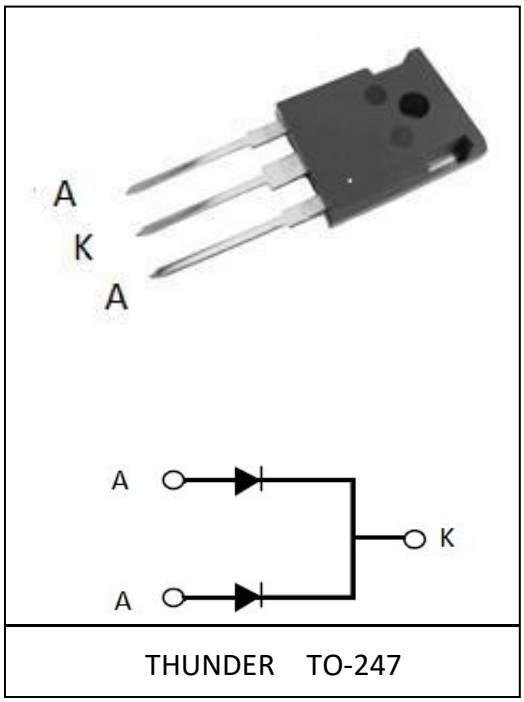
FRED
Ultrafast Soft Recovery Diode



THUNDER TO-247

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

Benefits:

- Reduced RFI and EMI
- Higher frequency operation
- Reduced snubbing
- Reduced part count

Product Summary	
V_R	400 V
$I_{F(AV)}$	2*40A
t_{rr}	25ns

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}		400	V
Continuous forward current	$I_{F(AV)}$	Tc =110°C	2*40	A
Single pulse forward current	I_{FSM}	Tc =25°C	2*400	A
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHZ	2*80	A
Operating junction	T_j		175	°C
Storage temperatures	T_{stg}		-55 to +175	°C

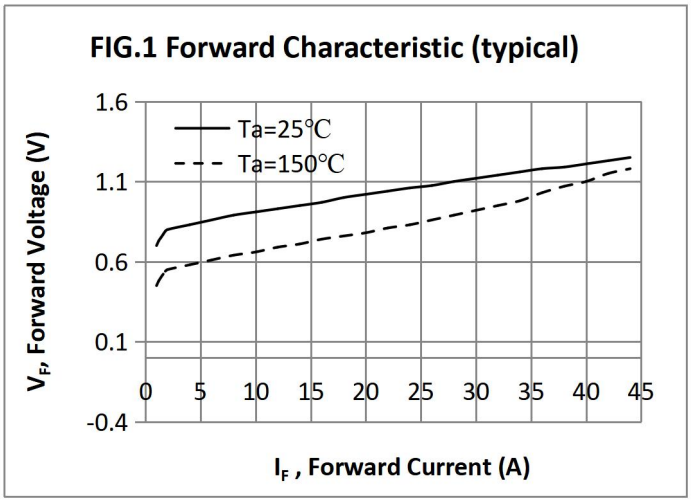
Electrical characteristics (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ.	Max.	Units
Breakdown voltage Blocking voltage	V_{BR}, V_R	I_R=100μA	400			V
Forward voltage (Per Diode)	V_F	I_F=40A, Tj =25°C		1.20	1.40	
		I_F=40 A, Tj =125°C		1.10	1.30	
Reverse leakage current(Per Diode)	I_R	V_R= V_{RRM}			3	μA
		Tj=150°C, V_R=400V			40	
Reverse recovery time(Per Diode)	trr	I_F=0.5A, I_R=1A, I_{RR}=0.25A		35	55	ns
		I_F=1A,V_R=30V, di/*dt* =200A/us		25	35	

Thermal characteristics

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

Electrical performance (typical single die)



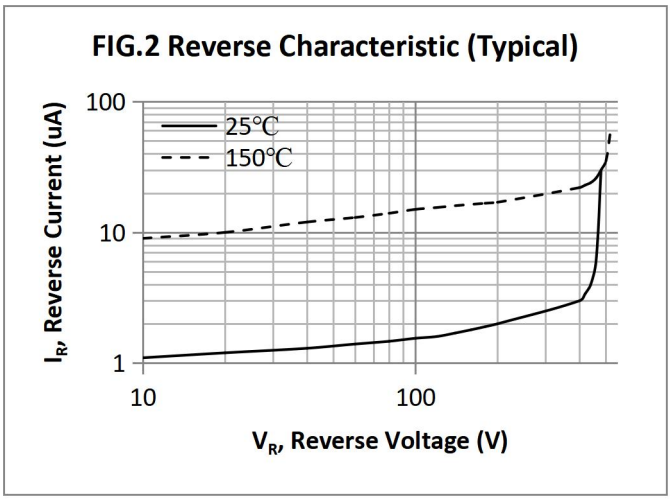


FIG.3 Reverse Recover Time vs. Current Rate of Change

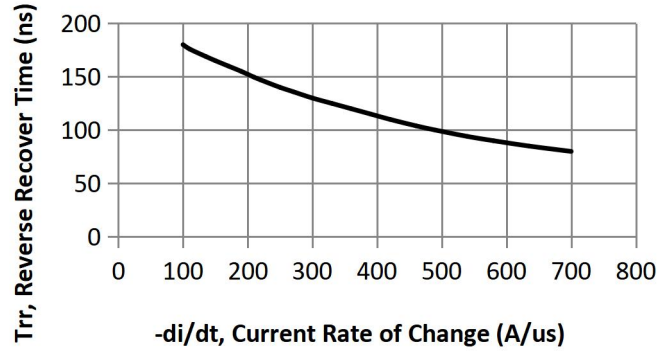


FIG.4 Reverse Recover Charge vs. Current Rate of Change

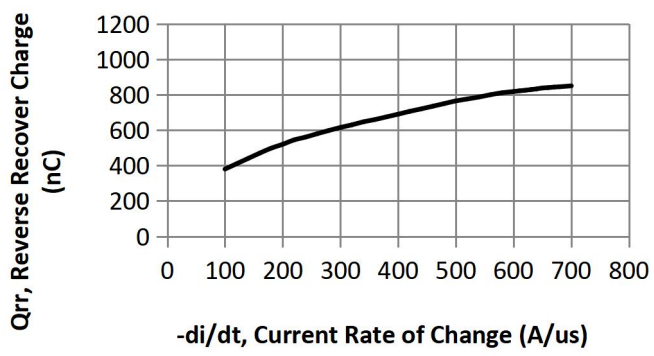


FIG.5 Reverse Recover Current vs. Current Rate of Change

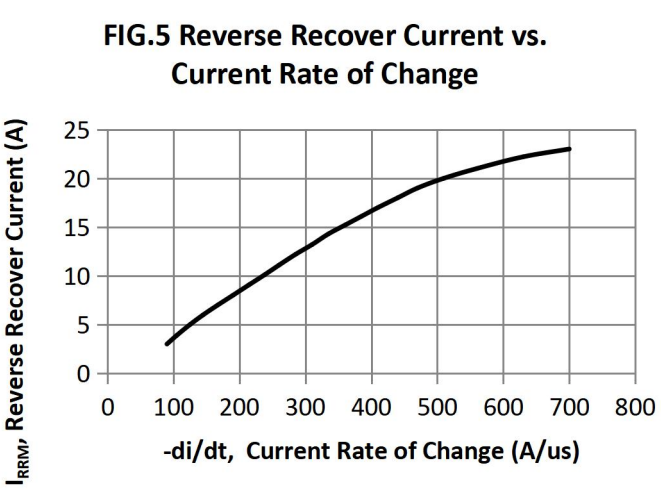


FIG.6 Average Forward Current vs. Case Temperature

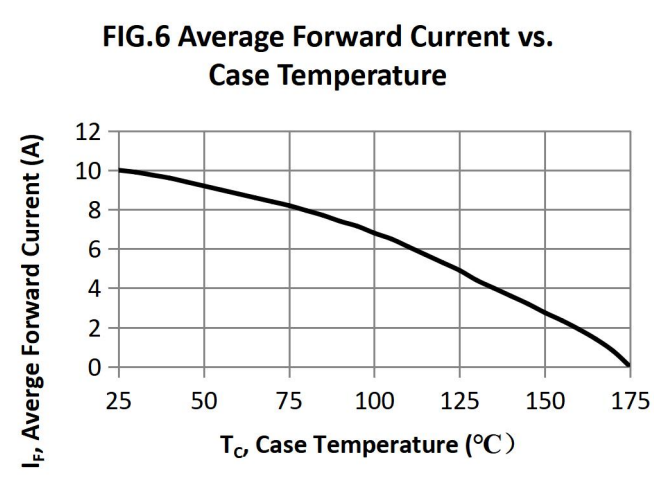
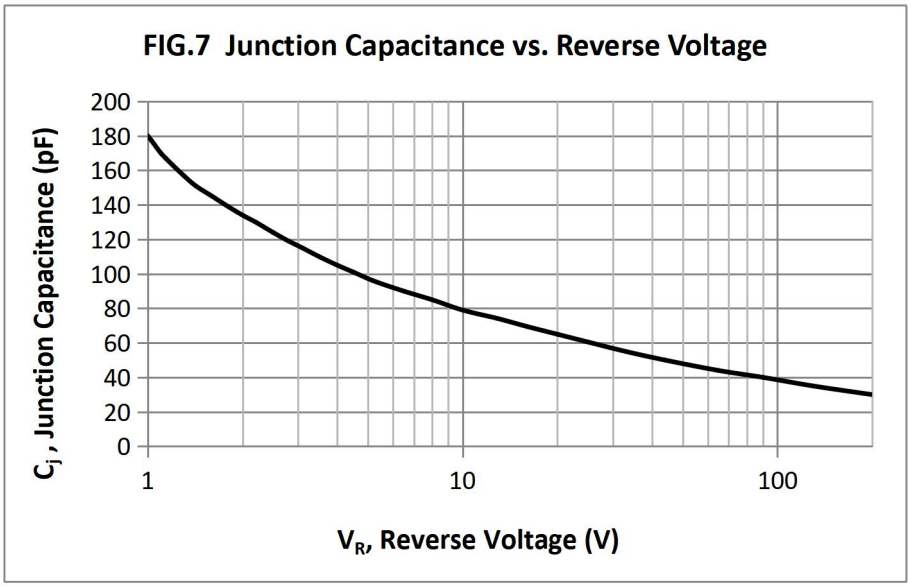
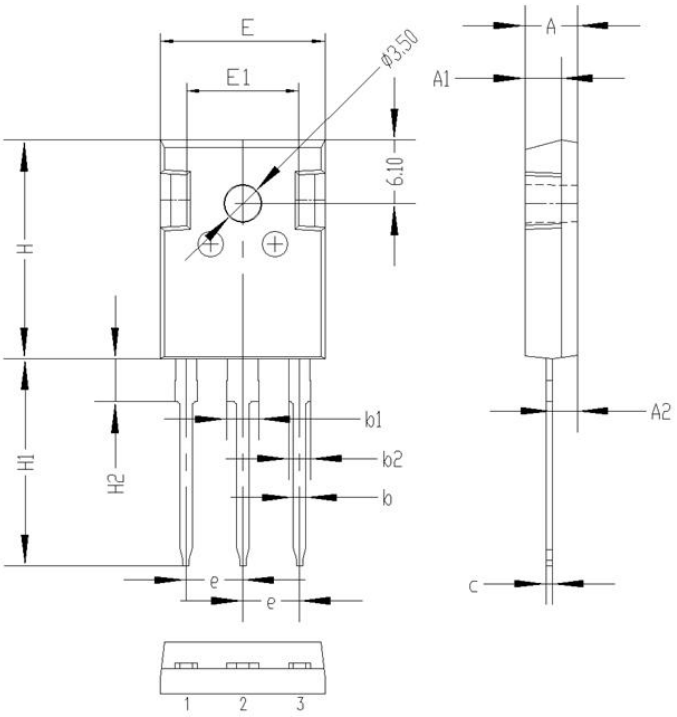


FIG.7 Junction Capacitance vs. Reverse Voltage



Package Information

TO-247 PACKAGE



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.80	5.20
A1	3.30	3.70
A2	2.10	2.50
b	1.00	1.40
b1	2.90	3.30
b2	1.90	2.30
c	0.40	0.80
e	5.25	5.65
E	15.6	16.0
E1	10.6	11.00
H	20.8	21.2
H1	19.4	20.4
H2	3.90	4.30
G	5.90	6.30
ΦP	3.30	3.70

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