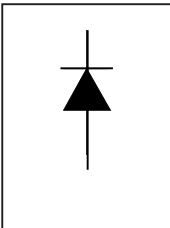


International
IR Rectifier

SAFEIR Series
40EPS..PbF

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



V_F	$< 1V @ 20A$
I_{FSM}	$= 475A$
V_{RRM}	$= 800 - 1200V$

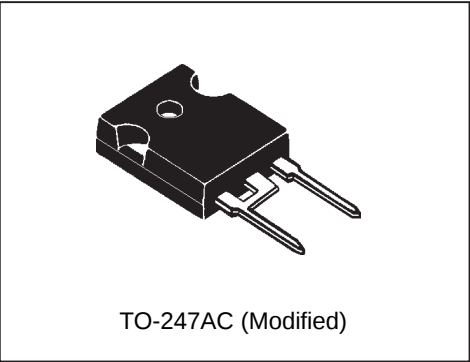
Description/ Features

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



40EPS..PbF **SAFEIR** Series

Bulletin I2179 rev. A 03/06

International
IR Rectifier

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 reappplied
I^2t Max. I^2t for fusing	800	A^2s	10ms Sine pulse, rated V_{RRM} applied
	1131		10ms Sine pulse, no voltage reappplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	11310	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reappplied

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	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ 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	°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)
Marking Device	40EPS12		

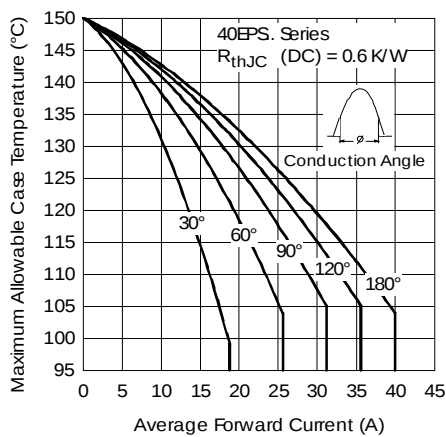


Fig. 1 - Current Rating Characteristics

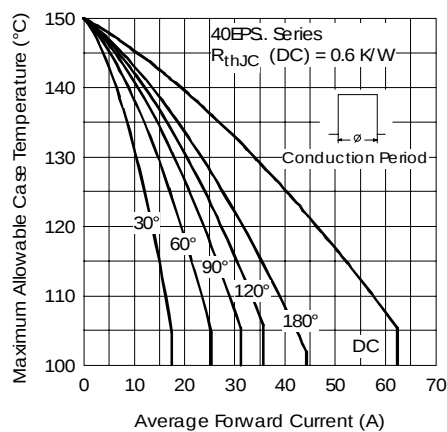


Fig. 2 - Current Rating Characteristics

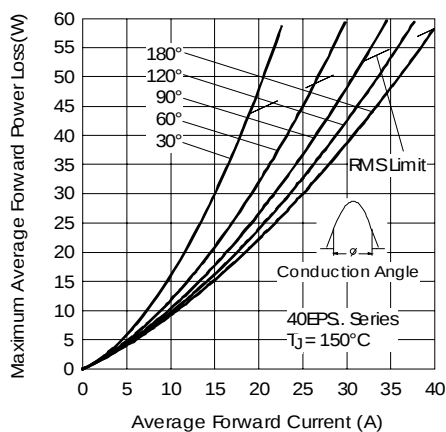


Fig. 3 - Forward Power Loss Characteristics

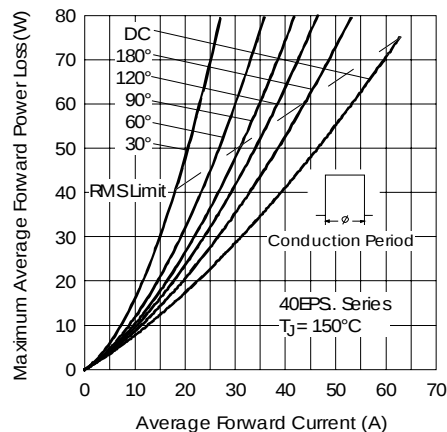


Fig. 4 - Forward Power Loss Characteristics

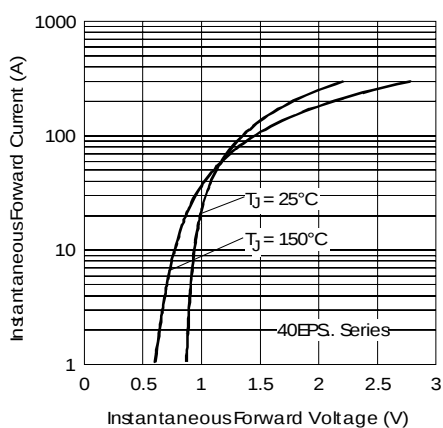


Fig. 5 - Forward Voltage Drop Characteristics

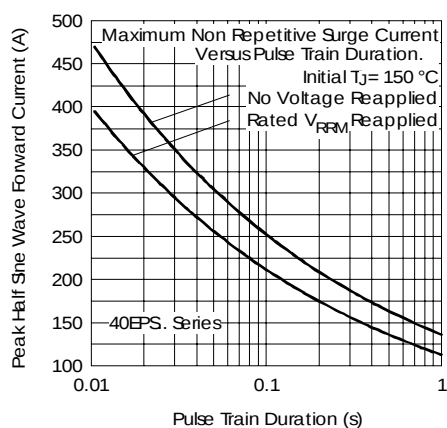


Fig. 6 - Maximum Non-Repetitive Surge Current

40EPS..PbF **SAFEIR** Series

Bulletin I2179 rev. A 03/06

International
IR Rectifier

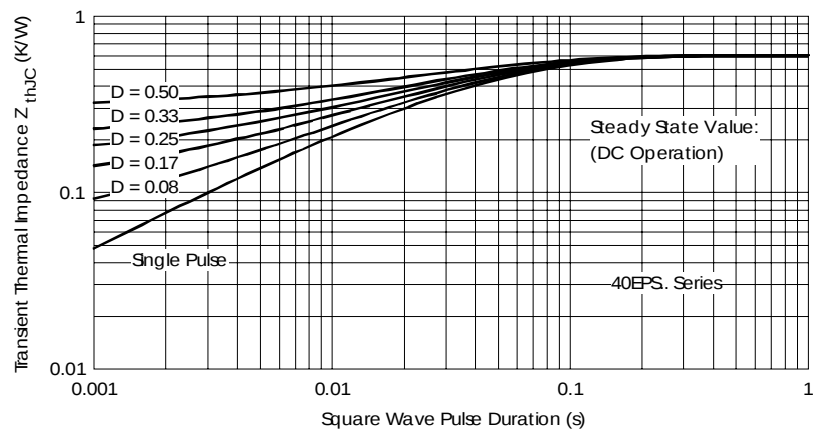
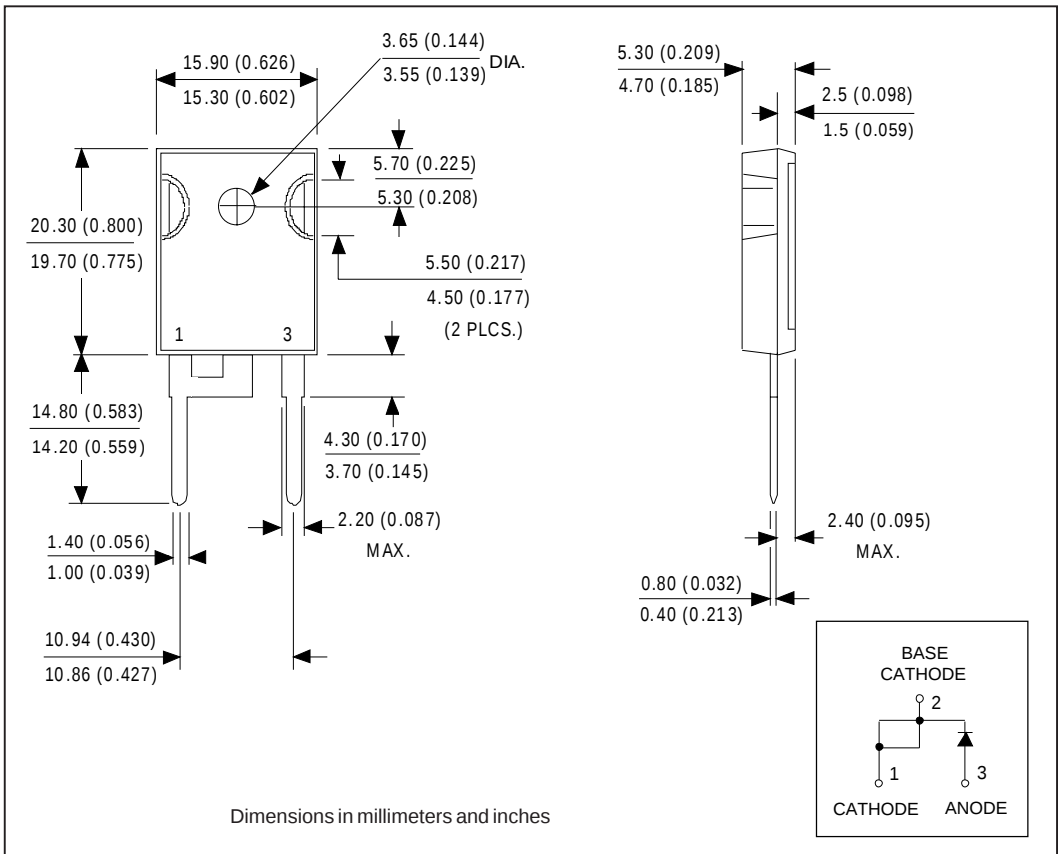


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Marking Information

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

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
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 Ratings			
		12 = 1200V 08 = 800V			
6	-	• 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.