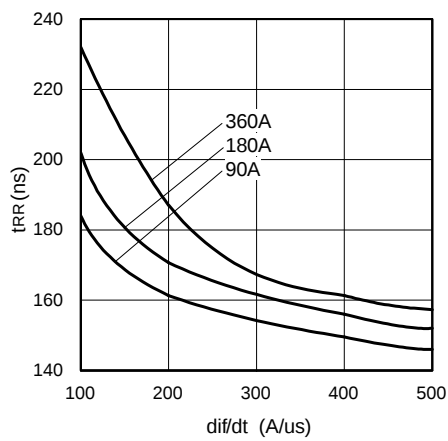


Fig. 4 - Typical Reverse Recovery vs. di_F/dt
 $T_J = 125^\circ\text{C}$ (per Leg)

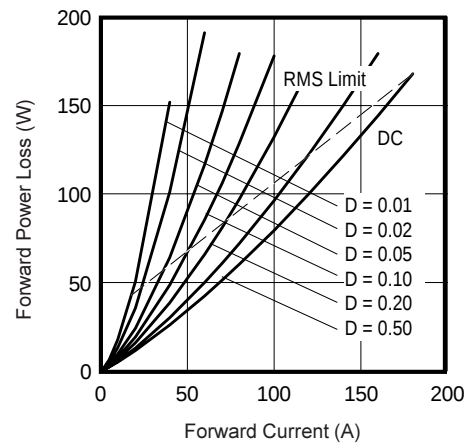


Fig. 5 - Forward Power Loss
Characteristics

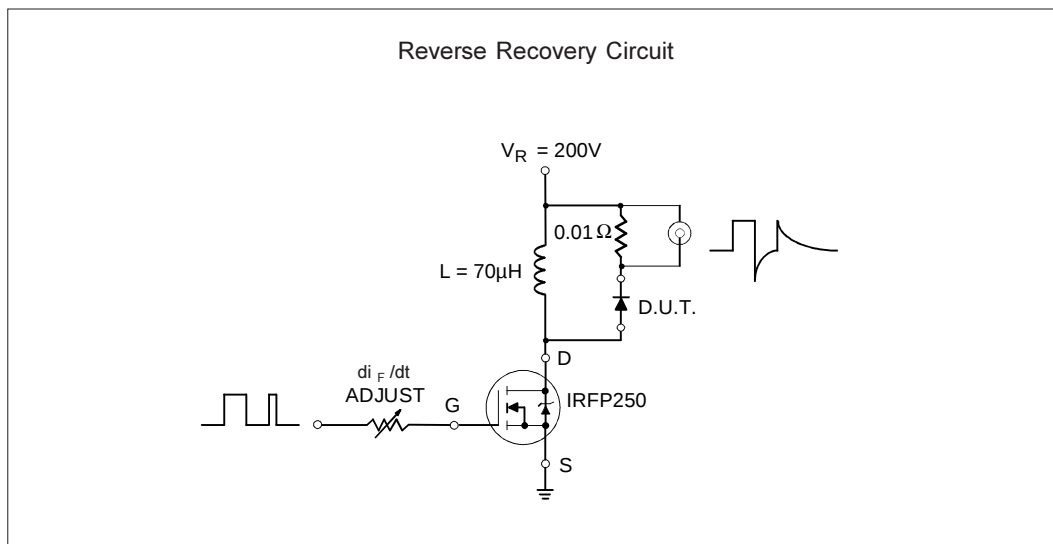


Fig. 6- Reverse Recovery Parameter Test Circuit

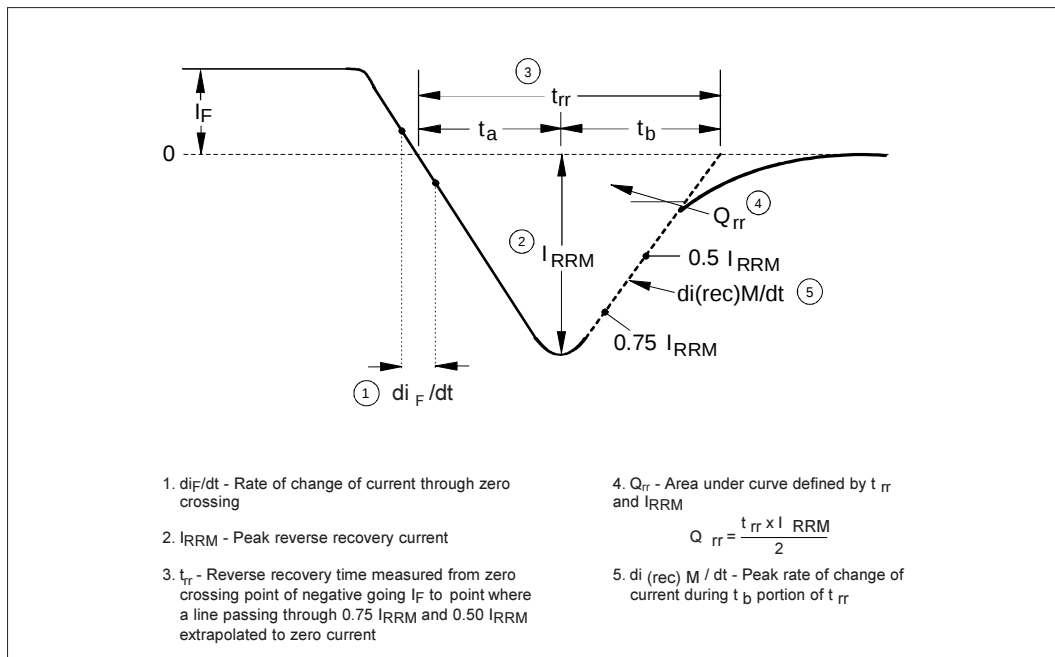
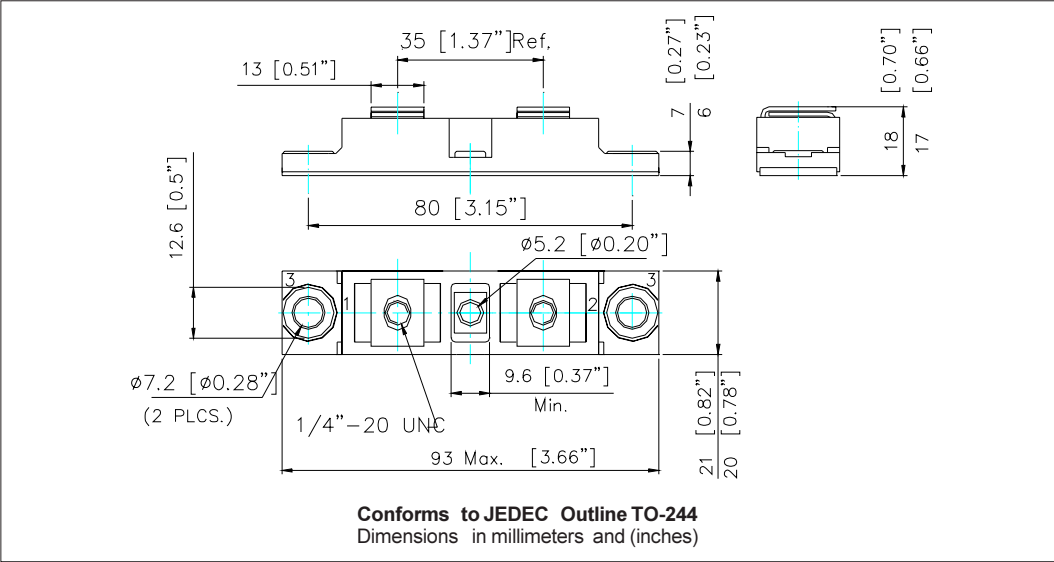


Fig. 7 - Reverse Recovery Waveform and Definitions

Outline Table



Ordering Information Table

Device Code					
IR	UD	360	C	W	40
1	2	3	4	5	6
1	-	International Rectifier			
2	-	Type of Device Indicator:	UD = HEXFRED Gen.2		
3	-	Current Rating indicator x1 :	360 = 360A		
4	-	Circuit Configuration Indicator:	C = Common Cathode		
5	-	Type of Device Indicator:	W = TO-244 Wire Bondable Not Isolated		
6	-	Voltage Rating indicator x10 :	40 = 400V		

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.