

Bulletin I2160 10/01

International
IR Rectifier

SAFEIR Series
40EPS16

INPUT RECTIFIER DIODE



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

Description/Features

The 40EPS16 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.

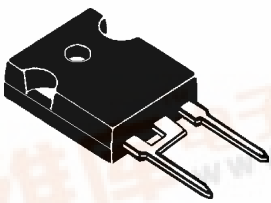
Typical applications are in input rectification and these products are designed to be used with International Rectifier Switches and Output Rectifiers which are available in identical package outlines.

Major Ratings and Characteristics

Characteristics	40EPS..	Units
$I_{F(AV)}$ Sinusoidal waveform	40	A
V_{RRM} Range (*)	1600	V
I_{FSM}	475	A
$V_F @ 20A, T_J = 25^{\circ}C$	1.0	V
T_J	-40to 150	°C

(*) Contact Factory

Package Outline



TO-247AC (Modified)



40EPS16 *SAFEIR* Series

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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
40EPS16	1600	1700	1

Absolute Maximum Ratings

Parameters	40EPS16	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		40EPS16	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop	1.14	V	@ 40A, T _J = 25°C	
r _t	Forward slope resistance	7.6	mΩ	T _J = 150°C	
V _{F(TO)}	Threshold voltage	0.72	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	40EPS16	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)	Kg-cm (lbf-in)	
	Max. 12 (10)		
Case Style	TO-247AC		JEDEC (Modified)

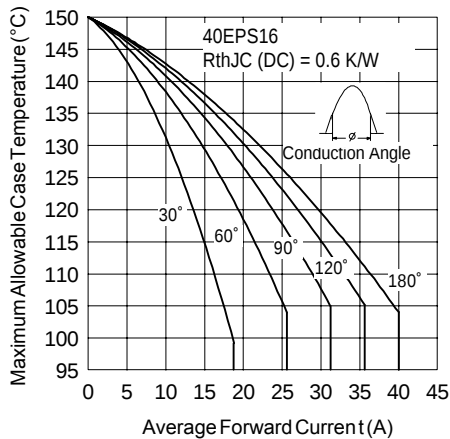


Fig. 1 - Current Rating Characteristics

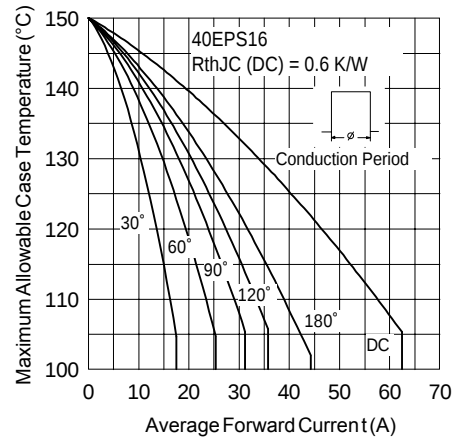


Fig. 2 - Current Rating Characteristics

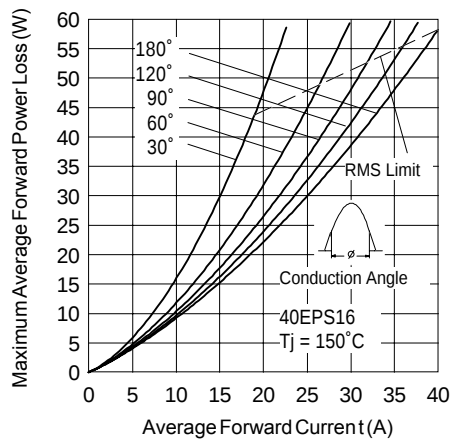


Fig. 3 - Forward Power Loss Characteristics

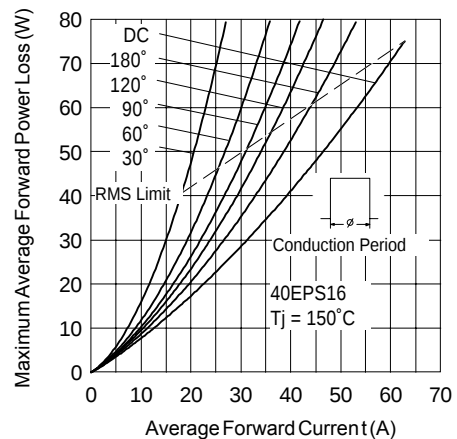


Fig. 4 - Forward Power Loss Characteristics

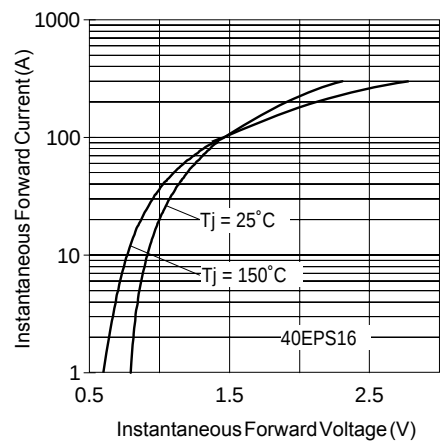


Fig. 5 - Forward Voltage Drop Characteristics

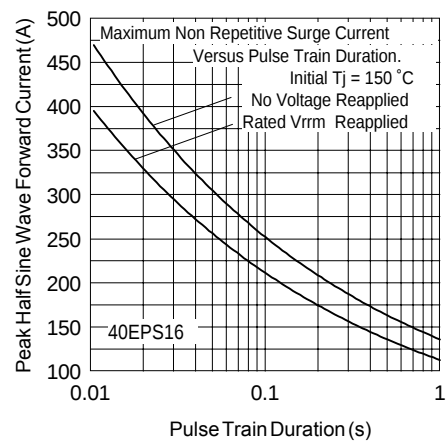


Fig. 6 - Maximum Non-Repetitive Surge Current

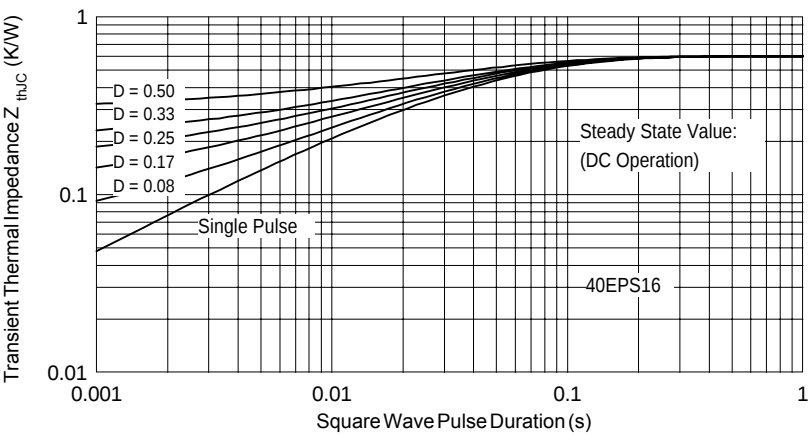
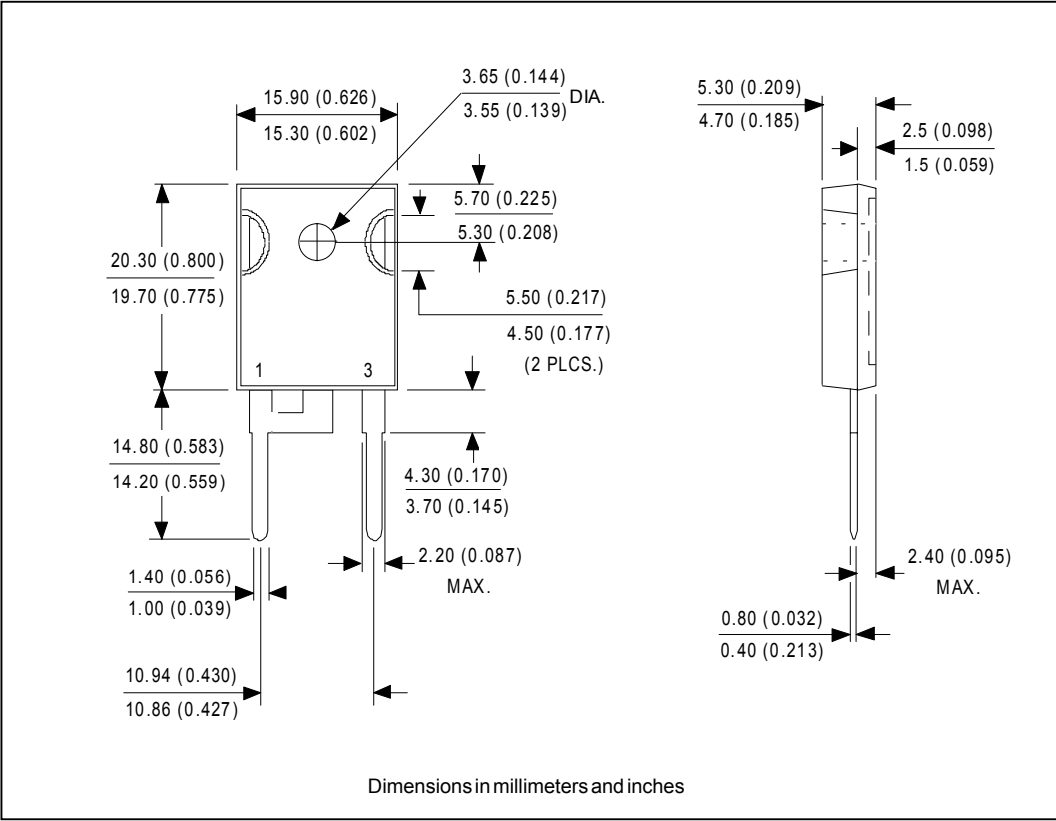


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Marking Information

EXAMPLE: THIS IS A 40EPS16
WITH ASSEMBLY
LOT CODE 5657
ASSEMBLED ON WW 35, 2000
IN THE ASSEMBLY LINE "H"

INTERNATIONAL
RECTIFIER
LOGO

ASSEMBLY
LOT CODE

PART NUMBER

DATE CODE
YEAR 0 = 2000
WEEK 35
LINE H

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} (*) — 16 = 1600V

BASE
CATHODE

CATHODE ANODE

(*) Contact Factory

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.