

I2123 rev. B 11/99

International
IOR Rectifier

SAFEIR Series
80EPS..

INPUT RECTIFIER DIODE



$V_F < 1.17V @ 80A$
 $I_{FSM} = 1450A$
 $V_{RRM} 800 \text{ to } 1600V$

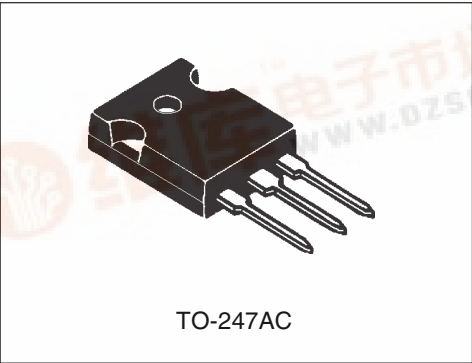
Description/Features

The 80EPS 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	80EPS..	Units
$I_{F(AV)}$ Sinusoidal waveform	80	A
V_{RRM}	800to 1600	V
I_{FSM}	1450	A
$V_F @ 80A, T_J=25^{\circ}C$	1.17	V
T_J	-40to 150	°C

Package Outline



TO-247AC



80EPS.. SAFEIR Series

I2123 rev. B 11/99

International
IOR 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
80EPS08	800	900	1
80EPS12	1200	1300	
80EPS16	1600	1700	

Absolute Maximum Ratings

Parameters	80EPS..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	80	A	@ $T_C = 100^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	1450	A	10ms Sine pulse, rated V_{RRM} applied
	1500		10ms Sine pulse, no voltage reappplied
I^2t Max. I^2t for fusing	10500	A^2s	10ms Sine pulse, rated V_{RRM} applied
	14000		10ms Sine pulse, no voltage reappplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	105000	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reappplied

Electrical Specifications

Parameters	80EPS..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.17	V	@ 80A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	3.17	m Ω	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.73	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	80EPS..	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)	Kg-cm (lbf-in)
	Max.	12(10)	
Case Style	TO-247AC		JEDEC

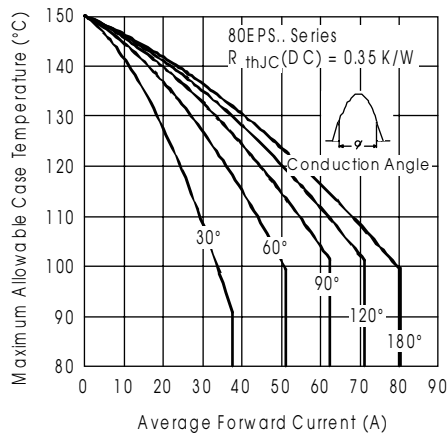


Fig. 1 - Current Rating Characteristics

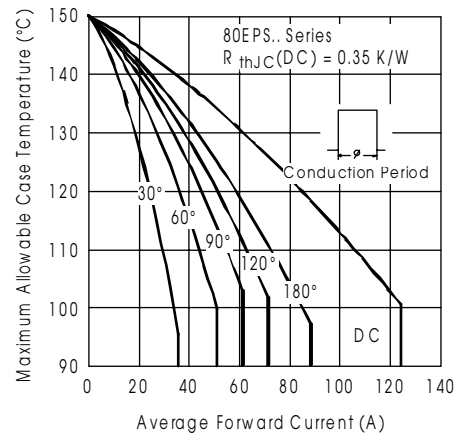


Fig. 2 - Current Rating Characteristics

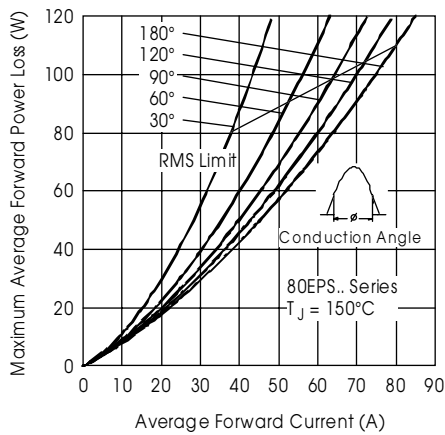


Fig. 3 - Forward Power Loss Characteristics

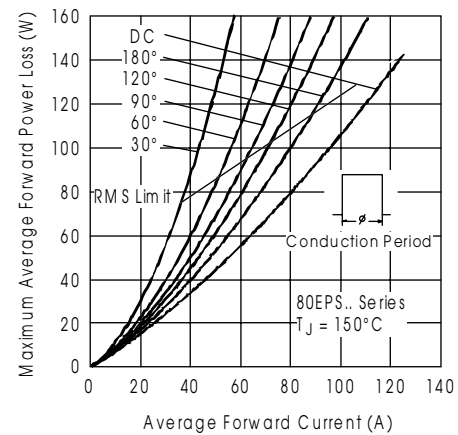


Fig. 4 - Forward Power Loss Characteristics

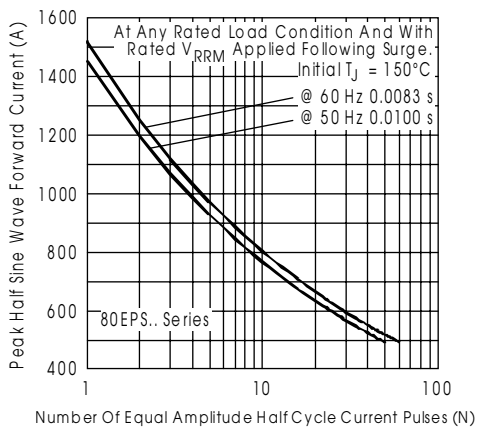


Fig. 5 - Maximum Non-Repetitive Surge Current

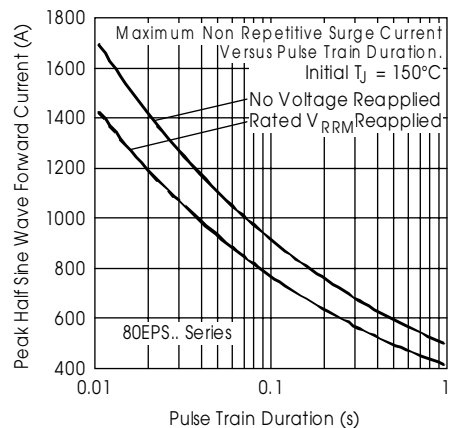


Fig. 6 - Maximum Non-Repetitive Surge Current

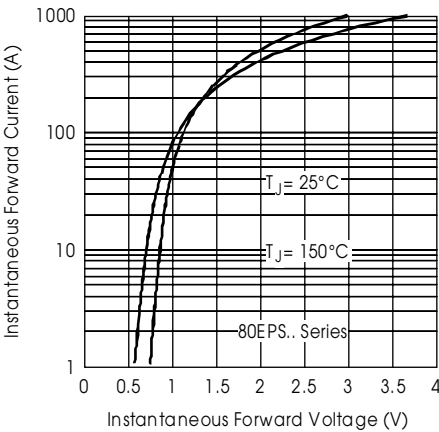


Fig.7-Forward Voltage Drop Characteristics

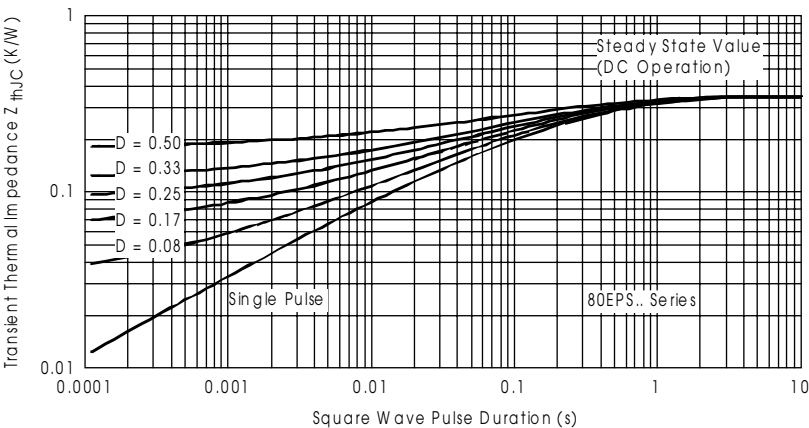
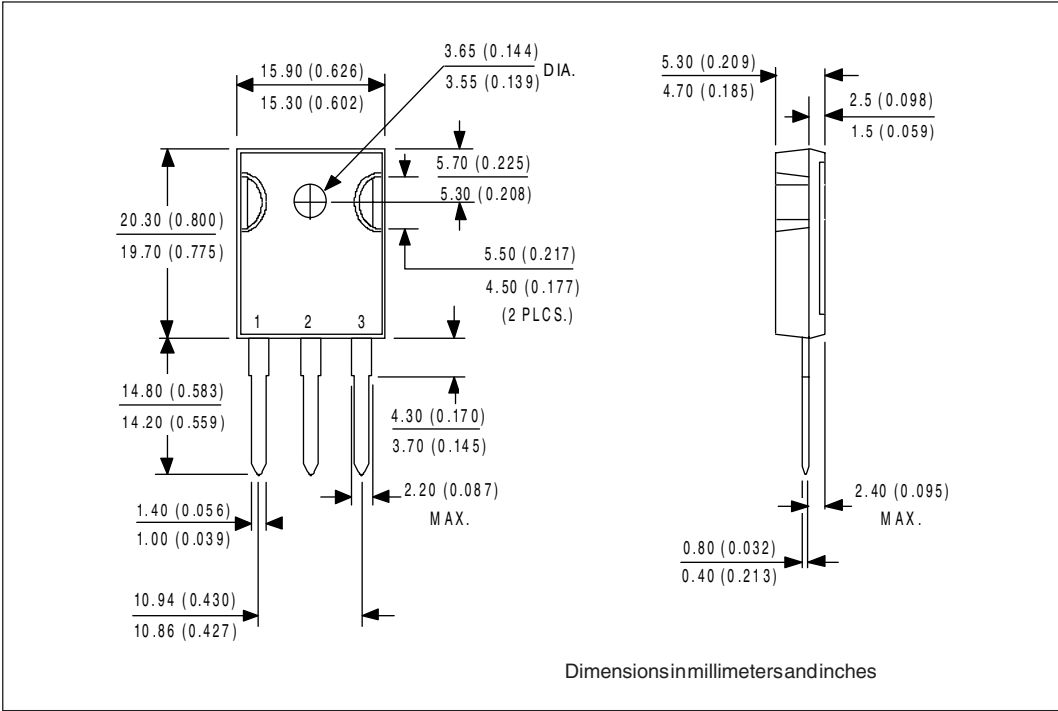


Fig.8- Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code				
80	E	P	S	16
1	2	3	4	5
1	- Current Rating			
2	- Circuit Configuration:			
	E = Single Diode			
3	- Package:			
	P = TO-247AC			
4	- Type of Silicon:			
	S = Standard Recovery Rectifier			
5	- Voltage code: Code x 100 = V _{RRM}			
	08 = 800V			
	12 = 1200V			
	16 = 1600V			

Circuit diagram of the diode package showing the Base Cathode (2) and Anode (1, 3) connections.

80EPS.. SAFEIR Series

I2123 rev. B 11/99

International
IOR Rectifier

International
IOR Rectifier

WORLD HEADQUARTERS:
EUROPEAN HEADQUARTERS:

IR CANADA:

IR GERMANY:

IR ITALY:

IR FAR EAST:

233 Kansas St., El Segundo, California 90245 U.S.A Tel: (310) 322-3331 Fax: (310) 322-3332
Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020 Fax: ++ 44 1883 733408
7231 Victoria Park Ave., Suite #201, Markham, Ontario L3R 2Z8 Tel: (905) 475 1897. Fax: (905) 475 8801
Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590 Fax: ++ 49 6172 965933
Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 4510111 Fax: ++ 39 11 4510220
K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171 Tel: 81 3 3983 0086 Fax: 81 3 3983 0642

IR SOUTHEAST ASIA: 315 Outram Road, # 10-02 Tan Boon Liat Building, SINGAPORE 0316. Tel: 65 221 8371. Fax: 65 221 8372.

<http://www.irf.com>

Fax-On-Demand: +44 1883 733420

Data and specifications subject to change without notice

11/97