

International
IOR Rectifier

SAFEIR Series
10ETS..S

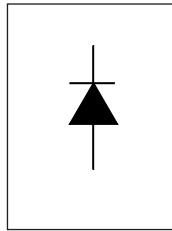
INPUT RECTIFIER DIODE

Description/Features

The 10ETS..S 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.

The **High Reverse Voltage** range available allows design of input stage primary rectification with **Outstanding Voltage Surge** capability.

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.



$$V_F < 1.1V @ 10A$$

$$I_{FSM} = 200A$$

$$V_{RRM} 800 \text{ to } 1600V$$

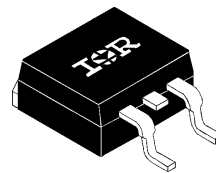
Output Current in Typical Applications

Applications	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A=55^\circ\text{C}$, $T_J=125^\circ\text{C}$ common heatsink of 1°C/W	12.0	16.0	A

Major Ratings and Characteristics

Characteristics	10ETS..S	Units
$I_{F(AV)}$ Sinusoidal waveform	10	A
V_{RRM}	800 to 1600	V
I_{FSM}	200	A
V_F @ 10A, $T_J=25^\circ\text{C}$	1.1	V
T_J	-40 to 150	$^\circ\text{C}$

Package Outline



D² Pak (SMD-220)

10ETS..S *SAFEIR* Series

Preliminary Data Sheet I2121 09/97

International
IOR Rectifier

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
10ETS08S	800	900	0.5
10ETS12S	1200	1300	
10ETS16S	1600	1700	

Provide terminal coating for voltages above 1200V

Absolute Maximum Ratings

Parameters	10ETS..S	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	10	A	@ $T_C = 105^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	170	A	10ms Sine pulse, rated V_{RRM} applied
	200		10ms Sine pulse, no voltage reappplied
I^2t Max. I^2t for fusing	130	A^2s	10ms Sine pulse, rated V_{RRM} applied
	145		10ms Sine pulse, no voltage reappplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	1450	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reappplied

Electrical Specifications

Parameters	10ETS..S	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.1	V	@ 10A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	20	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.82	V	
I_{RM} Max. Reverse Leakage Current	0.05	mA	$T_J = 25^\circ\text{C}$
	0.50		$T_J = 150^\circ\text{C}$

$V_R = \text{rated } V_{RRM}$

Thermal-Mechanical Specifications

Parameters	10ETS..S	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	2.5	°C/W	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient (PCB Mount)**	62	°C/W	
T_s Soldering Temperature	240	°C	
wt Approximate Weight	2(0.07)	g(oz.)	
Case Style	D ² Pak (SMD-220)		

**When mounted on 1" square (650mm²) PCB of FR-4 or G-10 material 4oz (140μm) copper 40°C/W
For recommended footprint and soldering techniques refer to application note #AN-994

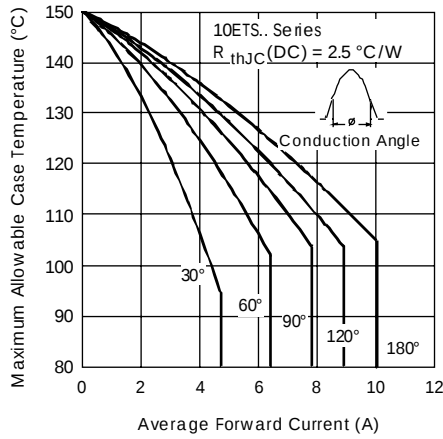


Fig. 1 - Current Rating Characteristics

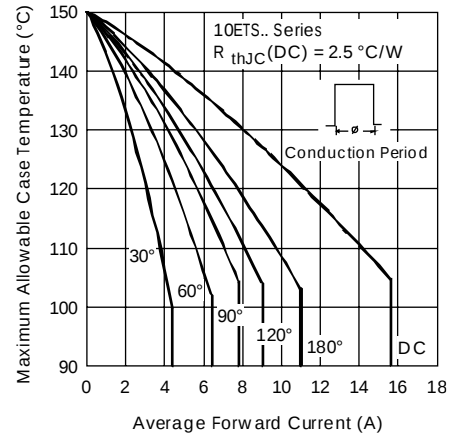


Fig. 2 - Current Rating Characteristics

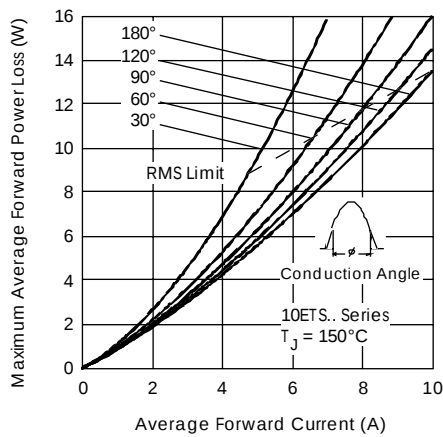


Fig. 3 - Forward Power Loss Characteristics

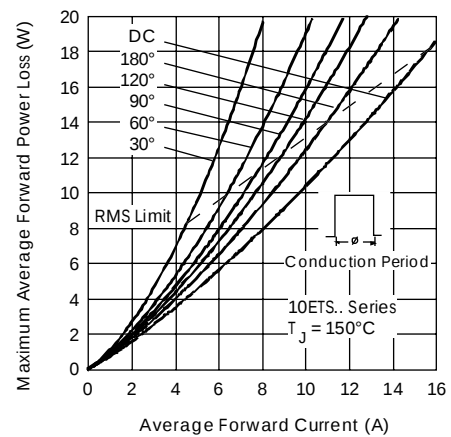


Fig. 4 - Forward Power Loss Characteristics

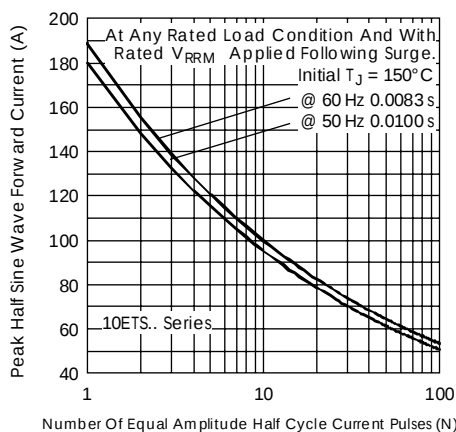


Fig. 5 - Maximum Non-Repetitive Surge Current

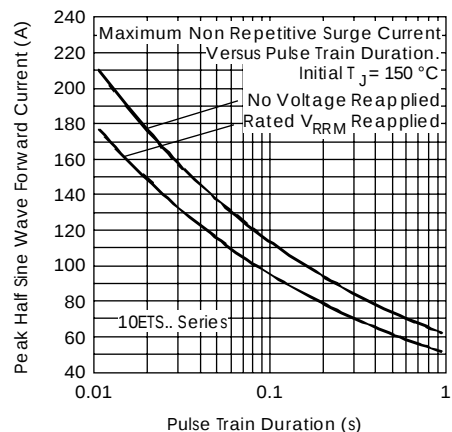


Fig. 6 - Maximum Non-Repetitive Surge Current

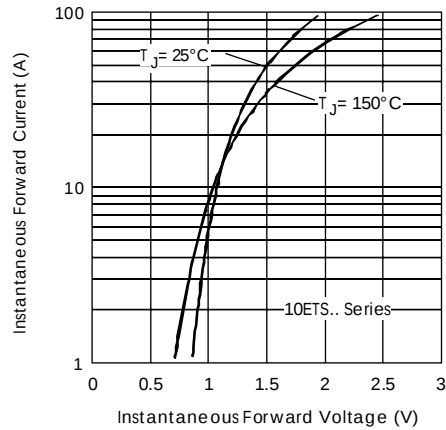


Fig.8-Forward Voltage Drop Characteristics

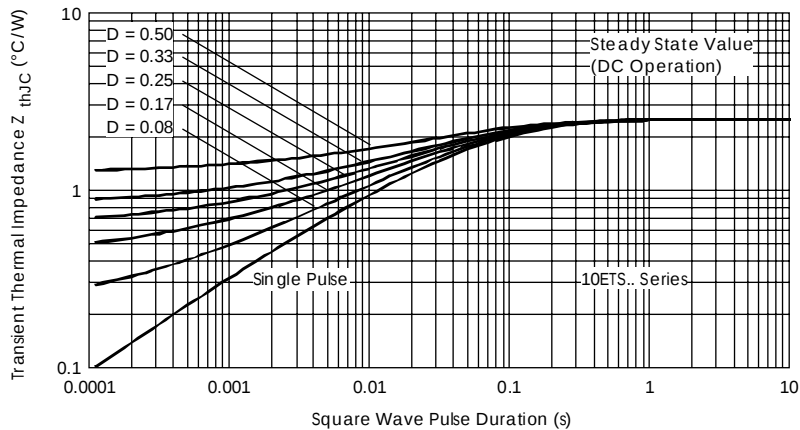


Fig.9- Thermal Impedance Z_{thJC} Characteristics

Ordering Information Table

Device Code

10

E

T

S

16

S

TRL

1

2

3

4

5

6

7

1

-

Current Rating

2

-

Circuit Configuration: E = Single Diode

3

-

Package: T = TO-220AC

4

-

Type of Silicon: S = Standard Recovery Rectifier

5

-

Voltage code: Code x 100 = V_{RRM}

6

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S = TO-220 D²Pak (SMD-220) Version

7

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Tape and Reel Option

TRL = Left Reel

TRR = Right Orientation Reel

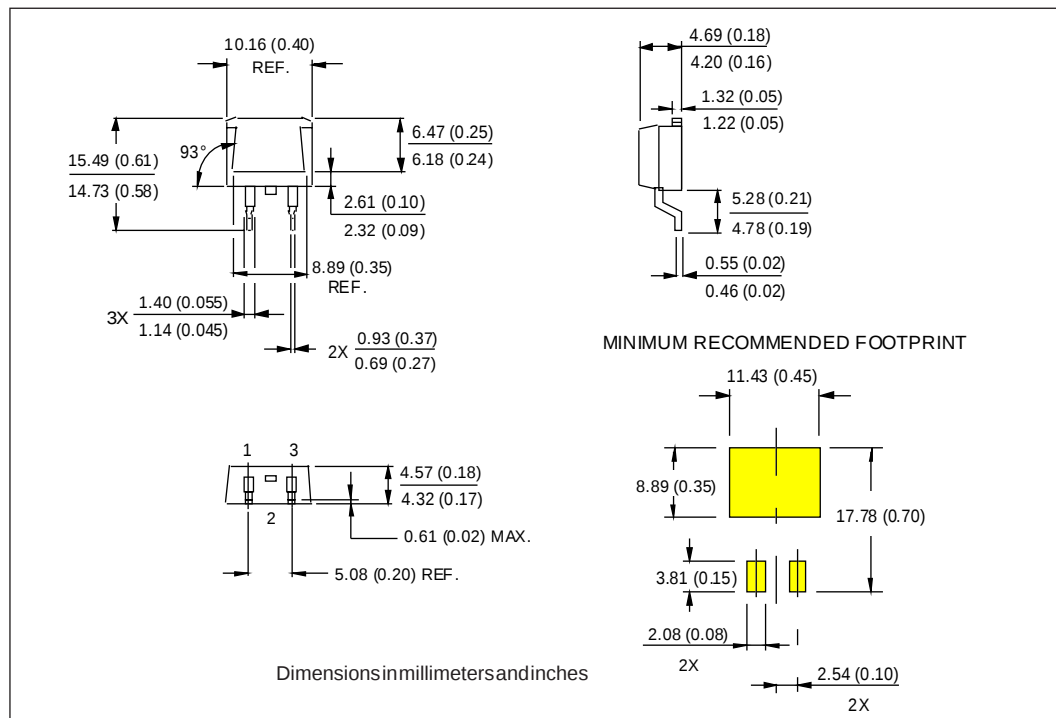
08 = 800V

12 = 1200V

16 = 1600V

08	= 800V
12	= 1200V
16	= 1600V

Outline Table

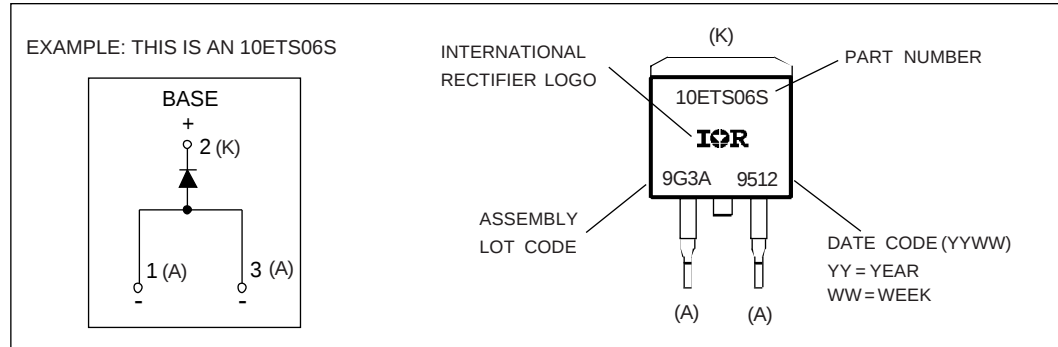


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Marking Information



Tape & Reel Information

