

Preliminary Data Sheet I2127 09/97

International
IOR Rectifier

QUIETIR Series
20ETF.. HV

FAST SOFT RECOVERY
RECTIFIER DIODE



$V_F < 1.31V @ 20A$
 $I_{FSM} = 355A$
 $V_{RRM} 1000 \text{ to } 1200V$

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.

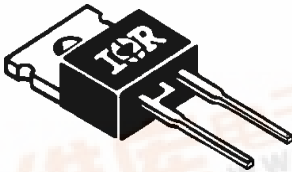
Typical applications are both:

- 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}	1000to1200	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	-40to150	$^{\circ}C$

Package Outline



TO-220AC



20ETF.. HV *QUIETIR* Series

Preliminary Data Sheet I2127 09/97

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
20ETF10	1000	1100	6
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 Sine pulse, rated V_{RRM} applied
	355		10ms Sine pulse, no voltage reappplied
I^2t Max. I^2t for fusing	450	A^2s	10ms Sine pulse, rated V_{RRM} applied
	635		10ms Sine pulse, no voltage reappplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	6350	$A^2\sqrt{s}$	$t = 0.1$ to 10ms , no voltage reappplied

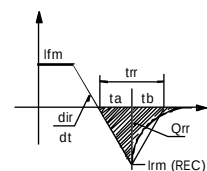
Electrical Specifications

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	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ 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/ μs @ 25°C
I_{rr} Reverse Recovery Current	6.1	A	
Q_{rr} Reverse Recovery Charge	1.7	μC	
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	DCoperation
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		

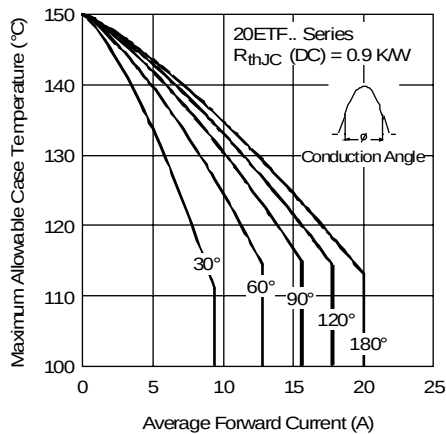


Fig. 1 - Current Rating Characteristics

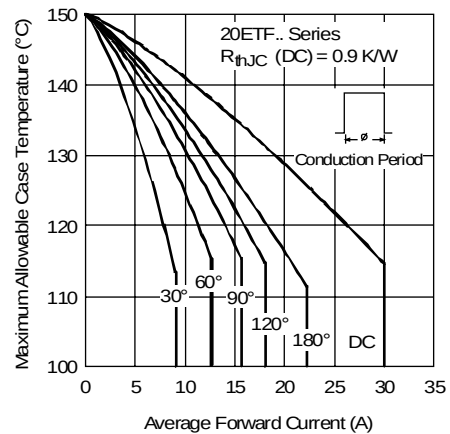


Fig. 2 - Current Rating Characteristics

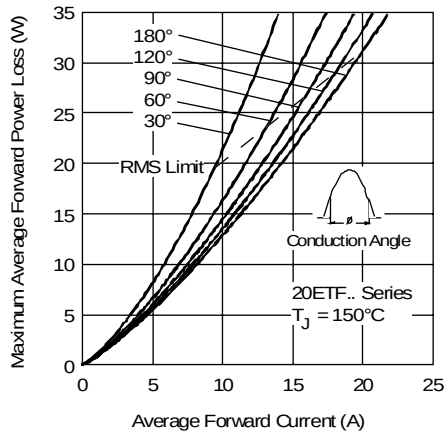


Fig. 3 - Forward Power Loss Characteristics

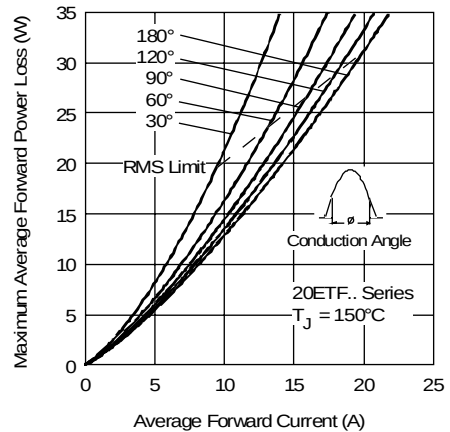


Fig. 4 - Forward Power Loss Characteristics

20ETF.. HV *QUIETIR* Series

Preliminary Data Sheet I2127 09/97

International
IOR Rectifier

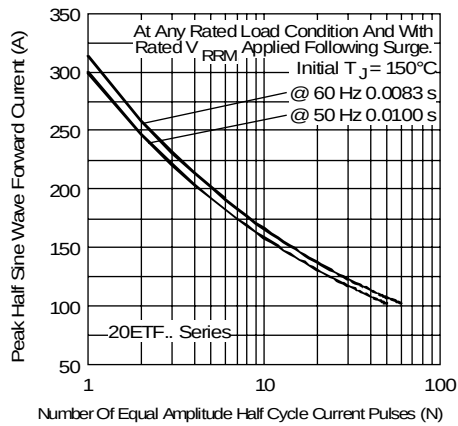


Fig. 5 - Maximum Non-Repetitive Surge Current

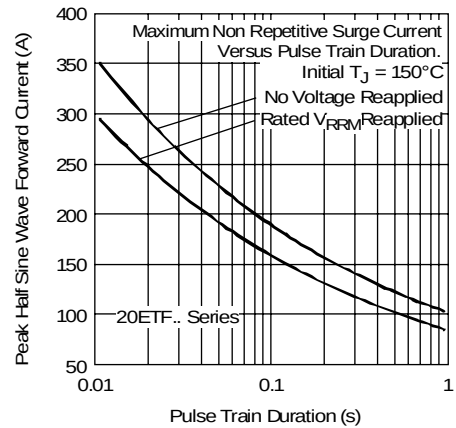


Fig. 6 - Maximum Non-Repetitive Surge Current

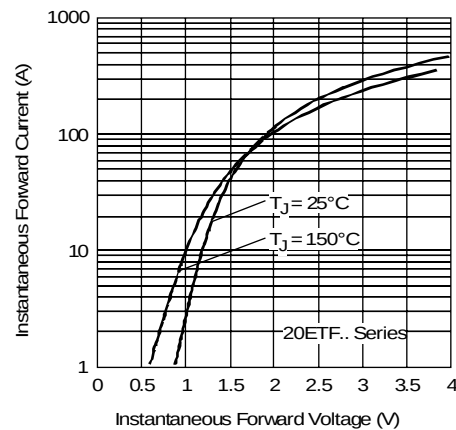


Fig. 7 - Forward Voltage Drop Characteristics

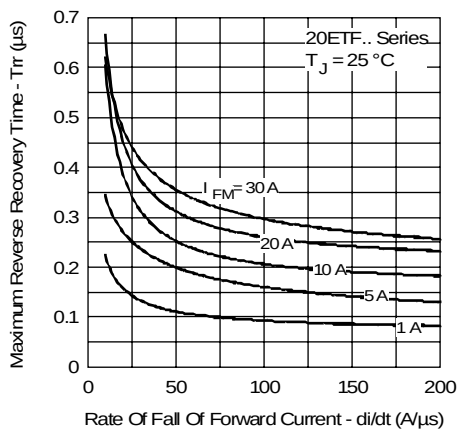


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

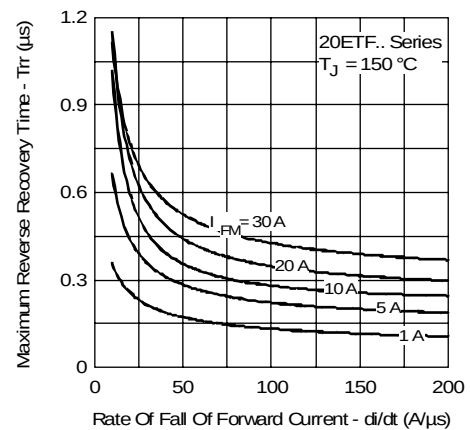


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

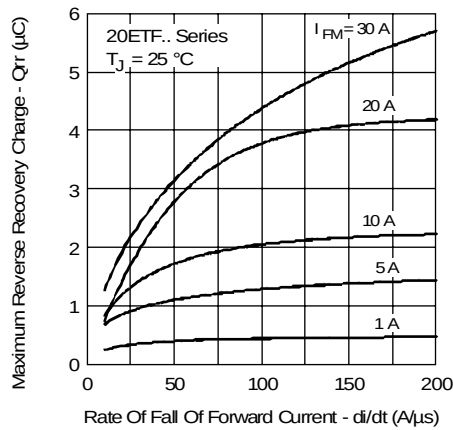


Fig. 10 - Recovery Charge Characteristics, $T_j = 25^\circ\text{C}$

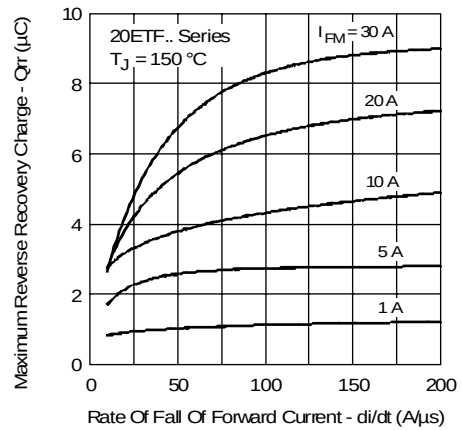


Fig. 11 - Recovery Charge Characteristics, $T_j = 150^\circ\text{C}$

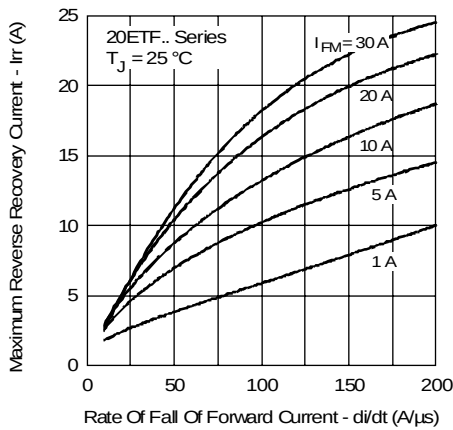


Fig. 12 - Recovery Current Characteristics, $T_j = 25^\circ\text{C}$

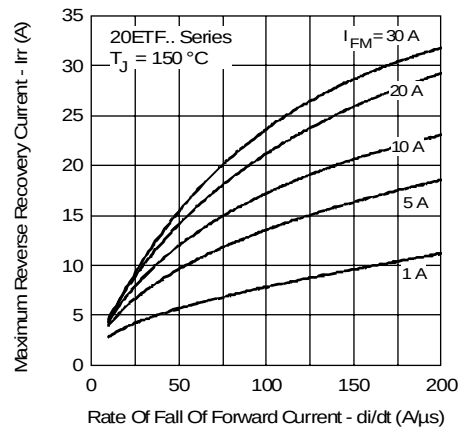


Fig. 13 - Recovery Current Characteristics, $T_j = 150^\circ\text{C}$

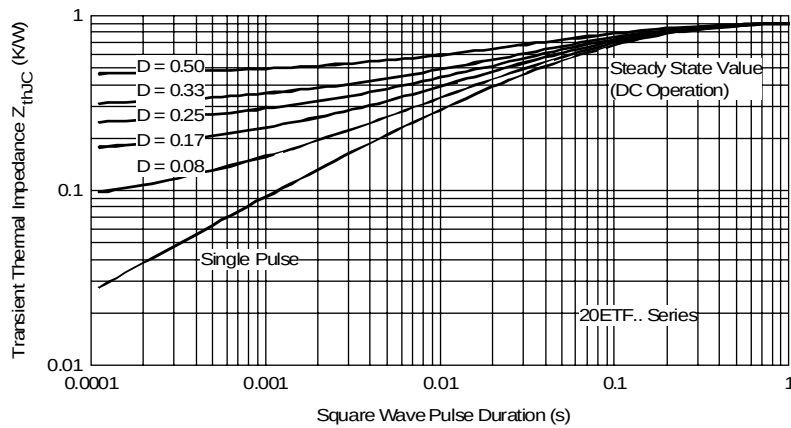


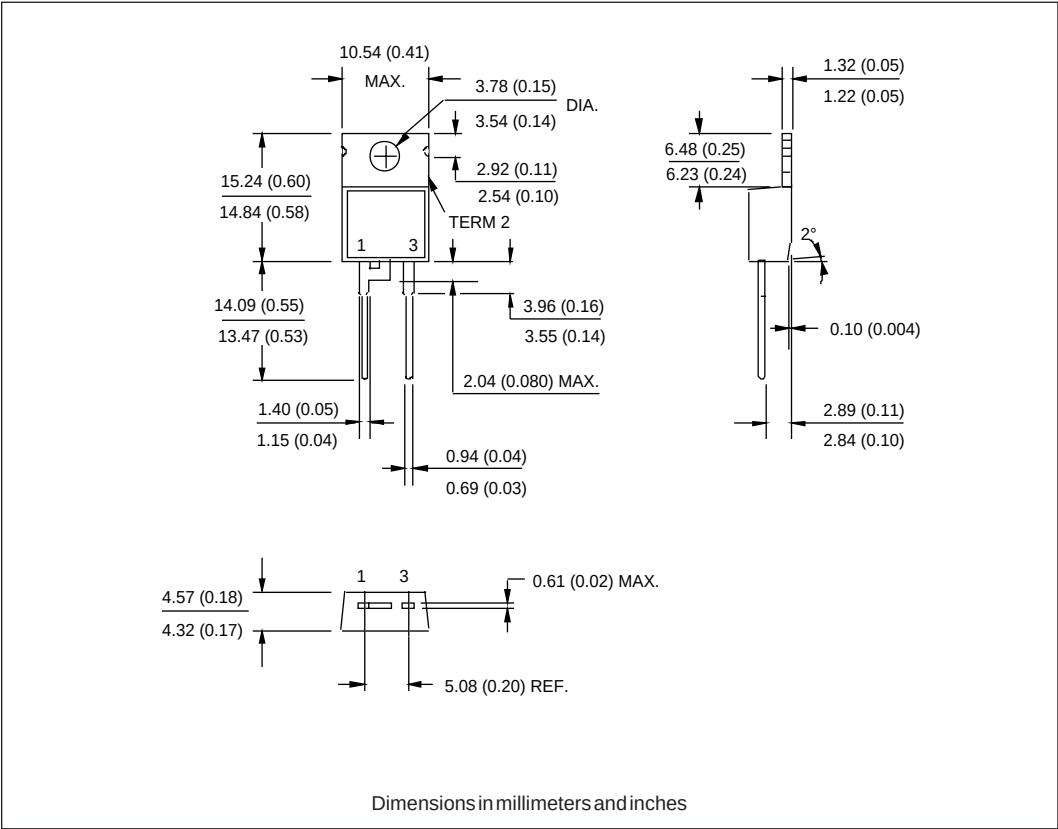
Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

20ETF.. HV *QUIETIR* Series

Preliminary Data Sheet I2127 09/97

International
IOR Rectifier

Outline Table



Ordering Information Table

