

Bulletin I2101 rev. B 07/97

International
IR Rectifier

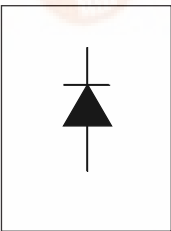
SAFEIR Series
20ETS..

INPUT RECTIFIER DIODE

Description/Features

The 20ETS.. 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.



V_F	< 1V @ 10A
I_{FSM}	= 300A
V_{RRM}	800 to 1600V

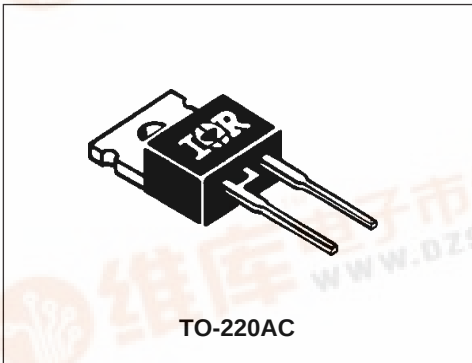
Output Current in Typical Applications

	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	16.3	21	A

Major Ratings and Characteristics

Characteristics	20ETS..	Units
$I_{F(AV)}$ Sinusoidal waveform	20	A
V_{RRM}	800 to 1600	V
I_{FSM}	300	A
V_F @ 10 A, $T_J = 25^\circ\text{C}$	1.0	V
T_J	-40 to 150	$^\circ\text{C}$

Package Outline



Also available in SMD-220 package (series 20ETS..S)



20ETS.. *SAFEIR* Series

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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
20ETS08	800	900	1
20ETS12	1200	1300	
20ETS16	1600	1700	

Provide terminal coating for voltages above 1200V

Absolute Maximum Ratings

Parameters	20ETS..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	20	A	@ $T_C = 105^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	250	A	10ms Sine pulse, rated V_{RRM} applied
	300		10ms Sine pulse, no voltage reapplied
I^2t Max. I^2t for fusing	316	A^2s	10ms Sine pulse, rated V_{RRM} applied
	442		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	4420	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied

Electrical Specifications

Parameters	20ETS..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.1	V	@ 20A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	10.4	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.85	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	20ETS..	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	1.3	°C/W	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient	62	°C/W	
R_{thCS} Typ. Thermal Resistance Case to Heatsink	0.5	°C/W	Mounting surface, smooth and greased
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)
	Max.	12 (10)	
Case Style	TO-220AC		

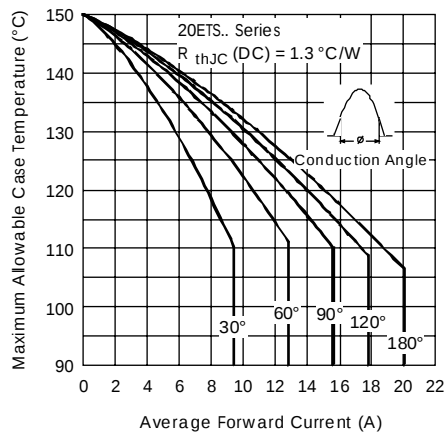


Fig. 1 - Current Rating Characteristics

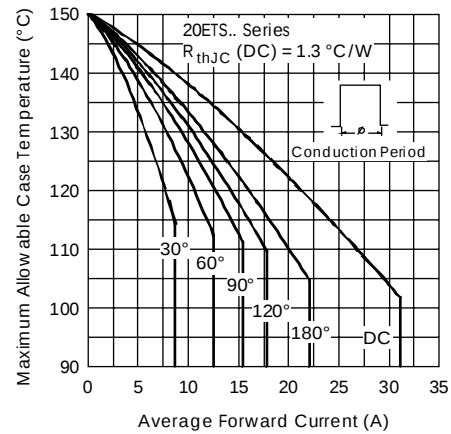


Fig. 2 - Current Rating Characteristics

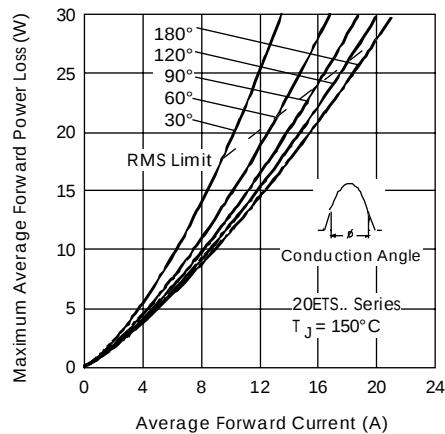


Fig. 3 - Forward Power Loss Characteristics

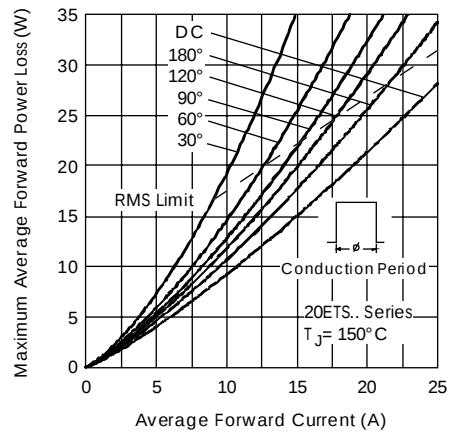


Fig. 4 - Forward Power Loss Characteristics

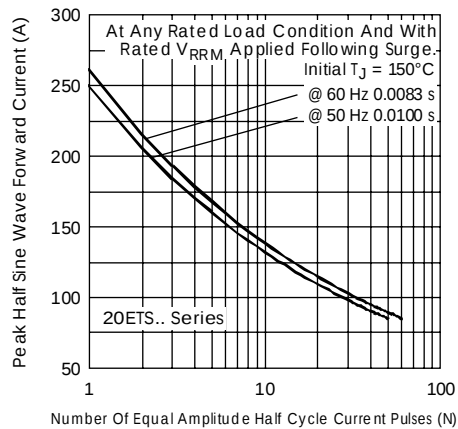


Fig. 5 - Maximum Non-Repetitive Surge Current

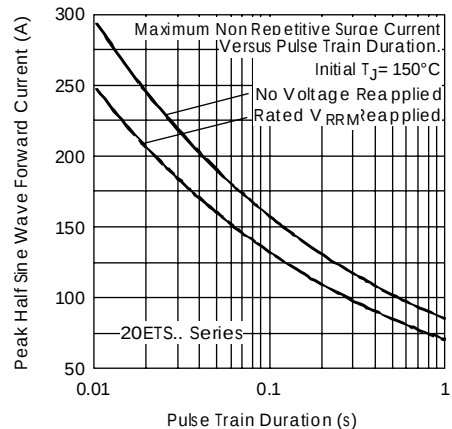


Fig. 6 - Maximum Non-Repetitive Surge Current

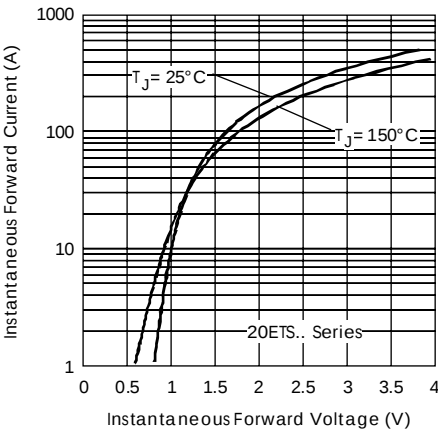


Fig. 7 - Forward Voltage Drop Characteristics

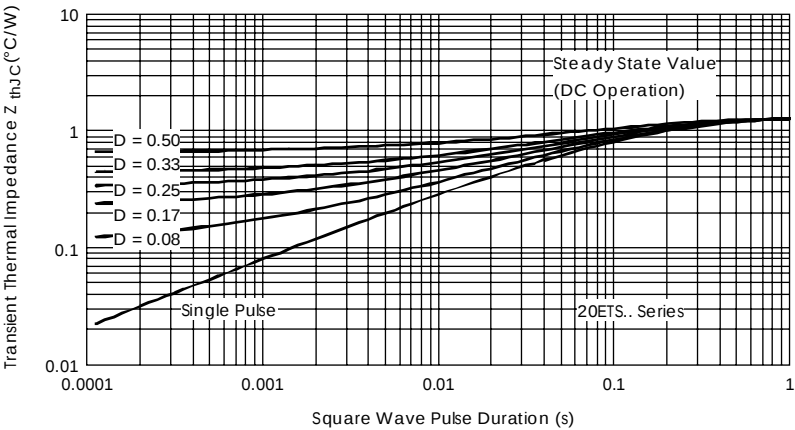
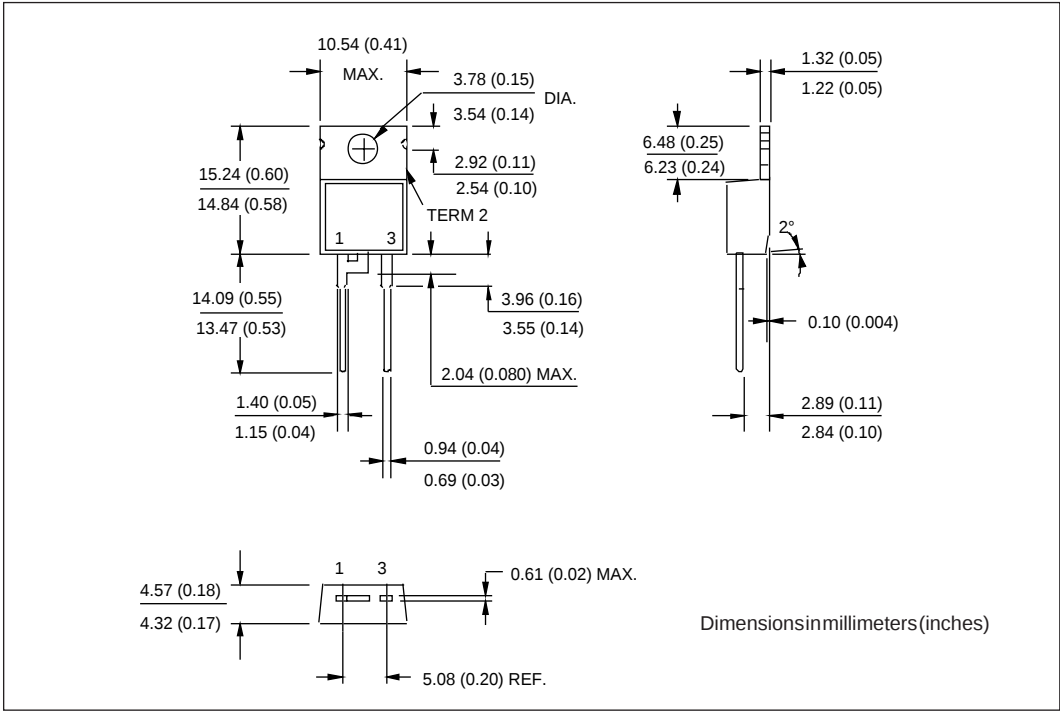


Fig.8- Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code				
20	E	T	S	16
①	②	③	④	⑤
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}			
				08 = 800V
				12 = 1200V
				16 = 1600V

BASE
CATHODE

2

1 3

CATHODE ANODE