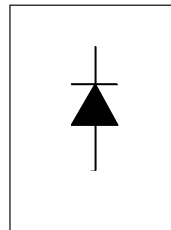


International  
**IOR** Rectifier

**QUIETIR** Series  
60EPF.. 60CPF.. HV

**FAST SOFT RECOVERY  
RECTIFIER DIODE**



$V_F < 1.2V @ 30A$   
 $t_{rr} = 95 \text{ ns}$   
 $V_{RRM} 1000 \text{ to } 1200V$

#### Description/Features

The 60EPF.. & 60CPF.. fast soft recovery QUIETIR rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop. The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

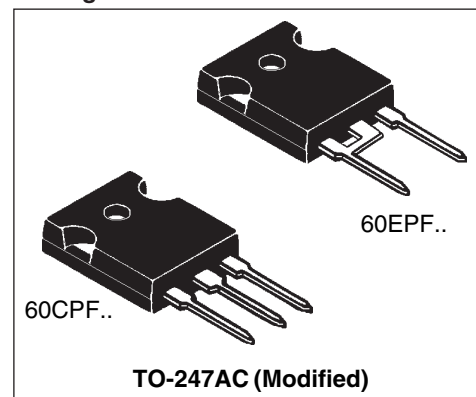
Typical applications are both:

- output rectification and freewheeling in inverters, choppers and converters
- and input rectifications where severe restrictions on conducted EMI should be met.

#### Major Ratings and Characteristics

Characteristics	60EPF.. 60CPF..	Units
$I_{F(AV)}$ Sinusoidal waveform	60	A
$V_{RRM}$ range	1000to1200	V
$I_{FSM}$	700	A
$V_F$ @ 30A, $T_J=25^\circ\text{C}$	1.2	V
$t_{rr}$ @ 1A, -100A/ $\mu\text{s}$	95	ns
$T_J$ range	-40to150	$^\circ\text{C}$

#### Package Outline



# 60EPF.. 60CPF.. HV QUIETIR Series

I2130 rev. A 01/2000

International  
**IR** Rectifier

## Voltage Ratings

Part Number	$V_{RRM}$ , maximum peak reverse voltage V	$V_{RSM}$ , maximum non repetitive peak reverse voltage V	$I_{RRM}$ 150°C mA
60EPF10, 60CPF10	1000	1100	8
60EPF12, 60CPF12	1200	1300	

## Absolute Maximum Ratings

Parameters	60.PF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	60	A	@ $T_C = 103^\circ\text{C}$ , 180° conduction half sine wave
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	700	A	10ms Sine pulse, rated $V_{RRM}$ applied
	830		10ms Sine pulse, no voltage reapplied
$I^2t$ Max. $I^2t$ for fusing	2450	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied
	3460		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	34600	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

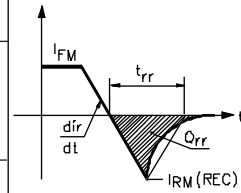
## Electrical Specifications

Parameters	60.PF..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.4	V	@ 60A, $T_J = 25^\circ\text{C}$
$r_t$ Forward slope resistance	4.6	$m\Omega$	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.9	V	
$I_{RM}$ Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	8		$T_J = 150^\circ\text{C}$

$V_R = \text{rated } V_{RRM}$

## Recovery Characteristics

Parameters	60.PF..	Units	Conditions
$t_{rr}$ Reverse Recovery Time	480	ns	$I_F @ 60\text{Apk}$ @ 25A/ $\mu\text{s}$ @ 25°C
$I_{tr}$ Reverse Recovery Current	8	A	
$Q_{rr}$ Reverse Recovery Charge	2.7	$\mu\text{C}$	@ 25°C
S Snap Factor	0.6		



## Thermal-Mechanical Specifications

Parameters	60.PF..	Units	Conditions
$T_J$ Max. Junction Temperature Range	-40 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case	0.4	$^\circ\text{C/W}$	DC operation
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	40	$^\circ\text{C/W}$	
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.2	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	6(0.21)	g(oz.)	
T Mounting Torque	Min.	6(5)	Kg-cm (lbf-in)
	Max.	12(10)	
Case Style	TO-247AC		JEDEC (Modified)

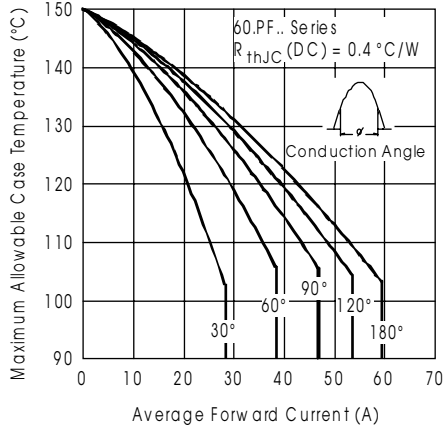


Fig. 1 - Current Rating Characteristics

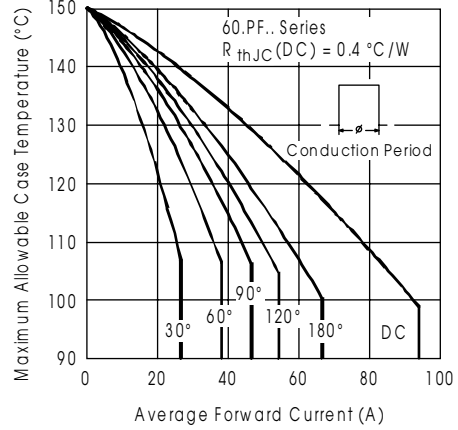


Fig. 2 - Current Rating Characteristics

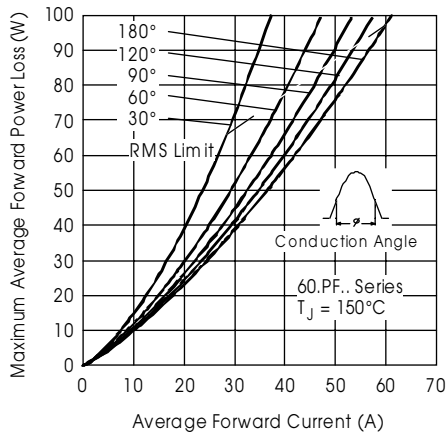


Fig. 3 - Forward Power Loss Characteristics

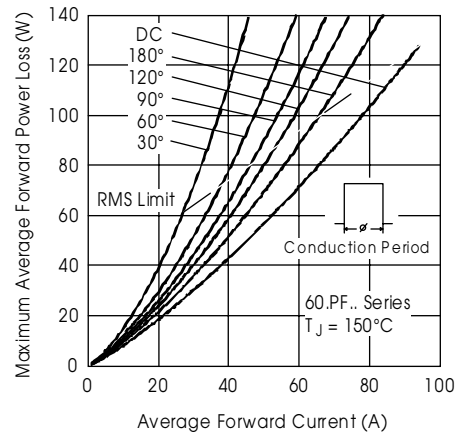


Fig. 4 - Forward Power Loss Characteristics

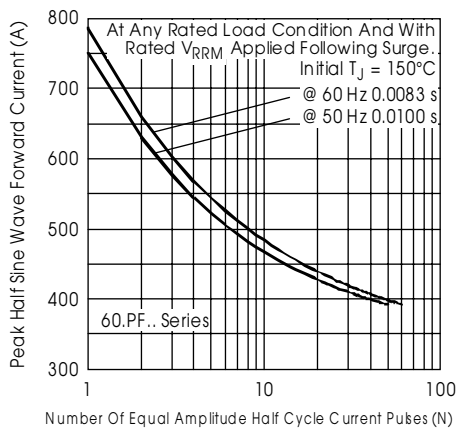


Fig. 5 - Maximum Non-Repetitive Surge Current

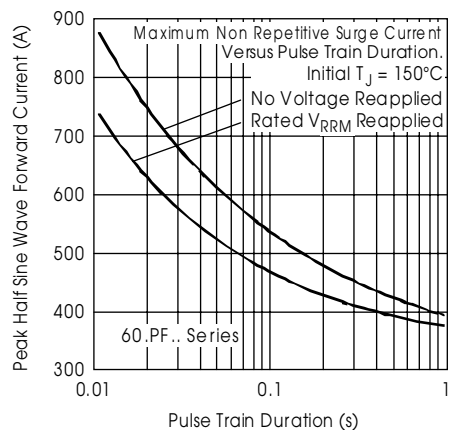


Fig. 6 - Maximum Non-Repetitive Surge Current

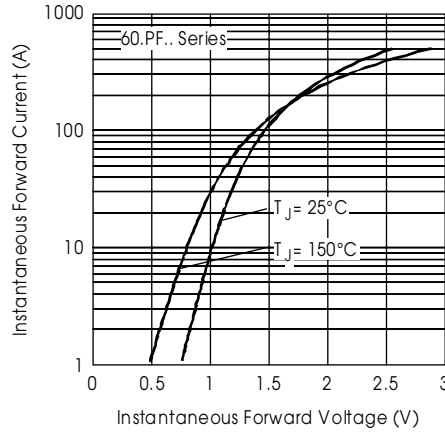


Fig. 7 - Forward Voltage Drop Characteristics

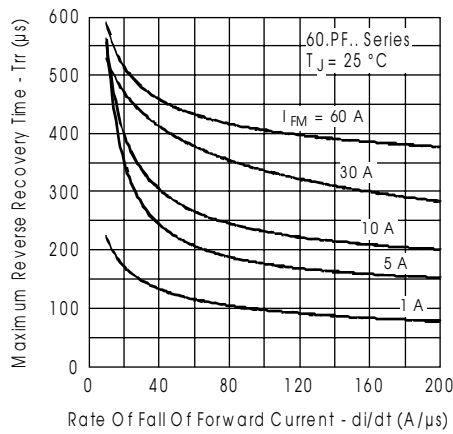


Fig. 8 - Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

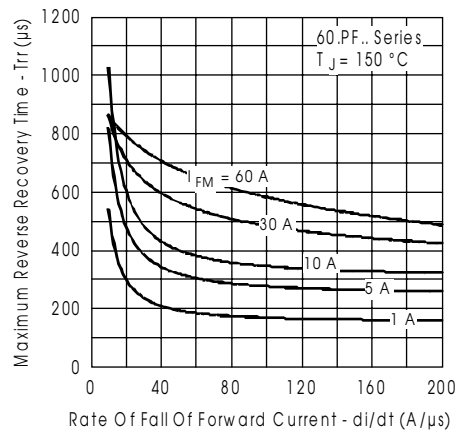


Fig. 9 - Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

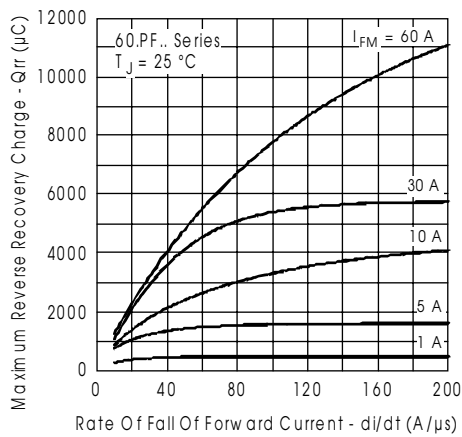


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

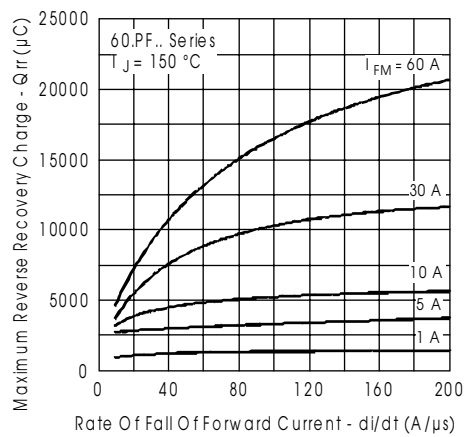


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

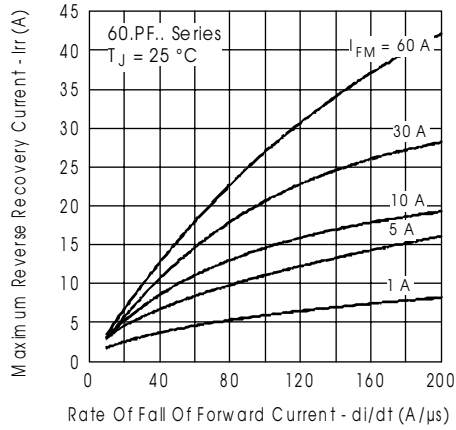


Fig. 12-Recovery Current Characteristics,  $T_J=25^\circ\text{C}$

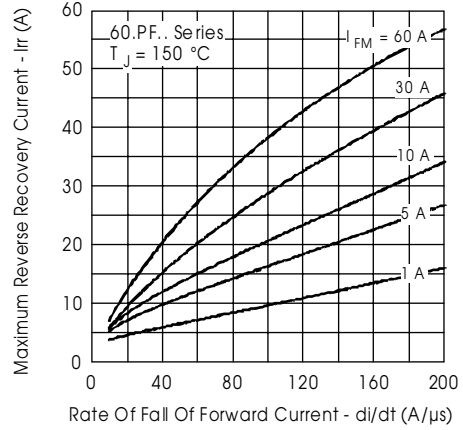


Fig. 13-Recovery Current Characteristics,  $T_J=150^\circ\text{C}$

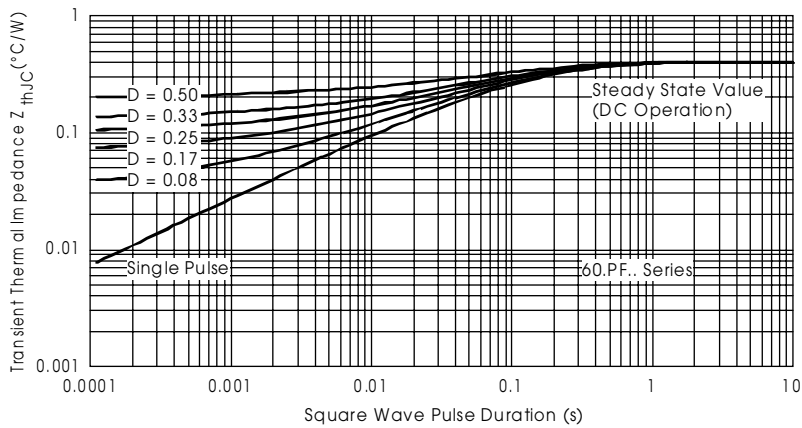
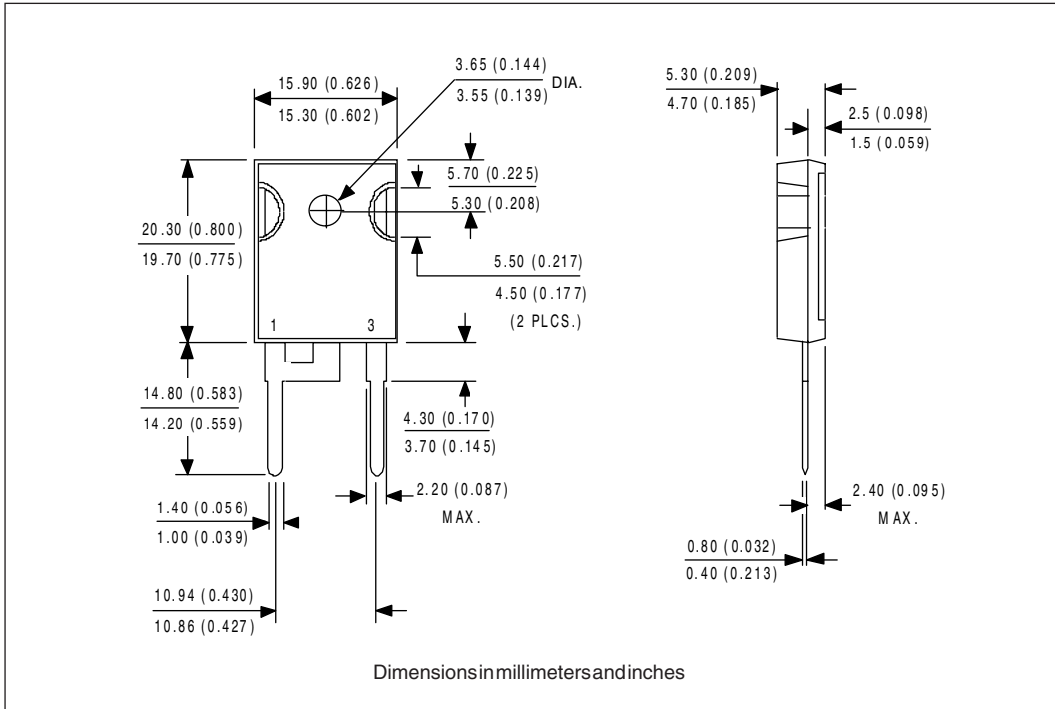
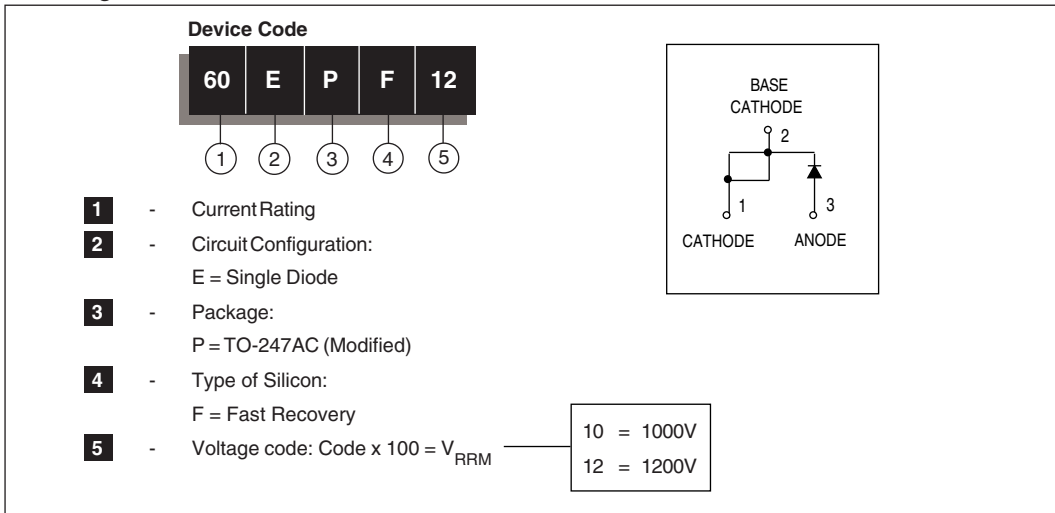


Fig. 14-Thermal Impedance  $Z_{thJC}$  Characteristics

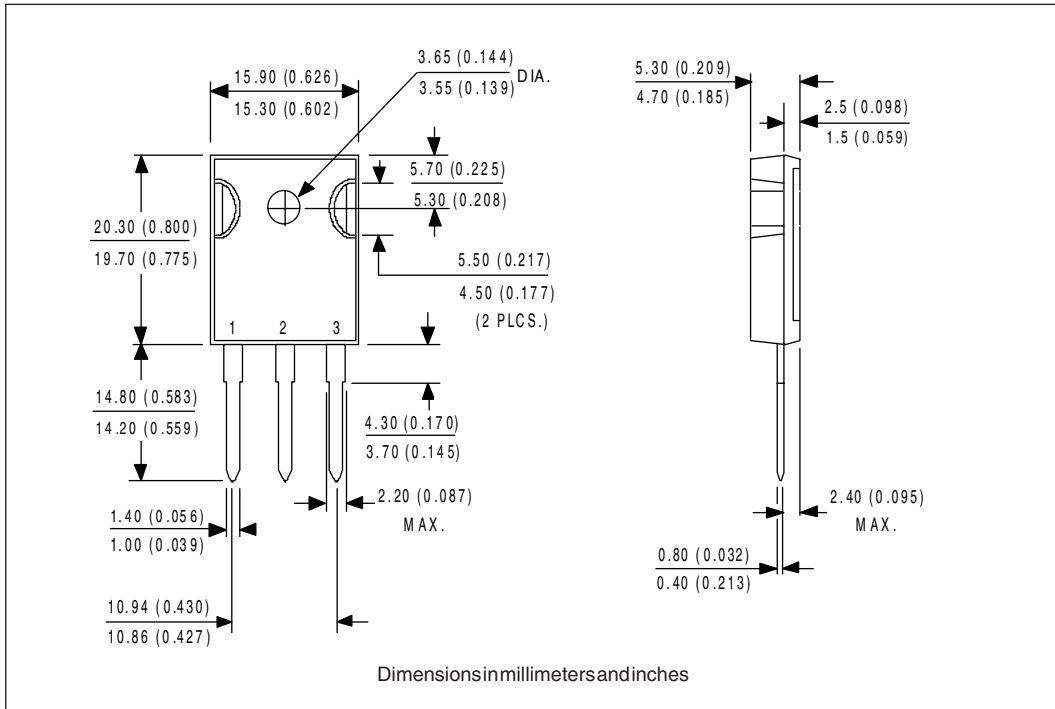
Outline Table



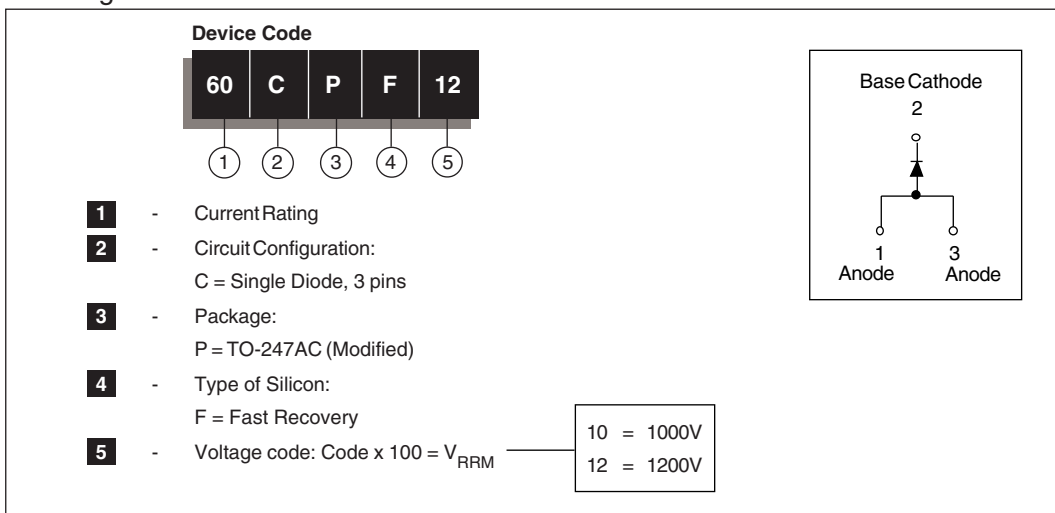
Ordering Information Table



Outline Table



Ordering Information Table



# 60EPF.. 60CPF.. HV QUIETIR Series

I2130 rev. A 01/2000

International  
**IOR** Rectifier

International  
**IOR** Rectifier

**WORLD HEADQUARTERS:** 233 Kansas St., El Segundo, California 90245 U.S.A Tel: (310) 322-3331 Fax: (310) 322-3332  
**EUROPEAN HEADQUARTERS:** Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020 Fax: ++ 44 1883 733408  
**IR CANADA:** 7231 Victoria Park Ave., Suite #201, Markham, Ontario L3R 2Z8 Tel: (905) 475 1897. Fax: (905) 475 8801  
**IR GERMANY:** Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590 Fax: ++ 49 6172 965933  
**IR ITALY:** Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 4510111 Fax: ++ 39 11 4510220  
**IR FAR EAST:** K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171 Tel: 81 3 3983 0086 Fax: 81 3 3983 0642

**IR SOUTHEAST ASIA:** 315 Outram Road, # 10-02 Tan Boon Liat Building, SINGAPORE 0316. Tel: 65 221 8371. Fax: 65 221 8372.

<http://www.irf.com>

Fax-On-Demand: +44 1883 733420

Data and specifications subject to change without notice

11/97