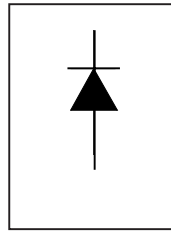


International  
**IR** Rectifier

**SAFEIR** Series  
 40EPS..PbF

INPUT RECTIFIER DIODE  
 Lead-Free ("PbF" suffix)



$$V_F < 1V @ 20A$$

$$I_{FSM} = 475A$$

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

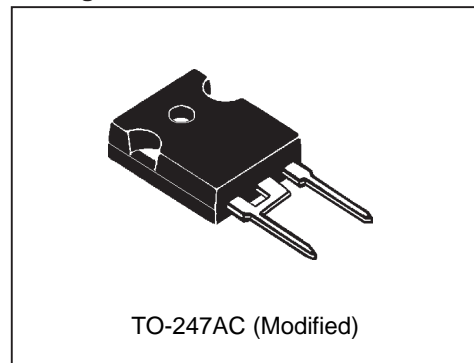
#### Description/ Features

The 40EPS..PbF 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
$V_F$ @ 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
40EPS08PbF	800	900	1
40ETF12PbF	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)	$\text{Kg-cm}$ $(\text{lbf-in})$
	Max.	12 (10)	
Case Style	TO-247AC	JEDEC (Modified)	
Marking Device	40EPS12		

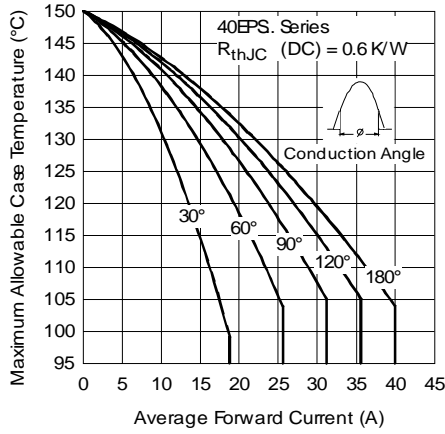


Fig. 1 - Current Rating Characteristics

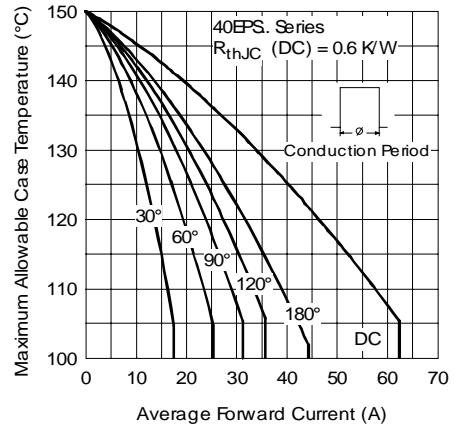


Fig. 2 - Current Rating Characteristics

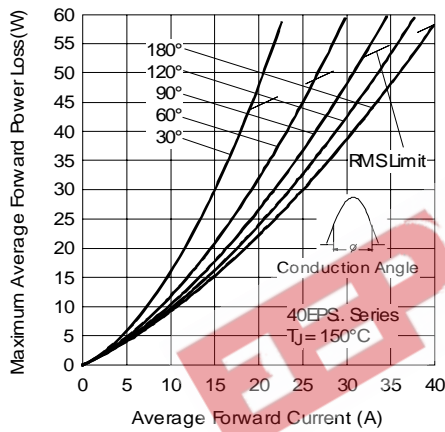


Fig. 3 - Forward Power Loss Characteristics

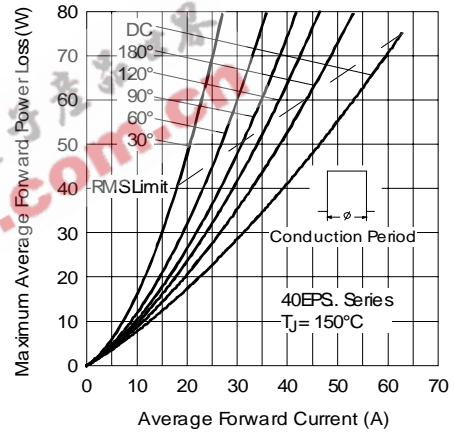


Fig. 4 - Forward Power Loss Characteristics

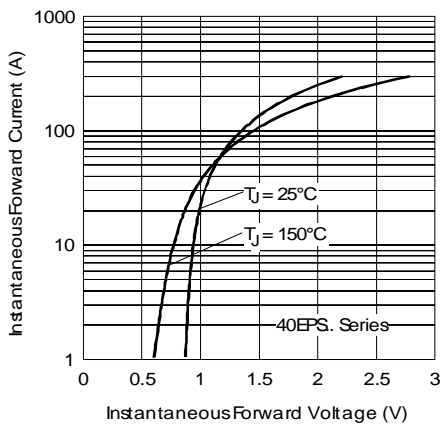


Fig. 5 - Forward Voltage Drop Characteristics

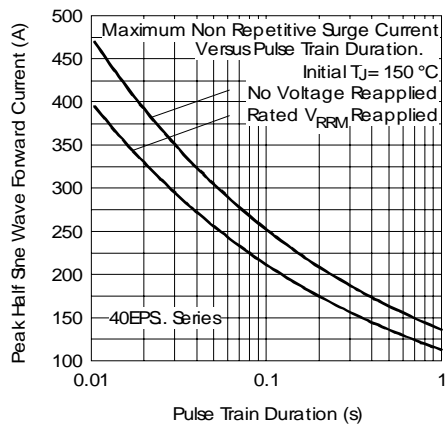


Fig. 6 - Maximum Non-Repetitive Surge Current

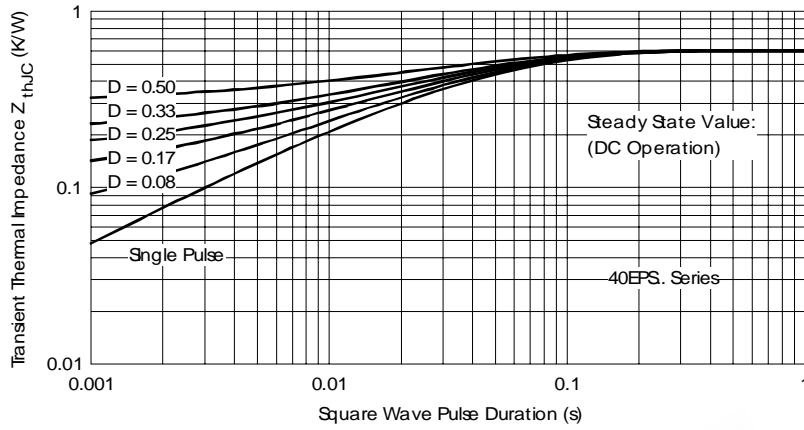
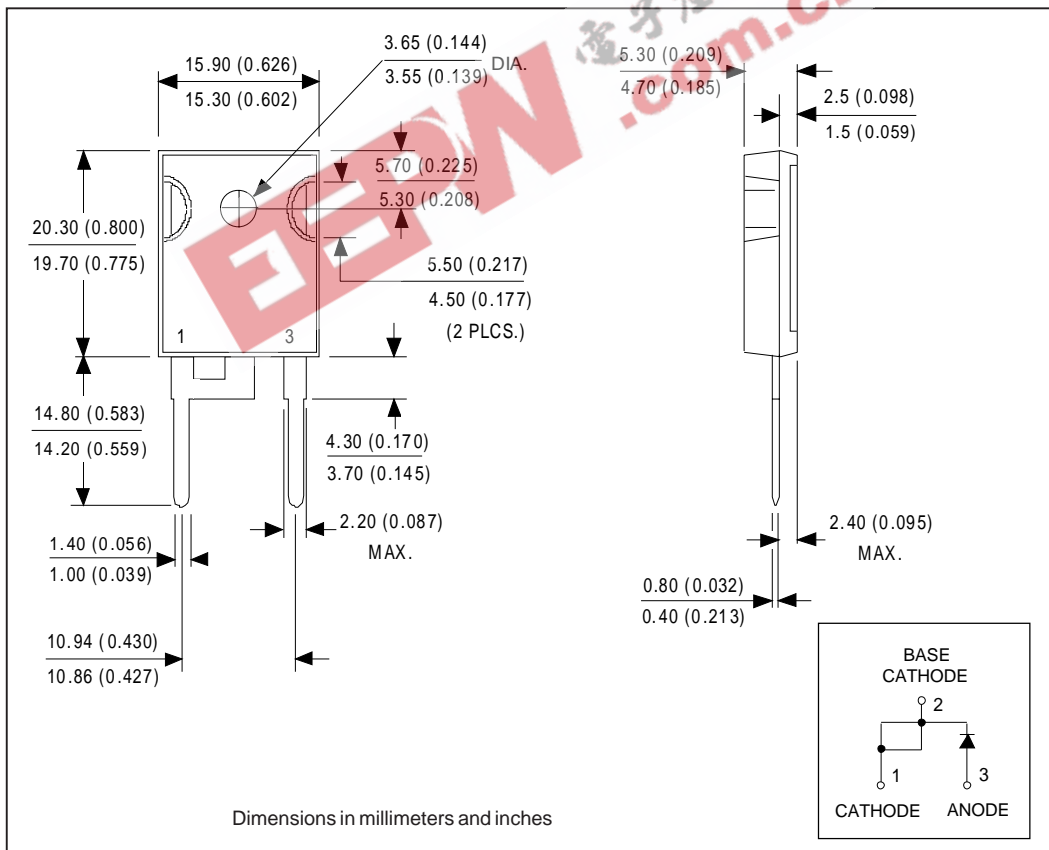


Fig. 7 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Marking Information

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

INTERNATIONAL RECTIFIER LOGO

ASSEMBLY LOT CODE

PART NUMBER

DATE CODE  
P = LEAD-FREE  
YEAR 0 = 2000  
WEEK 35  
LINE H

Ordering Information Table

Device Code					
40	E	P	S	12	PbF
①	②	③	④	⑤	⑥
<b>1</b>	-	Current Rating (40 = 40A)			
<b>2</b>	-	Circuit Configuration:			
		E = Single Diode			
<b>3</b>	-	Package:			
		P = TO-247AC (Modified)			
<b>4</b>	-	Type of Silicon:			
		S = Standard Recovery Rectifier			
<b>5</b>	-	Voltage Ratings		12 = 1200V	
				08 = 800V	
<b>6</b>	-	• none = Standard Production			
		• PbF = Lead-Free			

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