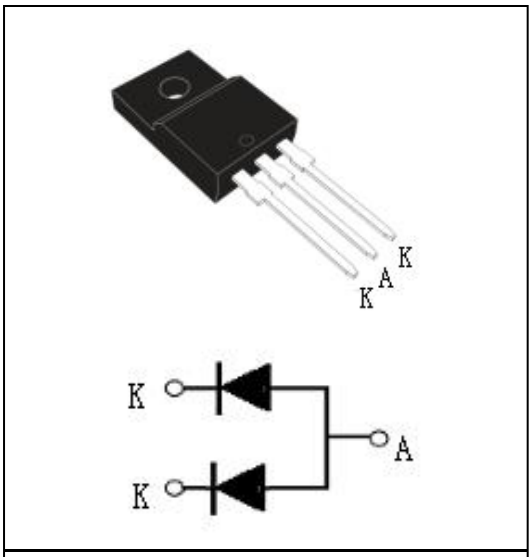
FRED
Ultrafast Soft Recovery Diode,25A

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
$I_{F(AV)}$	2*12.5A
t_{rr}	24ns



THUNDER TO-220F

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 HF welding power converters and other 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	$I_{F(AV)}$	Tc =110°C	25	A
Single pulse forward current	I_{FSM}	Tc =25°C	250	
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHZ	20	
Operating junction	Tj		175	°C
Storage temperatures	Tstg		-55 to +175	°C

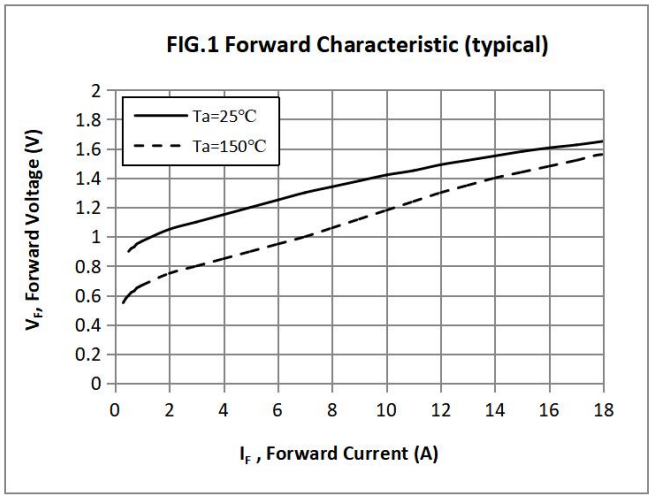
Electrical characteristics (Ta=25°C unless otherwise specified)

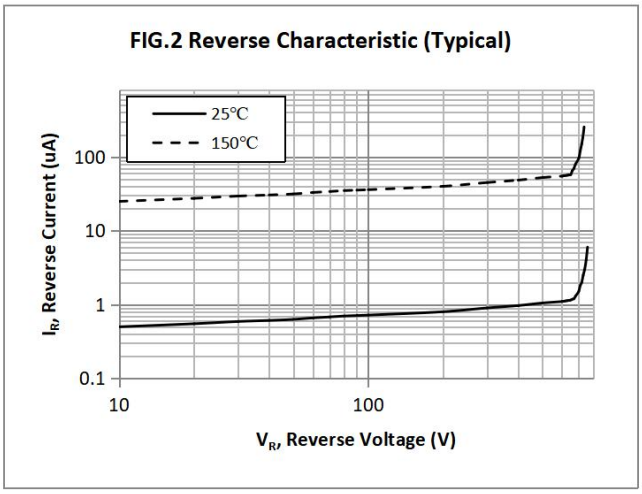
Parameter	Symbol	Test Conditions	Min	Typ.	Max.	Units
Breakdown voltage Blocking voltage	V_{BR}, V_R	I_R=100μA	600			V
Forward voltage (Per Diode)	V_F	I_F=12.5A		1.35	1.65	
		I_F=12.5A, Tj =125°C		1.25	1.55	
Reverse leakage current(Per Diode)	I_R	V_R= V_{RRM}			20	μA
		Tj=150°C, V_R=200V			200	
Reverse recovery time(Per Diode)	trr	I_F=0.5A, I_R=1A, I_{RR}=0.25A		35	50	ns
		I_F=1A,V_R=30V, di/*dt* =200A/us		24	35	

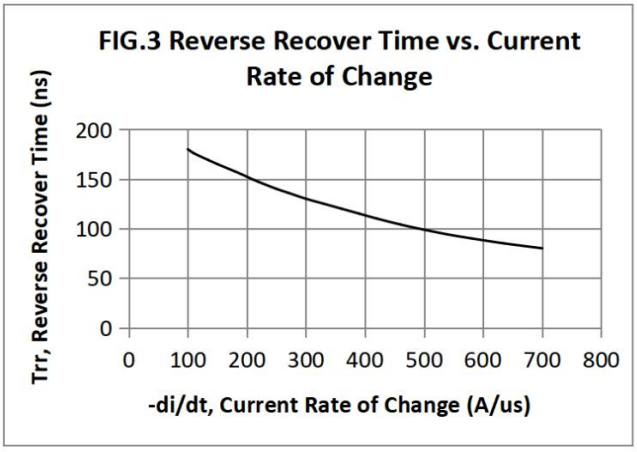
Thermal characteristics

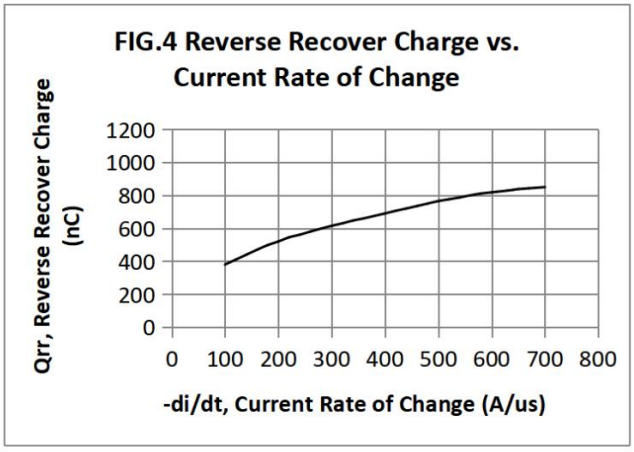
Paramter	Symbol	Typ	Units
Junction-to-Case	$R_{\theta JC}$	4.0	℃/W

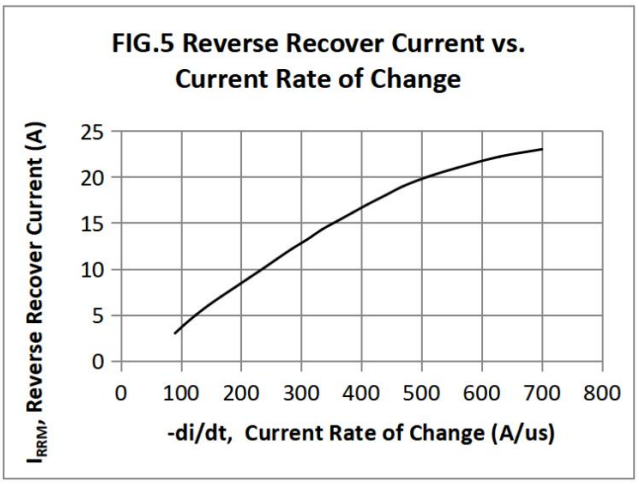
Electrical performance (typical)

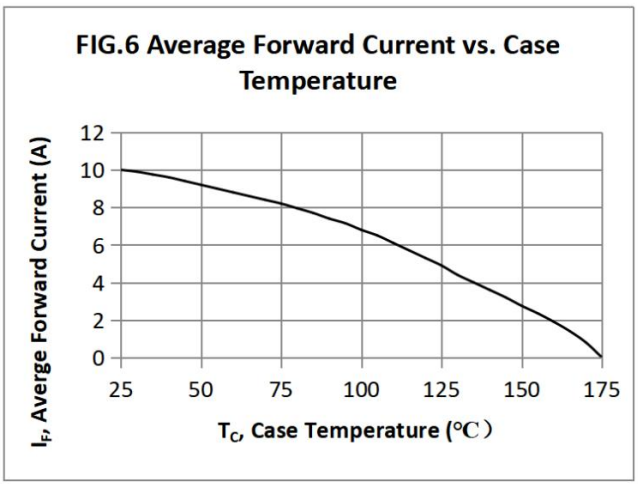


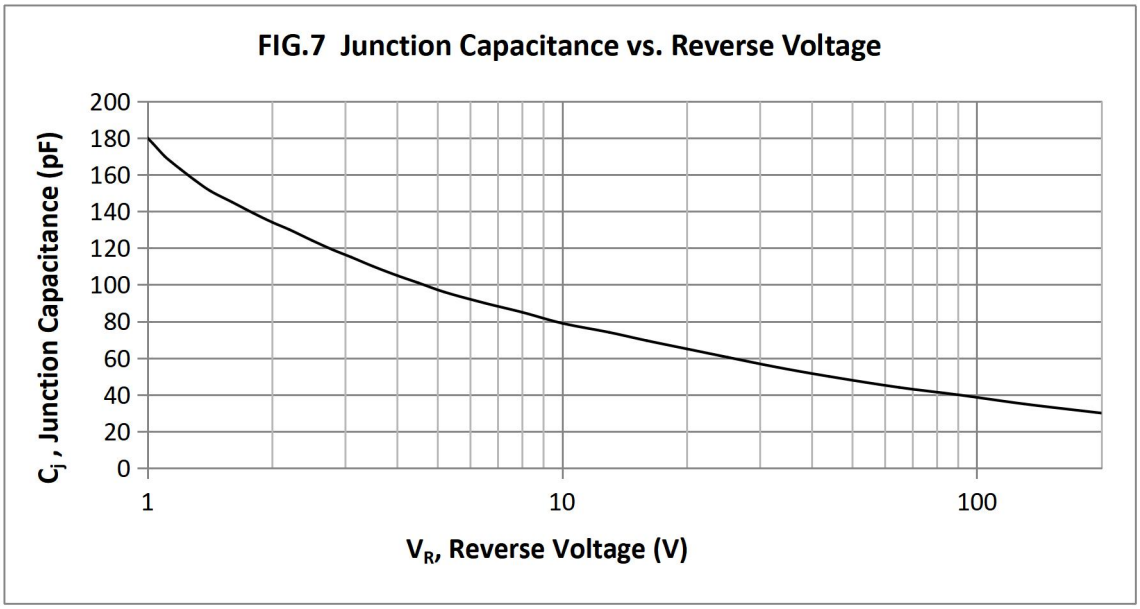



FIG.3 Reverse Recover Time vs. Current Rate of Change
Trr, Reverse Recover Time (ns)
200
150
100
50
0
0 100 200 300 400 500 600 700 800
-di/dt, Current Rate of Change (A/us)


FIG.4 Reverse Recover Charge vs. Current Rate of Change
Qrr, Reverse Recover Charge (nC)
1200
1000
800
600
400
200
0
0 100 200 300 400 500 600 700 800
-di/dt, Current Rate of Change (A/us)

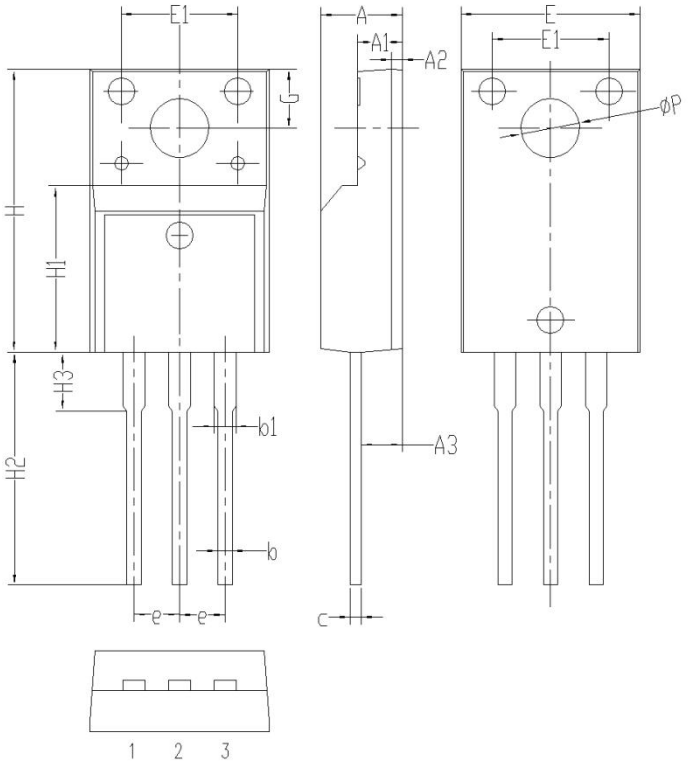

FIG.5 Reverse Recover Current vs. Current Rate of Change
IRRM, Reverse Recover Current (A)
25
20
15
10
5
0
0 100 200 300 400 500 600 700 800
-di/dt, Current Rate of Change (A/us)


FIG.6 Average Forward Current vs. Case Temperature
IF, Averge Forward Current (A)
12
10
8
6
4
2
0
25 50 75 100 125 150 175
TC, Case Temperature (℃)


FIG.7 Junction Capacitance vs. Reverse Voltage
Cj, Junction Capacitance (pF)
200
180
160
140
120
100
80
60
40
20
0
1
10
100
VR, Reverse Voltage (V)

Package Information

TO-220F PACKAGE



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
b	0.60	0.80	1.00
c	0.42	0.50	0.58
e	2.30	2.50	2.70
E	9.9	10.1	10.3
E1	0.68	0.70	0.72
H	15.8	16.0	16.2
H1	9.10	9.30	9.50
H2	12.9	13.2	13.5
H3	3.10	3.30	3.50
G	3.10	3.30	3.50
ΦP	3.00	3.20	3.40

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