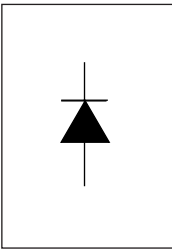


**FAST SOFT RECOVERY  
RECTIFIER DIODE**



$I_{F(RMS)}$	= 160A
$V_F$	< 1.4V @ 100A
$t_{rr}$	= 95ns
$V_{RRM}$	800 to 1200V

**Description/Features**

The 85EPF.. 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.

Available in the new **PowIRtab™** package, this new series is suitable for a large range of applications combining excellent die to footprint ratio and sturdiness connectivity for use in high current environments.

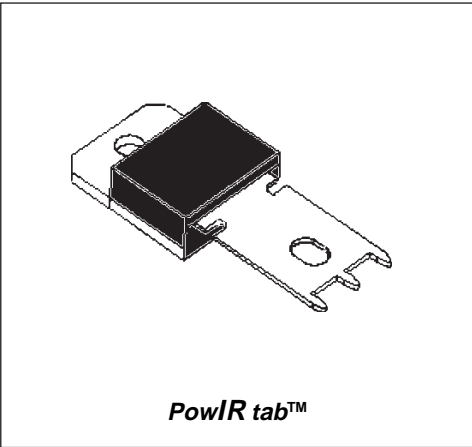
Typical applications are both:

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

**Major Ratings and Characteristics**

Characteristics	85EPF..	Units
$I_{F(AV)}$ Rect. Conduction 50% duty Cycle @ $T_C = 85^\circ\text{C}$	85	A
$I_{F(RMS)}$	160	A
$V_{RRM}$ range	800 to 1200	V
$I_{FSM}$	1100	A
$V_F$ @ 100A, $T_J = 25^\circ\text{C}$	1.4	V
$t_{rr}$ @ 1A, -100A/ $\mu\text{s}$	95	ns
$T_J$ range	-40 to 150	$^\circ\text{C}$

**Package Outline**



**PowIR tab™**

## 85EPF.. HV QUIET<sup>IR</sup> Series

Preliminary Data Sheet I2153 rev. B 11/98

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
85EPF08	800	900	15
85EPF10	1000	1100	
85EPF12	1200	1300	

### Absolute Maximum Ratings

Parameters	85EPF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	85	A	@ $T_C = 85^\circ\text{C}$ , 180° conduction half sine wave
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	1100	A	10ms Sine pulse, rated $V_{RRM}$ applied
	1250		10ms Sine pulse, no voltage reapplied
$I^2t$ Max. $I^2t$ for fusing	5000	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied
	7000		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	70000	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

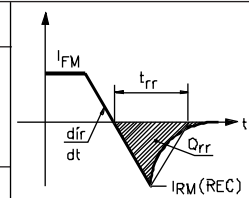
### Electrical Specifications

Parameters	85EPF..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.36	V	@ 85A, $T_J = 25^\circ\text{C}$
$r_t$ Forward slope resistance	4.03	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.87	V	
$I_{RM}$ Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	15		$T_J = 150^\circ\text{C}$

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

### Recovery Characteristics

Parameters	85EPF..	Units	Conditions
$t_{rr}$ Reverse Recovery Time	480	ns	$I_F @ 85\text{Apk}$ @ 25A/ $\mu s$ @ 25°C
$I_{rr}$ Reverse Recovery Current	7.1	A	
$Q_{rr}$ Reverse Recovery Charge	2.1	$\mu C$	
S Snap Factor	0.5		



### Thermal-Mechanical Specifications

Parameters	85EPF..	Units	Conditions
$T_J$ Max. Junction Temperature Range	-40 to 150	°C	
$T_{stg}$ Max. Storage Temperature Range	-40 to 150	°C	
$R_{thJC}$ Max. Thermal Resistance Junction to Case	0.35	°C/W	DC operation
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	40	°C/W	
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.2	°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

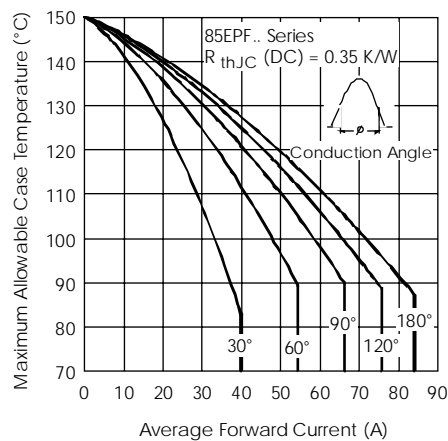


Fig. 1 - Current Rating Characteristics

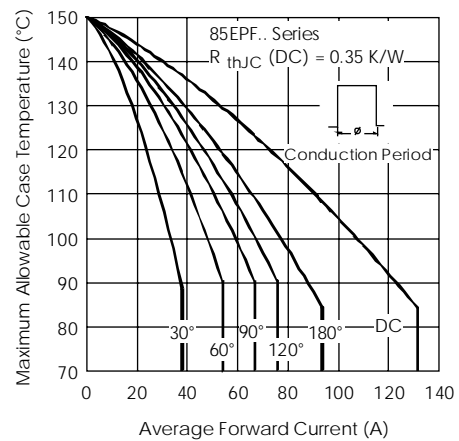


Fig. 2 - Current Rating Characteristics

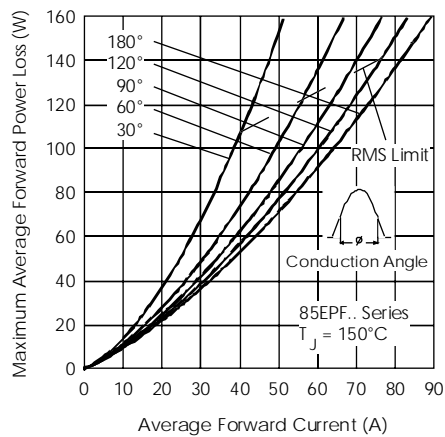


Fig. 3 - Forward Power Loss Characteristics

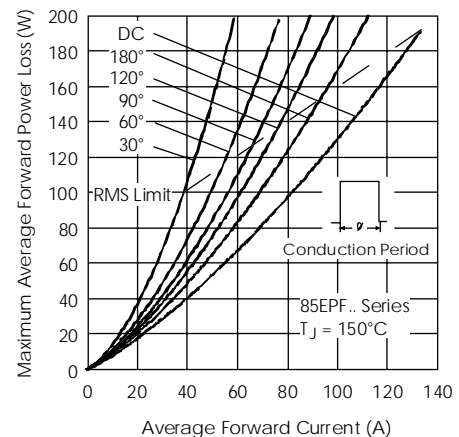


Fig. 4 - Forward Power Loss Characteristics

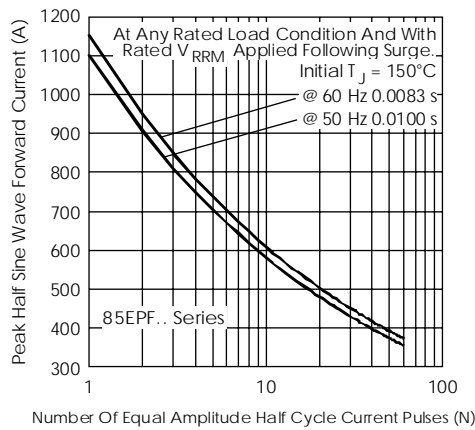


Fig. 5- Maximum Non-Repetitive Surge Current

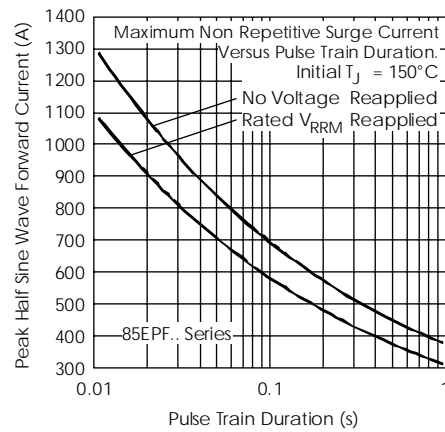


Fig. 6- Maximum Non-Repetitive Surge Current

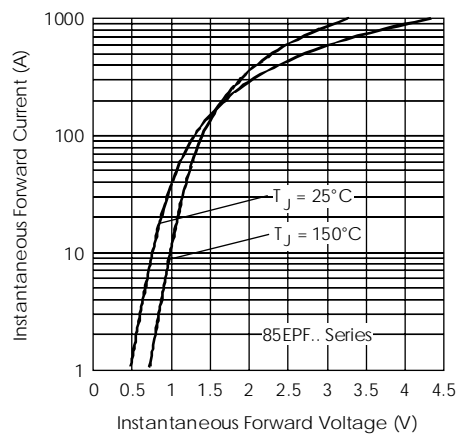


Fig. 7- Forward Voltage Drop Characteristics

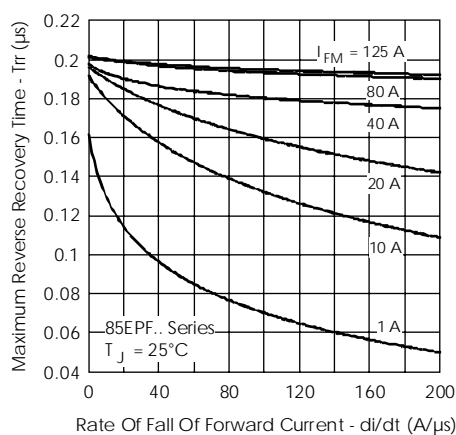


Fig. 8- Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

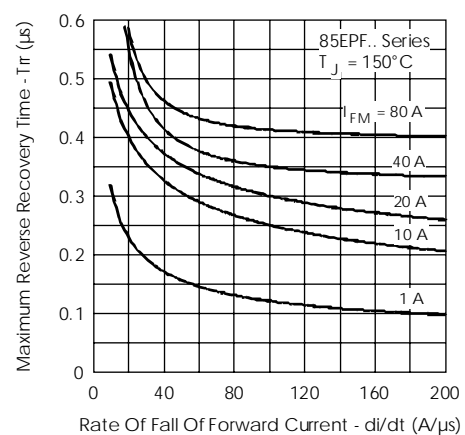


Fig. 9- Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

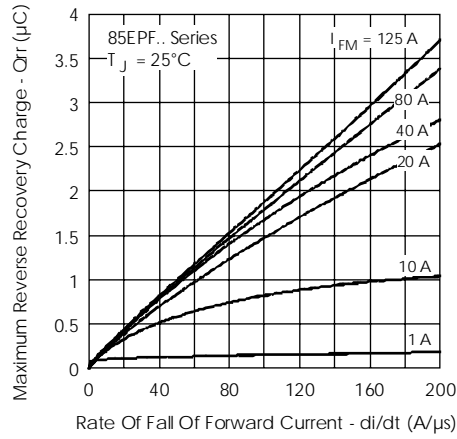


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

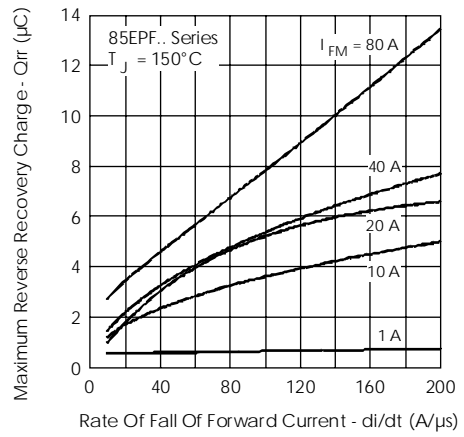


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

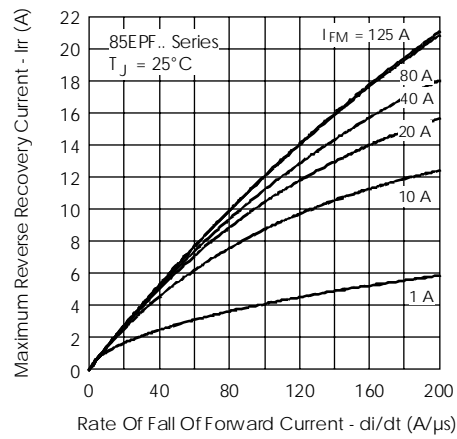


Fig. 12 - Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

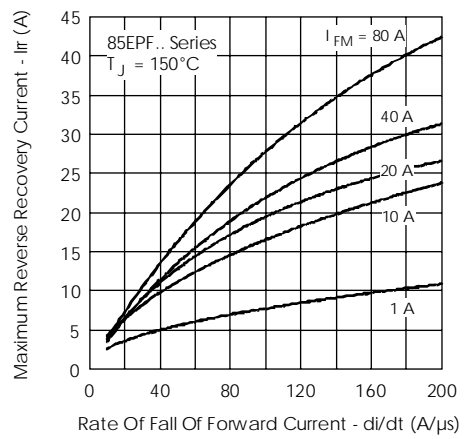


Fig. 13 - Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

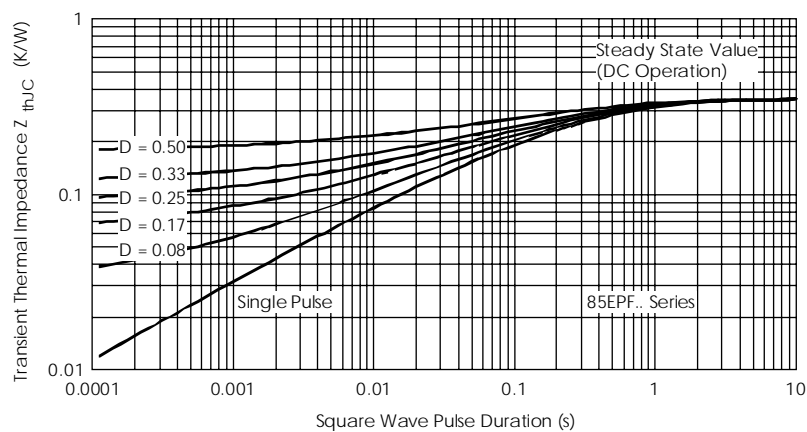
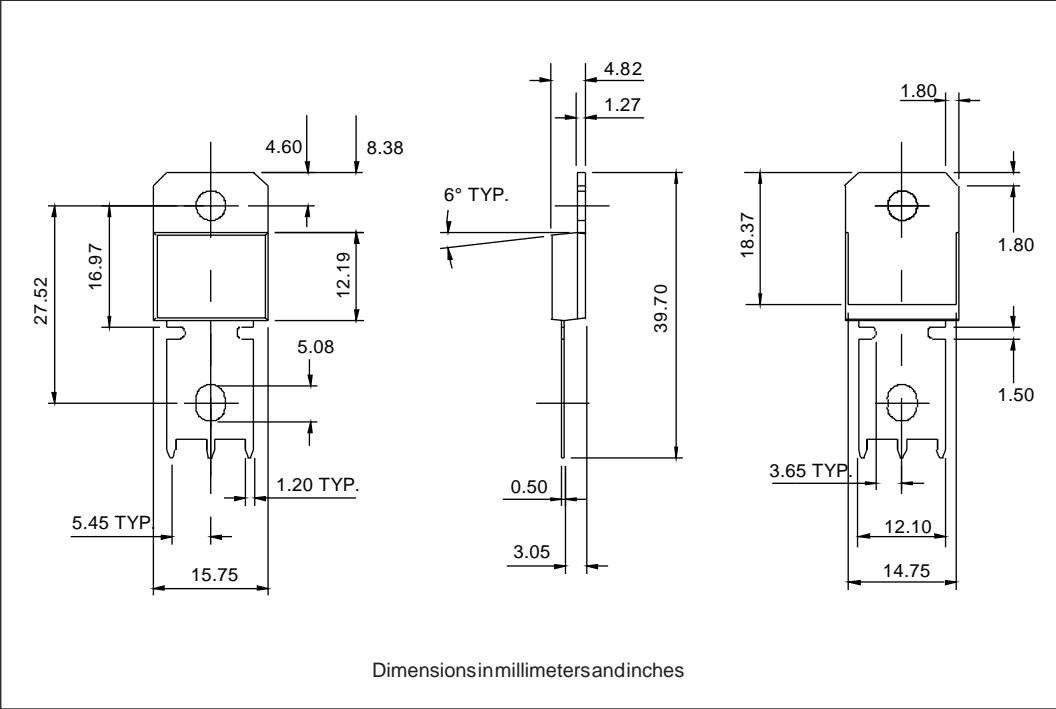
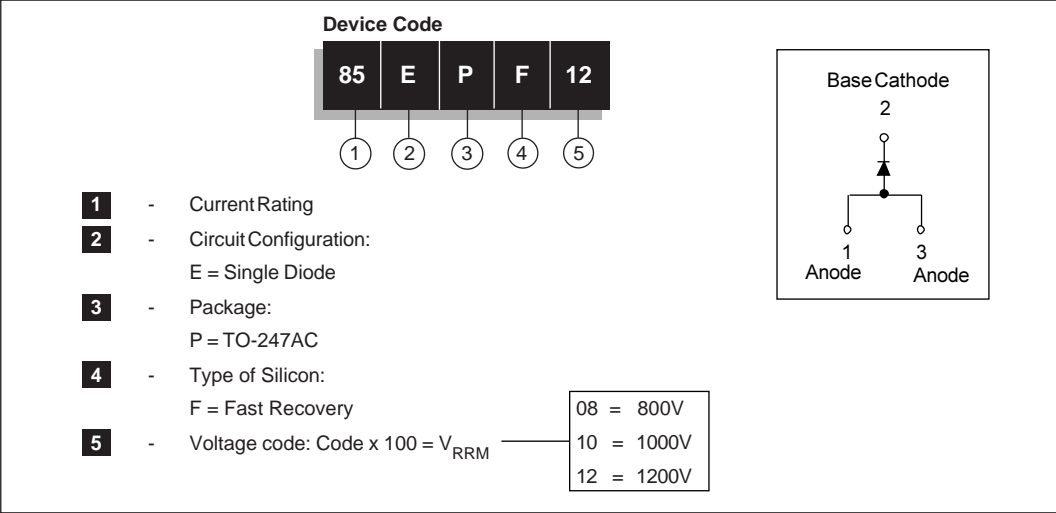


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table



International  
**IOR** Rectifier

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**IR CANADA:** 15 Lincoln Court, Brampton, Markham, Ontario L6T3Z2. Tel: (905) 453 2200. 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.  
**IR SOUTHEAST ASIA:** 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994. Tel: ++ 65 838 4630.  
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