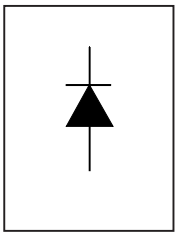
Bulletin I2173 10/04

International
IOR Rectifier

SAFEIR Series
40EPS16PbF

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



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

Description/ Features

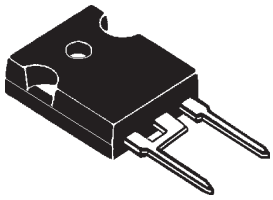
The 40EPS16PbF rectifier *SAFEIR* series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150° C junction temperature.

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°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° 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	°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)
	Marking Device		40EPS16		

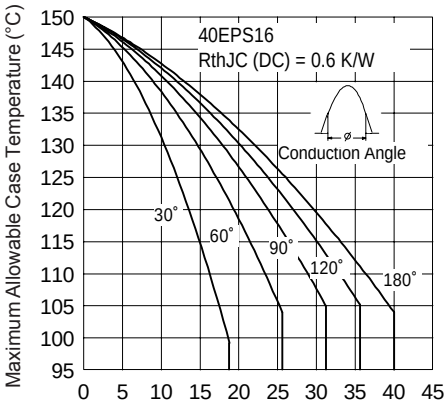


Fig. 1 - Current Rating Characteristics

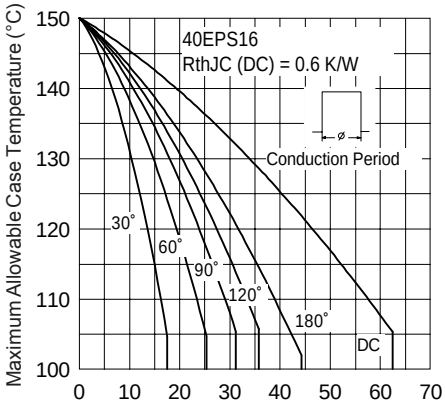


Fig. 2 - Current Rating Characteristics

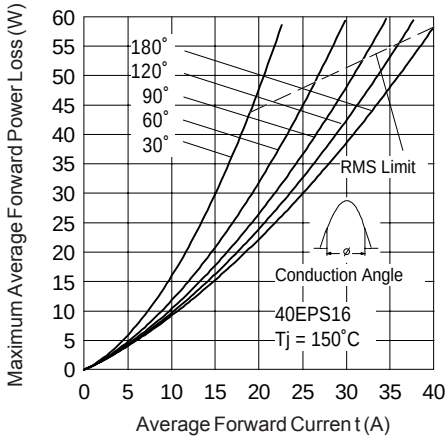


Fig. 3 - Forward Power Loss Characteristics

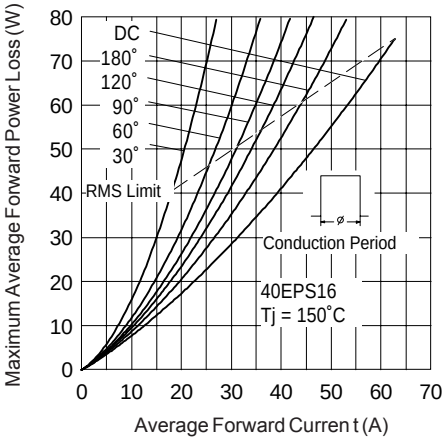


Fig. 4 - Forward Power Loss Characteristics

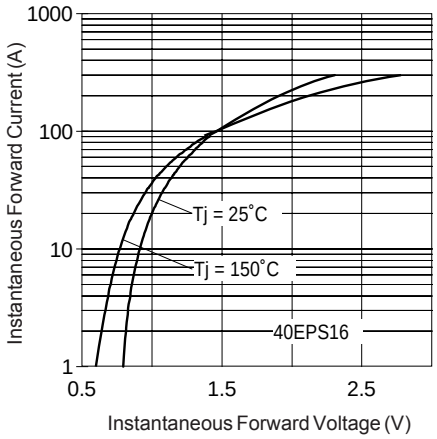


Fig. 5 - Forward Voltage Drop Characteristics

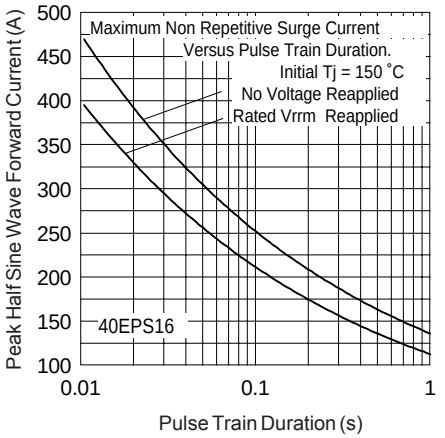


Fig. 6 - Maximum Non-Repetitive Surge Current

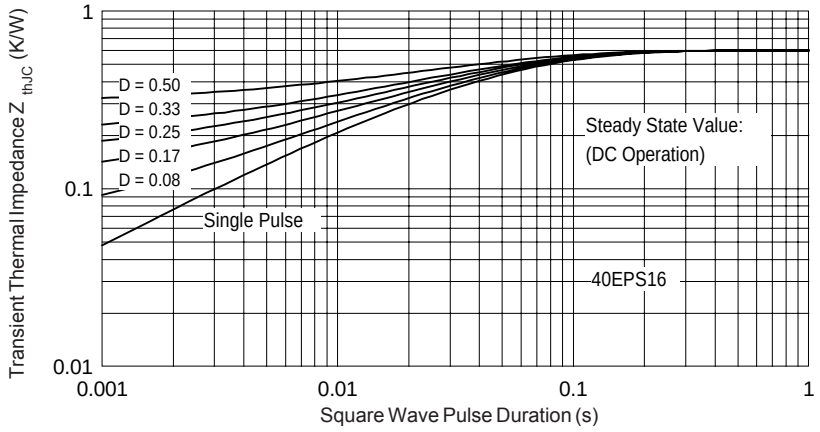
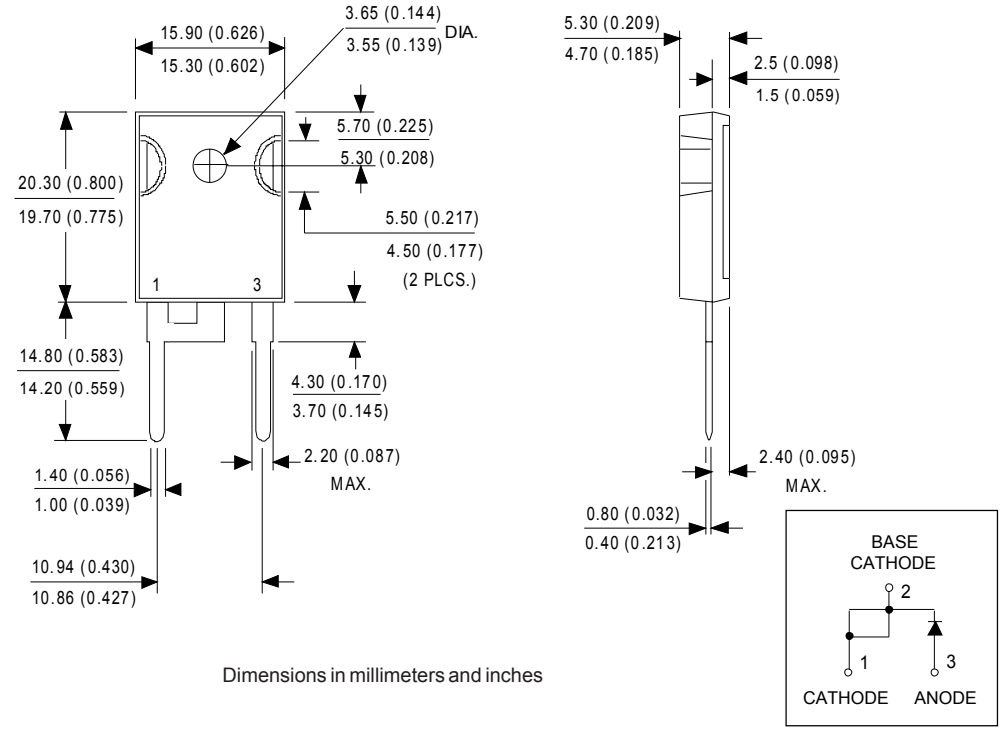


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics

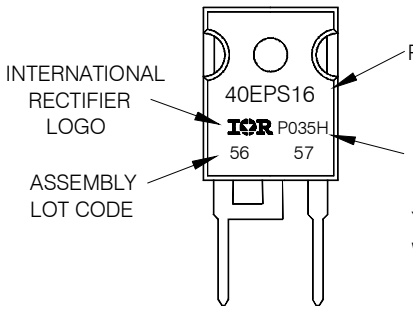
Outline Table



Dimensions in millimeters and inches

Marking Information

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

International
IOR Rectifier

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