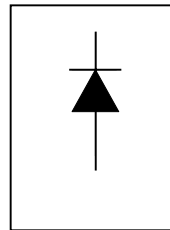


International  
**IR** Rectifier

**SAFEIR** Series  
 40EPS12

## INPUT RECTIFIER DIODE



$$V_F < 1V @ 20A$$

$$I_{FSM} = 475A$$

$$V_{RRM} 800 - 1200V$$

### Description/Features

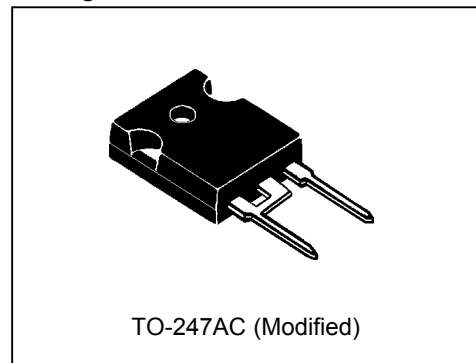
The 40EPS.. rectifier **SAFEIR** series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150° C junction temperature.

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	40EPS..	Units
$I_{F(AV)}$ Sinusoidal waveform	40	A
$V_{RRM}$ Range (*)	800 - 1200	V
$I_{FSM}$	475	A
$V_F$ @20A, $T_J = 25^\circ C$	1.0	V
$T_J$	-40 to 150	°C

### Package Outline



## 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 <sub>FM</sub>	Max. Forward Voltage Drop	1.1	V	@ 40A, T <sub>j</sub> = 25°C	
r <sub>t</sub>	Forward slope resistance	7.16	mΩ	T <sub>j</sub> = 150°C	
V <sub>F(TO)</sub>	Threshold voltage	0.74	V		
I <sub>RM</sub>	Max. Reverse Leakage Current	0.1	mA	T <sub>j</sub> = 25 °C	V <sub>R</sub> = rated V <sub>RRM</sub>
		1.0		T <sub>j</sub> = 150 °C	

## Thermal-Mechanical Specifications

Parameters	40EPS..	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	0.6	°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 (Modified)

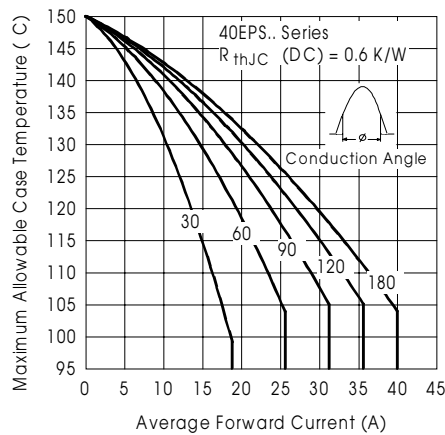


Fig. 1 - Current Rating Characteristics

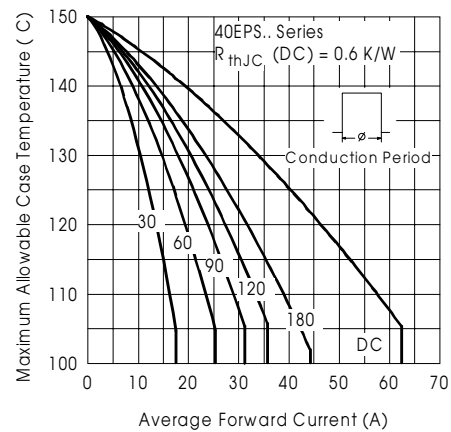


Fig. 2 - Current Rating Characteristics

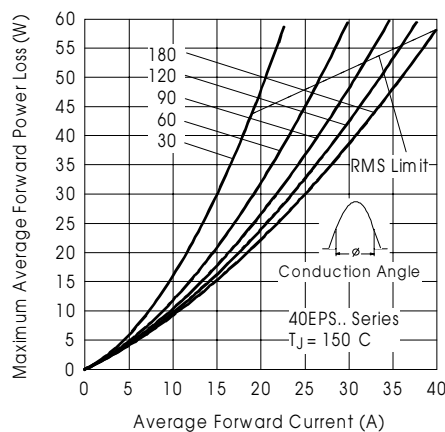


Fig. 3 - Forward Power Loss Characteristics

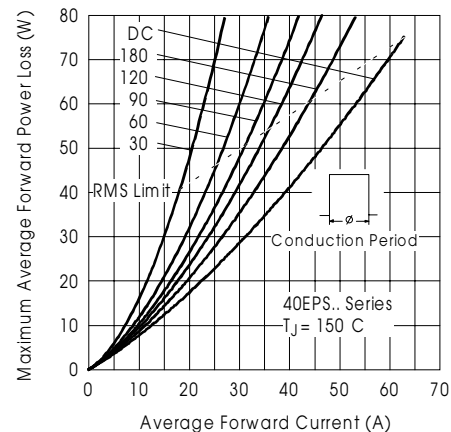


Fig. 4 - Forward Power Loss Characteristics

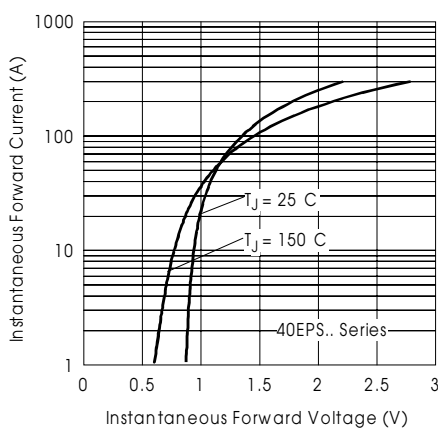


Fig. 5 - Forward Voltage Drop Characteristics

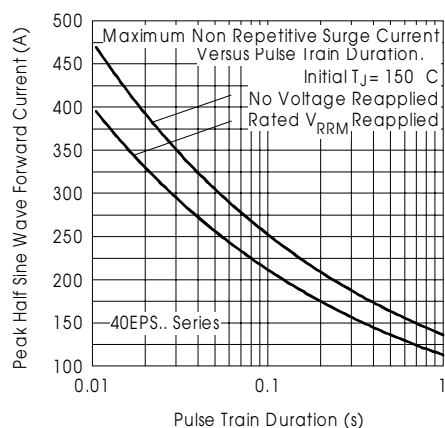


Fig. 6 - Maximum Non-Repetitive Surge Current

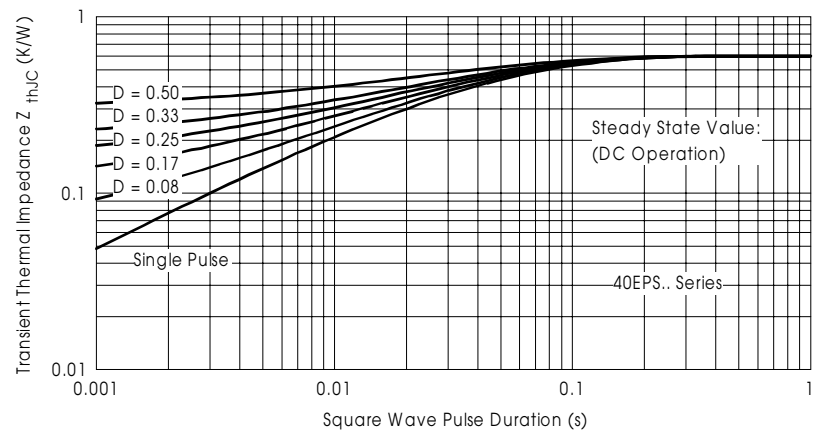
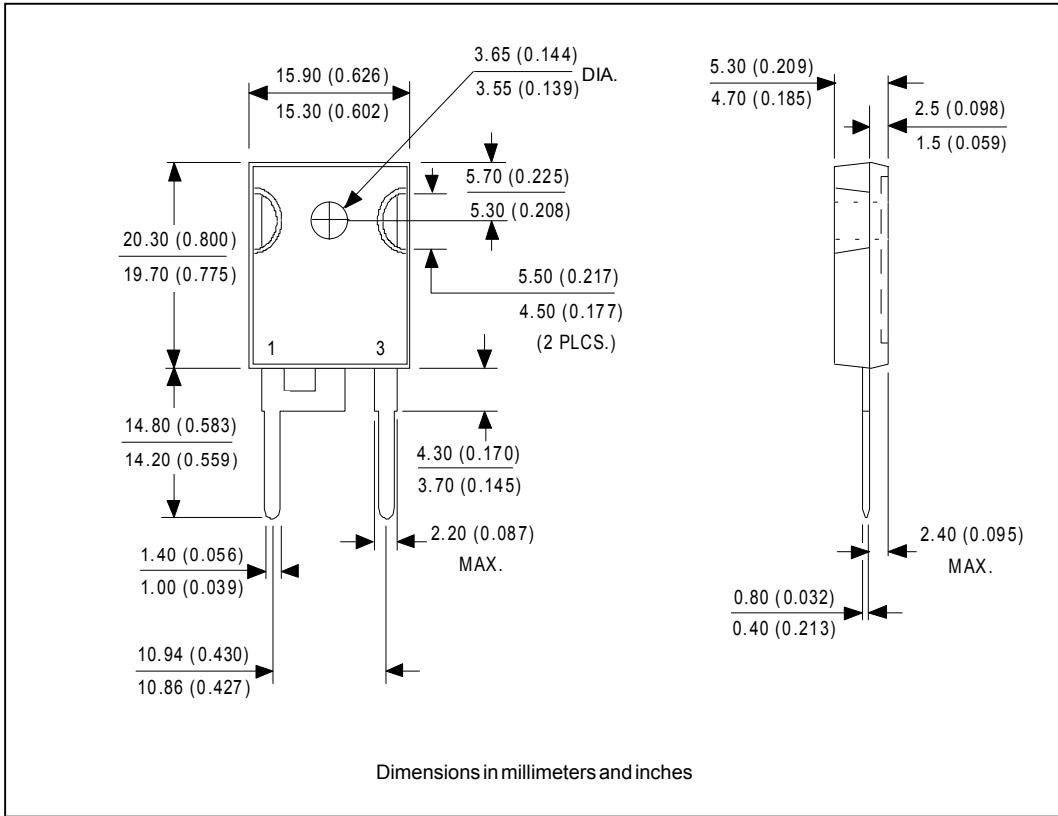


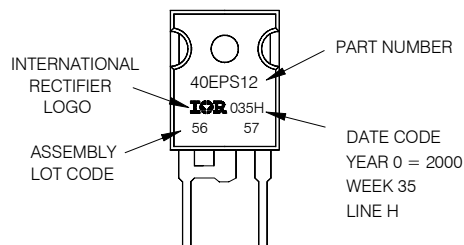
Fig. 7 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



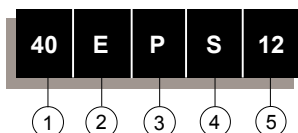
## Marking Information

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

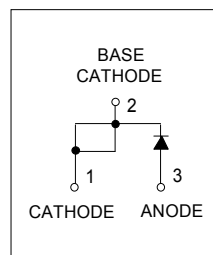


## Ordering Information Table

### Device Code



- 1** - Current Rating
- 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.

International  
**IOR** Rectifier

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