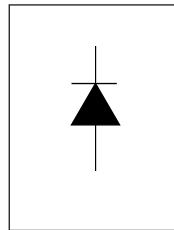


International  
**IOR** Rectifier

**SAFEIR** Series  
60EPS..

### INPUT RECTIFIER DIODE



$$V_F < 1V @ 30A$$

$$I_{FSM} = 950A$$

$$V_{RRM} 800 \text{ to } 1600V$$

### Description/Features

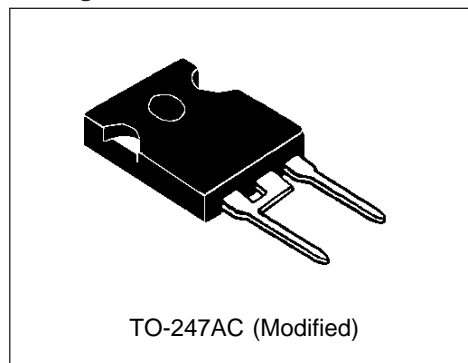
The 60EPS.. rectifier **SAFEIR** series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150° C junction temperature.

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                    | 60EPS..     | Units |
|------------------------------------|-------------|-------|
| $I_{F(AV)}$ Sinusoidal waveform    | 60          | A     |
| $V_{RRM}$                          | 800 to 1600 | V     |
| $I_{FSM}$                          | 950         | A     |
| $V_F$ @30A, $T_J=25^\circ\text{C}$ | 1.0         | V     |
| $T_J$                              | -40 to 150  | °C    |

### Package Outline



**60EPS.. SAFEIR Series**

Bulletin I2122 rev. A 07/97

International  
**IOR** Rectifier**Voltage Ratings**

| Part Number | $V_{RRM}$ , maximum peak reverse voltage<br>V | $V_{RSM}$ , maximum non repetitive peak reverse voltage<br>V | $I_{RRM}$<br>150°C<br>mA |
|-------------|---|--|--------------------------|
| 60EPS08     | 800   | 900  | 1                        |
| 60EPS12     | 1200  | 1300   |                          |
| 60EPS16     | 1600  | 1700   |                          |

**Absolute Maximum Ratings**

| Parameters   | 60EPS.. | Units         | Conditions   |
|--|---------|---------------|--|
| $I_{F(AV)}$ Max. Average Forward Current                   | 60      | A             | @ $T_C = 118^\circ\text{C}$ , 180° conduction half sine wave |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current | 950     | A             | 10ms Sine pulse, rated $V_{RRM}$ applied                     |
|  | 1100    |               | 10ms Sine pulse, no voltage reapplied                        |
| $I^2t$ Max. $I^2t$ for fusing                              | 4512    | $A^2s$        | 10ms Sine pulse, rated $V_{RRM}$ applied                     |
|  | 6300    |               | 10ms Sine pulse, no voltage reapplied                        |
| $I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing                | 63000   | $A^2\sqrt{s}$ | $t = 0.1$ to 10ms, no voltage reapplied                      |

**Electrical Specifications**

| Parameters                            | 60EPS.. | Units     | Conditions                      |
|---------------------------------------|---------|-----------|---------------------------------|
| $V_{FM}$ Max. Forward Voltage Drop    | 1.07    | V         | @ 60A, $T_J = 25^\circ\text{C}$ |
| $r_t$ Forward slope resistance        | 3.96    | $m\Omega$ | $T_J = 150^\circ\text{C}$       |
| $V_{F(TO)}$ Threshold voltage         | 0.74    | V         |                                 |
| $I_{RM}$ Max. Reverse Leakage Current | 0.1     | mA        | $T_J = 25^\circ\text{C}$        |
|                                       | 1.0     |           | $T_J = 150^\circ\text{C}$       |

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

**Thermal-Mechanical Specifications**

| Parameters  | 60EPS..    | 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)               | $\text{Kg-cm}$<br>$(\text{lbf-in})$  |
|   | Max.       | 12(10)             |                                      |
| Case Style  | TO-247AC   |                    | JEDEC (Modified)                     |

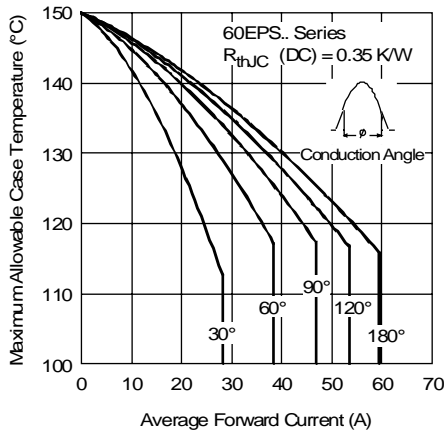


Fig. 1 - Current Rating Characteristics

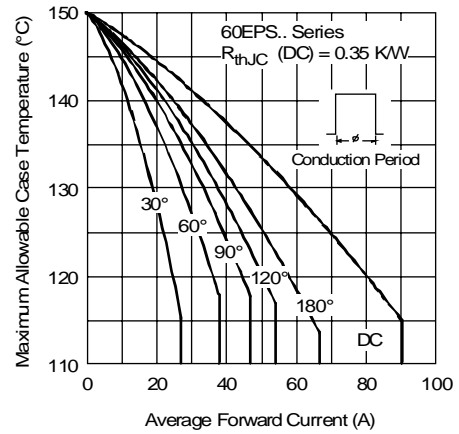


Fig. 2 - Current Rating Characteristics

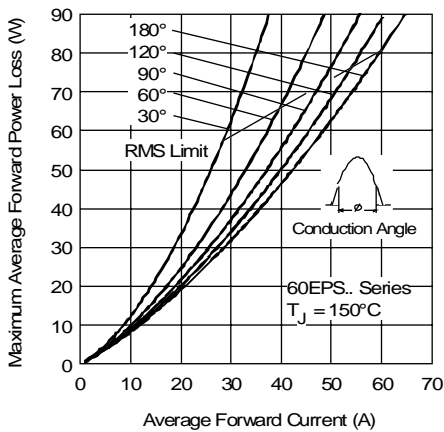


Fig. 3 - Forward Power Loss Characteristics

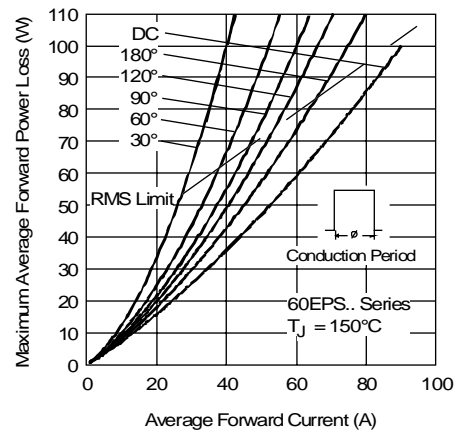


Fig. 4 - Forward Power Loss Characteristics

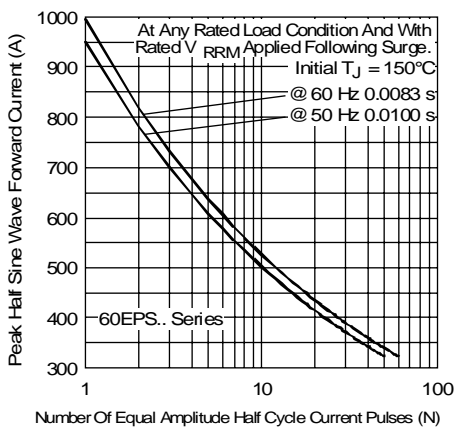


Fig. 5 - Maximum Non-Repetitive Surge Current

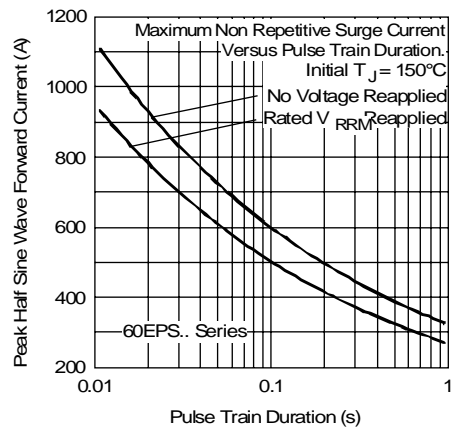


Fig. 6 - Maximum Non-Repetitive Surge Current

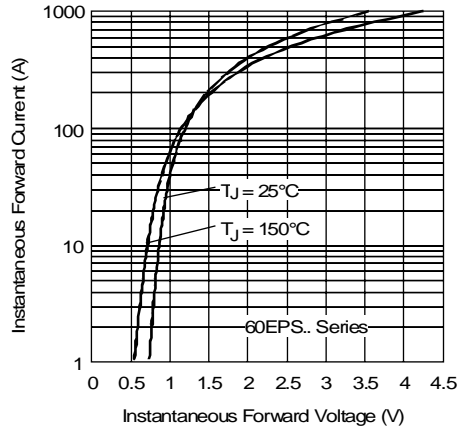


Fig. 7 - Forward Voltage Drop Characteristics

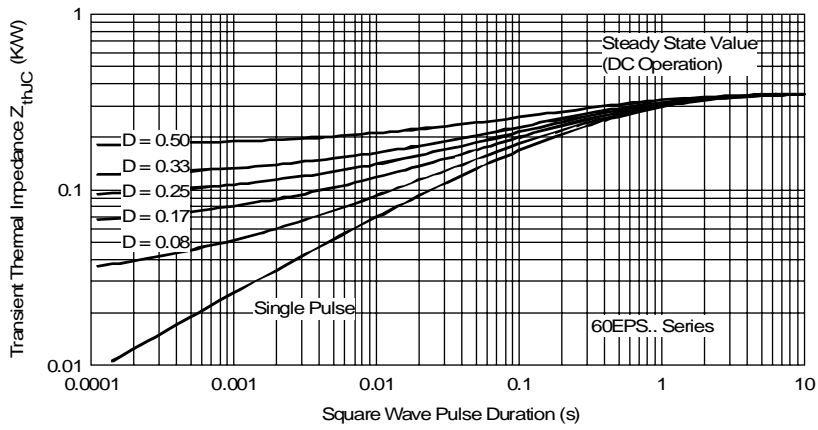
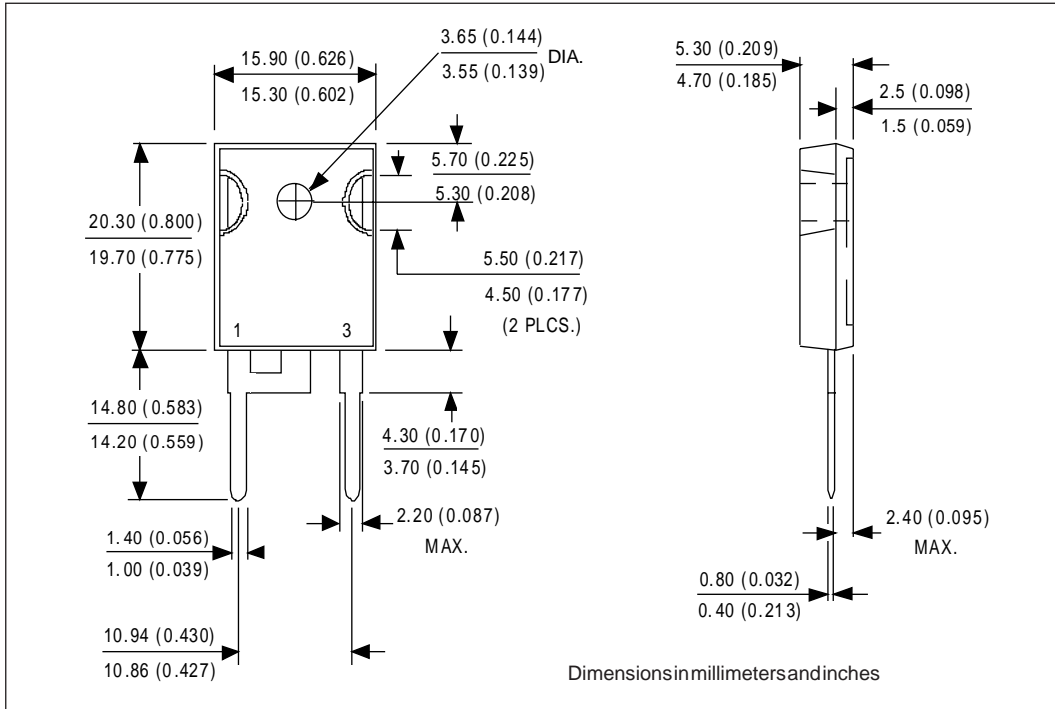


Fig.8- Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table

| Device Code |   |   |   |    |
|-------------|---|---|---|----|
| 60          | E | P | S | 16 |
| ①           | ② | ③ | ④ | ⑤  |

|  |   |           |            |            |
|--|---|-----------|------------|------------|
| <p><b>1</b> - Current Rating</p> <p><b>2</b> - Circuit Configuration:<br/>E = Single Diode</p> <p><b>3</b> - Package:<br/>P = TO-247AC (Modified)</p> <p><b>4</b> - Type of Silicon:<br/>S = Standard Recovery Rectifier</p> <p><b>5</b> - Voltage code: Code x 100 = <math>V_{RRM}</math></p> | <table border="1"> <tr> <td>08 = 800V</td> </tr> <tr> <td>12 = 1200V</td> </tr> <tr> <td>16 = 1600V</td> </tr> </table> | 08 = 800V | 12 = 1200V | 16 = 1600V |
| 08 = 800V  |   |           |            |            |
| 12 = 1200V   |   |           |            |            |
| 16 = 1600V   |   |           |            |            |

BASE  
CATHODE

CATHODE    ANODE