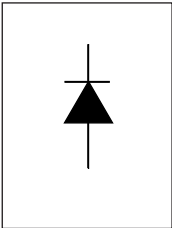


International
IOR Rectifier

SAFEIR Series
40EPS..

INPUT RECTIFIER DIODE



V_F	< 1V @ 20A
I_{FSM}	= 475A
V_{RRM}	800 to 1600V

Description/Features

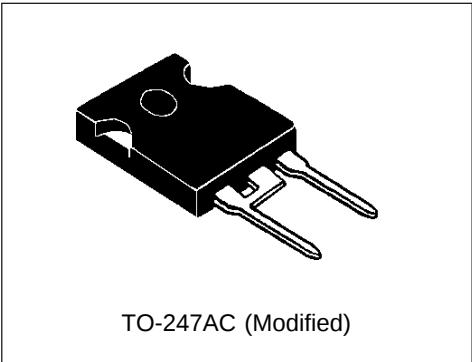
The 40EPS rectifier **SAFEIR** series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150° C junction temperature.

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}	800 to 1600	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	
40EPS16	1600	1700	

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	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)

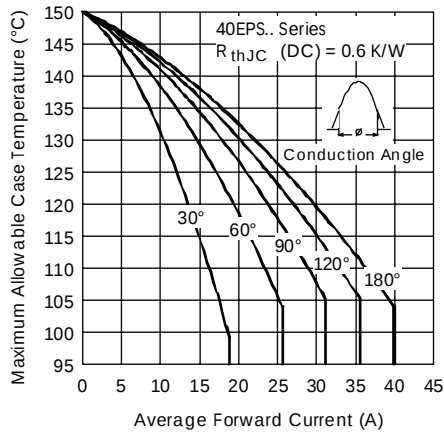


Fig. 1 - Current Rating Characteristics

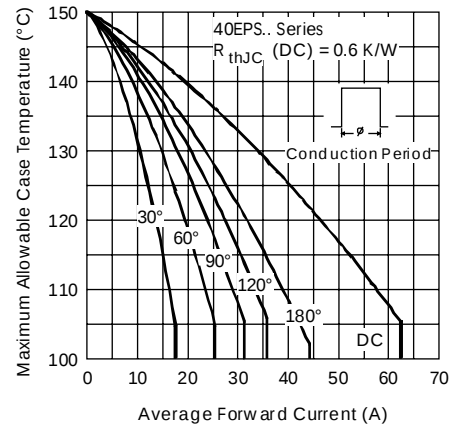


Fig. 2 - Current Rating Characteristics

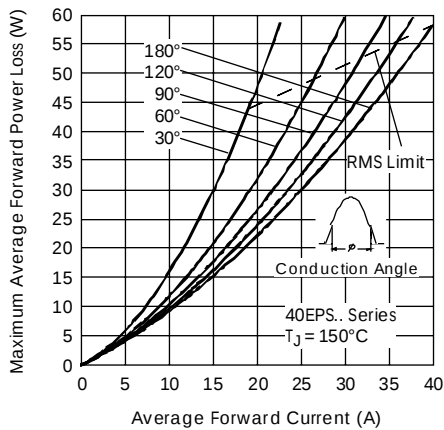


Fig. 3 - Forward Power Loss Characteristics

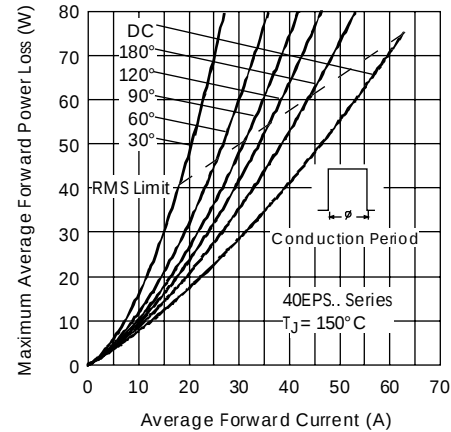


Fig. 4 - Forward Power Loss Characteristics

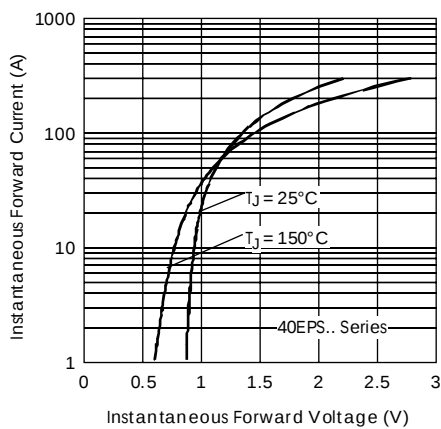


Fig. 5 - Forward Voltage Drop Characteristics

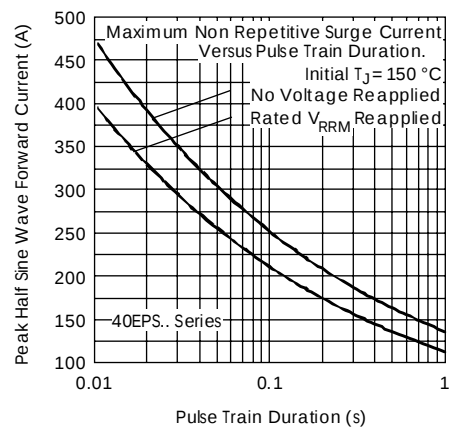


Fig. 6 - Maximum Non-Repetitive Surge Current

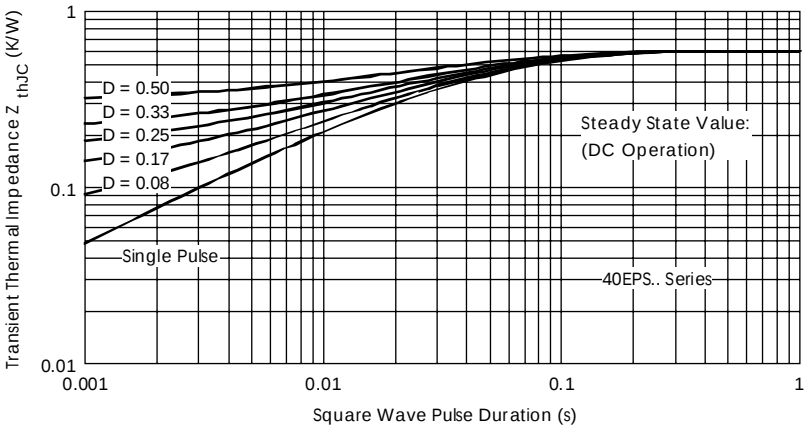
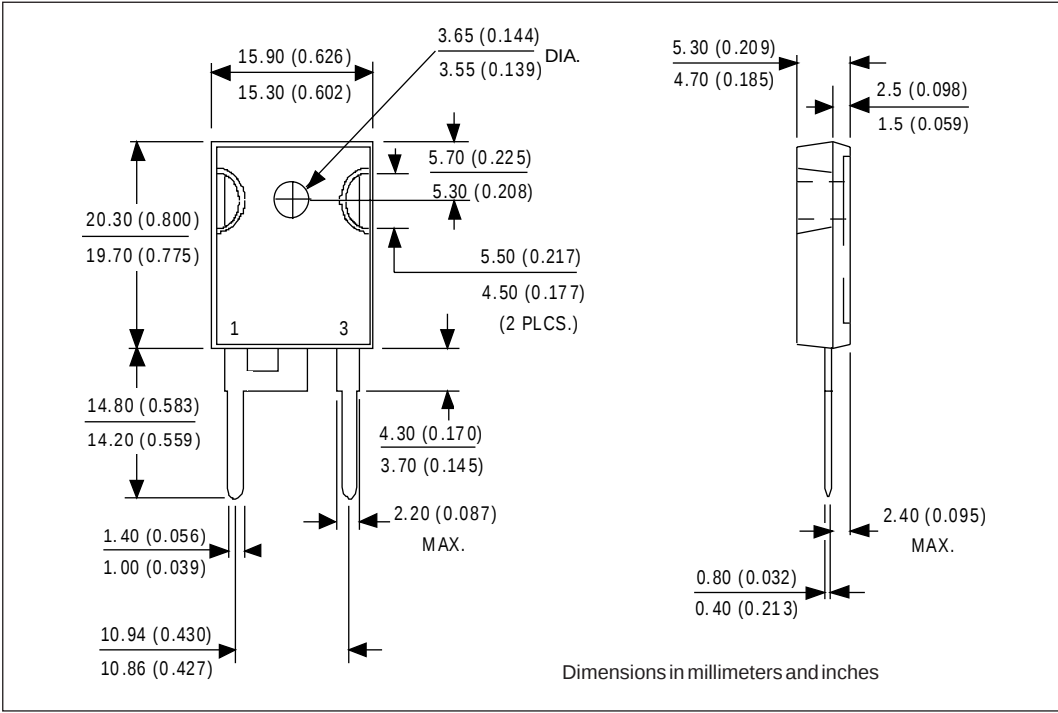


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code

40	E	P	S	16
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

16 = 1600V

BASE
CATHODE

2

1

3

CATHODE

ANODE