# International

PD-2.375 Provisional Data Sheet HFA45HC120C

# HEXFRED™ ULTRA FAST, SOFT RECOVERY DIODE 1200V, 28A

#### **Major Ratings and Characteristics**

Characteristics		Unite
V <sub>br</sub> (per leg)	1200	v
IF(AV)	28	A
t <sub>rr</sub> (per leg)	135	ns
Q <sub>rr</sub> (per leg)	675	nC
RRM (per leg)	10	A
VF (per leg)	3.0	v

#### Description

International Rectifier's HFA45HC120C 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 1200 volts and 28 amps continuous current, the HFA45HC120C is especially well suited for use as the companion diode for [GBFs and MOSFETs, In addition to ultra fast recovery time, the HEXFRED product line features extremely low values of peak recovery current (IRRM) and does not exhibit any tendency to "snap-off" during the t<sub>b</sub> portion of recovery.

#### Features:

- Ultrafast Recovery
- Ultra Soft Recovery
- Very Low IRRM
- Very Low Qrr
- Guaranteed Avalanche
  Specified at Operating Conditions
- Specified at
- Hermetic
- Electrically Isolated
- Ceramic Éyelets

#### Benefits:

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

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 HFA45HC120C 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.



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#### Voltage Ratings: TJ = 25 - 150°C

Parameter			Units	
V <sub>br</sub> (per leg)	Max D.C. Reverse Voltage (V)	1200	v	
VISO (per leg)	Max PK Repetitive Reverse Voltage (V)	600		70K ft, I <sub>R</sub> < 25μA

### Absolute Maximum Ratings

Parameter		Min	Тур	Max	Units	Conditions
IF(AV)	Max Average Forward Current	-	-	28		$T_{C}$ = 100°C, d.c. = 50%, rect. wave V <sub>R</sub> = 0.8 V <sub>RRM</sub>
FSM (per leg)	Max Single Pulse Forward Current	-	-	190	A	T <sub>C</sub> = 25°C, 1/2 Sine Wave, 60 Hz P.W. = 8.33 ms
IAS	Max Single Pulse Avelanche Current	-	-	2		L ≈ 100 µH

# Electrical Specifications: TJ = 25°C unless otherwise specified

Parameter		Min	Тур	Max	Units	Conditions
VFM (per leg)	Max Forward Voltage		-	3.0	v	IF = 14A
		-	-	3.9		1F = 28A
		-		2.7		IF = 14A, TJ = 125°C
IRM (per leg)	Max Reverse Leakage Current	-	-	20	μA	V <sub>R</sub> = V <sub>R</sub> Rated
		-	-	2.0	mA	T <sub>J</sub> = 125°C, V <sub>R</sub> ≈ 0.8 x V <sub>R</sub> Rated
CT (per leg)	Junction Capacitance		-	40	pF	V <sub>R</sub> = 200V
LS	Internal Source Inductance	-	8.7		nH	Measured lead to lead 5mm from package body

# Dynamic Recovery Specifications: TJ = 25°C unless otherwise specified

Parameter		Min	Тур	Max	Units	Conditions
t <sub>rr</sub> (per leg)	Reverse Recovery Time	-	-	135	ns	IF = 14A, di/dt $\leq$ 200A/ $\mu$ s, VR $\approx$ 200V
RRM (per leg)	Max Reverse Recovery Current	-	-	10	Α	$i_F = 14A$ , di/dt $\leq 200A/\mu$ s, $V_R = 200V$
QRR (per leg)	Reverse Recovered Charge	-	-	675	nC	$I_F = 14A$ , di/dt $\leq 200A/\mu s$ , $V_R = 200V$

# **Thermal-Mechanical Specifications**

Parameter		Min	Тур	Мах	Units	Conditions
TJ, TSTG	Junction and Storage Temp Range	-55	-	150	°C	
R <sub>ØJC</sub>	Thermal Resistance; Junction to Case	-	-	1.20	K/W	
WT	Weight		10.9	_	g	
Case	TO-258AA		JE	DEC		