


INPUT RECTIFIER DIODE

| | |
|---|---|
|  | $V_F < 1.1V @ 40A$ $I_{FSM} = 475A$ $V_{RRM} = 800 - 1200V$ |
|---|---|

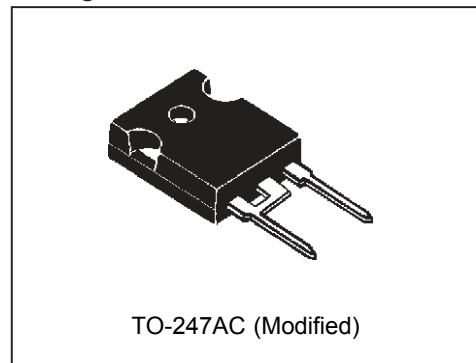
Description/Features

The 40EPS.. 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 | Values | Units |
|---------------------------------|------------|-------|
| $I_{F(AV)}$ Sinusoidal waveform | 40 | A |
| V_{RRM} Range (*) | 800- 1200 | V |
| I_{FSM} | 475 | A |
| V_F @40A, $T_J=25^\circ C$ | 1.1 | V |
| T_J | -40 to 150 | °C |

Package Outline



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

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 |
|-------------|---|--|--------------------------|
| 40EPS08 | 800 | 900 | 1 |
| 40EPS12 | 1200 | 1300 | |

Absolute Maximum Ratings

| Parameters | 40EPS.. | Units | Conditions |
|--|---------|---------------|--|
| $I_{F(AV)}$ Max. Average Forward Current | 40 | A | @ $T_C = 105^\circ\text{C}$, 180° conduction half sine wave |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current | 400 | A | 10ms Sine pulse, rated V_{RRM} applied |
| | 475 | | 10ms Sine pulse, no voltage reapplied |
| I^2t Max. I^2t for fusing | 800 | A^2s | 10ms Sine pulse, rated V_{RRM} applied |
| | 1131 | | 10ms Sine pulse, no voltage reapplied |
| $I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing | 11310 | $A^2\sqrt{s}$ | t = 0.1 to 10ms, no voltage reapplied |

Electrical Specifications

| Parameters | 40EPS.. | Units | Conditions |
|---------------------------------------|---------|-----------|---------------------------------|
| V_{FM} Max. Forward Voltage Drop | 1.1 | V | @ 40A, $T_J = 25^\circ\text{C}$ |
| r_t Forward slope resistance | 7.16 | $m\Omega$ | $T_J = 150^\circ\text{C}$ |
| $V_{F(TO)}$ 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 | 40EPS.. | 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 | 0.6 | $^\circ\text{C/W}$ | 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) |

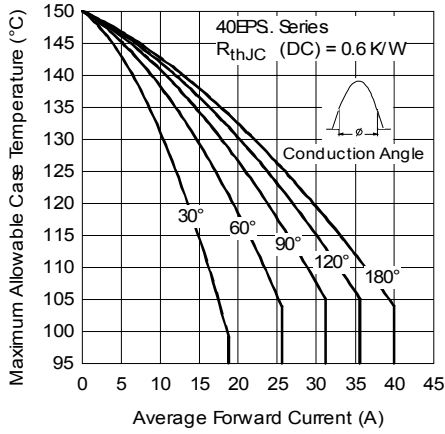


Fig. 1 - Current Rating Characteristics

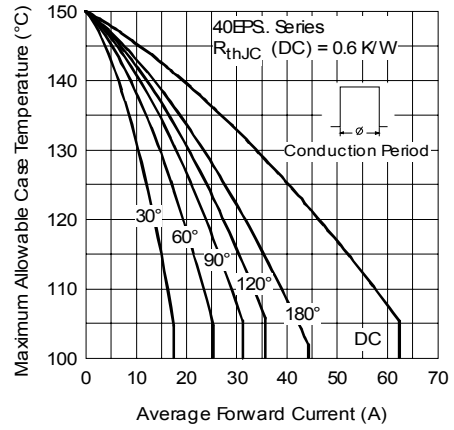


Fig. 2 - Current Rating Characteristics

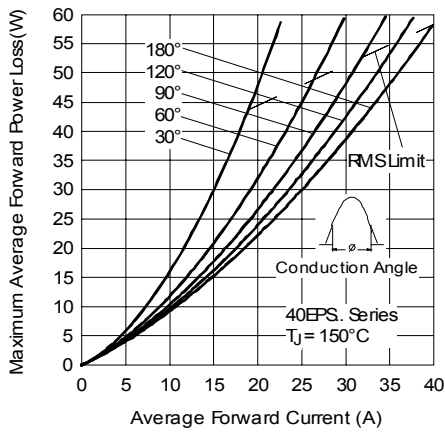


Fig. 3 - Forward Power Loss Characteristics

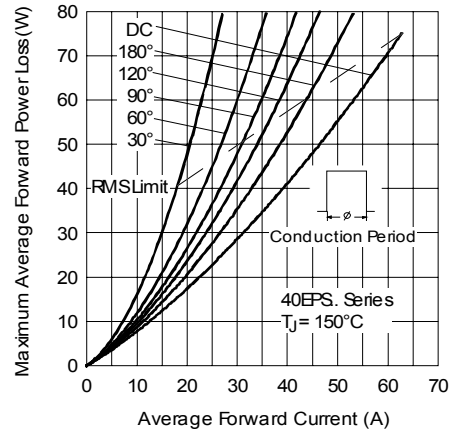


Fig. 4 - Forward Power Loss Characteristics

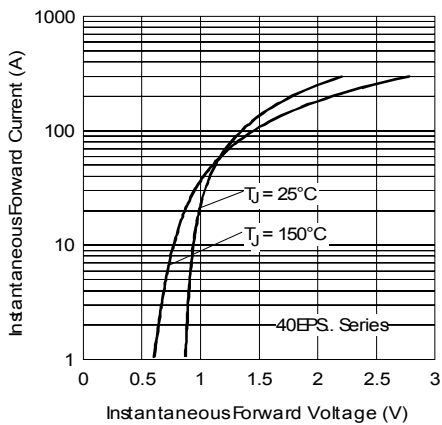


Fig. 5 - Forward Voltage Drop Characteristics

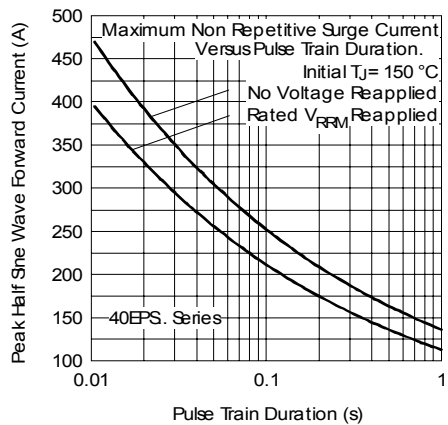


Fig. 6 - Maximum Non-Repetitive Surge Current

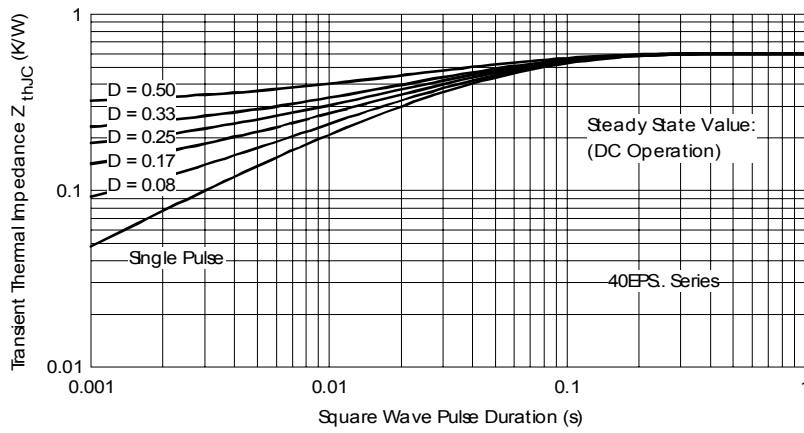
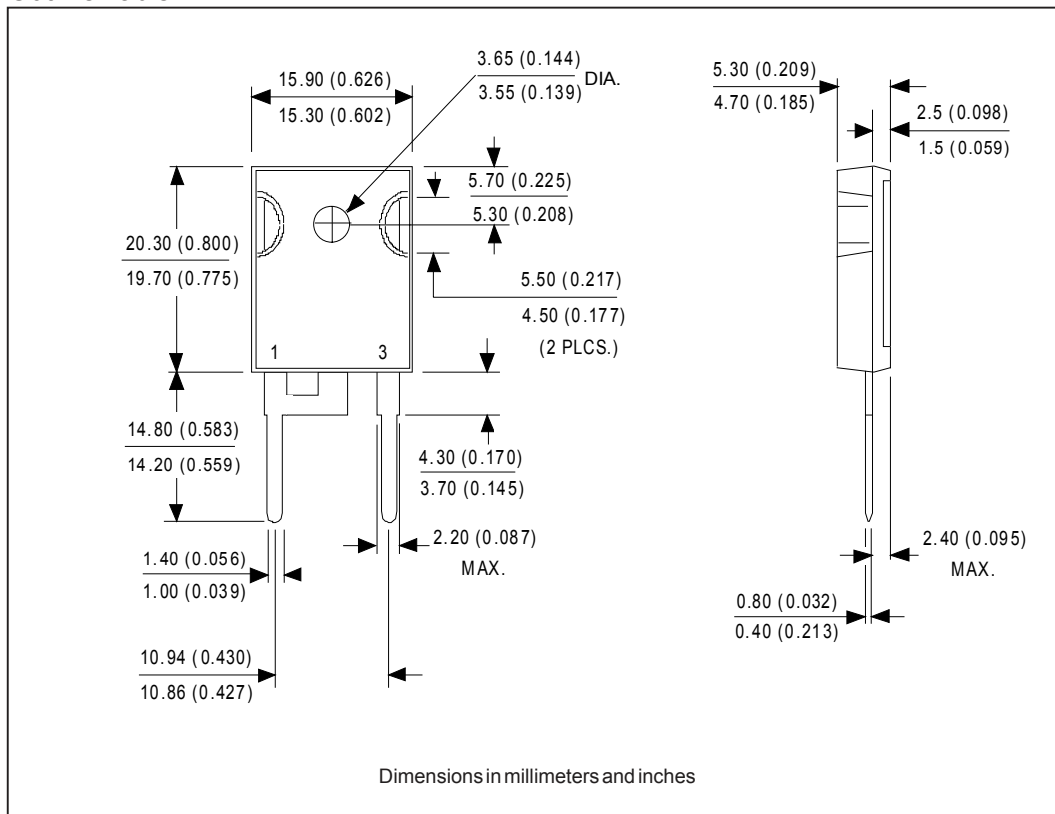


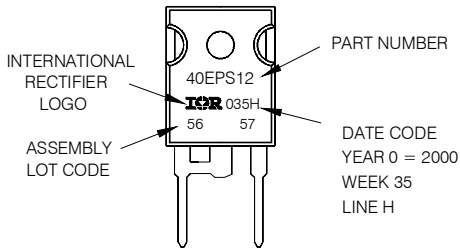
Fig. 7 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Marking Information

EXAMPLE: THIS IS A 40EPS12
 WITH ASSEMBLY
 LOT CODE 5657
 ASSEMBLED ON WW 35, 2000
 IN THE ASSEMBLY LINE "H"



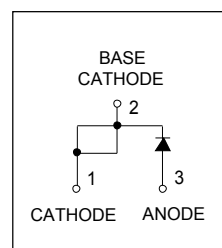
Ordering Information Table

Device Code

| | | | | |
|----|---|---|---|----|
| 40 | E | P | S | 12 |
| ① | ② | ③ | ④ | ⑤ |

- 1 - Current Rating (40 = 40A)
- 2 - Circuit Configuration
E = Single Diode
- 3 - Package
P = TO-247AC (Modified)
- 4 - Type of Silicon
S = Standard Recovery Rectifier
- 5 - Voltage code: Code x 100 = V_{RRM}

| |
|------------|
| 08 = 800V |
| 12 = 1200V |



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.



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