


INPUT RECTIFIER DIODE

	$I_{F(RMS)}$ = 160A
	$V_F$ < 1.15V @ 85A
	$I_{FSM}$ = 1400A
	$V_{RRM}$ 800 and 1200V

Major Ratings and Characteristics



Characteristics	85EPS..	Units
$I_{F(AV)}$ Sine waveform @ $T_C = 95^\circ\text{C}$	85	A
$I_{F(RMS)}$	160	A
$V_{RRM}$ range (*)	800 and 1200	V
$I_{FSM}$	1400	A
$V_F$ @ 85A, $T_J = 25^\circ\text{C}$	1.15	V
$T_J$ range	-40 to 150	$^\circ\text{C}$

Description/ Features

The 85EPS.. rectifier **SAFEIR** series has been optimized for very low forward voltage drop, with moderate leakage.

The glass passivation technology used has reliable operation up to  $150^\circ\text{C}$  junction temperature.

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.

Case Styles	
<p>85EPS..</p> 	<p>85EPS..J</p> 

(\*) for higher voltage up to 1600V contact factory

## 85EPS.. *SAFEIR* Series

Bulletin I2139 rev. C 10/02

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
85EPS08	800	900	3
85EPS12	1200	1300	

### Absolute Maximum Ratings

Parameters	85EPS..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	85	A	@ $T_c = 95^\circ\text{C}$ , 180° conduction half sine wave
$I_{F(RMS)}$ Max. RMS Forward Current	160	A	
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	1400	A	10ms Sine pulse, rated $V_{RRM}$ applied
	1500		10ms Sine pulse, no voltage reapplied
$I^2t$ Max. $I^2t$ for fusing	10500	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied
	9550		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	105000	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

### Electrical Specifications

Parameters	85EPS..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.15	V	@ 85A, $T_J = 25^\circ\text{C}$
$r_t$ Forward slope resistance	3.17	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.86	V	
$I_{RM}$ Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	3.0		$T_J = 150^\circ\text{C}$

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

### Thermal-Mechanical Specifications

Parameters	85EPS..	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	0.35	$^\circ\text{C/W}$	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	<i>PowIRtab</i> <sup>TM</sup>		

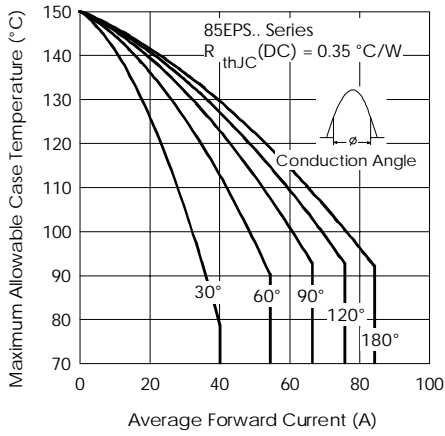


Fig. 1 - Current Rating Characteristics

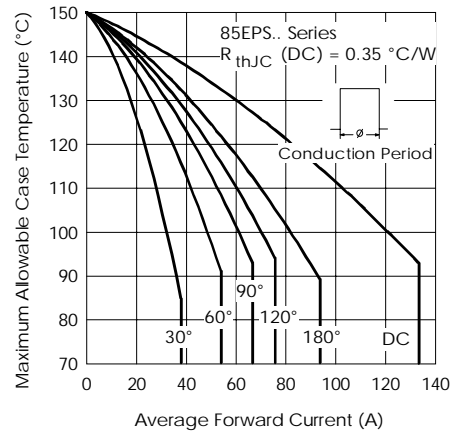


Fig. 2 - Current Rating Characteristics

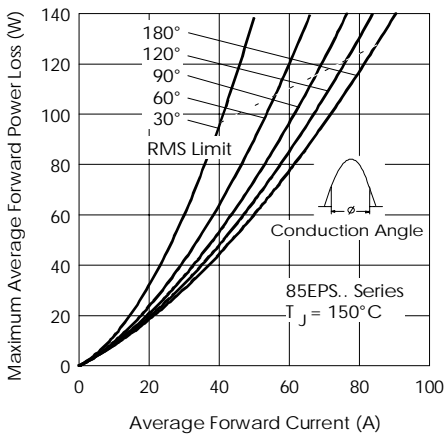


Fig. 3 - Forward Power Loss Characteristics

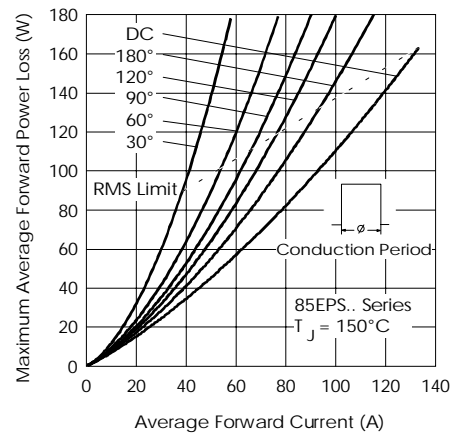


Fig. 4 - Forward Power Loss Characteristics

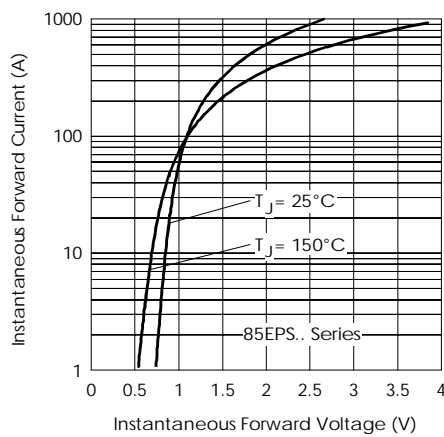


Fig. 5 - Forward Voltage Drop Characteristics

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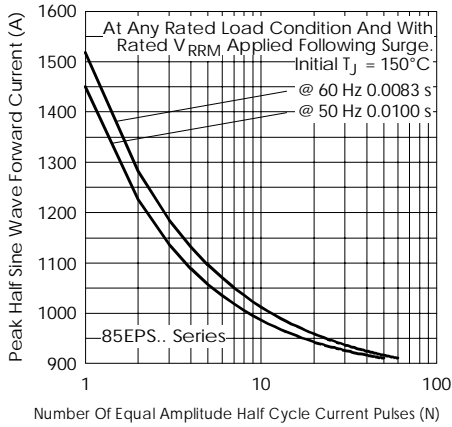


Fig.6-Maximum Non-Repetitive Surge Current

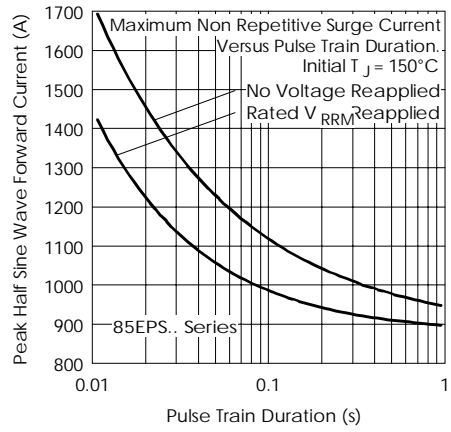


Fig.7-Maximum Non-Repetitive Surge Current

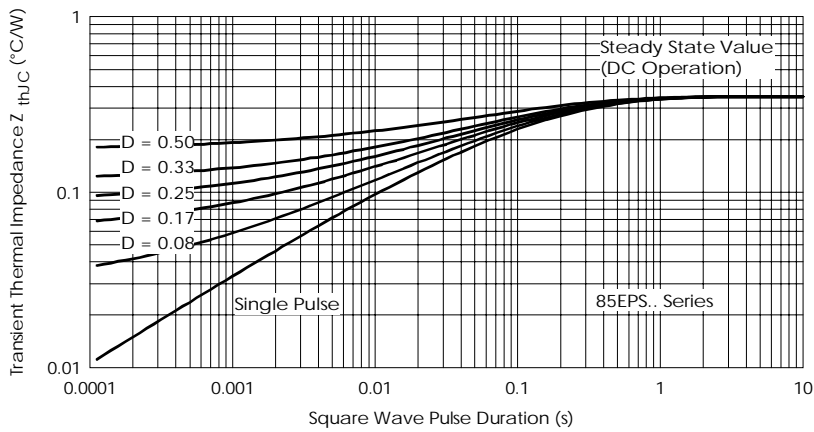
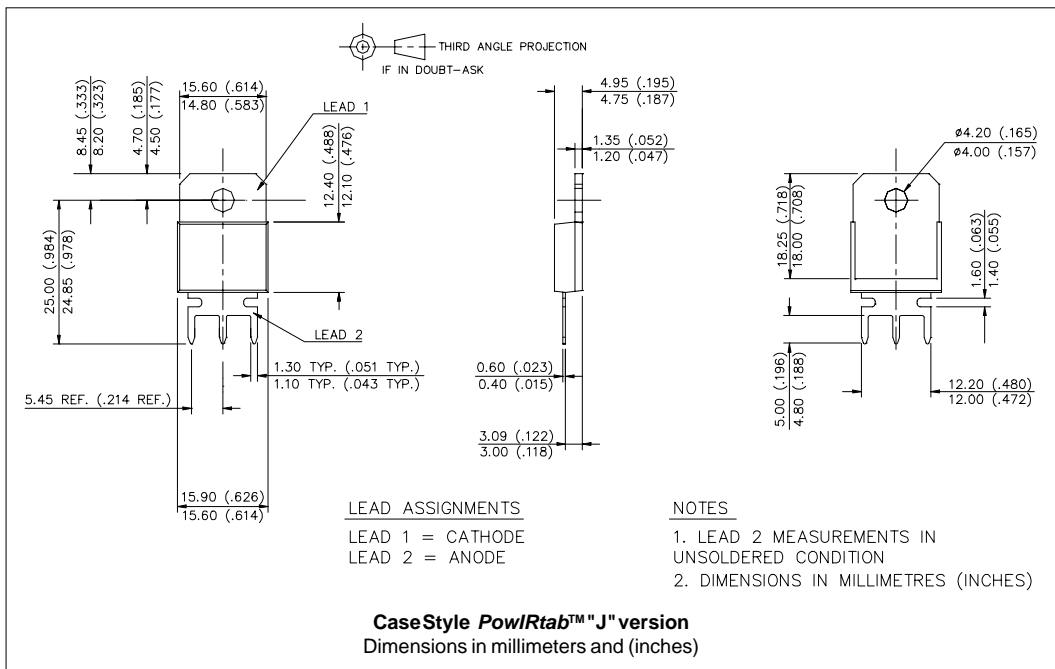
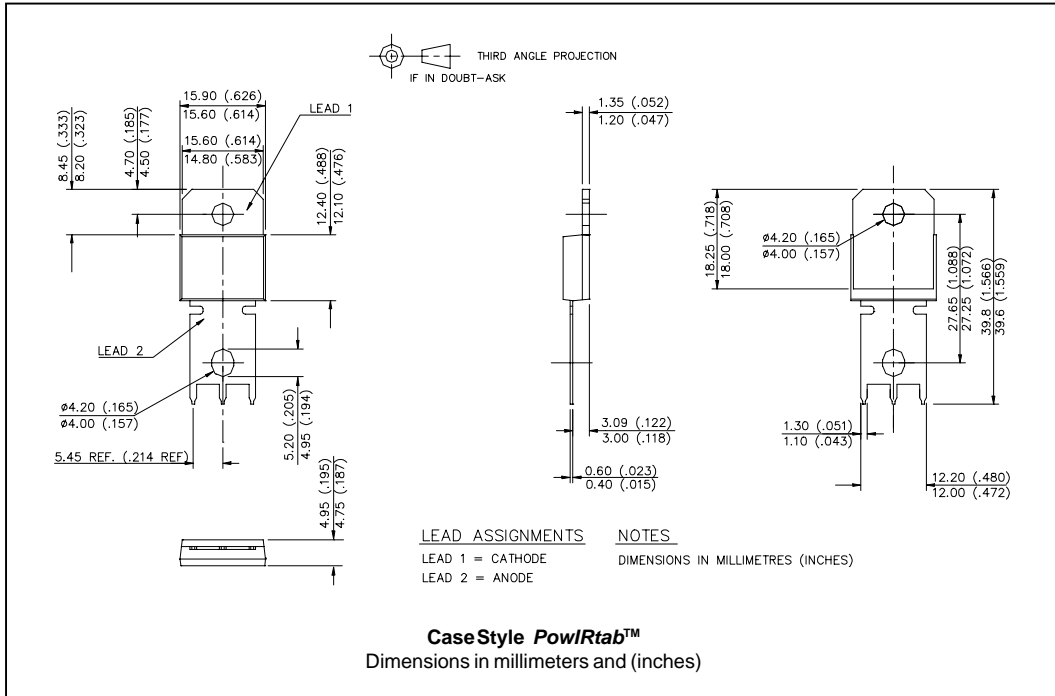


Fig.8-Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



85EPS.. **SAFEIR** Series

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Ordering Information Table

Device Code	
<b>85</b>	<b>E</b>
①	②
<b>P</b>	<b>S</b>
③	④
<b>12</b>	<b>J</b>
⑤	⑥

<p><b>1</b> - Current Rating</p> <p><b>2</b> - Circuit Configuration: E = Single Diode</p> <p><b>3</b> - Package: P = <i>PowIRtab</i><sup>TM</sup></p> <p><b>4</b> - Type of Silicon: S = Standard Recovery Rectifier</p> <p><b>5</b> - Voltage code: Code x 100 = <math>V_{RRM}^{(*)}</math></p> <p><b>6</b> - none=<i>PowIRtab</i><sup>TM</sup> standard J = Short Lead Version</p>	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">08 = 800V</td> </tr> <tr> <td style="padding: 2px;">12 = 1200V</td> </tr> </table>	08 = 800V	12 = 1200V
08 = 800V			
12 = 1200V			

Base Cathode

②  
Base Cathode

①      ③  
Anode    Anode

(\*) for higher voltage up to 1600V contact factory

Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial Level.  
Qualification Standards can be found on IR's Web site.

International  
**IR** Rectifier

**IR WORLD HEADQUARTERS:** 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105

TAC Fax: (310) 252-7309

Visit us at [www.irf.com](http://www.irf.com) for sales contact information. 10/02