

International
IR Rectifier
HEXFRED™

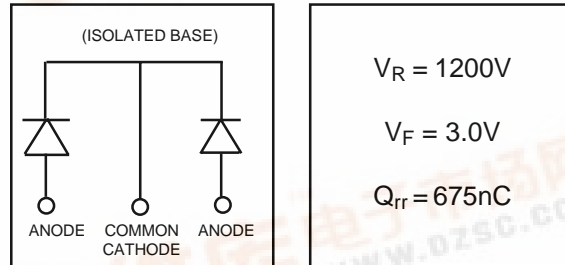
PD-20375A

HFA45HC120C

Ultrafast, Soft Recovery Diode

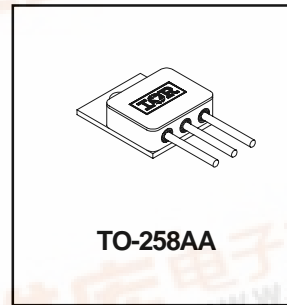
Features

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



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	28	A
$I_{FSM} @ T_C = 25^\circ C$	Single Pulse Forward Current ②	190	
$P_D @ T_C = 25^\circ C$	Maximum Power Dissipation	104	W
T_J	Operating Junction and	-55 to +150	°C
T_{STG}	Storage Temperature Range		

Thermal - Mechanical Characteristics

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case, Single Leg Conducting	—	1.2	°C/W
	Weight	10.9	—	g

Note: ① D.C. = 50% rect. wave
② 1/2 sine wave, 60 Hz, P.W. = 8.33 ms

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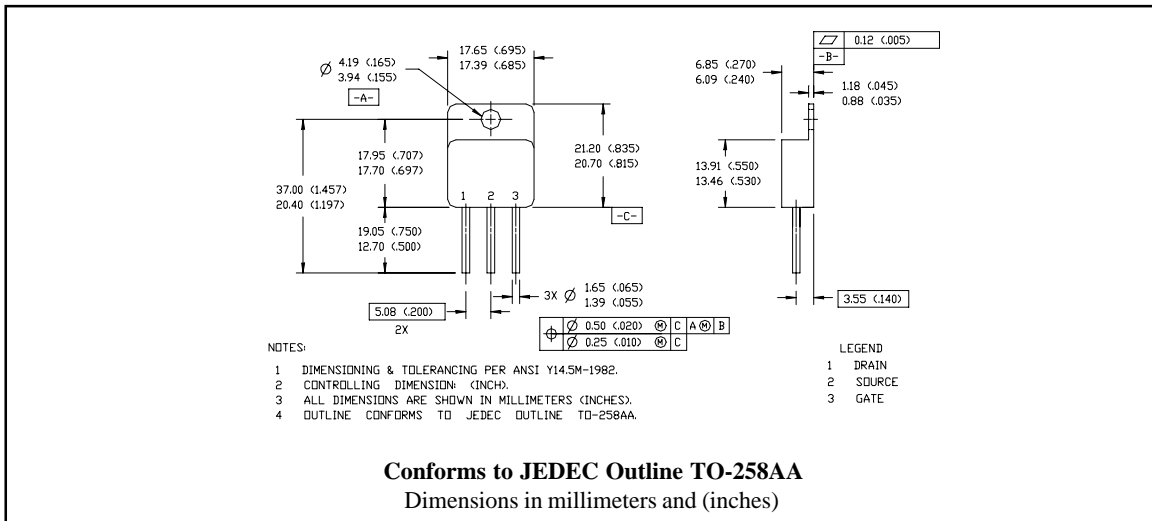
Electrical Characteristics (per Leg) @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V_{BR}	Cathode Anode Breakdown Voltage	1200	—	—	V	$I_R = 100\mu\text{A}$
V_{FM}	Max Forward Voltage	—	—	3.0	V	$I_F = 14\text{A}$
		—	—	3.9		$I_F = 28\text{A}$
		—	—	2.7		$I_F = 14\text{A}, T_J = 125^\circ\text{C}$
I_{RM}	Max Reverse Leakage Current	—	—	20	μA	$V_R = V_R$ Rated
		—	—	2.0	mA	$T_J = 125^\circ\text{C}, V_R = 960\text{V}$
C_T	Junction Capacitance	—	—	40	pF	$V_R = 200\text{V}$
L_S	Series Inductance	—	8.7	—	nH	Measured from center of bond pad to end of anode bonding wire

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

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
t_{rr}	Reverse Recovery Time	—	—	135	nS	$I_F = 14\text{A}, di/dt \leq 200\text{A}/\mu\text{s}, V_R = 200\text{V}$
I_{RRM}	Max Reverse Recovery Current	—	—	10	A	$I_F = 14\text{A}, di/dt \leq 200\text{A}/\mu\text{s}, V_R = 200\text{V}$
Q_{RR}	Reverse Recovered Charge	—	—	675	nC	$I_F = 14\text{A}, di/dt \leq 200\text{A}/\mu\text{s}, V_R = 200\text{V}$

Case Outline and Dimensions — TO-258AA



CAUTION BERYLLIA WARNING PER MIL-PRF-19500

Package containing beryllia shall not be ground, sandblasted, machined, or have other operations performed on them which will produce beryllia or beryllium dust. Furthermore, beryllium oxide packages shall not be placed in acids that will produce fumes containing beryllium.

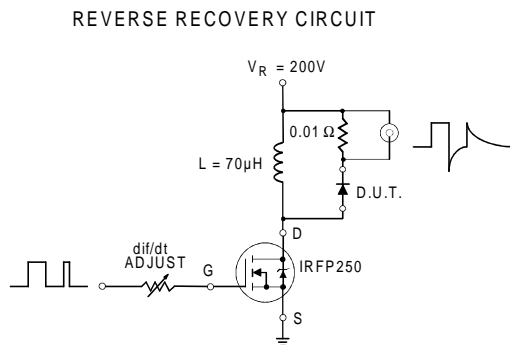


Fig.1 - Reverse Recovery Parameter Test Circuit

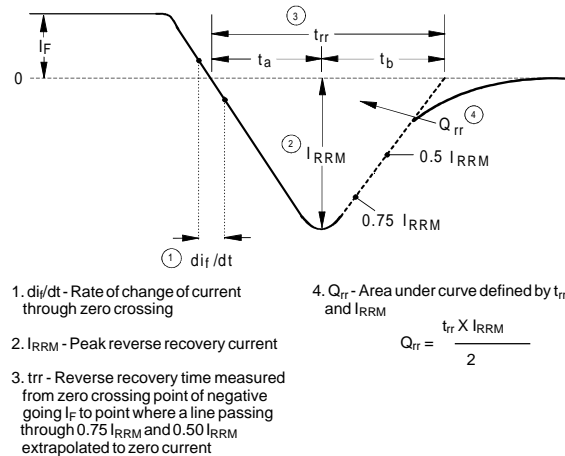


Fig. 2 - Reverse Recovery Waveform and Definitions