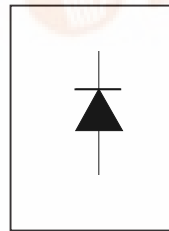


International **IR** Rectifier

QUIETIR Series 10ETF06PbF

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



$V_F < 1.2V @ 10A$
 $t_{rr} = 50ns$
 $V_{RRM} = 600V$

Description/ Features

The 10ETF06PbF 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	10	A
V_{RRM}	600	V
I_{FSM}	150	A
$V_F @ 10A, T_J = 25^\circ C$	1.2	V
$t_{rr} @ 1A, 100A/\mu s$	50	ns
T_J	-40 to 150	$^\circ C$

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
10ETF06PbF	600	700	2

Absolute Maximum Ratings

Parameters	10ETF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	10	A	@ $T_C = 128^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	150	A	10ms Sine pulse, rated V_{RRM} applied
	160		10ms Sine pulse, no voltage reapplied
I^2t Max. I^2t for fusing	112.5	A^2s	10ms Sine pulse, rated V_{RRM} applied
	160		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	1600	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

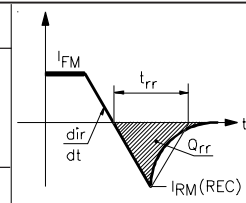
Electrical Specifications

Parameters	10ETF..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.2	V	@ 10A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	23.5	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.85	V	
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	3.0		$T_J = 150^\circ\text{C}$

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

Recovery Characteristics

Parameters	10ETF..	Units	Conditions
t_{rr} Reverse Recovery Time	145	ns	$I_F @ 10\text{Apk}$ @ 25A/ μs @ 25°C
I_{rr} Reverse Recovery Current	2.75	A	
Q_{rr} Reverse Recovery Charge	0.32	μC	
S Snap Factor	0.6		



Thermal-Mechanical Specifications

Parameters		10ETF..	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	1.5	°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	JEDEC	
Marking Device		10ETF06		

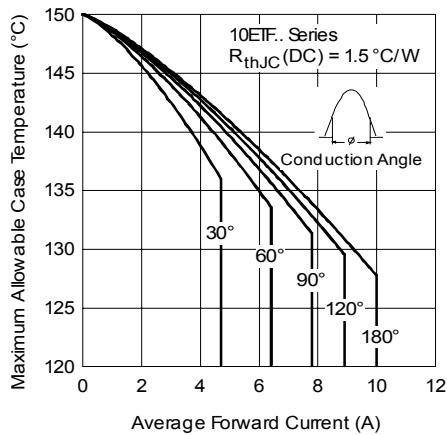


Fig. 1 - Current Rating Characteristics

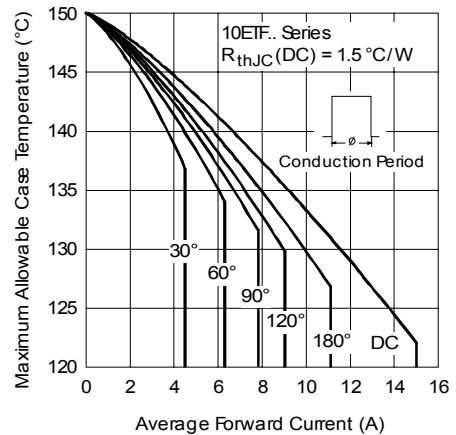


Fig. 2 - Current Rating Characteristics

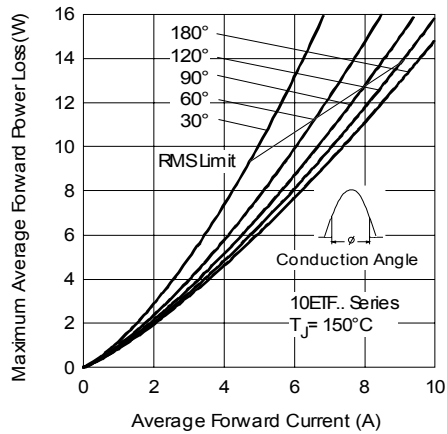


Fig. 3 - Forward Power Loss Characteristics

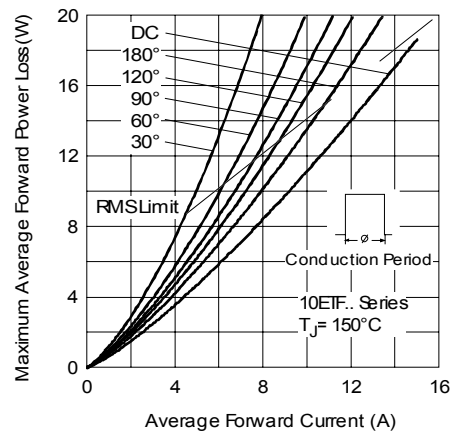


Fig. 4 - Forward Power Loss Characteristics

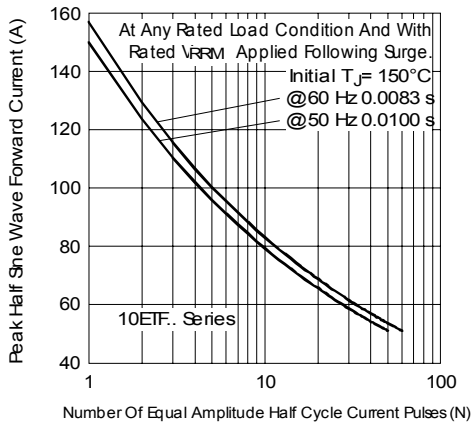


Fig. 5 - Maximum Non-Repetitive Surge Current

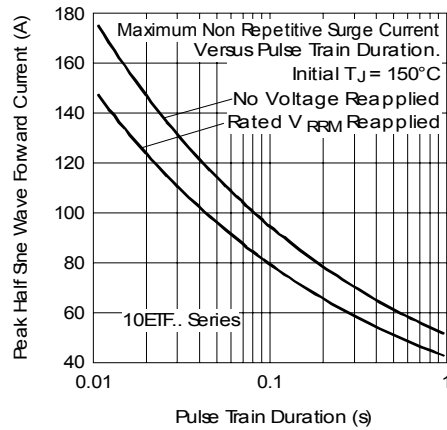


Fig. 6 - Maximum Non-Repetitive Surge Current

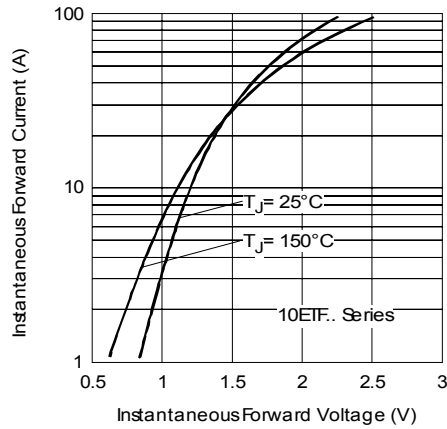


Fig. 7 - Forward Voltage Drop Characteristics

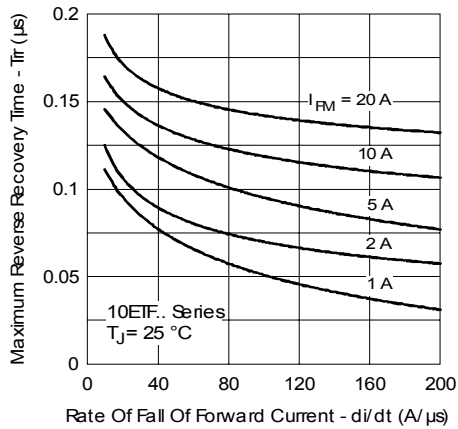


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

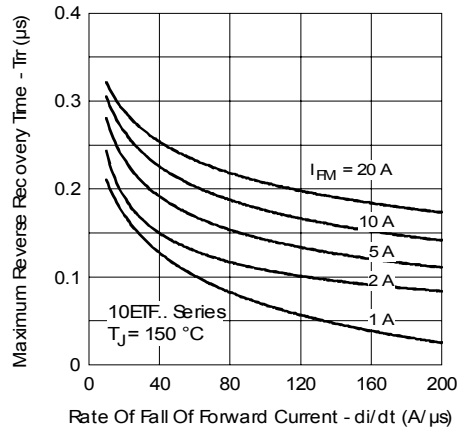


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

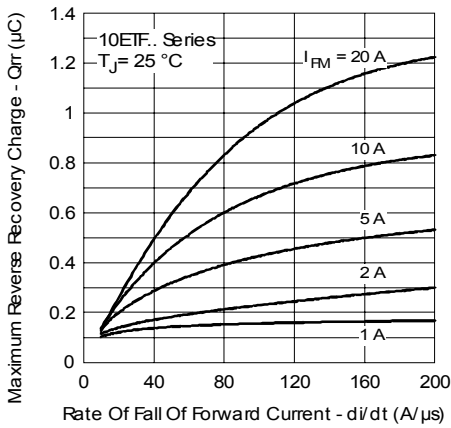


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

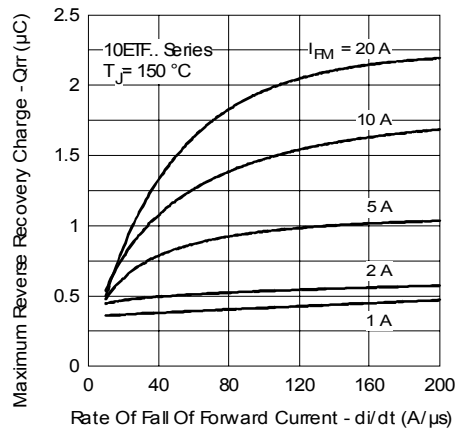


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

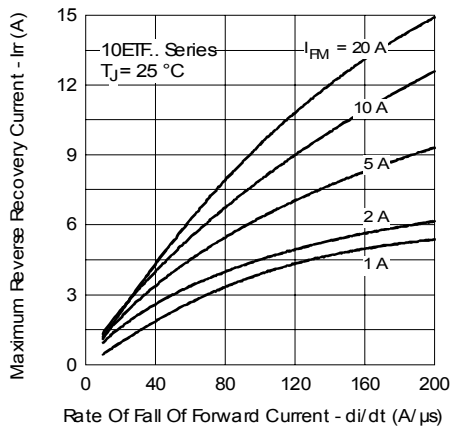


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

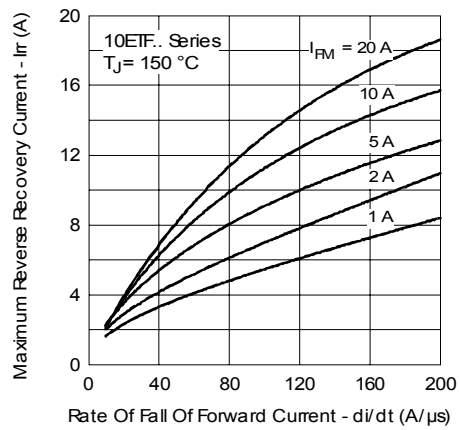


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

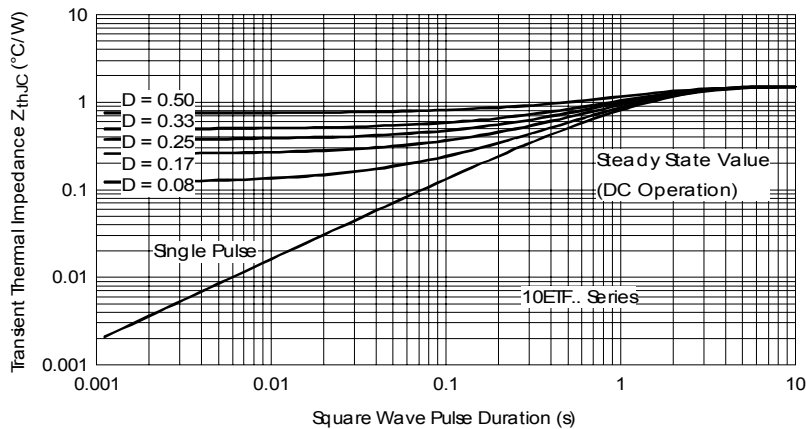


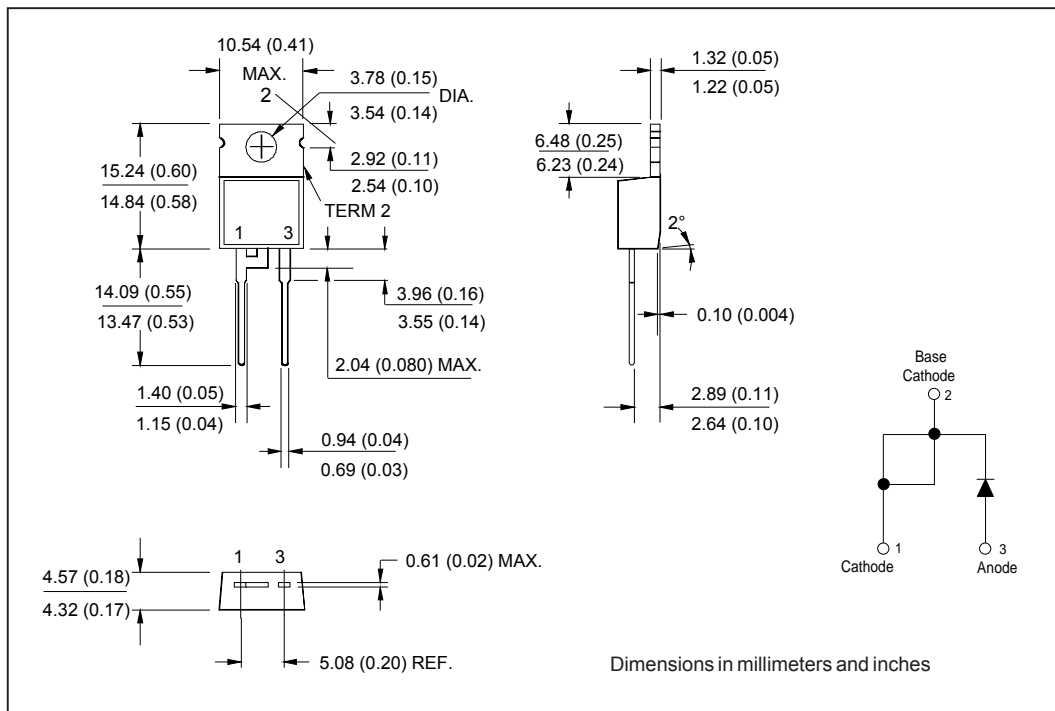
Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

10ETF06PbF *QUIETIR* Series

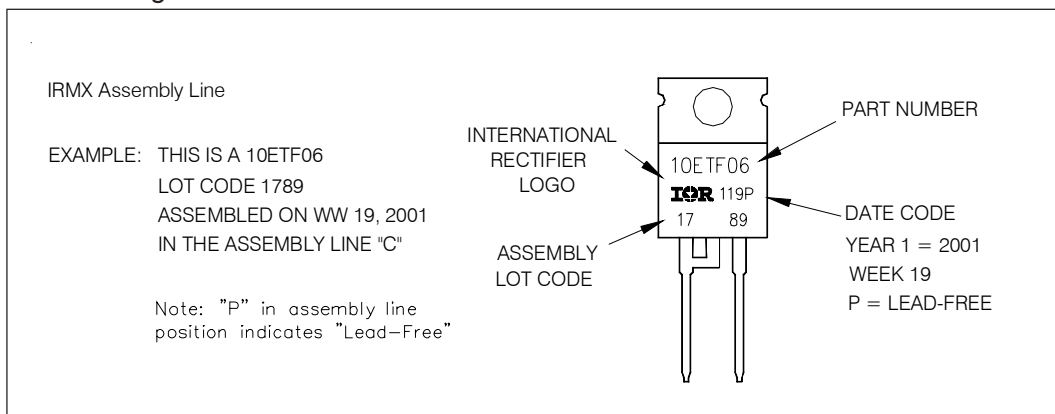
Bulletin I2187 12/04



Outline Table



Part Marking Information



Ordering Information Table

Device Code	10	E	T	F	06	PbF
	①	②	③	④	⑤	⑥
1	-	Current Rating (10 = 10A)				
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.