

International IOR Rectifier

SAFEIR Series 20ETS12, 20ETS12S

INPUT RECTIFIER DIODE

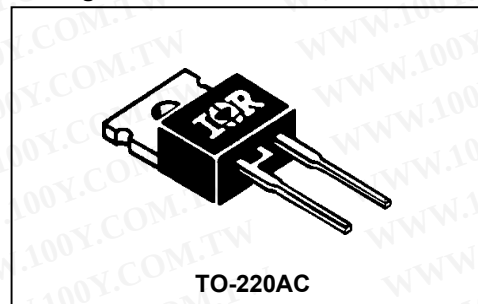
Description/Features

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.

	$V_F < 1V @ 10A$
	$I_{FSM} = 300A$
	$V_{RRM} 800 \text{ to } 1200V$

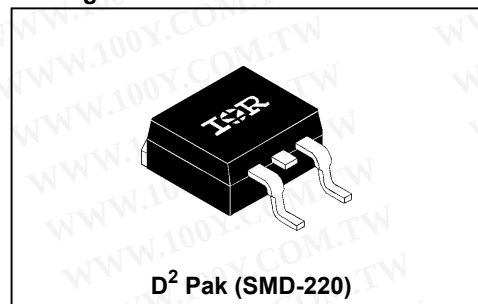
Package Outline



Major Ratings and Characteristics

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

Package Outline



Output Current in Typical Applications

	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A = 55^\circ C, T_J = 125^\circ C$, common heatsink of $1^\circ C/W$	16.3	21	A

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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, 20ETS08S	800	900	1
20ETS12, 20ETS12S	1200	1300	

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		-40to150	°C	
T _{stg}	Max. Storage Temperature Range		-40to150	°C	
R _{thJC}	Max. Thermal Resistance Junction to Case		1.3	°C/W	DCoperation
R _{thJA}	Max. Thermal Resistance Junction to Ambient		62	°C/W	(*) For D ² Pak version
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, D ² Pak (SMD-220)		

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

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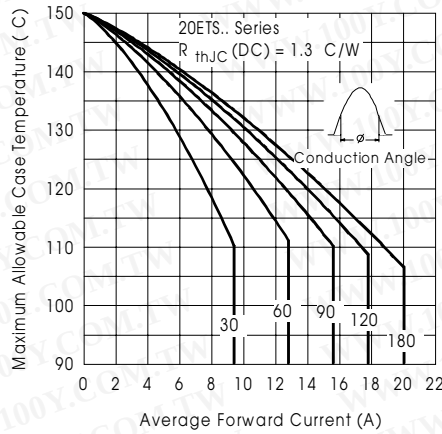


Fig. 1 - Current Rating Characteristics

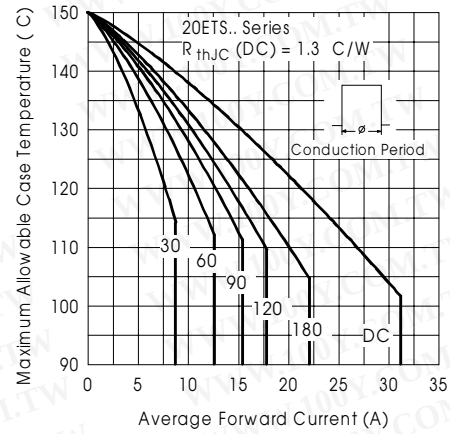


Fig. 2 - Current Rating Characteristics

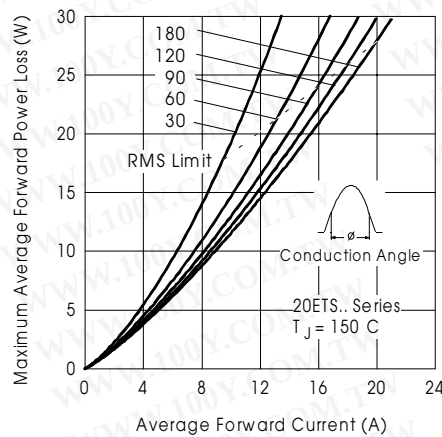


Fig. 3 - Forward Power Loss Characteristics

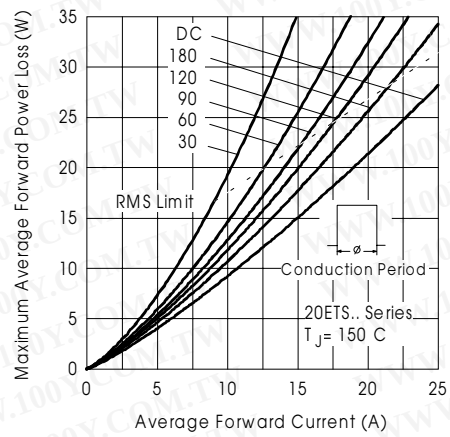


Fig. 4 - Forward Power Loss Characteristics

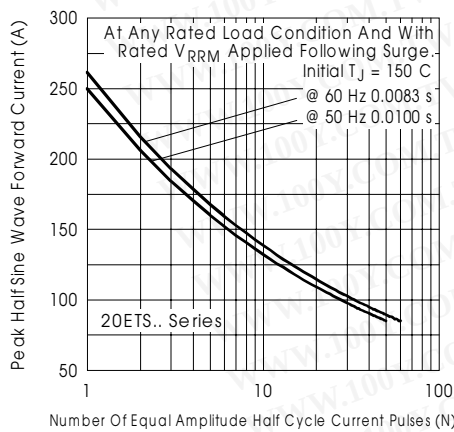


Fig. 5 - Maximum Non-Repetitive Surge Current

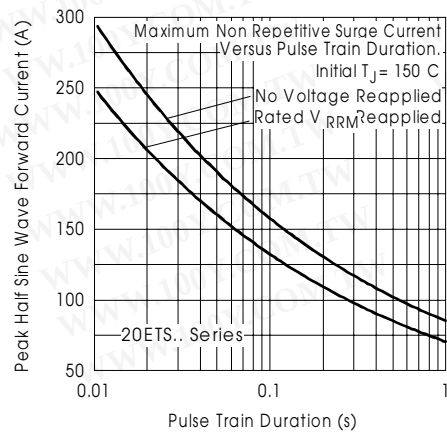


Fig. 6 - Maximum Non-Repetitive Surge Current

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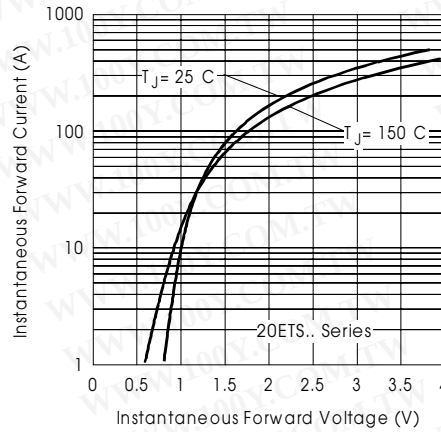


Fig. 7 - Forward Voltage Drop Characteristics

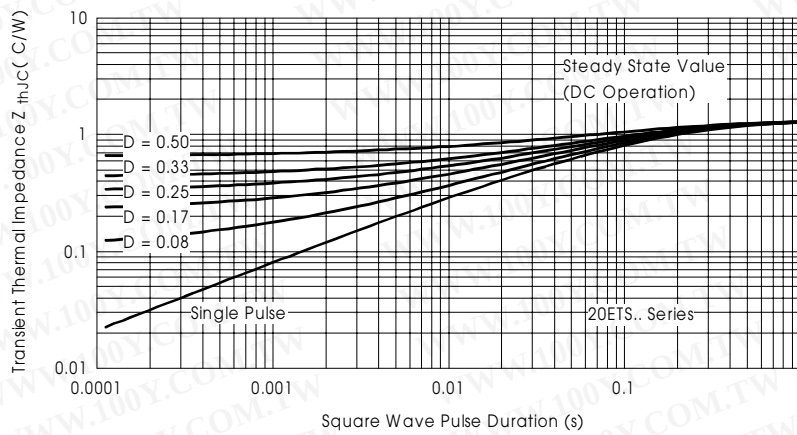


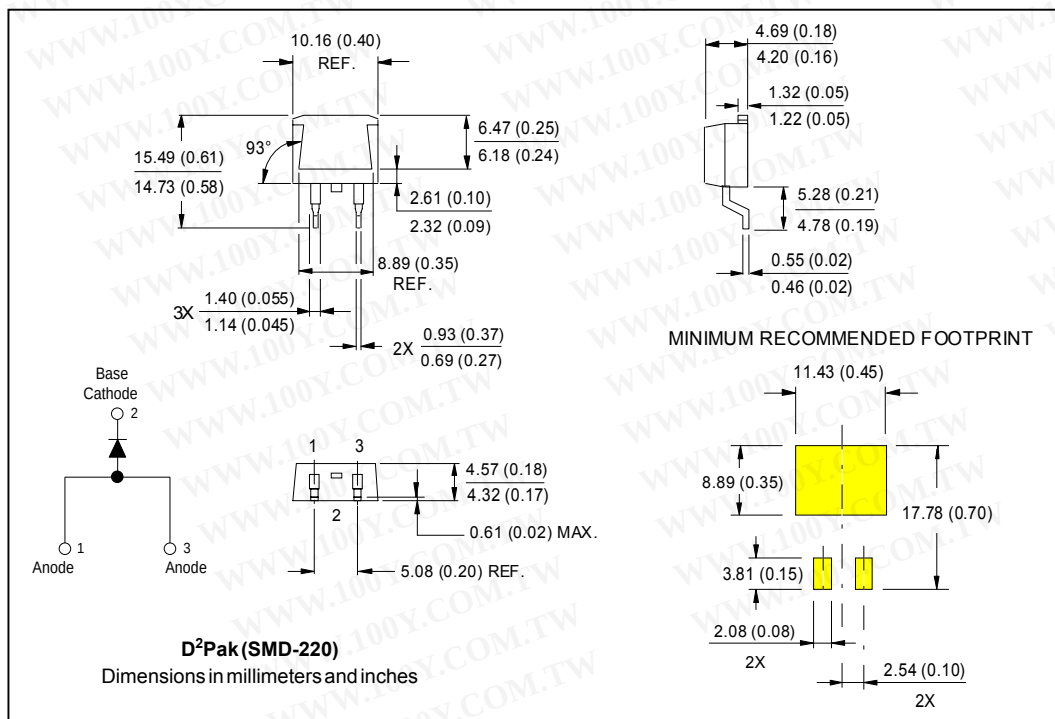
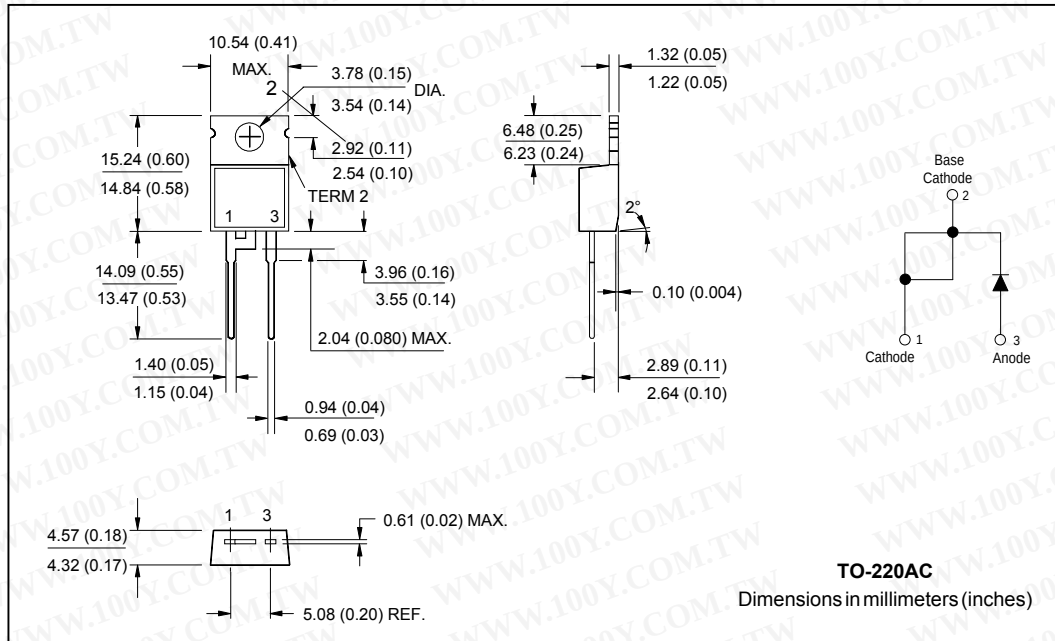
Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

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Outline Table

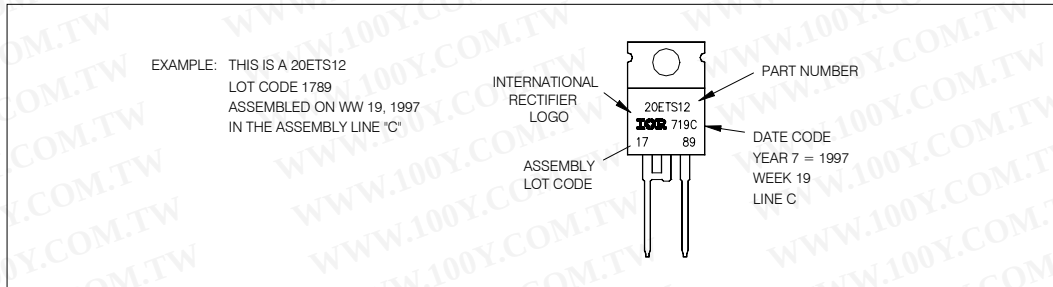


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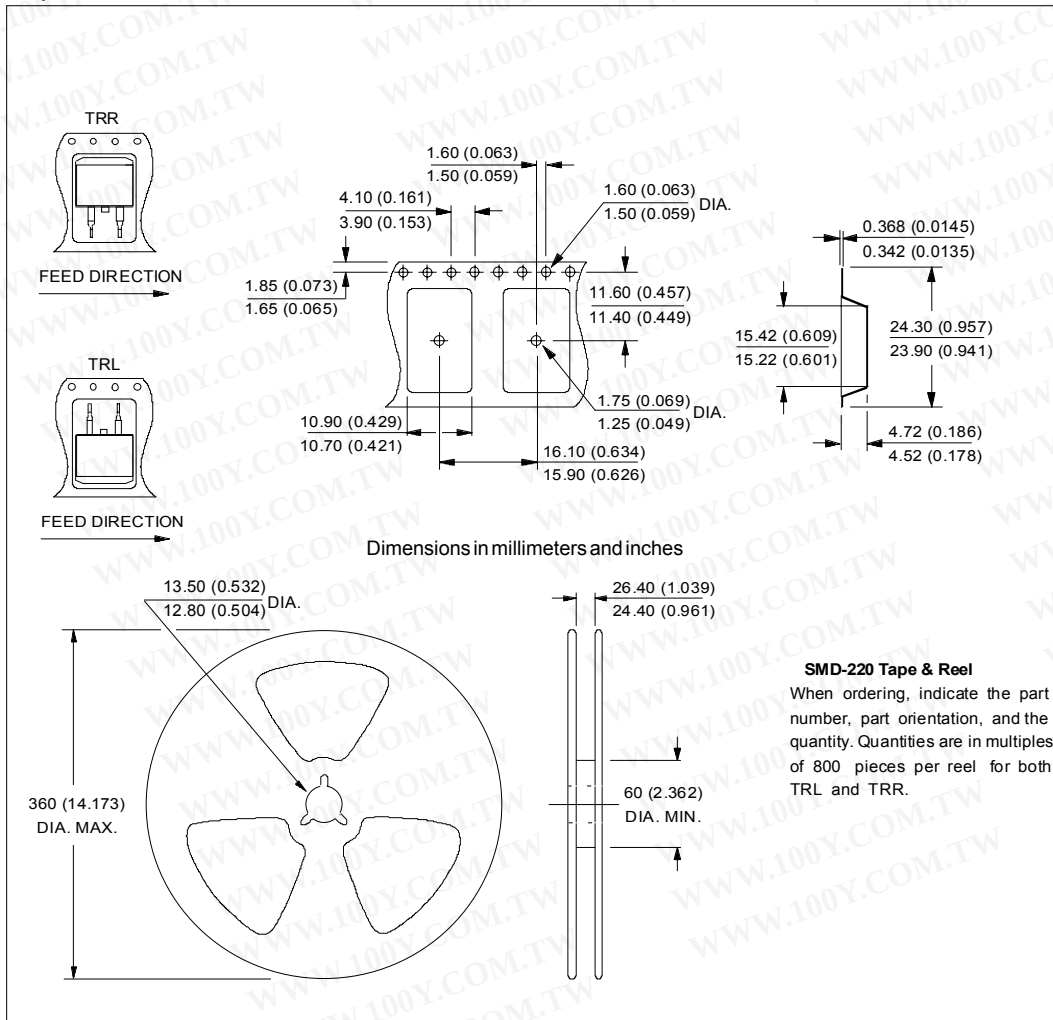
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Marking Information



Tape & Reel Information



勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

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Ordering Information Table

Device Code						
20	E	T	S	12	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	-	S = TO-220 D ² Pak (SMD-220) Version				
7	-	Tape and Reel Option				
		TRL = Left Reel				
		TRR = Right Orientation Reel				

08 = 800V
12 = 1200V

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

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IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 12/01