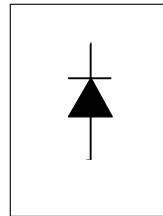


International  
**IOR** Rectifier

**QUIETIR** Series  
20ETF.. HV

### FAST SOFT RECOVERY RECTIFIER DIODE



$$V_F < 1.31V @ 20A$$

$$I_{FSM} = 355A$$

$$V_{RRM} 800 \text{ to } 1200V$$

#### Description/Features

The 20ETF.. fast soft recovery **QUIETIR** rectifier 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.

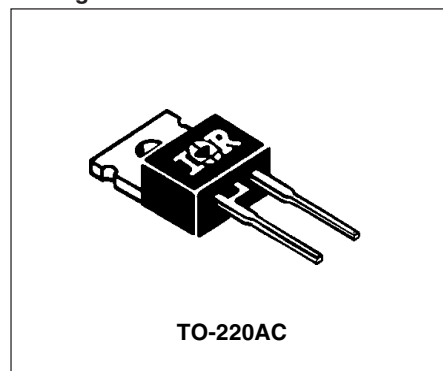
Typical applications are both:

- 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..	Units
$I_{F(AV)}$ Sinusoidal waveform	20	A
$V_{RRM}$ range	800 to 1200	V
$I_{FSM}$	355	A
$V_F$ @ 20A, $T_J = 25^\circ C$	1.31	V
$t_{rr}$ @ 1A, 100A/ $\mu s$	95	ns
$T_J$ range	-40 to 150	$^\circ C$

#### Package Outline



## 20ETF.. HV QUIETIR Series

I2127 rev. A 01/2000

International  
**IR** 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
20ETF08	800	900	6
20ETF10	1000	1100	
20ETF12	1200	1300	

### Absolute Maximum Ratings

Parameters	20ETF..	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	300	A	10ms Sinepulse, rated $V_{RRM}$ applied
	355		10ms Sinepulse, no voltage reapplied
$I^2t$ Max. $I^2t$ for fusing	450	$\text{A}^2\text{s}$	10ms Sinepulse, rated $V_{RRM}$ applied
	635		10ms Sinepulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	6350	$\text{A}^2/\sqrt{\text{s}}$	$t = 0.1$ to 10ms, no voltage reapplied

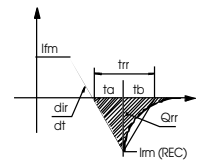
### Electrical Specifications

Parameters	20ETF..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.31	V	@ 20A, $T_J = 25^\circ\text{C}$
$r_t$ Forward slope resistance	11.88	$\text{m}\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.93	V	
$I_{RM}$ Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	6		$T_J = 150^\circ\text{C}$

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

### Recovery Characteristics

Parameters	20ETF..	Units	Conditions
$t_{rr}$ Reverse Recovery Time	400	ns	$I_F @ 20\text{Apk}$ @ 25A/ $\mu\text{s}$
$I_{rr}$ Reverse Recovery Current	6.1	A	
$Q_{rr}$ Reverse Recovery Charge	1.7	$\mu\text{C}$	@ 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	62	°C/W	
$R_{thCS}$ Typical 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		

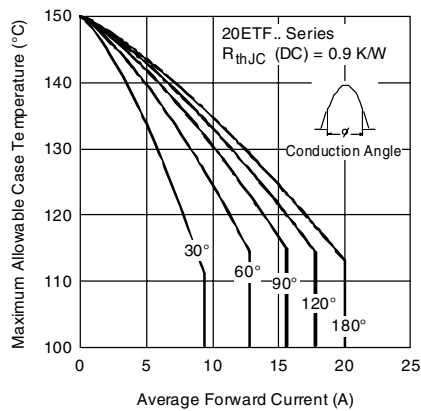


Fig. 1 - Current Rating Characteristics

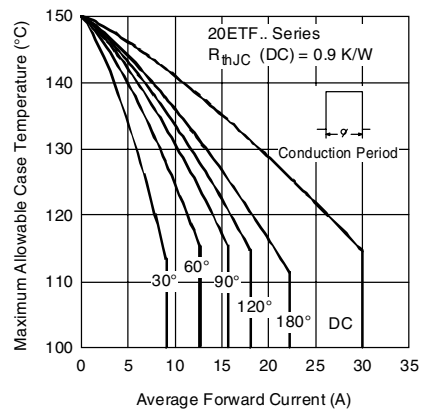


Fig. 2 - Current Rating Characteristics

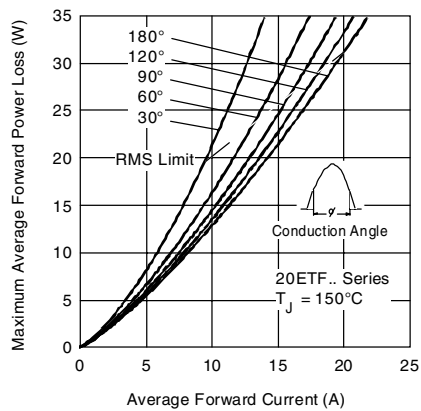


Fig. 3 - Forward Power Loss Characteristics

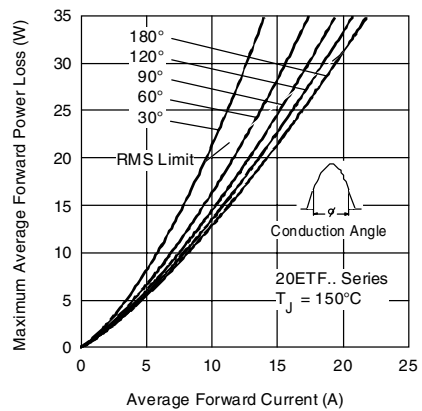


Fig. 4 - Forward Power Loss Characteristics

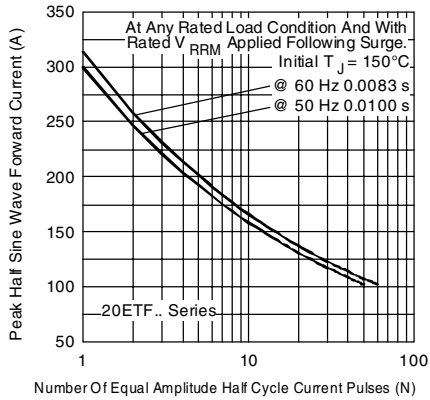


Fig.5 - Maximum Non-Repetitive Surge Current

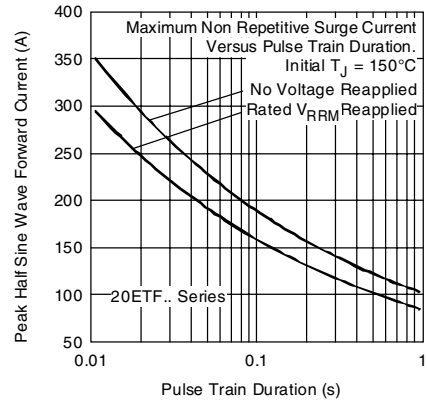


Fig.6 - Maximum Non-Repetitive Surge Current

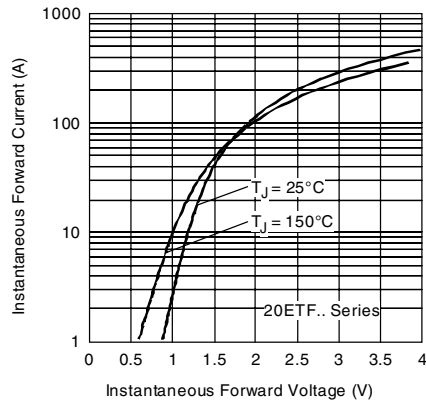


Fig.7 - Forward Voltage Drop Characteristics

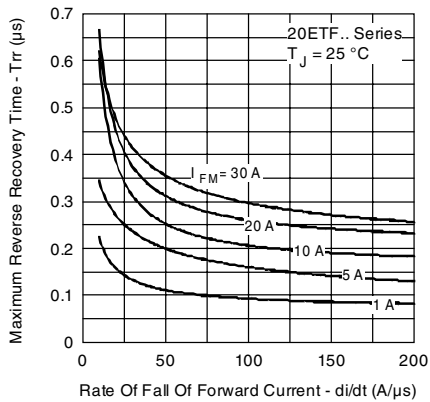


Fig.8 - Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

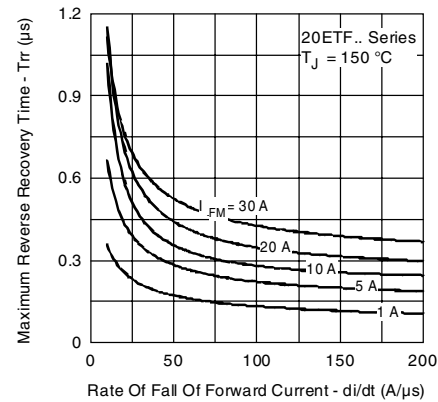


Fig.9 - Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

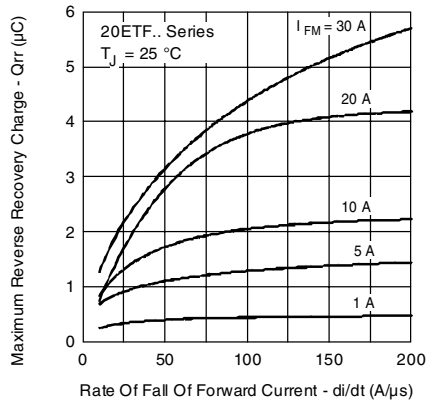


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

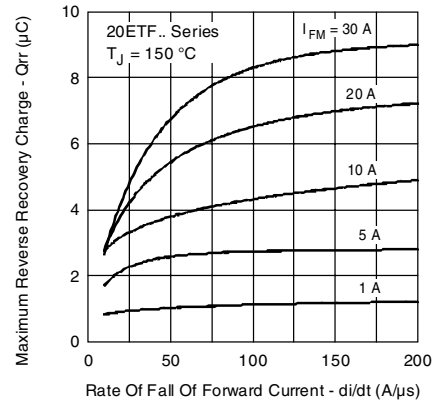


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

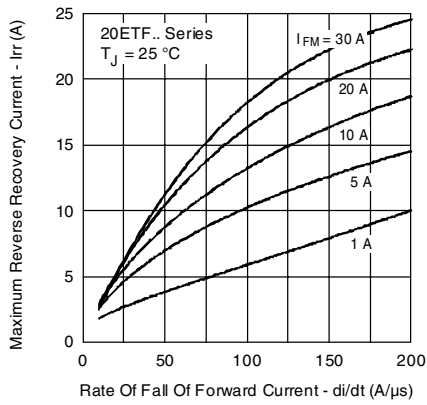


Fig. 12 - Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

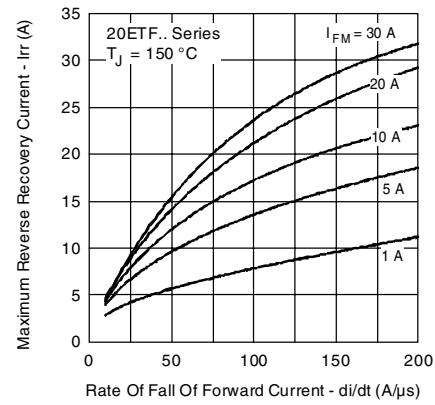


Fig. 13 - Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

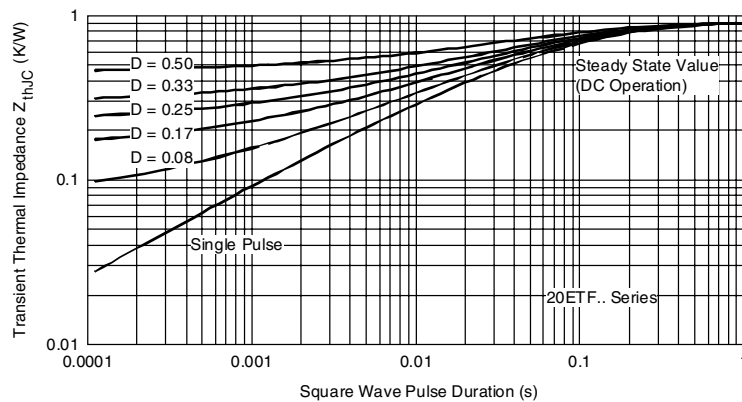
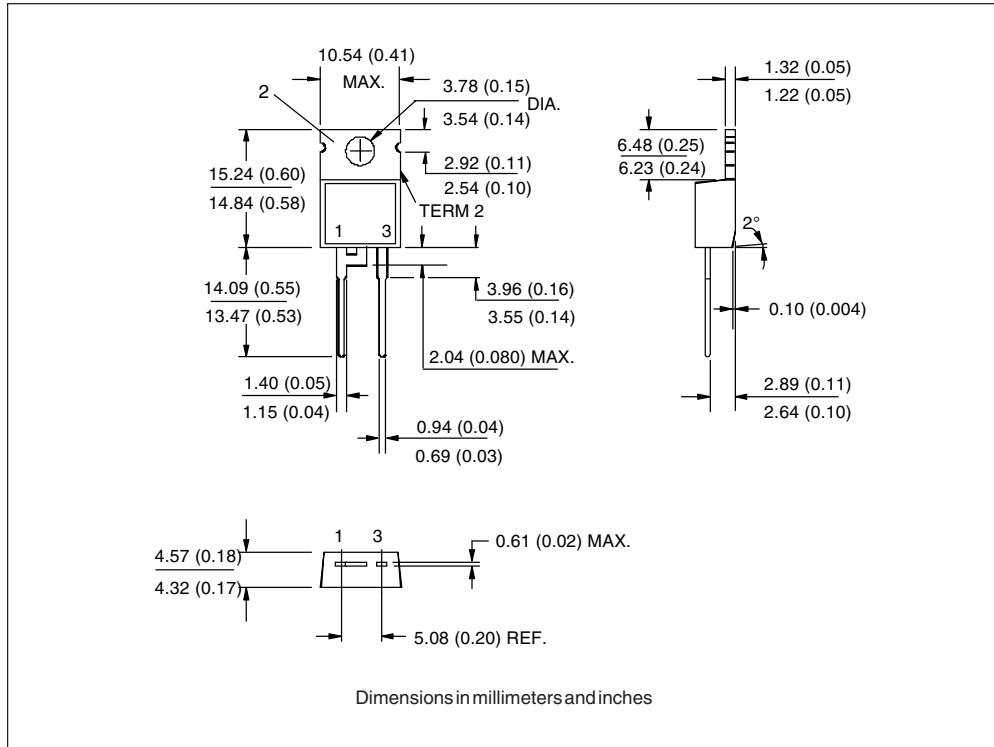
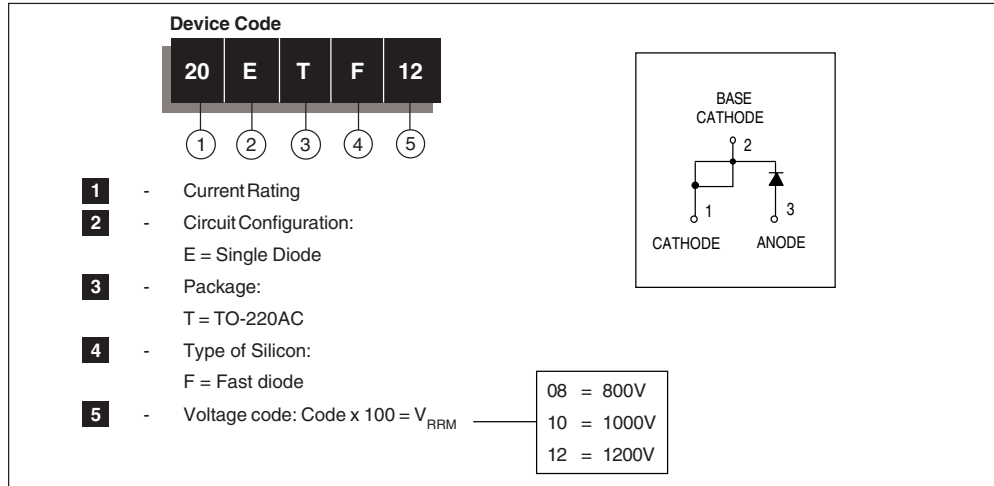


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table



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Data and specifications subject to change without notice

11/97