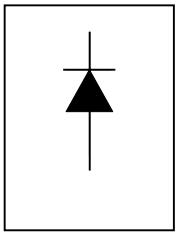
Bulletin I2104 rev. B 10/01

International
IOR Rectifier

SAFEIR Series
40EPS12

INPUT RECTIFIER DIODE



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

Description/Features

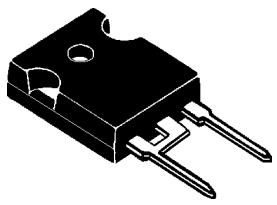
The 40EPS.. rectifier *SAFEIR* series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150° C junction temperature.

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°C	1.0	V
T_J	-40 to 150	°C

Package Outline



TO-247AC (Modified)

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° 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°C	
r_t	Forward slope resistance	7.16	mΩ	T_J = 150°C	
$V_{F(TO)}$	Threshold voltage	0.74	V		
I_{RM}	Max. Reverse Leakage Current	0.1	mA	T_J = 25 °C	V_R = rated V_{RRM}
		1.0		T_J = 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)

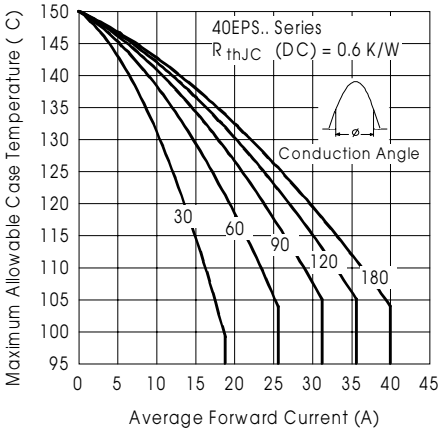


Fig. 1 - Current Rating Characteristics

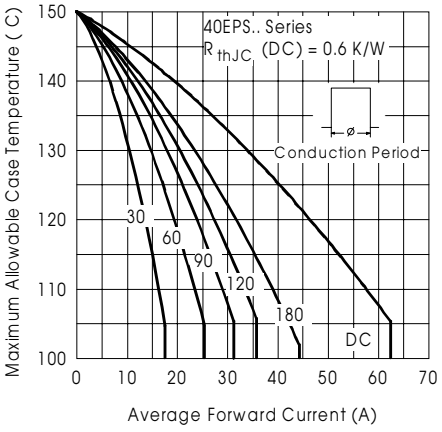


Fig. 2 - Current Rating Characteristics

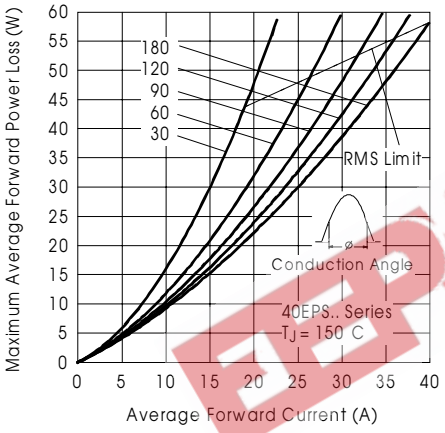


Fig. 3 - Forward Power Loss Characteristics

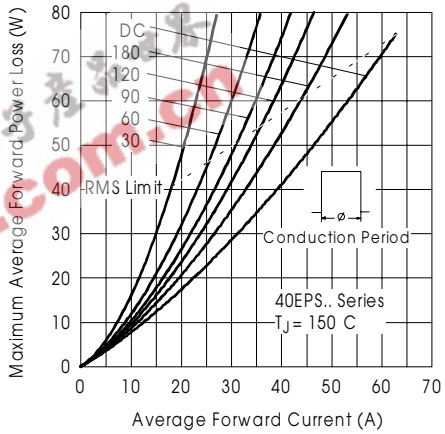


Fig. 4 - Forward Power Loss Characteristics

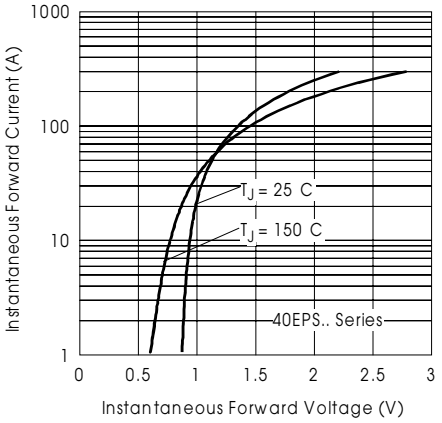


Fig. 5 - Forward Voltage Drop Characteristics

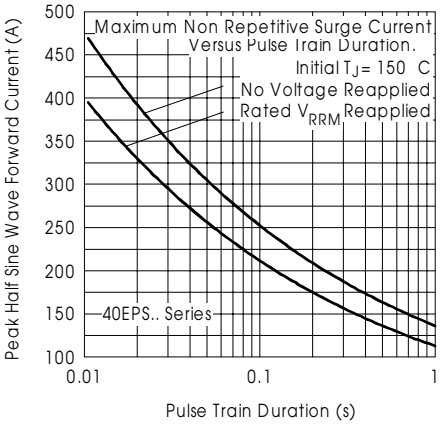


Fig. 6 - Maximum Non-Repetitive Surge Current

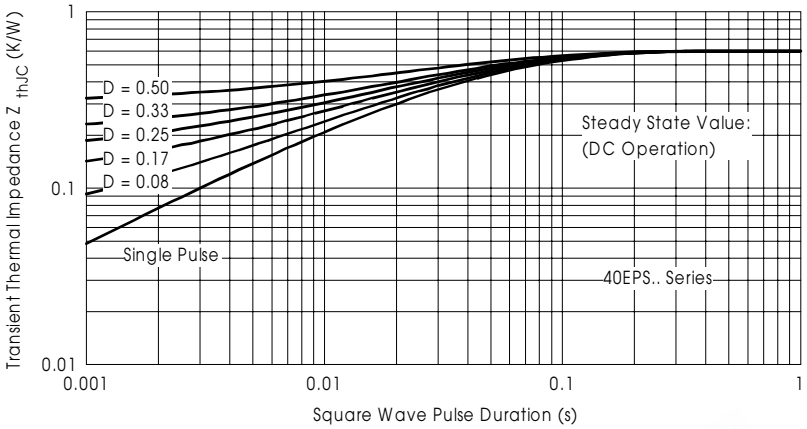
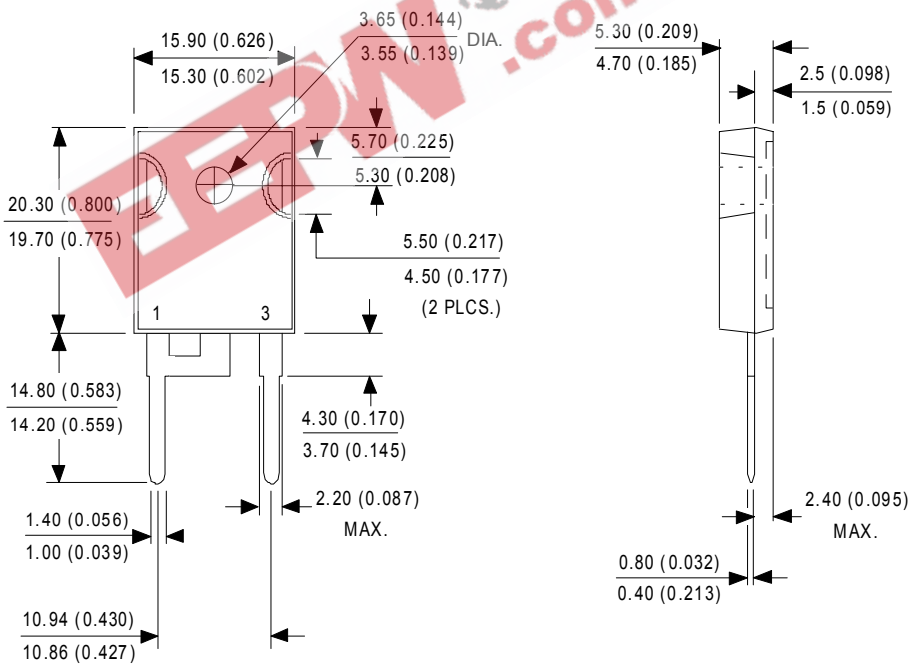


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics

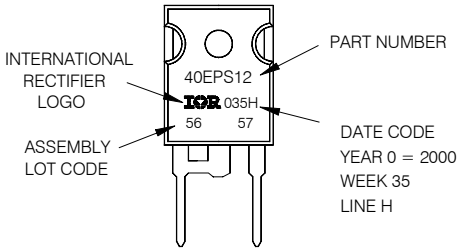
Outline Table



Dimensions in millimeters and inches

Marking Information

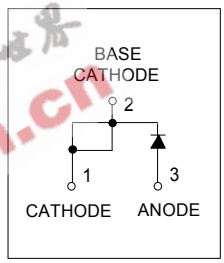
EXAMPLE: THIS IS A 40EPS12
WITH ASSEMBLY
LOT CODE 5657
ASSEMBLED ON WW 35, 2000
IN THE ASSEMBLY LINE "H"



Ordering Information Table

Device Code

40	E	P	S	12
1	2	3	4	5



1 - Current Rating
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

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 10/01

International
IOR Rectifier

WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245 U.S.A. Tel: (310) 322 3331. Fax: (310) 322 3332.
EUROPEAN HEADQUARTERS: Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020. Fax: ++ 44 1883 733408.
IR CANADA: 15 Lincoln Court, Brampton, Markham, Ontario L6T3Z2. Tel: (905) 453 2200. Fax: (905) 475 8801.
IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg. Tel: ++ 49 6172 96590. Fax: ++ 49 6172 965933.
IR ITALY: Via Liguria 49, 10071 Borgaro, Torino. Tel: ++ 39 11 4510111. Fax: ++ 39 11 4510220.
IR FAR EAST: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171. Tel: 81 3 3983 0086.
IR SOUTHEAST ASIA: 1 Kim Seng Promenade, Great World City West Tower,13-11, Singapore 237994. Tel: ++ 65 838 4630.
IR TAIWAN: 16 Fl. Suite D.207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan. Tel: 886 2 2377 9936.

http://www.irf.com *Fax-On-Demand: +44 1883 733420*