

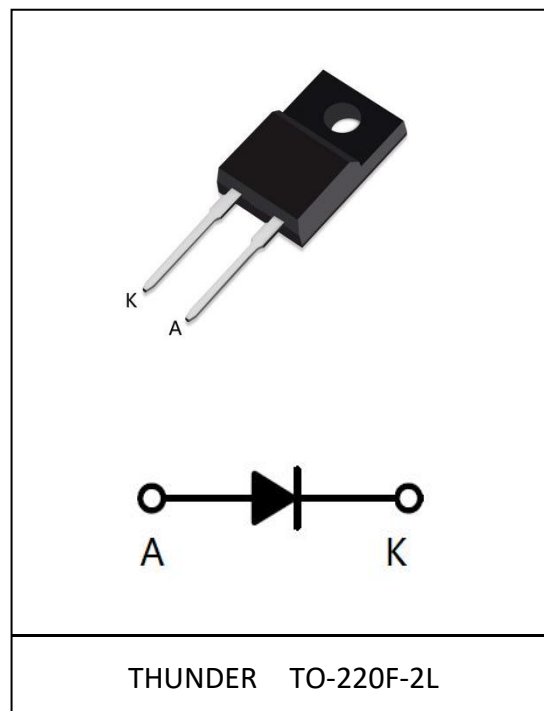
## FRED

### Ultrafast Soft Recovery Diode, 30A

#### Features:

- Ultrafast Recovery
- 175°C operating junction temperature
- High frequency operation
- Low power loss, less RFI and EMI
- Low  $I_R$  value
- High surge capacity
- Epitaxial chip construction

Product Summary	
$V_R$	600V
$I_{F(AV)}$	30A
$t_{rr}$	22ns



#### Description/Applications

These diodes are optimized to less losses and EMI/RFI in high frequency power conditioning system. The soft recovery behavior of the diodes offers the need as snubber in most applications. These devices are ideally suited for applications where the switching losses are not significant portion of the total losses.

#### Absolute Maximum Ratings

Parameter	Symbol	Test Conditions	Values	Units
Repetitive peak reverse voltage	$V_{RRM}$		600	V
Continuous forward current	$I_{F(AV)}$	$T_c = 110^\circ\text{C}$	30	A
Single pulse forward current	$I_{FSM}$	$T_c = 25^\circ\text{C}$	300	
Maximum repetitive forward current	$I_{FRM}$	Square wave, 20kHz	55	
Operating junction	$T_j$		175	$^\circ\text{C}$
Storage temperatures	$T_{stg}$		-55 to +175	$^\circ\text{C}$

**Electrical characteristics (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test Conditions	Min	Typ.	Max.	Units
Breakdown voltage Blocking voltage	$V_{BR}$ , $V_R$	$I_R=100\mu A$	600			V
Forward voltage	$V_F$	$I_F=30A$		2.00	2.50	
		$I_F=30A, T_J=125^\circ C$		1.75	2.20	
Reverse leakage current	$I_R$	$V_R=V_{RRM}$			20	$\mu A$
		$T_J=150^\circ C, V_R=600V$			200	
Reverse recovery time	$t_{rr}$	$I_F=1A, V_R=30V, di/dt=200A/\mu s$		22	35	ns
Reverse recovery time	$t_{rr}$	$I_F=30A, V_R=300V,$ $dI_F/dt=-200A/\mu s, T_J=25^\circ C$		27		ns
Maximum Reverse Recovery Current	$I_{RM}$			3.7		A
Reverse Recovery Charge	$Q_{rr}$			110		nC
Reverse recovery time	$t_{rr}$	$I_F=30A, V_R=300V,$ $dI_F/dt=-200A/\mu s, T_J=125^\circ C$		85		ns
Maximum Reverse Recovery Current	$I_{RM}$			7		A
Reverse Recovery Charge	$Q_{rr}$			650		nC

**Thermal characteristics**

Paramter	Symbol	Typ	Units
Junction-to-Case	$R_{\theta JC}$	2.0	$^\circ C/W$

## Electrical performance (typical)

FIG.1 Forward Characteristic (typical)

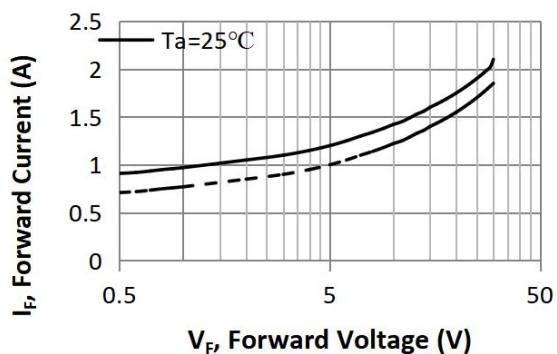


FIG.2 Reverse Characteristic (typ.)

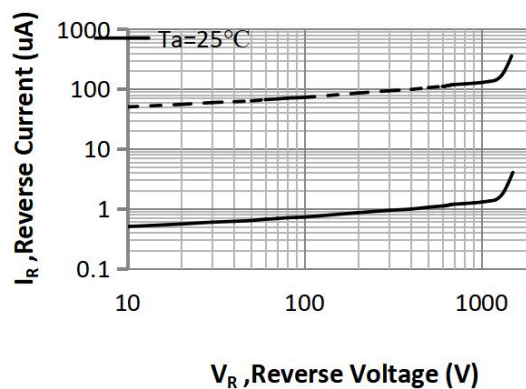


FIG.3 Reverse Recover Time vs. Current Rate of Change

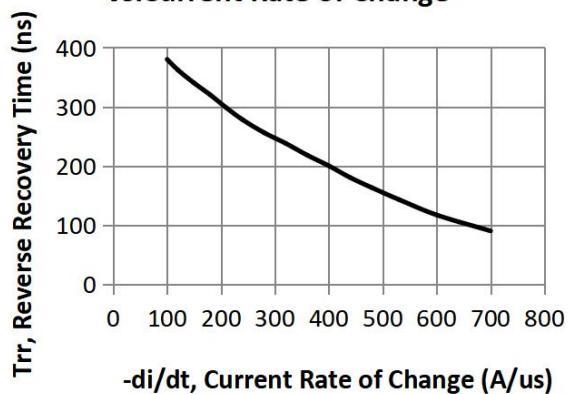


FIG.4 Reverse Recover Charge vs. Current Rate of Change

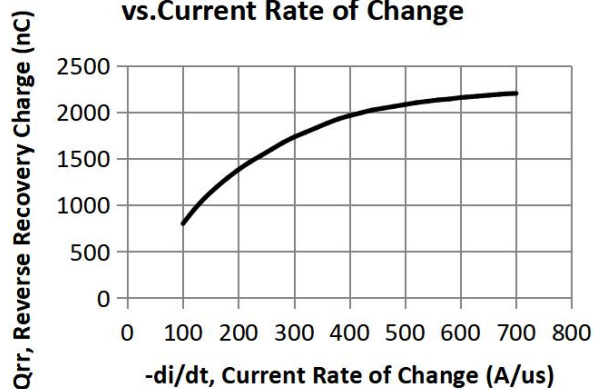


FIG.5 Reverse Recover Current vs. Current Rate of Change

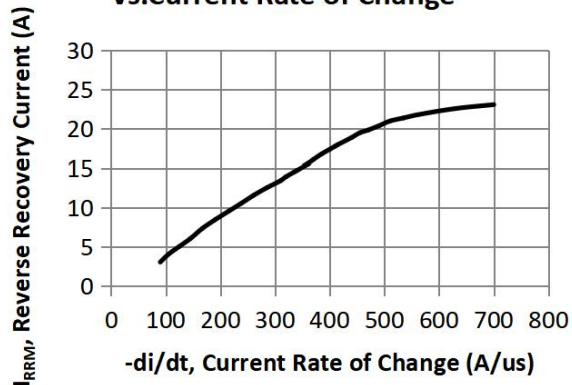
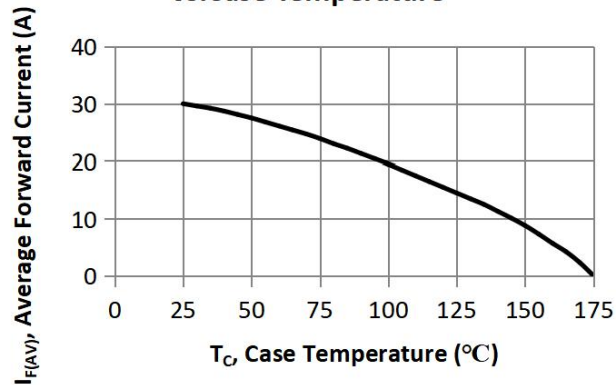


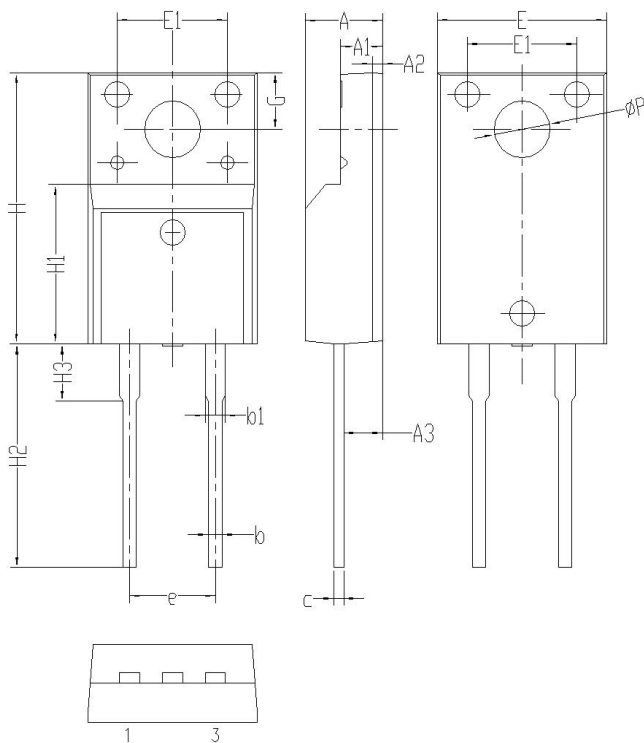
FIG.6 Average Forward Current vs. Case Temperature



## Package Information

### TO-220F-2L PACKAGE

#### 基本尺寸



Symbol	单位 mm		
	Min	Nom	Max
A	4.55	4.75	4.95
A1	2.40	2.60	2.80
A2	0.40	0.60	0.80
A3	2.10	2.30	2.50
b1	1.10	1.30	1.50
b	0.60	0.80	1.00
c	0.42	0.50	0.58
e	4.88	5.08	5.28
E	9.9	10.1	10.3
E1	6.8	7	7.2
H	15.8	16.0	16.2
H1	9.10	9.30	9.50
H2	12.5	13.0	13.5
H3	3.10	3.30	3.50
G	3.00	3.20	3.40
ΦP	3.00	3.20	3.40

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