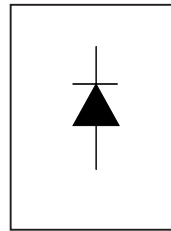


International
IR Rectifier

QUIETIR Series 20ETF06PbF

**FAST SOFT RECOVERY
RECTIFIER DIODE**
Lead-Free ("PbF" suffix)



$$\begin{aligned} V_F &< 1.2V @ 10A \\ I_{FSM} &= 300A \\ V_{RRM} &= 600V \end{aligned}$$

Description/ Features

The 20ETF06PbF 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.

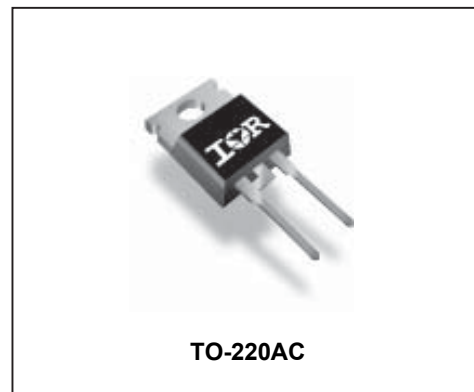
Typical applications are both:

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

Package Outline



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
20ETF06	600	700	5

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	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

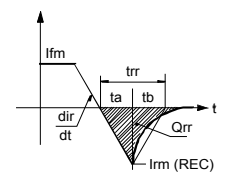
Electrical Specifications

Parameters	20ETF..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.3	V	@ 20A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	12.5	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.9	V	
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	5.0		$T_J = 150^\circ\text{C}$

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

Recovery Characteristics

Parameters	20ETF..	Units	Conditions
t_{rr} Reverse Recovery Time	160	ns	$I_F @ 20\text{Apk}$ @ 100A/ μs @ 25°C
I_{rr} Reverse Recovery Current	10	A	
Q_{rr} Reverse Recovery Charge	1.25	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	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		
Marking Device	20ETF06		

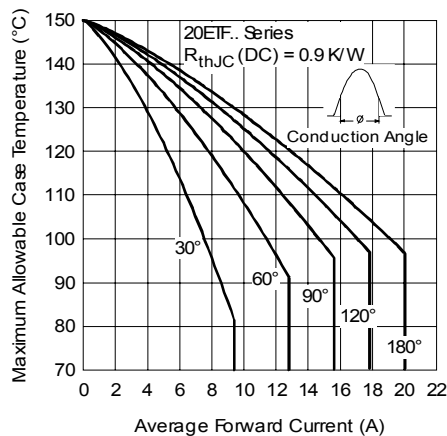


Fig. 1 - Current Rating Characteristics

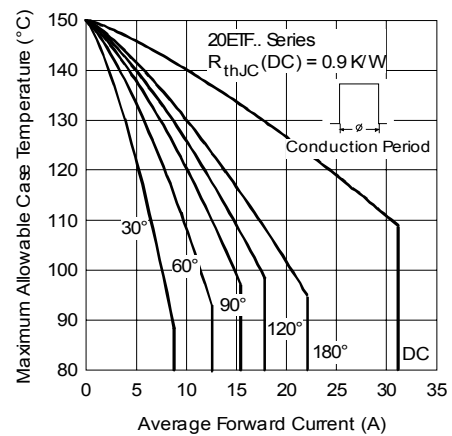


Fig. 2 - Current Rating Characteristics

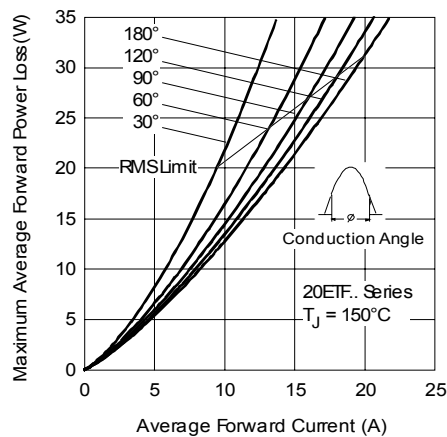


Fig. 3 - Forward Power Loss Characteristics

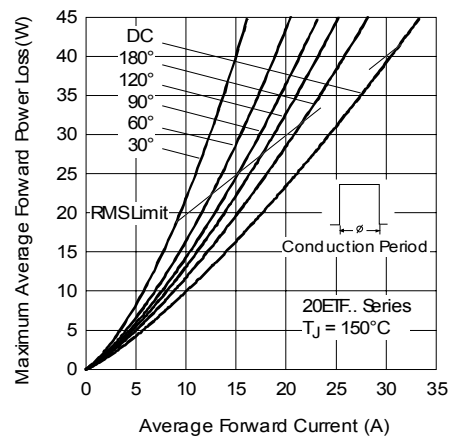


Fig. 4 - Forward Power Loss Characteristics

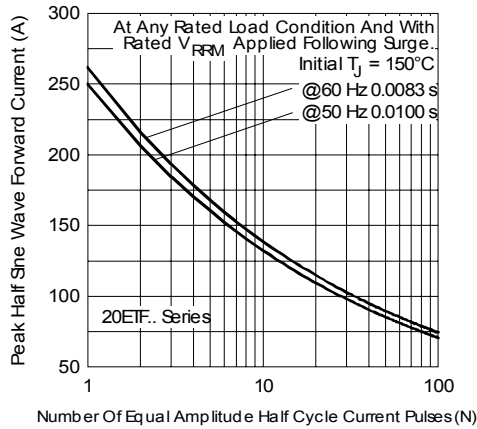


Fig. 5 - Maximum Non-Repetitive Surge Current

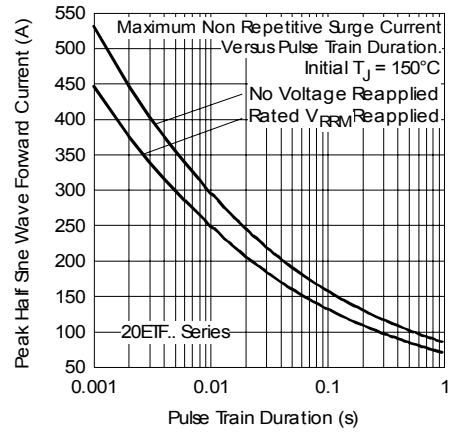


Fig. 6 - Maximum Non-Repetitive Surge Current

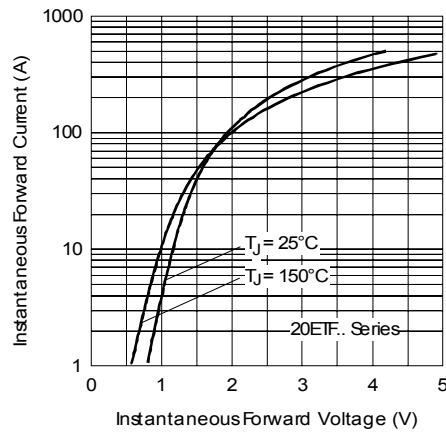


Fig. 7 - Forward Voltage Drop Characteristics

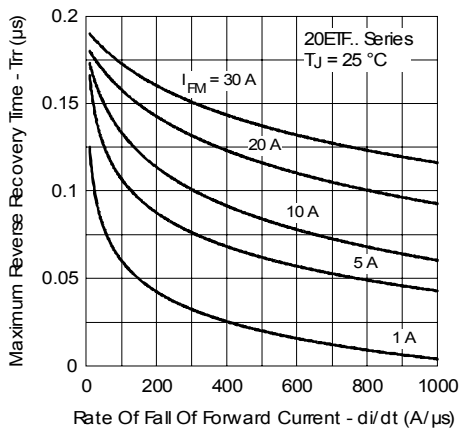


Fig. 8 - Recovery Time Characteristics, $T_j = 25^\circ\text{C}$

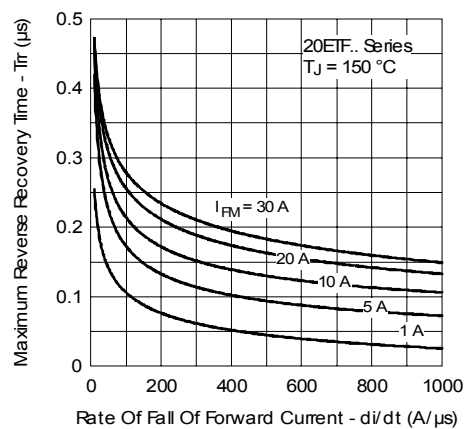


Fig. 9 - Recovery Time Characteristics, $T_j = 150^\circ\text{C}$

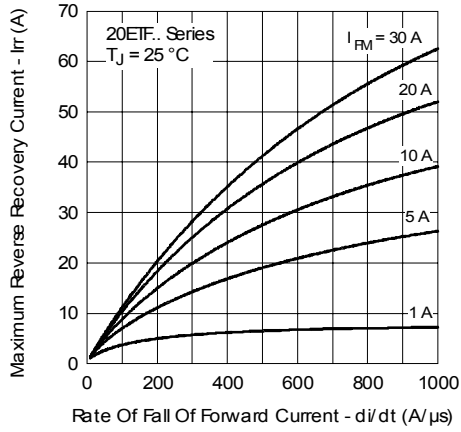


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

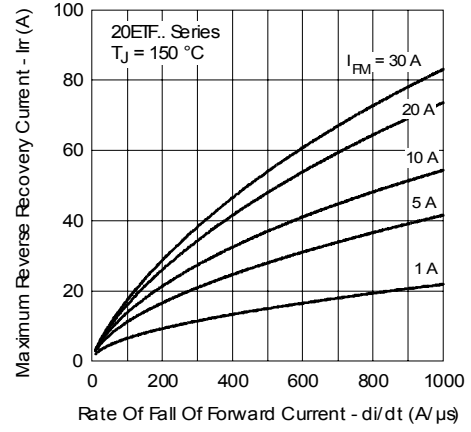


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

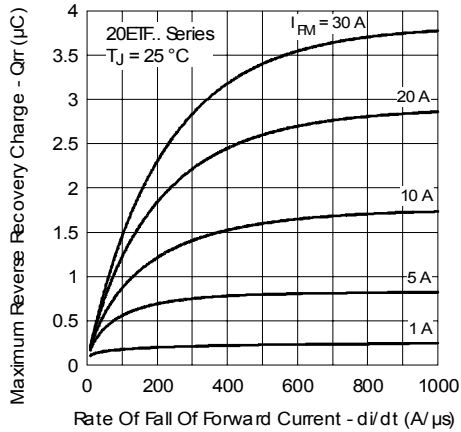


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

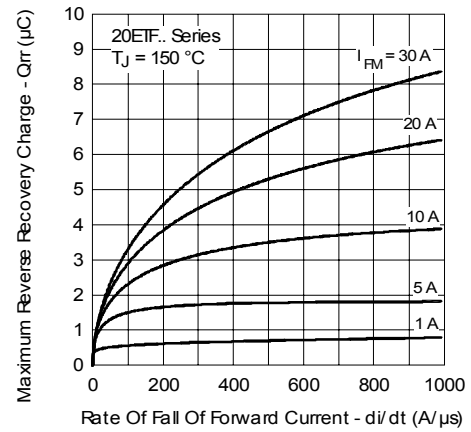


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

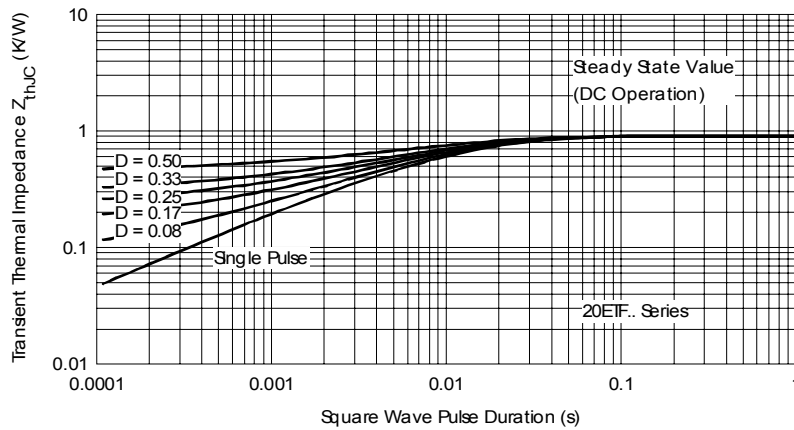
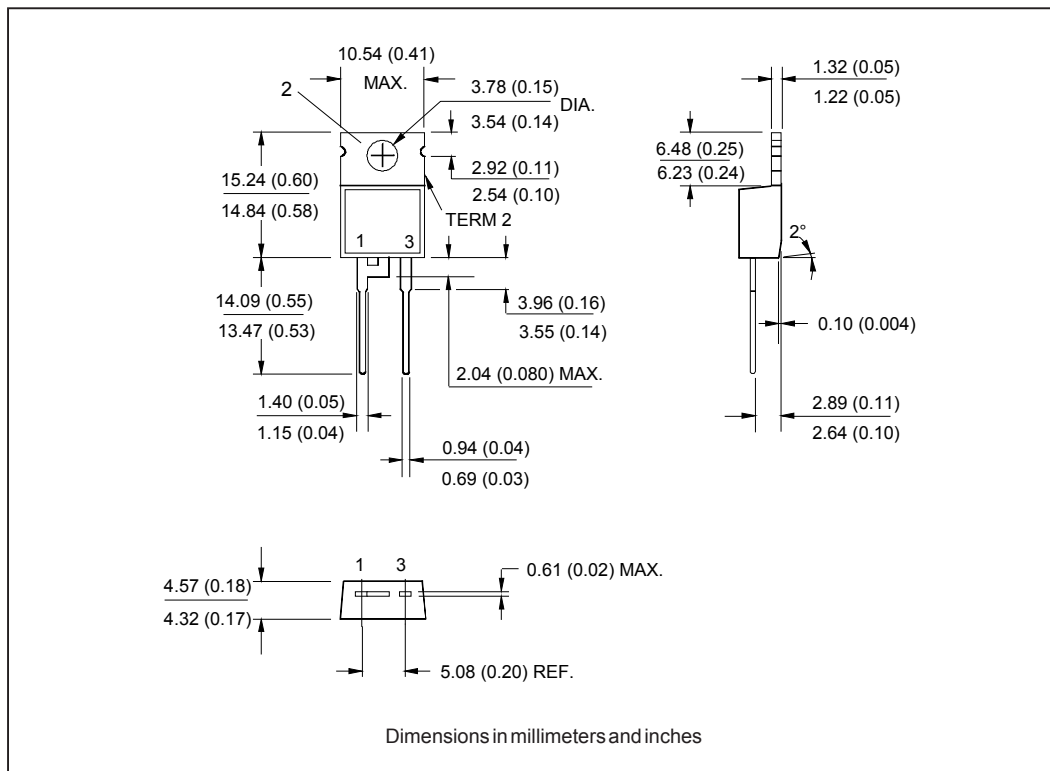


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Outline Table

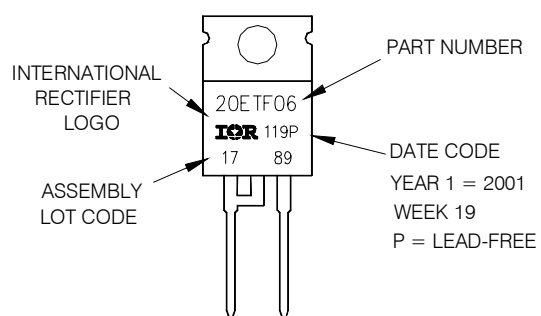


Part Marking Information

IRMX Assembly Line

EXAMPLE: THIS IS A 20ETF06
 LOT CODE 1789
 ASSEMBLED ON WW 19, 2001
 IN THE ASSEMBLY LINE "C"

Note: "P" in assembly line
 position indicates "Lead-Free"



Ordering Information Table

Device Code					
20	E	T	F	06	PbF
1	2	3	4	5	6
1	-	Current Rating (20 = 20A)			
2	-	Circuit Configuration:			
		E = Single Diode			
3	-	Package:			
		T = TO-220AC			
4	-	Type of Silicon:			
		F = Fast Soft Recovery Rectifier			
5	-	Voltage Rating (06 = 600V)			
6	-	• none = Standard Production • PbF = Lead-Free			

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

International
IR Rectifier

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