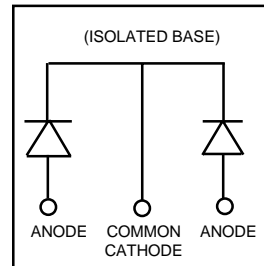


## Features

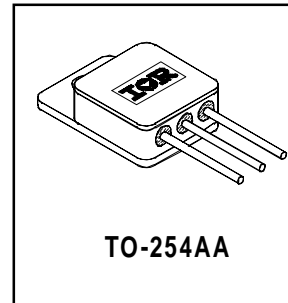
- Reduced RFI and EMI
- Reduced Snubbing
- Extensive Characterization of Recovery Parameters
- Hermetic
- Electrically Isolated
- Ceramic Eyelets



$V_R = 1200V$
$V_F = 4.46V$
$Q_{rr} = 370nC$
$di_{(rec)}/dt = 380A/\mu s$

## Description

HEXFRED™ diodes are optimized to reduce losses and EMI/RFI in high frequency power conditioning systems. An extensive characterization of the recovery behavior for different values of current, temperature and di/dt simplifies the calculations of losses in the operating conditions. The softness of the recovery eliminates the need for a snubber in most applications. These devices are ideally suited for power converters, motors drives and other applications where switching losses are significant portion of the total losses.



## Absolute Maximum Ratings (per Leg)

	Parameter	Max.	Units
$V_R$	D.C. Reverse Voltage	1200	V
$I_F @ T_C = 100^\circ C$	Continuous Forward Current ①	15	A
$I_{FSM} @ T_C = 25^\circ C$	Single Pulse Forward Current ②	130	
$P_D @ T_C = 25^\circ C$	Maximum Power Dissipation	63	W
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$

## Thermal - Mechanical Characteristics

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case, Single Leg Conducting	—	2.0	$^\circ C/W$
	Weight	9.3	—	g

**Note:** ① D.C. = 50% rect. wave

② 1/2 sine wave, 60 Hz, P.W. = 8.33 ms

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# HFA35HB120C

International  
**IRF** Rectifier

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

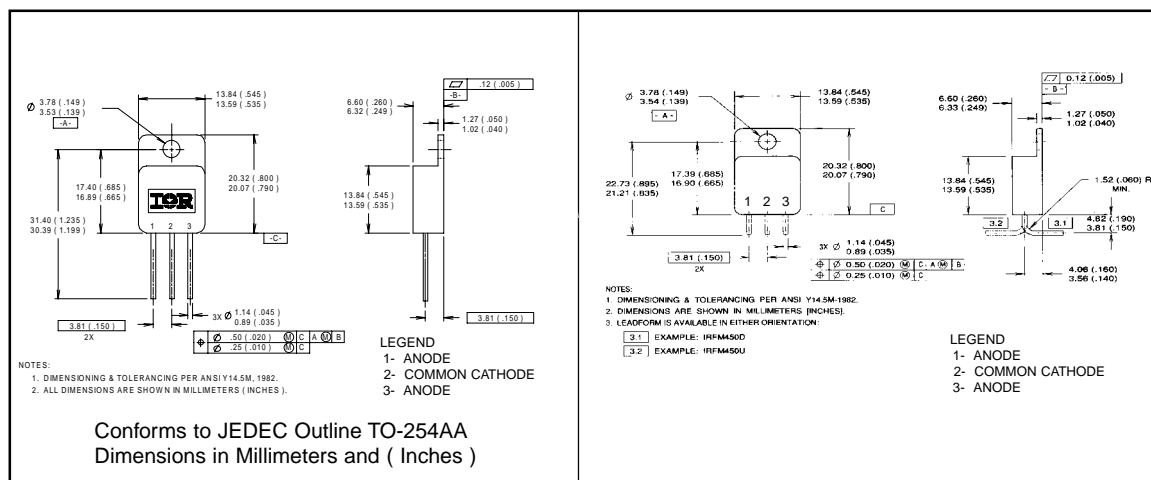
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$V_{BR}$	Cathode Anode Breakdown Voltage	1200	—	—	V	$I_R = 250\mu\text{A}$
$V_{FM}$	Max Forward Voltage	—	—	3.3	V	$I_F = 7.0\text{A}$
		—	—	4.4		$I_F = 15\text{A}$ See Fig. 1
		—	—	2.8		$I_F = 7.0\text{A}, T_J = 125^\circ\text{C}$
$I_{RM}$	Max Reverse Leakage Current	—	—	10	$\mu\text{A}$	$V_R = V_R$ Rated
		—	—	1.0	$\text{mA}$	$T_J = 125^\circ\text{C}, V_R = 480\text{V}$ See Fig. 2
$C_T$	Junction Capacitance	—	10	15	$\text{pF}$	$V_R = 200\text{V}$ See Fig. 3
$L_S$	Series Inductance	—	8.7	—	$\text{nH}$	Measured from center of bond pad to end of anode bonding wire

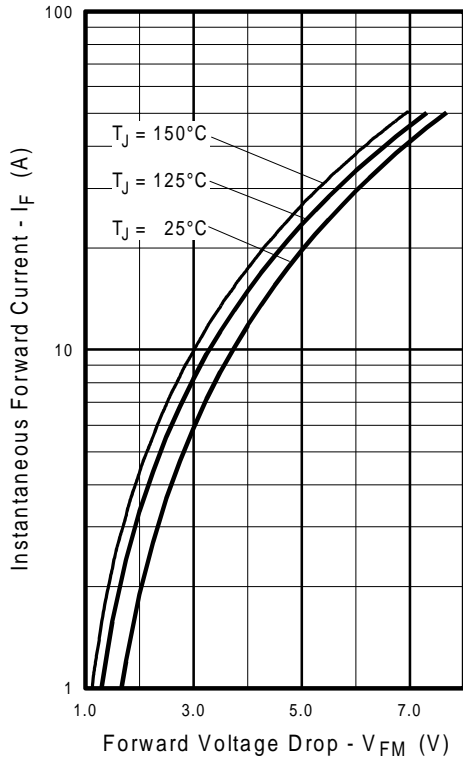
## Dynamic Recovery Characteristics (per Leg) @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$t_{rr1}$	Reverse Recovery Time	—	58	100	ns	$T_J = 25^\circ\text{C}$ See Fig.
$t_{rr2}$		—	110	165		$T_J = 125^\circ\text{C}$ 5
$I_{RRM1}$	Peak Recovery Current	—	5.4	8.1	A	$T_J = 25^\circ\text{C}$ See Fig.
$I_{RRM2}$		—	7.2	10.8		$T_J = 125^\circ\text{C}$ 6
$Q_{rr1}$	Reverse Recovery Charge	—	185	370	nC	$T_J = 25^\circ\text{C}$ See Fig.
$Q_{rr2}$		—	395	590		$T_J = 125^\circ\text{C}$ 7
$di_{(rec)M}/dt1$	Peak Rate of Fall of Recovery Current	—	255	380	$\text{A}/\mu\text{s}$	$T_J = 25^\circ\text{C}$ See Fig.
$di_{(rec)M}/dt2$		—	160	240		$T_J = 125^\circ\text{C}$ 8

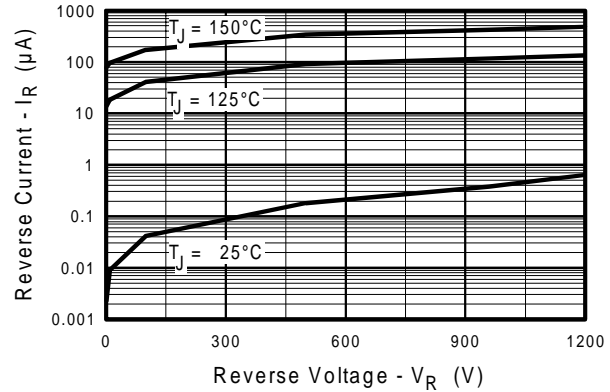
$I_F = 7\text{A}$   
 $V_R = 200\text{V}$   
 $di/dt = 200\text{A}/\mu\text{s}$

## Case Outline and Dimensions — TO-254AA

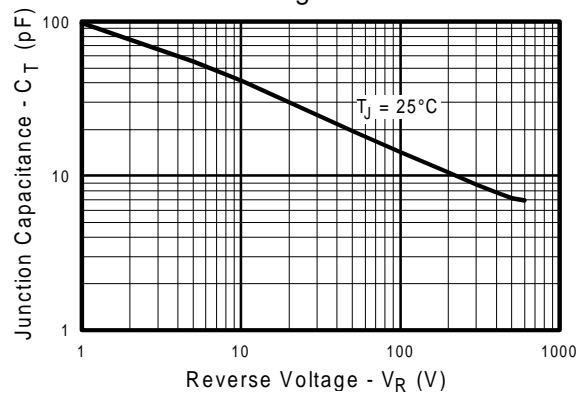




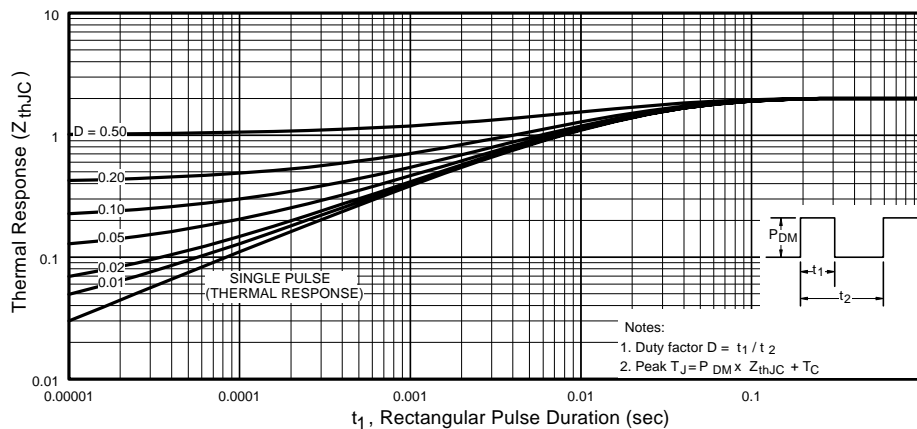
**Fig. 1** - Maximum Forward Voltage Drop vs. Instantaneous Forward Current



**Fig. 2** - Typical Reverse Current vs. Reverse Voltage



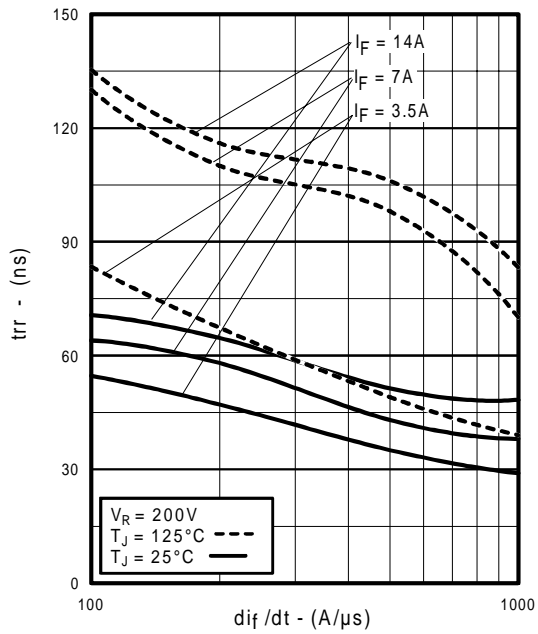
**Fig. 3** - Typical Junction Capacitance vs. Reverse Voltage



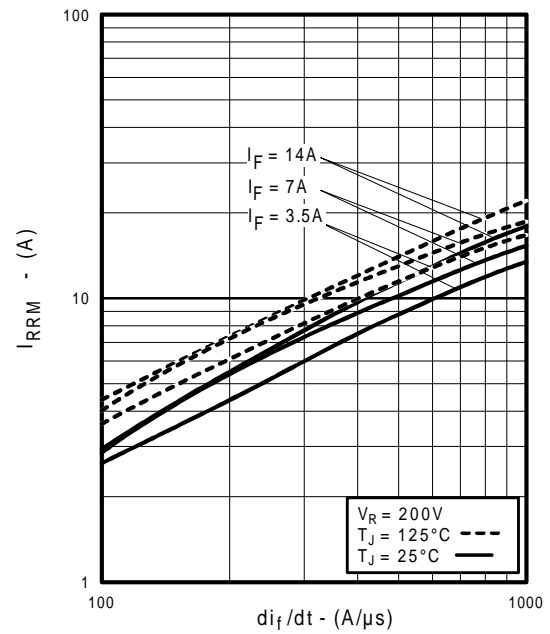
**Fig. 4** - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

# HFA35HB120C

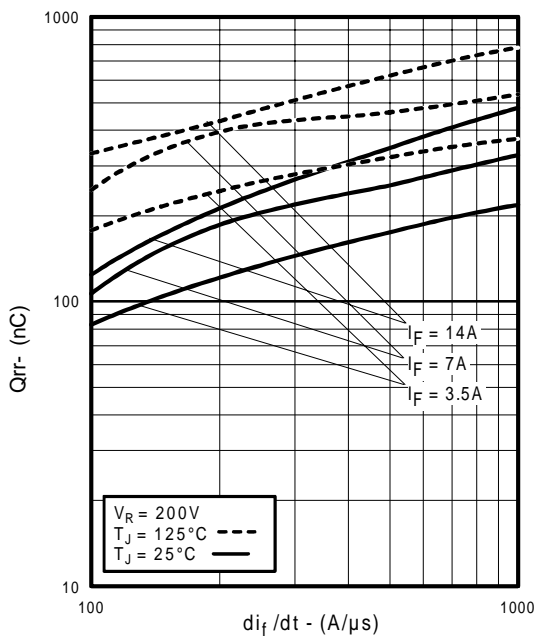
International  
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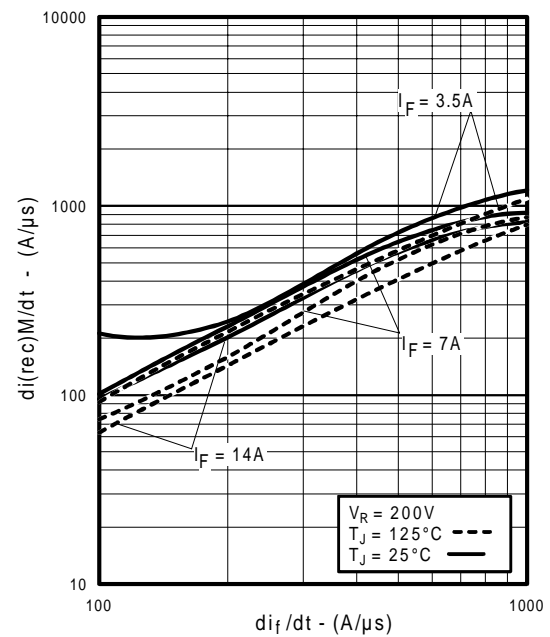
**Fig. 5** - Typical Reverse Recovery vs.  $di_f/dt$



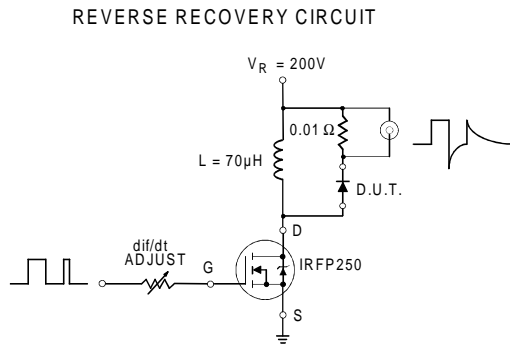
**Fig. 6** - Typical Recovery Current vs.  $di_f/dt$



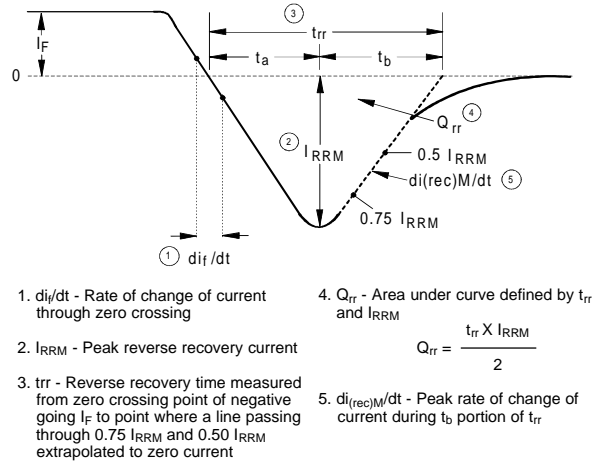
**Fig. 7** - Typical Stored Charge vs.  $di_f/dt$



**Fig. 8** - Typical  $di_{(rec)M}/dt$  vs.  $di_f/dt$



**Fig. 9 - Reverse Recovery Parameter Test Circuit**



**Fig. 10 - Reverse Recovery Waveform and Definitions**