

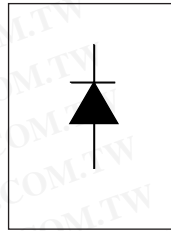
勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-54151736
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Bulletin I2111 rev. C 03/99

International
IO Rectifier

QUIETIR Series
20ETF..S

**SURFACE MOUNTABLE
 FAST SOFT RECOVERY
 RECTIFIER DIODE**



$V_F < 1.2V @ 10A$
 $I_{FSM} = 300A$
 $V_{RRM} 200 \text{ to } 600V$

Description/Features

The 20ETF..S soft recovery rectifier **QUIETIR** series has been optimized for combined short reverse recovery time and low forward voltage drop.

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

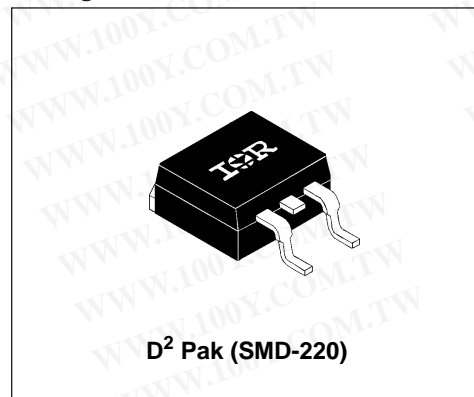
Typical applications are both:

- output rectification and freewheeling in inverters, choppers and converters
- and input rectifications where severe restrictions on conducted EMI should be met.

Major Ratings and Characteristics

Characteristics	20ETF..S	Units
$I_{F(AV)}$ Sinusoidal waveform	20	A
V_{RRM} range	200 to 600	V
I_{FSM}	300	A
V_F @ 10A, $T_J = 25^\circ C$	1.2	V
t_{rr} @ 1A, 100A/ μs	60	ns
T_J range	-40 to 150	$^\circ C$

Package Outline



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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
20ETF02S	200	300	5
20ETF04S	400	500	
20ETF06S	600	700	

Absolute Maximum Ratings

Parameters	20ETF..S	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	20	A	@ $T_c = 97^\circ\text{C}$, 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

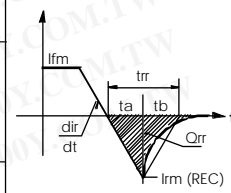
Electrical Specifications

Parameters	20ETF..S	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.30	V	@ 20A, $T_j = 25^\circ\text{C}$
	1.67	V	@ 60A, $T_j = 25^\circ\text{C}$
r_t Forward slope resistance	12.5	$m\Omega$	
$V_{F(TO)}$ Threshold voltage	0.9	V	$T_j = 150^\circ\text{C}$
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_j = 25^\circ\text{C}$
	5.0	mA	$T_j = 150^\circ\text{C}$

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

Recovery Characteristics

Parameters	20ETF..S	Units	Conditions
t_{rr} Reverse Recovery Time	160	ns	$I_F @ 20\text{Apk}$
I_{rr} Reverse Recovery Current	10	A	@ 100A/μs
Q_{rr} Reverse Recovery Charge	1.25	μC	@ 25°C
S Snap Factor t_b/t_a	0.6	typical	



Thermal-Mechanical Specifications

Parameters	20ETF..	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	0.9	°C/W	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient (PCB Mount)**	40	°C/W	
T_s Soldering Temperature	240	°C	
wt Approximate Weight	2 (0.07)	g (oz.)	
Case Style	D ² Pak		

**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

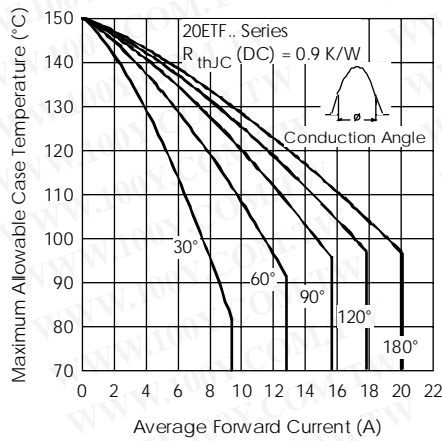


Fig. 1 - Current Rating Characteristics

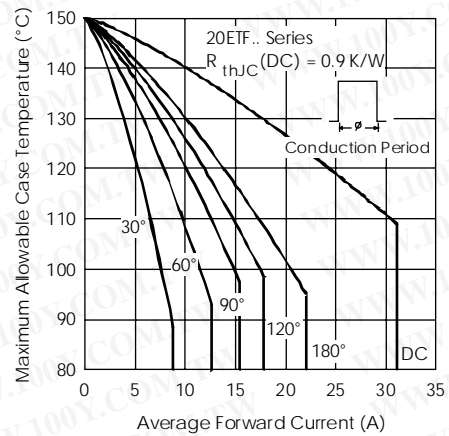


Fig. 2 - Current Rating Characteristics

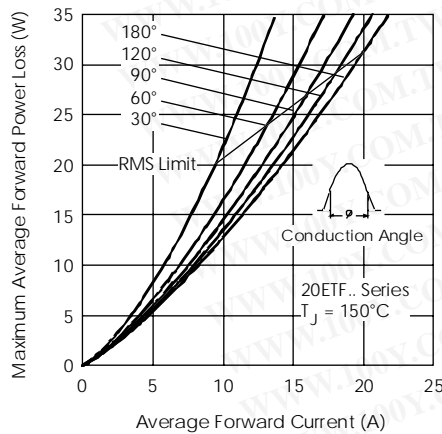


Fig. 3 - Forward Power Loss Characteristics

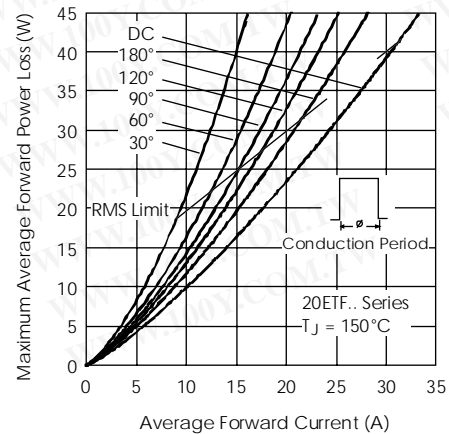


Fig. 4 - Forward Power Loss Characteristics

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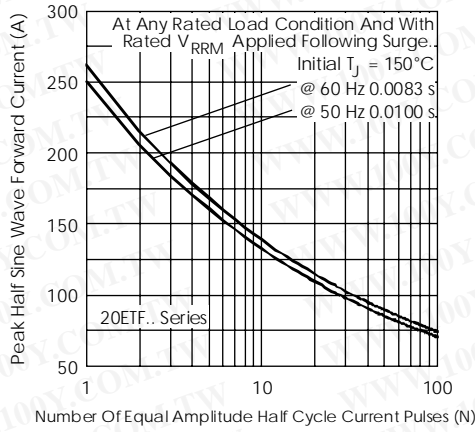


Fig. 5 - Maximum Non-Repetitive Surge Current

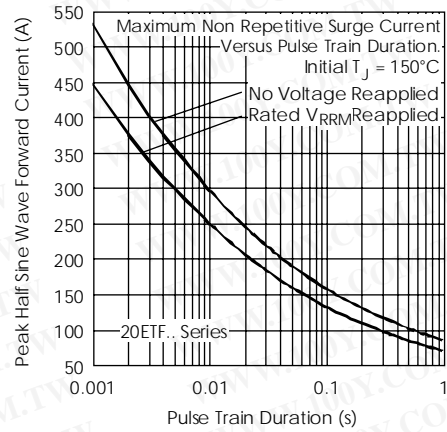


Fig. 6 - Maximum Non-Repetitive Surge Current

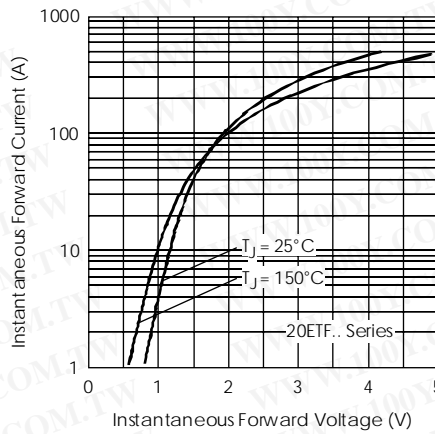


Fig. 7 - Forward Voltage Drop Characteristics

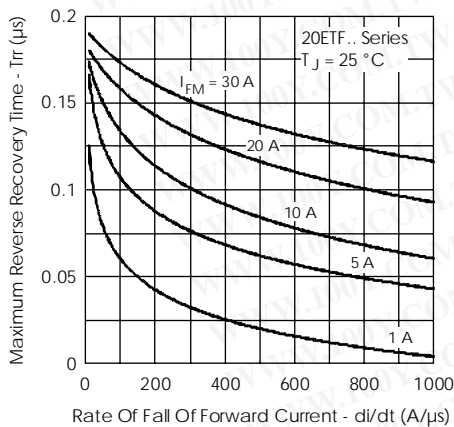


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

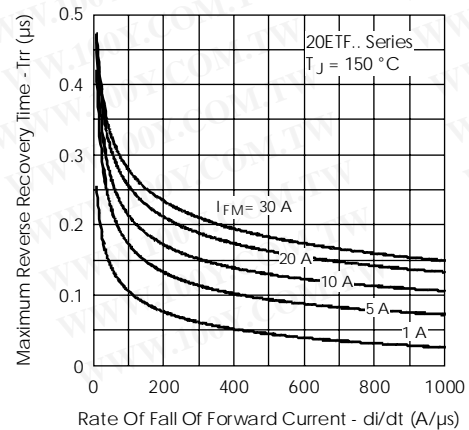


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

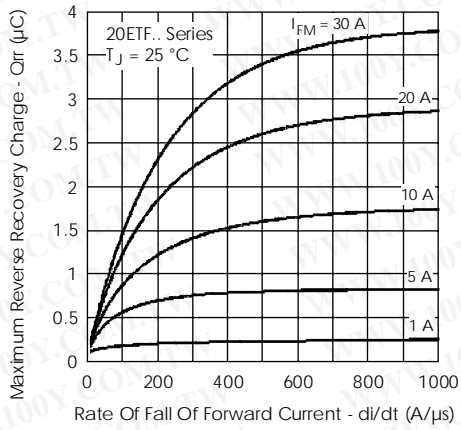


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

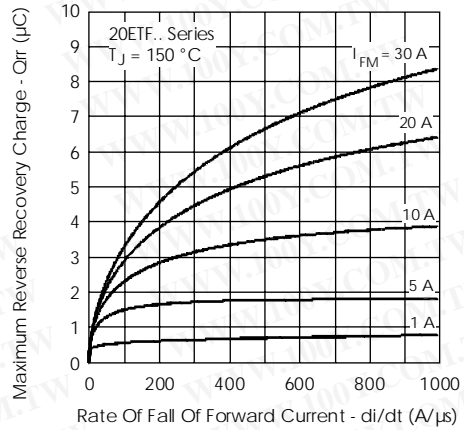


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

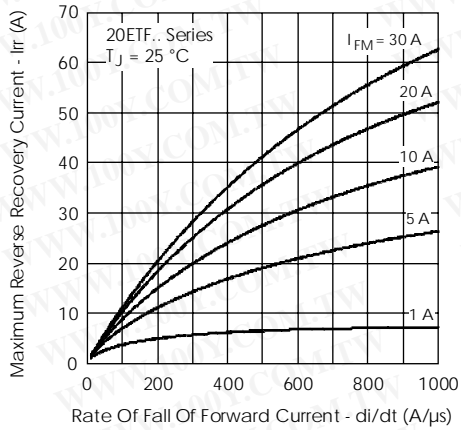


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

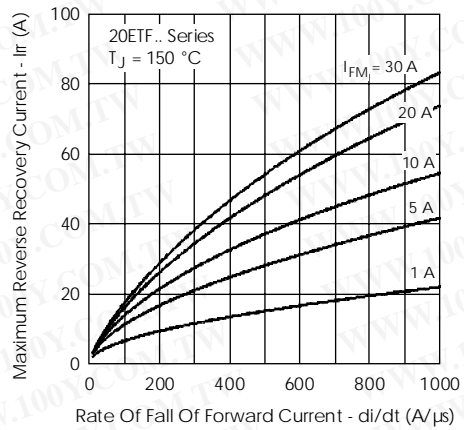


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

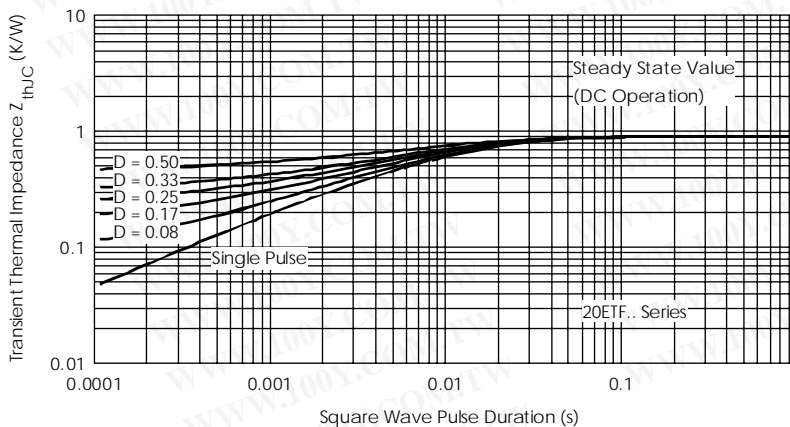


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

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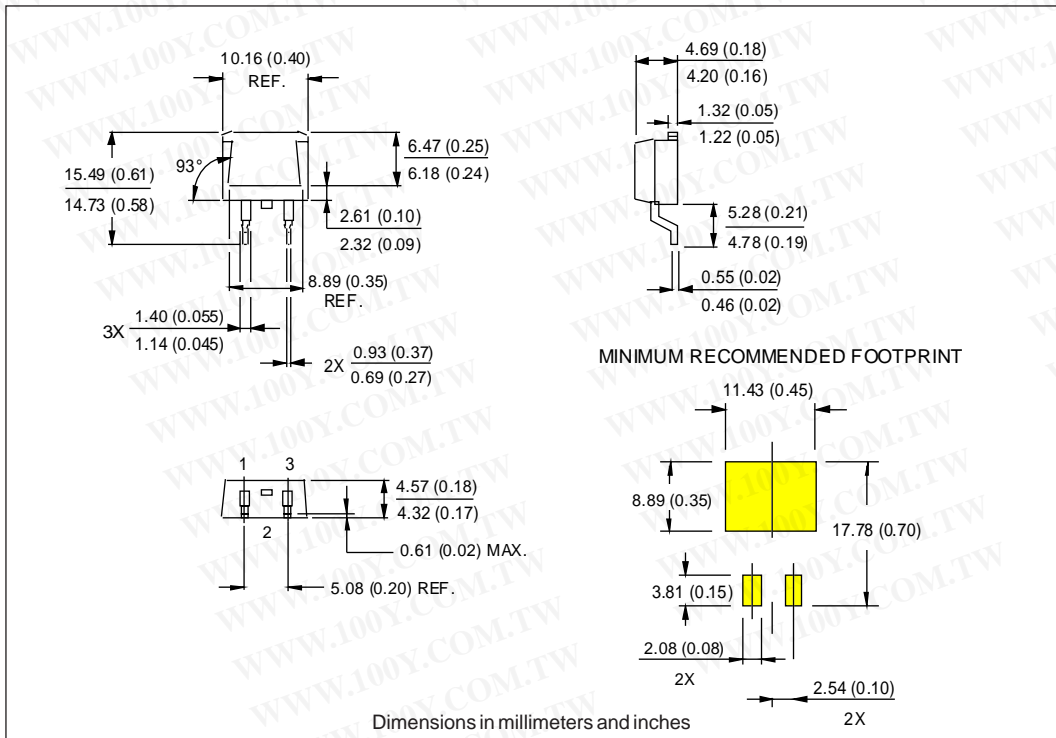
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Ordering Information Table

Device Code						
20	E	T	F	06	S	TRL
1	2	3	4	5	6	7
1	- Current Rating					
2	- Circuit Configuration: E = Single Diode					
3	- T = TO-220AC					
4	- F = Fast Recovery					
5	- Voltage code: Code x 100 = V_{RRM}					
6	- S = D ² Pak (SMD-220) Version					
7	- Tape and Reel Option:					
TRL = Left Reel						
TRR = Right Orientation Reel						

02 = 200V
04 = 400V
06 = 600V

Outline Table



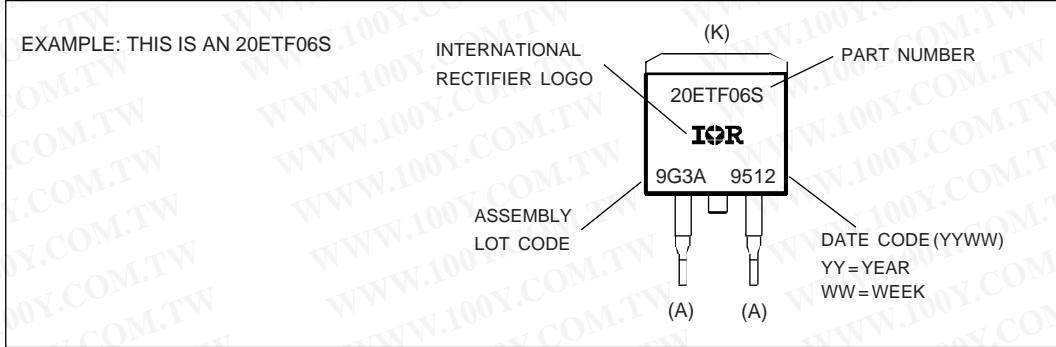
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Marking Information



Tape & Reel Information

