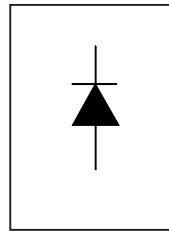


International
IR Rectifier

SAFEIR Series
 40EPS16PbF

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



$$V_F < 1V @ 20A$$

$$I_{FSM} = 475A$$

$$V_{RRM} = 1600V$$

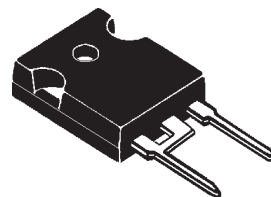
Description/ Features

The 40EPS16PbF 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}	1600	V
I_{FSM}	475	A
V_F @20A, $T_J = 25^\circ C$	1.0	
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
40EPS16PbF	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^2vt Max. I^2vt for fusing	11310	A^2vs	$t = 0.1$ to 10ms, no voltage reapplied

Electrical Specifications

Parameters	40EPS16	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.14	V	@ 40A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	7.6	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.72	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	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)
Marking Device	40EPS16		

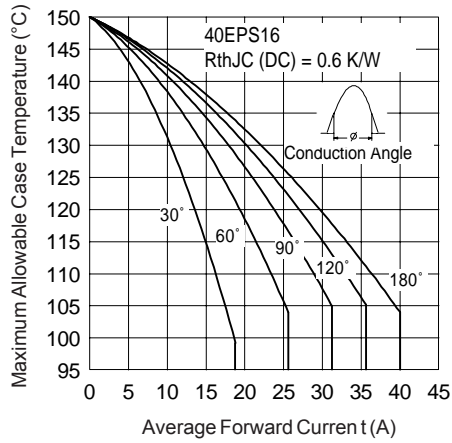


Fig. 1 - Current Rating Characteristics

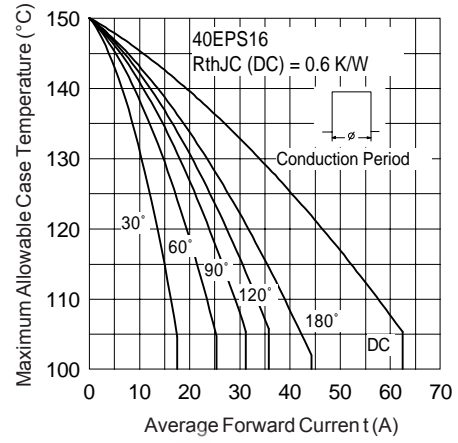


Fig. 2 - Current Rating Characteristics

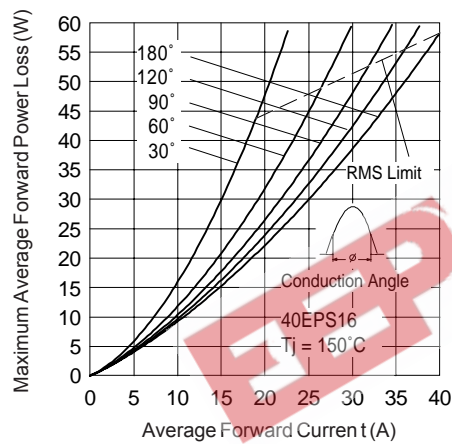


Fig. 3 - Forward Power Loss Characteristics

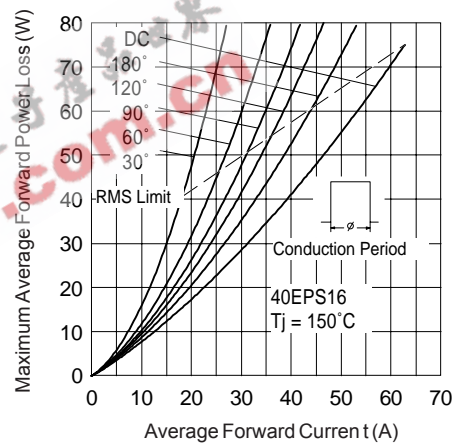


Fig. 4 - Forward Power Loss Characteristics

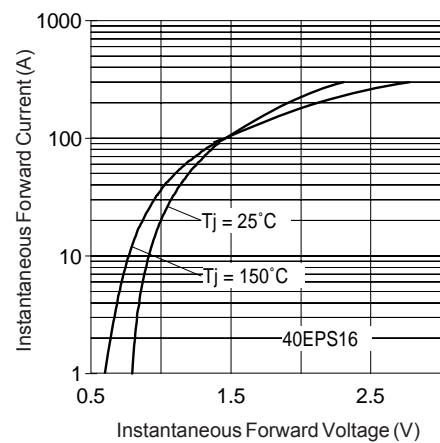


Fig. 5 - Forward Voltage Drop Characteristics

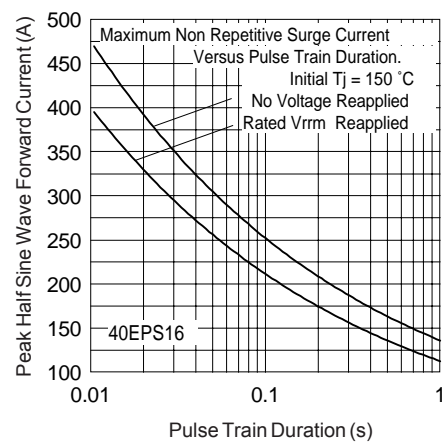


Fig. 6 - Maximum Non-Repetitive Surge Current

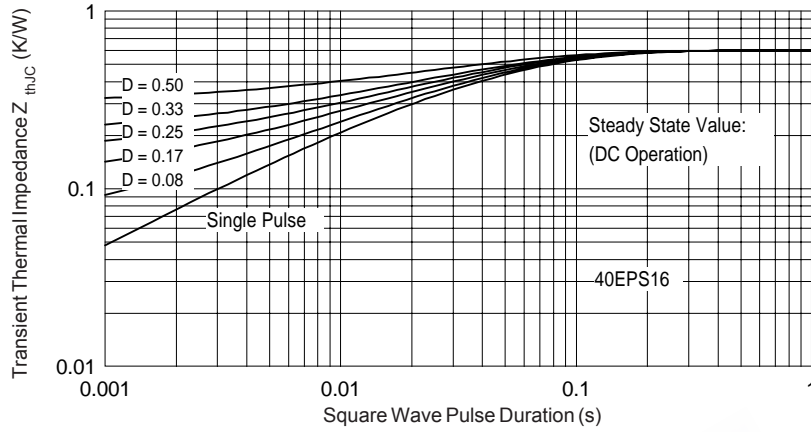
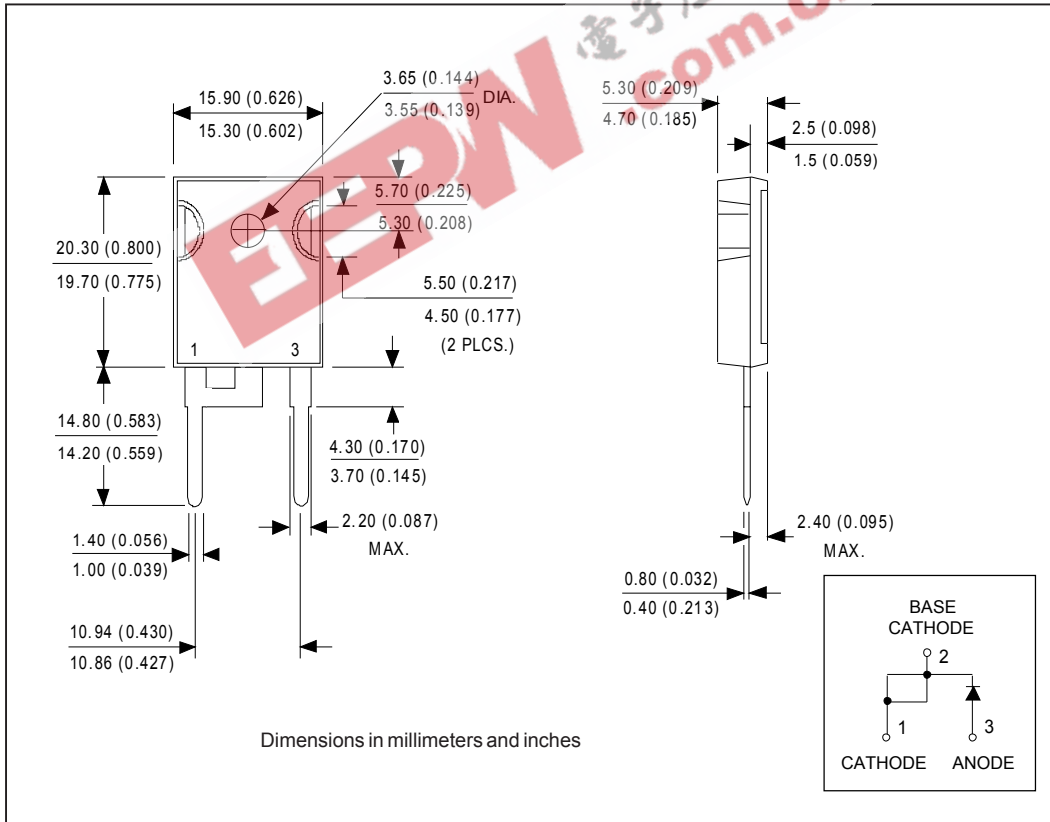


Fig. 7 - Thermal Impedance Z_{thjC} Characteristics

Outline Table



Marking Information

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

DATE CODE
 P = LEAD-FREE
 YEAR 0 = 2000
 WEEK 35
 LINE H

Ordering Information Table

Device Code					
40	E	P	S	16	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 rating (16 = 1600V)				
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.