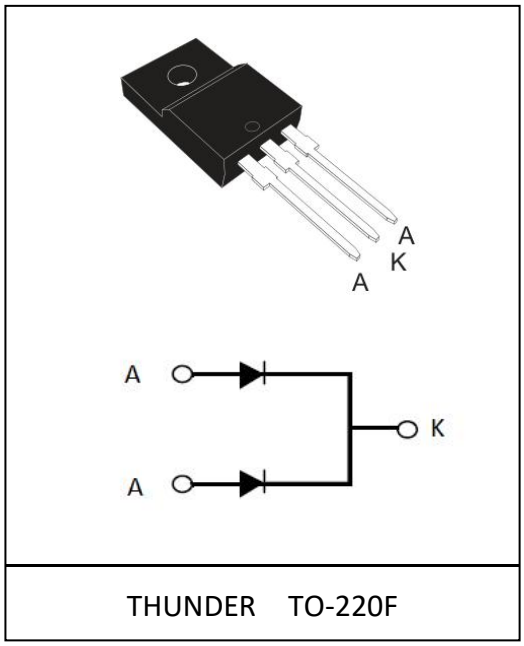
FRED
Ultrafast Soft Recovery Diode, 40A

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



THUNDER TO-220F

Product Summary	
V_R	300 V
$I_{F(AV)}$	2*20A
t_{rr}	23ns

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}		300	V
Continuous forward current	$I_{F(AV)}$	Tc =110°C	40	A
Single pulse forward current	I_{FSM}	Tc =25°C	300	
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHZ	100	
Operating junction	Tj		175	°C
Storage temperatures	Tstg		-55 to +175	°C

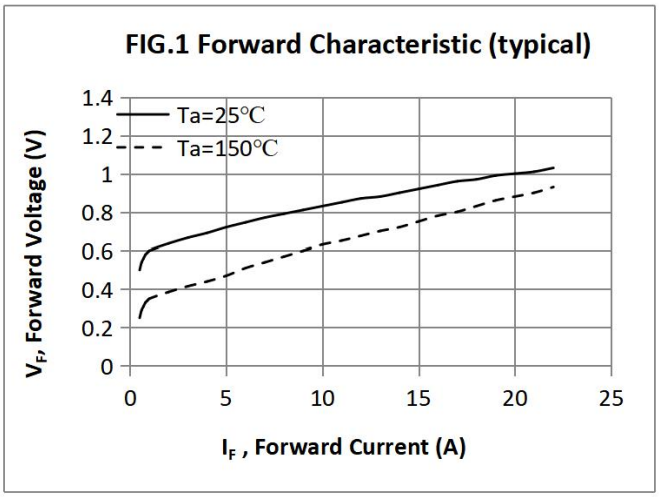
Electrical characteristics (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ.	Max.	Units
Breakdown voltage Blocking voltage	V_{BR}, V_R	I_R=100μA	300			V
Forward voltage (Per Diode)	V_F	I_F=20 A		0.98	1.20	
		I_F=20A, Tj =125°C		0.90	1.00	
Reverse leakage current(Per Diode)	I_R	V_R= V_{RRM}			10	μA
		Tj=150°C, V_R=300V			100	
Reverse recovery time(Per Diode)	t_{rr}	I_F=0.5A, I_R=1A, I_{RR}=0.25A		33	40	ns
		I_F=1A,V_R=30V, di/*dt* =200A/us		23	35	

Thermal characteristics

Paramter	Symbol	Typ	Units
Junction-to-Case	$R_{\theta JC}$	0.75	℃/W

Electrical performance (typical)



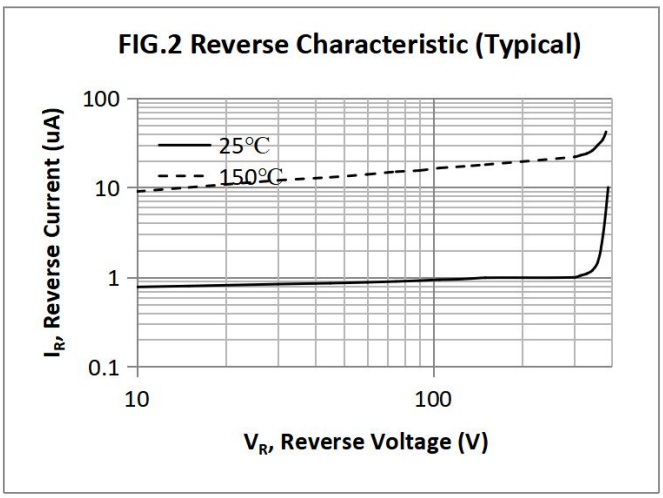


FIG.3 Reverse Recover Time vs. Current Rate of Change

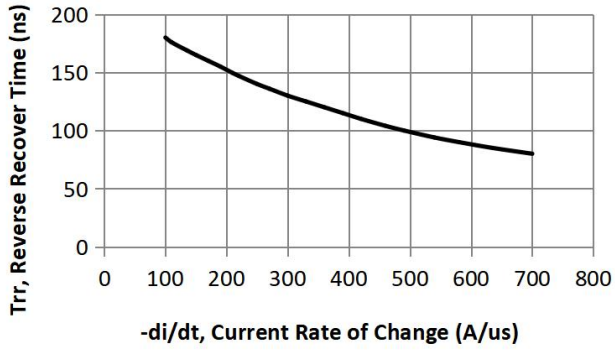


FIG.4 Reverse Recover Charge vs. Current Rate of Change

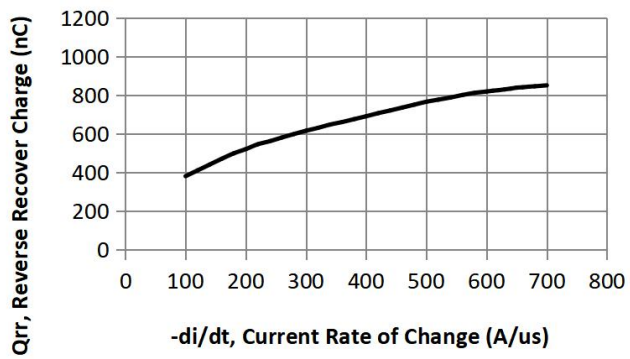


FIG.5 Reverse Recover Current vs. Current Rate of Change

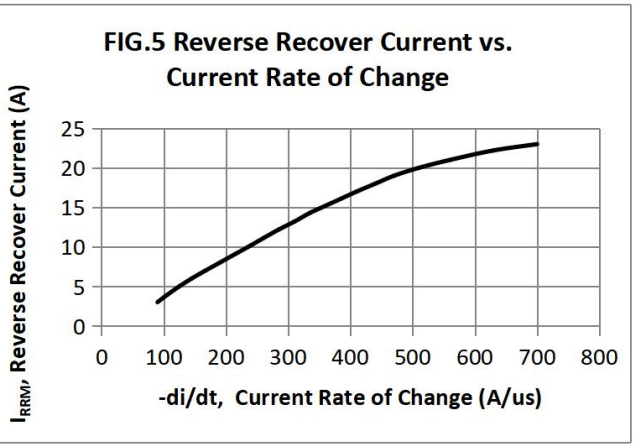


FIG.6 Average Forward Current vs. Case Temperature

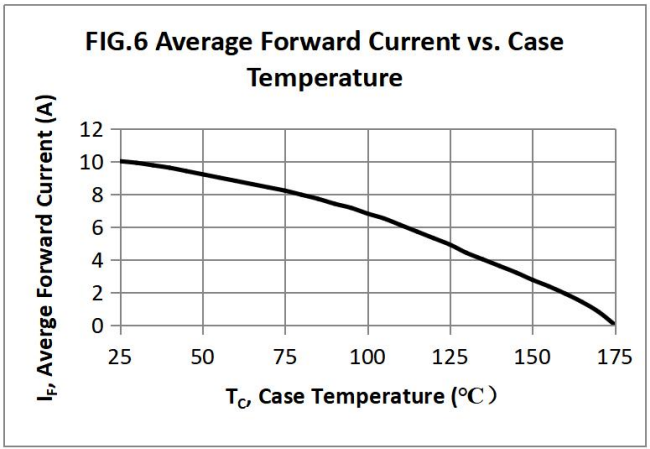
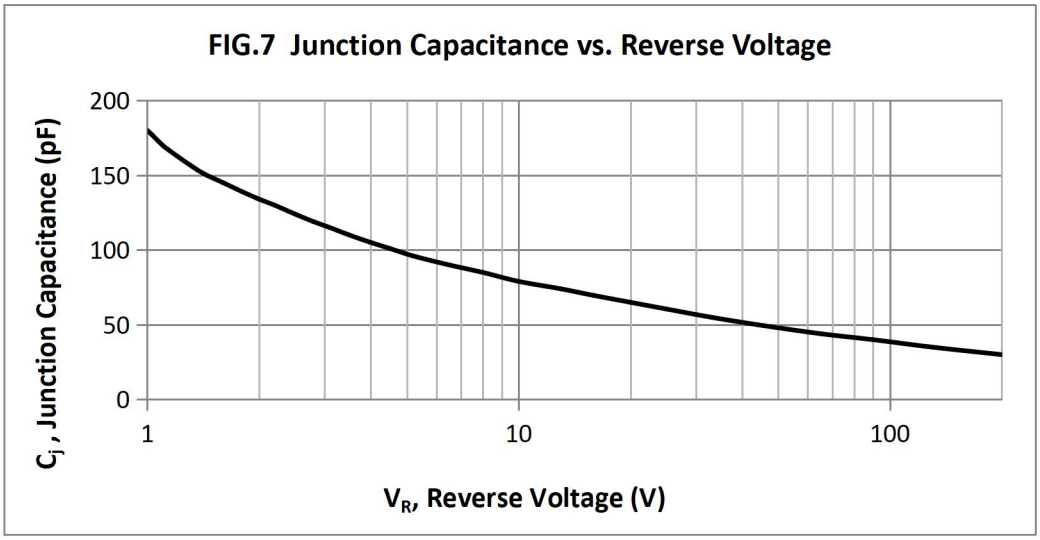
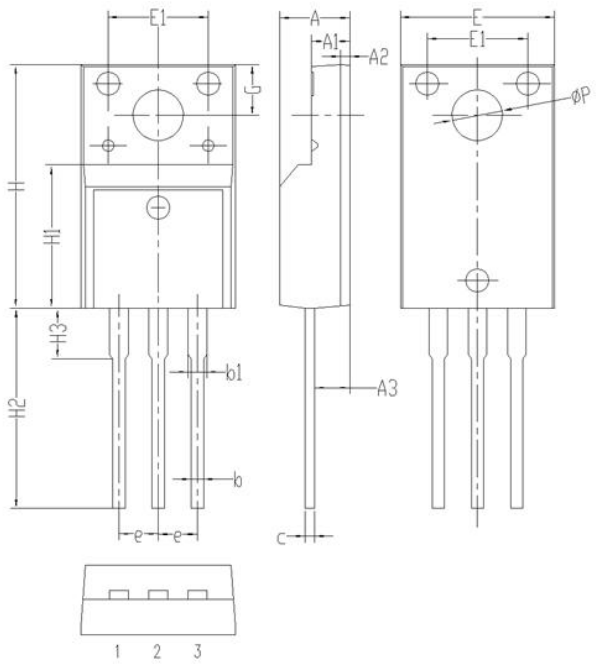


FIG.7 Junction Capacitance vs. Reverse Voltage



Package Information

TO-220F PACKAGE



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.35	4.75
A1	2.30	2.70
A2	0.40	0.80
A3	2.10	2.50
b	0.60	1.00
b1	1.00	1.40
c	0.30	0.70
e	2.30	2.70
E	9.80	10.2
E1	6.30	6.70
H	15.6	16.0
H1	8.80	9.20
H2	12.9	13.5
H3	3.10	3.50
G	3.10	3.50
ΦP	3.10	3.50

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-Headquarters

WuXi Thunder Microelectronics Incorporated Limited

Building E1-9F, No.200 LingHu Road, XinWu district,WuXi,China 214135

Tel:+86-510-85160109 Fax:+86-510-85160109