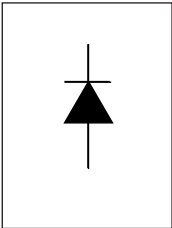




**SAFEIR** Series  
85EPS..

INPUT RECTIFIER DIODE



$V_F < 1.1V @ 80A$   
 $I_{FSM} = 1450A$   
 $V_{RRM} 800 \text{ to } 1600V$

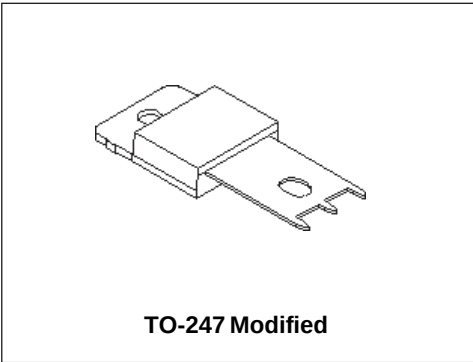
Description/Features

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° C junction temperature. Typical applications are in input rectification and these products are designed to be used with International Rectifier Switches and Output Rectifiers which are available in identical package outlines.

Major Ratings and Characteristics

| Characteristics                 | 85EPS..    | Units |
|---------------------------------|------------|-------|
| $I_{F(AV)}$ Sinusoidal waveform | 85         | A     |
| $V_{RRM}$                       | 800to 1600 | V     |
| $I_{FSM}$                       | 1450       | A     |
| $V_F @ 80A, T_J = 25^{\circ}C$  | 1.1        | V     |
| $T_J$                           | -40to 150  | °C    |

Package Outline



## 85EPS.. *SAFEIR* Series

Preliminary Data Sheet I2139 10/97

International  
**IOR** Rectifier

### Voltage Ratings

| Part Number | $V_{RRM}$ , maximum<br>peak reverse voltage<br>V | $V_{RSM}$ , maximum non repetitive<br>peak reverse voltage<br>V | $I_{RRM}$<br>150°C<br>mA |
|-------------|--------------------------------------------------|-----------------------------------------------------------------|--------------------------|
| 85EPS08     | 800                                              | 900                                                             | 1                        |
| 85EPS12     | 1200                                             | 1300                                                            |                          |
| 85EPS16     | 1600                                             | 1700                                                            |                          |

### 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 |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current | 1450    | A             | 10ms Sine pulse, rated $V_{RRM}$ applied                    |
|                                                            | 1500    |               | 10ms Sine pulse, no voltage reappplied                      |
| $I^2t$ Max. $I^2t$ for fusing                              | 10500   | $A^2s$        | 10ms Sine pulse, rated $V_{RRM}$ applied                    |
|                                                            | 9550    |               | 10ms Sine pulse, no voltage reappplied                      |
| $I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing                | 105000  | $A^2\sqrt{s}$ | t=0.1 to 10ms, no voltage reappplied                        |

### Electrical Specifications

| Parameters                            | 85EPS.. | Units | Conditions                      |
|---------------------------------------|---------|-------|---------------------------------|
| $V_{FM}$ Max. Forward Voltage Drop    | 1.1     | V     | @ 85A, $T_J = 25^\circ\text{C}$ |
| $r_t$ Forward slope resistance        | 3.17    | mΩ    | $T_J = 150^\circ\text{C}$       |
| $V_{F(TO)}$ 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  | °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<br>(lbf-in) |                                      |
|                                                         | Max. 12(10) |                   |                                      |
| Case Style                                              | TO-247      |                   | Modified                             |

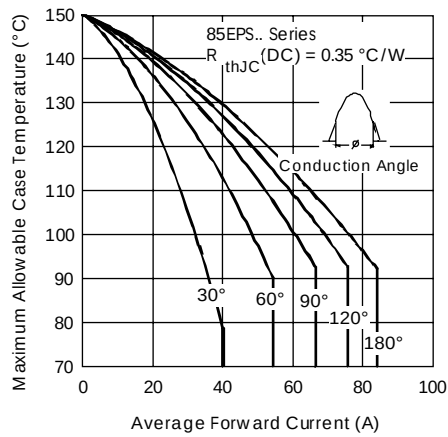


Fig. 1 - Current Rating Characteristics

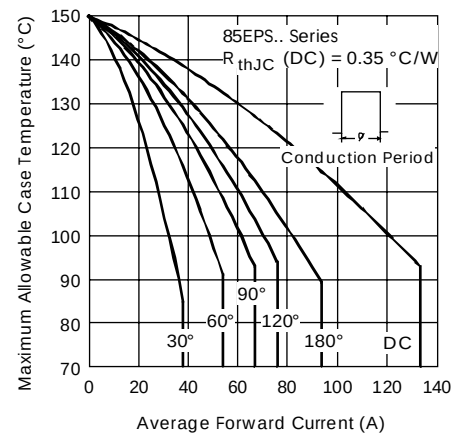


Fig. 2 - Current Rating Characteristics

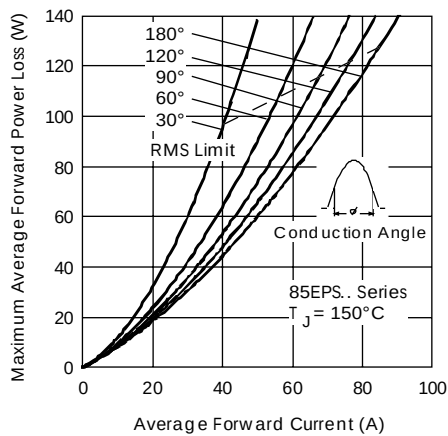


Fig. 3 - Forward Power Loss Characteristics

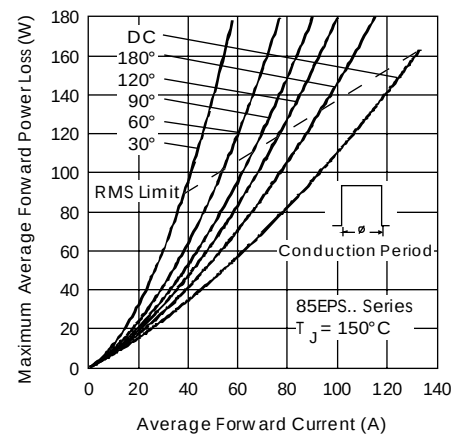


Fig. 4 - Forward Power Loss Characteristics

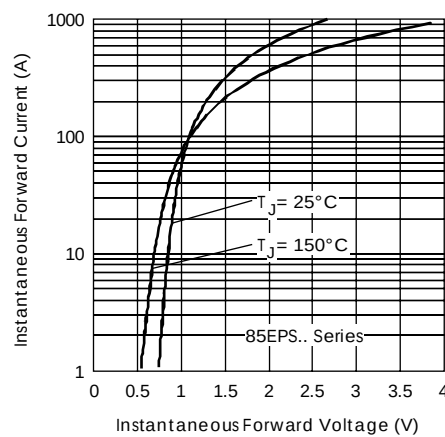


Fig. 5 - Forward Voltage Drop Characteristics

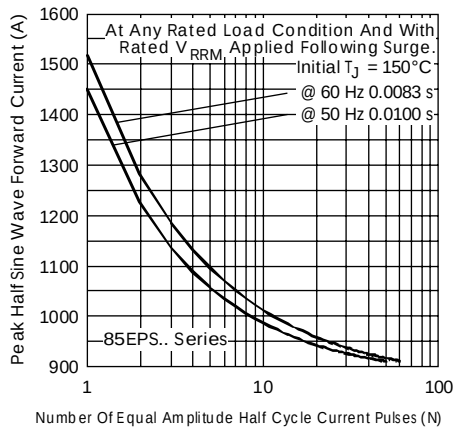


Fig. 6 - Maximum Non-Repetitive Surge Current

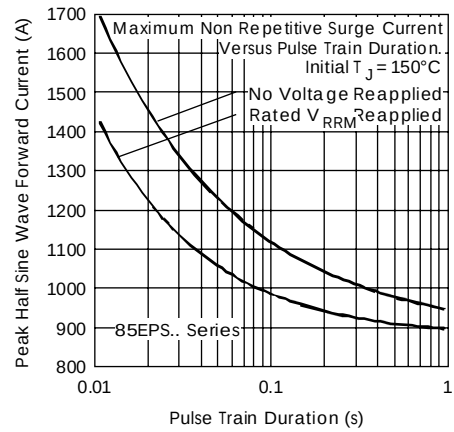


Fig. 7 - Maximum Non-Repetitive Surge Current

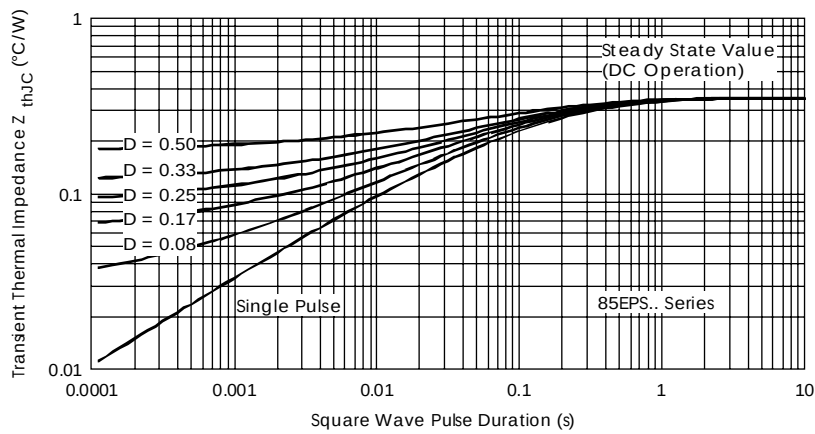
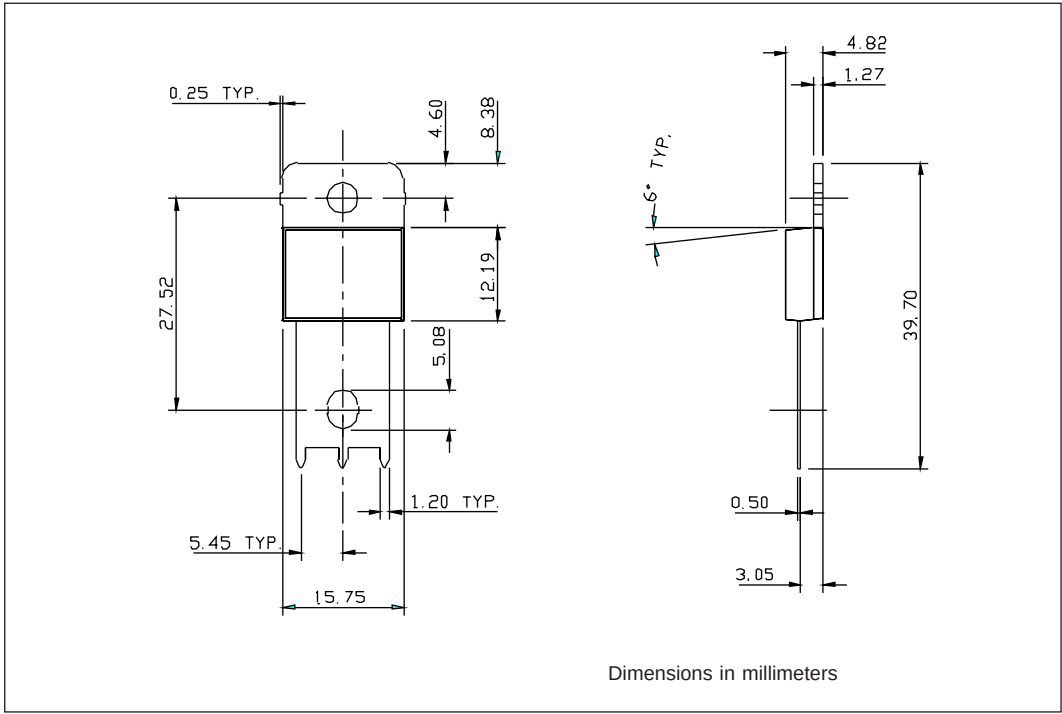


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table

