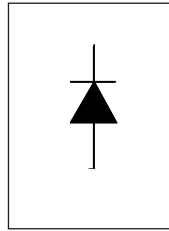


International  
**IOR** Rectifier

## QUIET**IR** 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 QUIET**IR** 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.

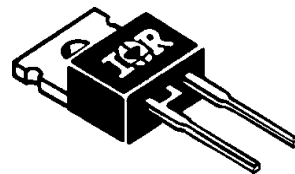
Typical applications are both:

- 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	800to 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	-40to 150	$^\circ C$

#### Package Outline



TO-220AC

## 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 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

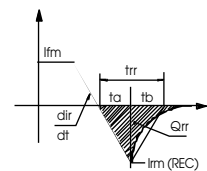
## Electrical Specifications

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	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ 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	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		

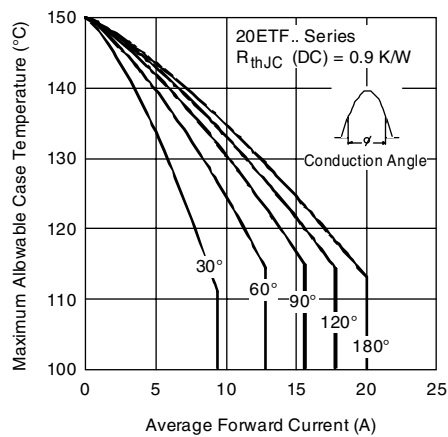


Fig. 1 - Current Rating Characteristics

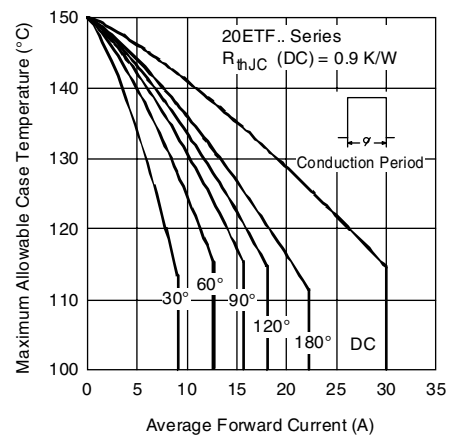


Fig. 2 - Current Rating Characteristics

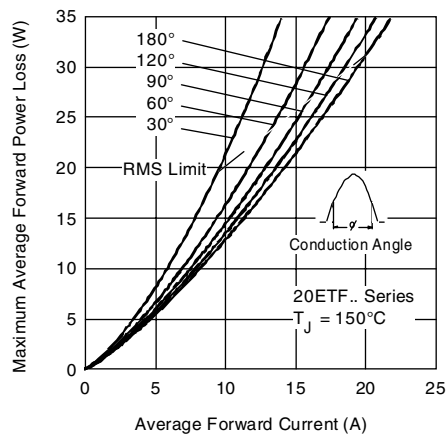


Fig. 3 - Forward Power Loss Characteristics

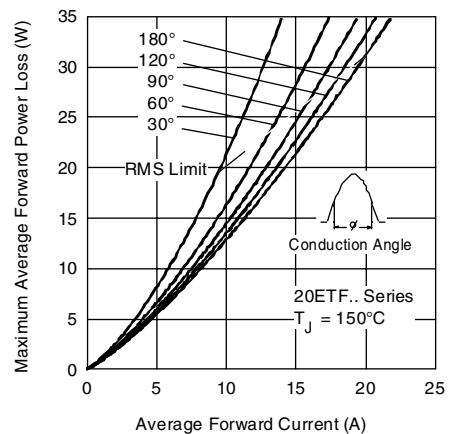


Fig. 4 - Forward Power Loss Characteristics

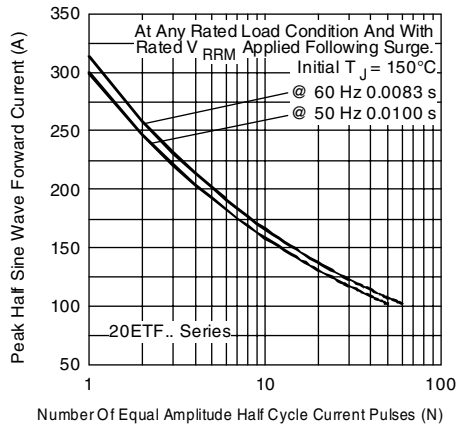


Fig. 5 - Maximum Non-Repetitive Surge Current

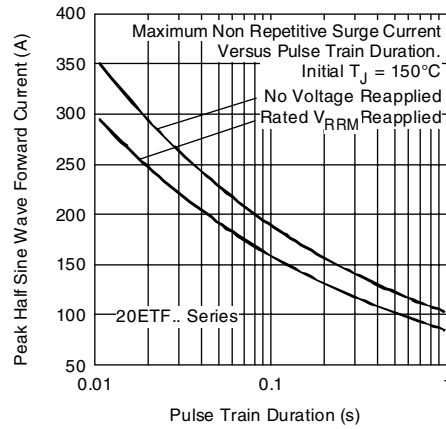


Fig. 6 - Maximum Non-Repetitive Surge Current

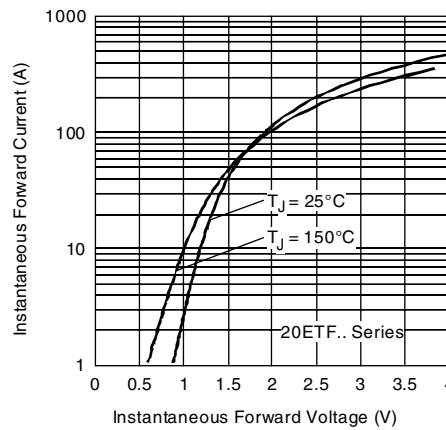


Fig. 7 - Forward Voltage Drop Characteristics

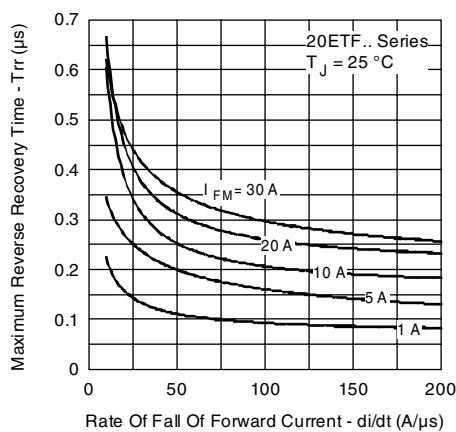


Fig. 8 - Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

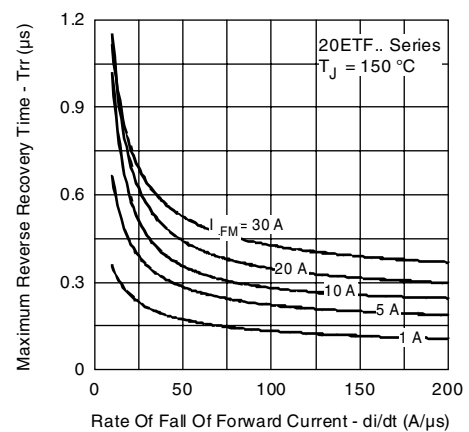


Fig. 9 - Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

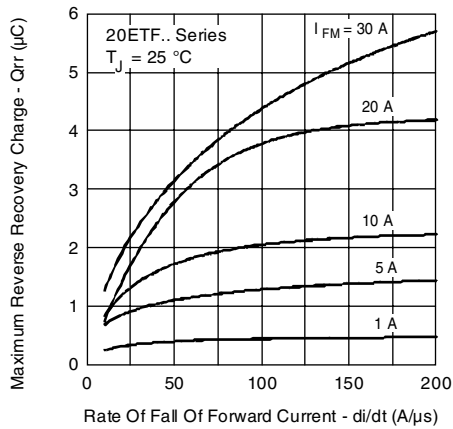


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

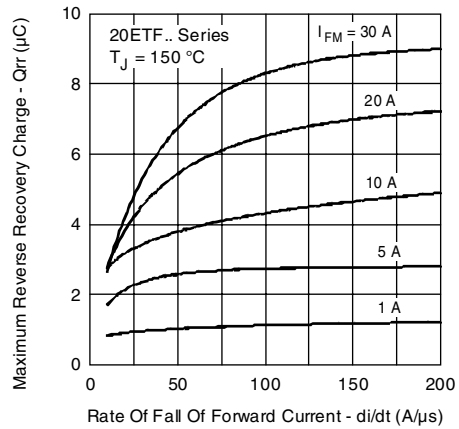


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

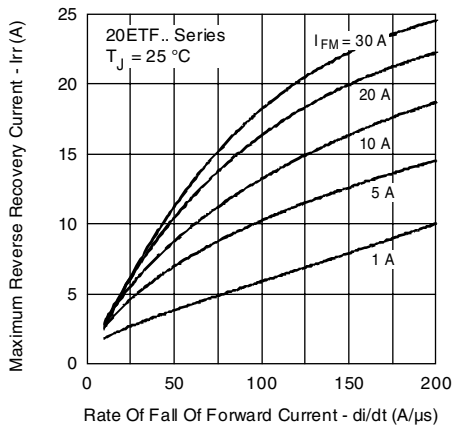


Fig. 12 - Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

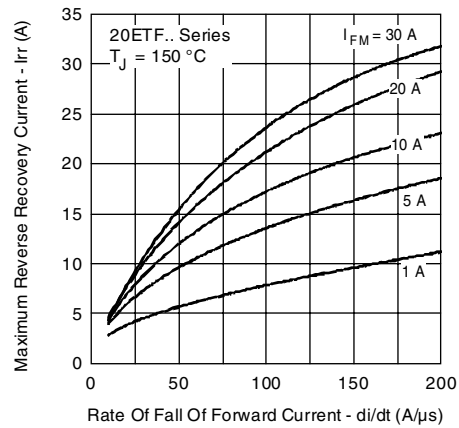


Fig. 13 - Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

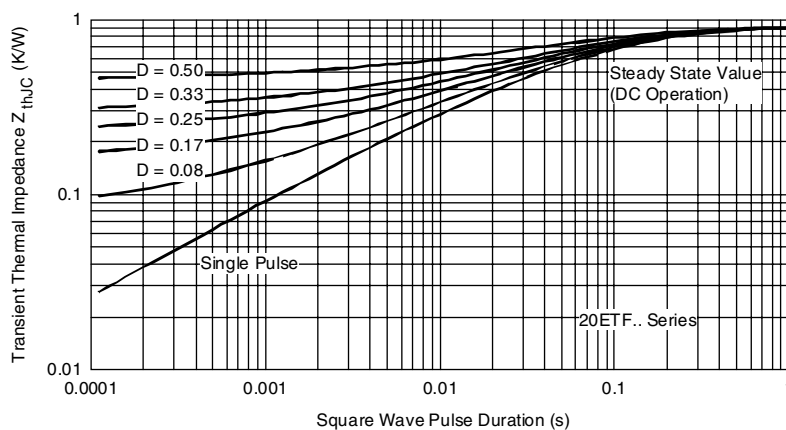
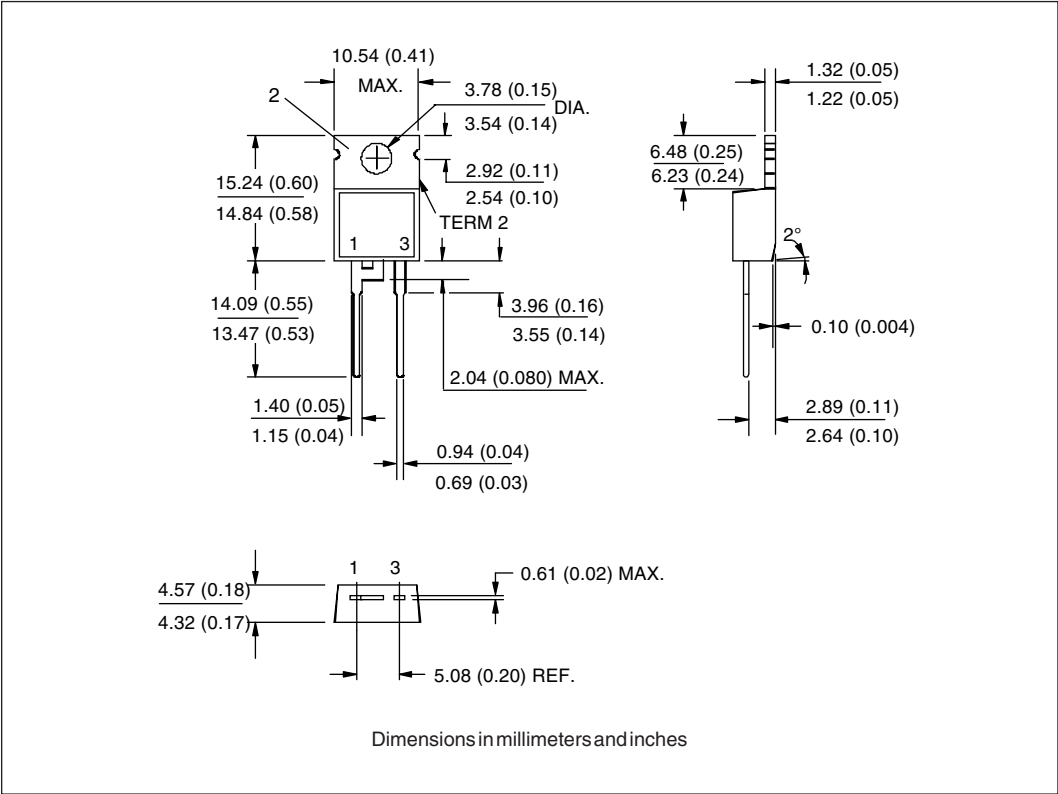


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table

Device Code				
20	E	T	F	12
①	②	③	④	⑤
1	-	Current Rating		
2	-	Circuit Configuration:		
		E = Single Diode		
3	-	Package:		
		T = TO-220AC		
4	-	Type of Silicon:		
		F = Fast diode		
5	-	Voltage code: Code x 100 = $V_{RRM}$		
			08	= 800V
			10	= 1000V
			12	= 1200V

BASE  
CATHODE

2

1 3

CATHODE ANODE

International  
**IOR** Rectifier

<b>WORLD HEADQUARTERS:</b>	233 Kansas St., El Segundo, California 90245 U.S.A Tel: (310) 322-3331 Fax: (310) 322-3332
<b>EUROPEAN HEADQUARTERS:</b>	Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020 Fax: ++ 44 1883 733408
<b>IR CANADA:</b>	7231 Victoria Park Ave., Suite #201, Markham, Ontario L3R 2Z8 Tel: (905) 475 1897. Fax: (905) 475 8801
<b>IR GERMANY:</b>	Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590 Fax: ++ 49 6172 965933
<b>IR ITALY:</b>	Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 4510111 Fax: ++ 39 11 4510220
<b>IR FAR EAST:</b>	K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171 Tel: 81 3 3983 0086 Fax: 81 3 3983 0642
<b>IR SOUTHEAST ASIA:</b>	315 Outram Road, # 10-02 Tan Boon Liat Building, SINGAPORE 0316. Tel: 65 221 8371. Fax: 65 221 8372.