

International IOR Rectifier

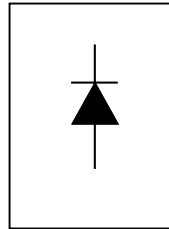
SAFEIR Series 20ETS..S

INPUT RECTIFIER DIODE

Description/Features

The 20ETS..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.

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.



$$V_F < 1V @ 10A$$

$$I_{FSM} = 300A$$

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

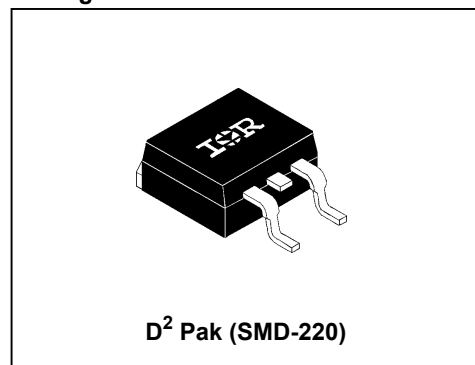
Output Current in Typical Applications

	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..S	Units
$I_{F(AV)}$ Sinusoidal waveform	20	A
V_{RRM} Range(*)	800 to 1200	V
I_{FSM}	300	A
V_F @ 10A, $T_J=25^\circ\text{C}$	1.0	V
T_J	-40 to 150	$^\circ\text{C}$

Package Outline



(*) for higher voltage up to 1600V contact factory

20ETS..S SAFEIR Series

Bulletin I2102 rev. C 05/00

International


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
20ETS08S	800	900	1
20ETS12S	1200	1300	
20ETS16S	1600	1700	

Provide terminal coating for voltages above 1200V

Absolute Maximum Ratings

Parameters	20ETS..S	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 reappplied
I^2t Max. I^2t for fusing	316	A^2s	10ms Sine pulse, rated V_{RRM} applied
	442		10ms Sine pulse, no voltage reappplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	4420	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reappplied

Electrical Specifications

Parameters	20ETS..S	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..S	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	1.3	$^\circ\text{C/W}$	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient (PCB Mount)**	62	$^\circ\text{C/W}$	
T_s Soldering Temperature	240	$^\circ\text{C}$	
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

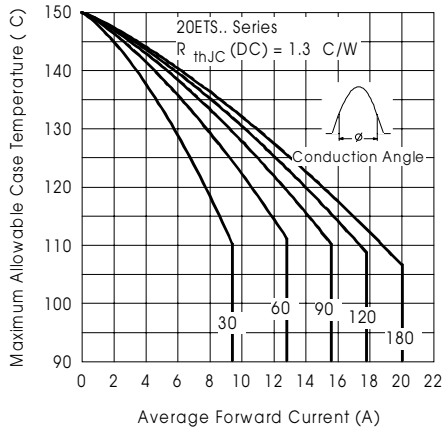


Fig. 1 - Current Rating Characteristics

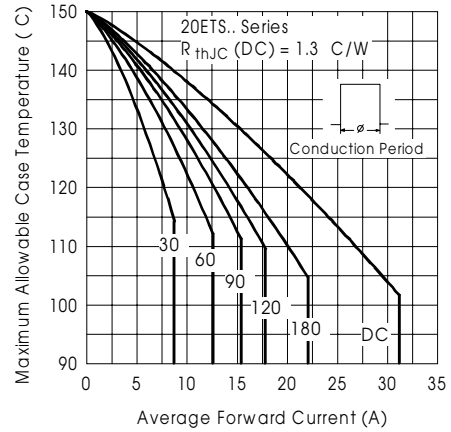


Fig. 2 - Current Rating Characteristics

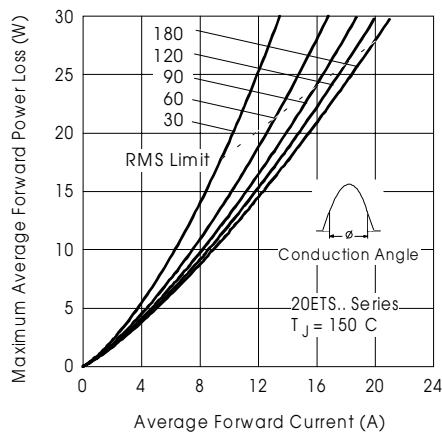


Fig. 3 - Forward Power Loss Characteristics

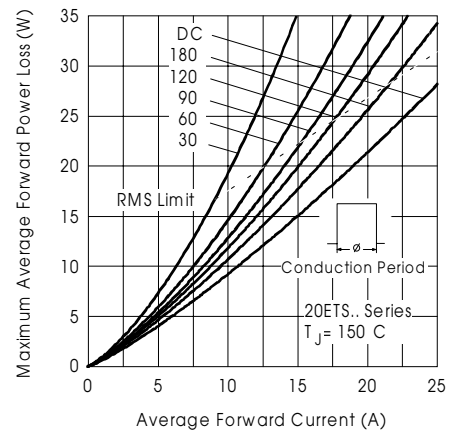


Fig. 4 - Forward Power Loss Characteristics

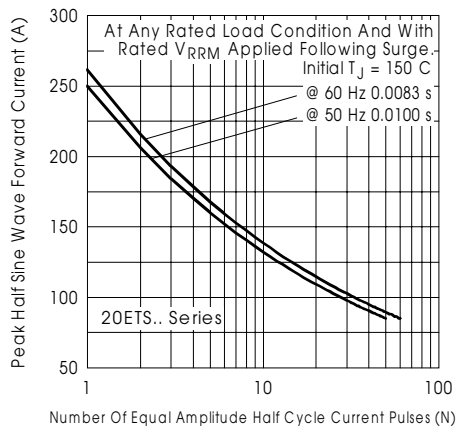


Fig. 5 - Maximum Non-Repetitive Surge Current

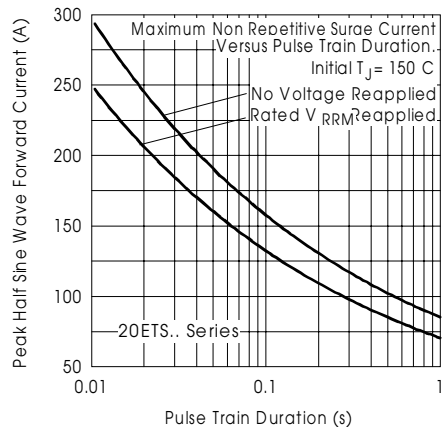


Fig. 6 - Maximum Non-Repetitive Surge Current

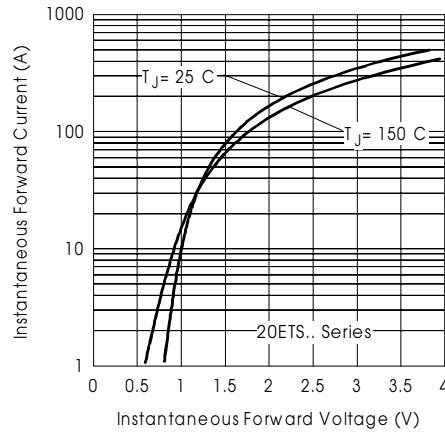


Fig. 7 - Forward Voltage Drop Characteristics

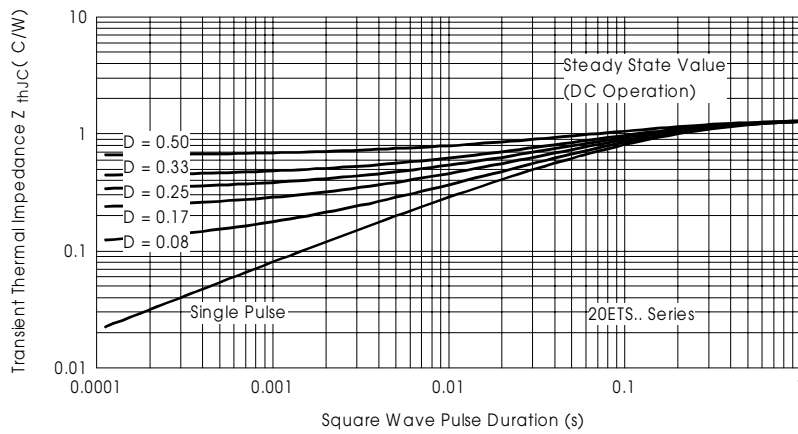


Fig. 8 - Thermal Impedance Z_{thjC} Characteristics

Ordering Information Table

Device Code						
20	E	T	S	16	S	TRL
①	②	③	④	⑤	⑥	⑦

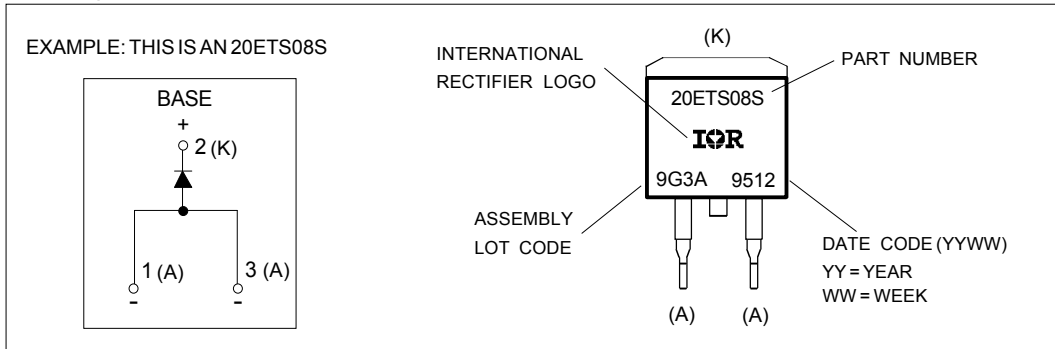
<p>1 - Current Rating</p> <p>2 - Circuit Configuration: E = Single Diode</p> <p>3 - Package: T = TO-220AC</p> <p>4 - Type of Silicon: S = Standard Recovery Rectifier</p> <p>5 - Voltage code: Code x 100 = V_{RRM}</p> <p>6 - S = TO-220 D²Pak (SMD-220) Version</p> <p>7 - Tape and Reel Option</p>	<p>TRL = Left Reel</p> <p>TRR = Right Orientation Reel</p>	<table border="1"> <tr> <td>08 = 800V</td> </tr> <tr> <td>12 = 1200V</td> </tr> <tr> <td>16 = 1600V</td> </tr> </table>	08 = 800V	12 = 1200V	16 = 1600V
08 = 800V					
12 = 1200V					
16 = 1600V					

Outline Table

Dimensions in millimeters and inches

MINIMUM RECOMMENDED FOOTPRINT

Marking Information



Tape & Reel Information

