International
IOR Rectifier

PD-2.368
Provisional Data Sheet

HFA45HC60C

HEXFRED™ ULTRA FAST, SOFT RECOVERY DIODE 600V, 45A

Major Ratings and Characteristics

Characteristics		Units
V_{br} (per leg)	600	V
$I_{F(AV)}$	45*	A
t_{rr} (per leg)	75	ns
Q_{rr} (per leg)	375	nC
I_{RRM} (per leg)	10	A
V_F (per leg)	1.7	V

*I_F limited by pin diameter

Features:
- — Ultrafast Recovery
- — Ultra Soft Recovery
- — Very Low I_{RRM}
- — Very Low Q_{rr}
- — Guaranteed Avalanche
- — Specified at Operating Conditions
- — Hermetic
- — Electrically Isolated
- — Ceramic Eyelets

Benefits:
- — Reduced RFI and EMI
- — Reduced Power Loss in Diode and Switching Transistor
- — Higher Frequency Operation
- — Reduced Snubbing
- — Reduced Parts Count

Description

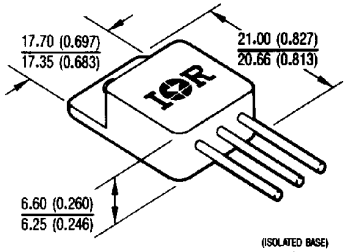
International Rectifier's HFA45HC60C is a state of the art ultra fast recovery diode. Employing the latest in epitaxial construction and advanced processing techniques it features a superb combination of characteristics which result in performance which is unsurpassed by any rectifier previously available.

With basic ratings of 600 volts and 45 amps continuous current, the HFA45HC60C is especially well suited for use as the companion diode for IGBTs and MOSFETs. In addition to ultra fast recovery time, the HEXFRED product line features extremely low values of peak recovery current (I_{RRM}) and does not exhibit any tendency to "snap-off" during the t_b portion of recovery.

The HEXFRED features combine to offer designers a rectifier with lower noise and significantly lower switching losses in both the diode and the switching transistor. These HEXFRED advantages can help to significantly reduce snubbing, component count and heatsink sizes.

The HEXFRED HFA45HC60C is ideally suited for applications in power supplies and power conversion systems (such as inverters, converters, UPS systems, and power factor correction circuits), motor drives, and many other similar applications where high speed, high efficiency rectification is needed.

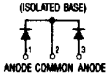
CASE STYLE AND DIMENSIONS

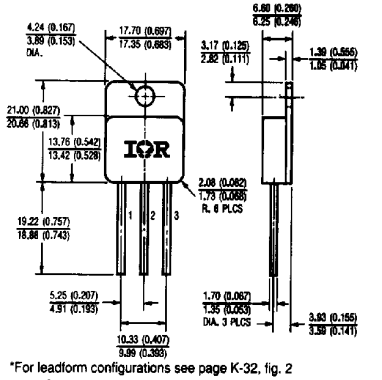


CAUTION

BERYLLIA WARNING PER MIL-S-19500

SEE PAGE K-31





*For leadform configurations see page K-32, fig. 2

Conforms to JEDEC Outline TO-258AA*

Dimensions in Millimeters and (Inches)

Voltage Ratings: T_J = 25 - 150°C

Parameter			Units	
V_{BR} (per leg)	Max D.C. Reverse Voltage (V)	600	V	
V_{ISO} (per leg)	Max PK Repetitive Reverse Voltage (V)			70K ft, I_R < 25μA

Absolute Maximum Ratings

Parameter		Min	Typ	Max	Units	Conditions
$I_{F(AV)}$	Max Average Forward Current	—	—	45*	A	T_C = 100°C, d.c. = 50%, rect. wave V_R = 0.8 V_{RRM}
I_{FSM} (per leg)	Max Single Pulse Forward Current	—	—	225		T_C = 25°C, 1/2 Sine Wave, 60 Hz P.W. = 8.33 ms
I_{AS}	Max Single Pulse Avalanche Current	—	—	2		L = 100 μH

*I_F limited by pin diameter

Electrical Specifications: T_J = 25°C unless otherwise specified

Parameter		Min	Typ	Max	Units	Conditions
V_{FM} (per leg)	Max Forward Voltage	—	—	1.7	V	I_F = 22A
		—	—	2.0		I_F = 45A
		—	—	1.5		I_F = 22A, T_J = 125°C
I_{RM} (per leg)	Max Reverse Leakage Current	—	—	10	μA	V_R = V_R Rated
		—	—	1.0	mA	T_J = 125°C, V_R = 0.8 x V_R Rated
C_T (per leg)	Junction Capacitance	—	—	100	pF	V_R = 200V
L_S	Internal Source Inductance	—	8.7	—	nH	Measured lead to lead 5mm from package body

Dynamic Recovery Specifications: T_J = 25°C unless otherwise specified

Parameter		Min	Typ	Max	Units	Conditions
t_{rr} (per leg)	Reverse Recovery Time	—	—	75	ns	I_F = 22A, di/dt ≤ 200A/μs, V_R = 200V
I_{RRM} (per leg)	Max Reverse Recovery Current	—	—	10	A	I_F = 22A, di/dt ≤ 200A/μs, V_R = 200V
Q_{RR} (per leg)	Reverse Recovered Charge	—	—	375	nC	I_F = 22A, di/dt ≤ 200A/μs, V_R = 200V

Thermal-Mechanical Specifications

Parameter		Min	Typ	Max	Units	Conditions
T_J, T_{STG}	Junction and Storage Temp Range	-55	—	150	°C	
$R_{\theta JC}$	Thermal Resistance; Junction to Case	—	—	1.20	K/W	
W_T	Weight	—	10.9	—	g	
Case	TO-258AA	—	JEDEC		—	