

FRED

Ultrafast Soft Recovery Diode,20A

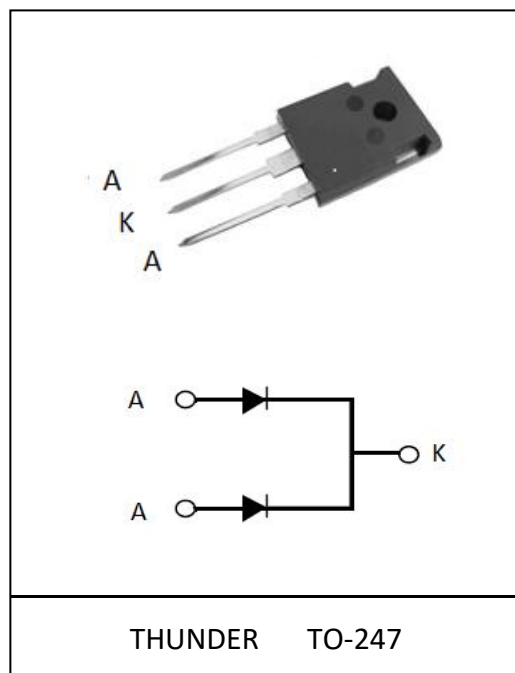
FEATURES:

- Ultrafast Recovery
- 175°C operating junction temperature
- Designed and qualified for industrial level

Benefits:

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

Product Summary	
V_R	600 V
$I_{F(AV)}$	2*10 A
t_{rr}	35 ns



Description/Applications

These diodes are optimized to reduce losses and EMI/RFI in high frequency power conditioning system. The softness of the recovery eliminates the need for a snubber in most applications. These devices are ideally suited for HF welding power converters and other applications where switching losses are not significant portion of the total losses.

Absolute Maximum Ratings

Parameter	Symbol	Test Conditions	Values	Units
Cathode to anode voltage	V_R		600	V
Continuous forward current	$I_{F(AV)}$	$T_c = 25^\circ\text{C}$	20	A
Single pulse forward current	I_{FSM}	$T_c = 25^\circ\text{C}$	200	
Maximum repetitive forward current	I_{FRM}	Square wave, 20 kHz	80	
Operating junction and storage temperatures	T_j, 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 (per Die)	V_F	$I_F=10 A$		1.35	1.55	
		$I_F=10 A$, $T_J=125^\circ C$		1.35	1.65	
Reverse leakage current	I_R	$V_R=V_R$ rated			1	μA
		$T_J=150^\circ C$, $V_R=V_R$ rated			100	
Reverse recovery time	t_{rr}	$I_F=0.5A$, $I_R=1A$, $I_{RR}=0.25A$		27	40	ns
		$I_F=1A$, $V_R=30V$, $di/dt=-200A/\mu s$		25	35	

Thermal characteristics

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	0.6	$^\circ C/W$

Electrical performance (Typical per die)

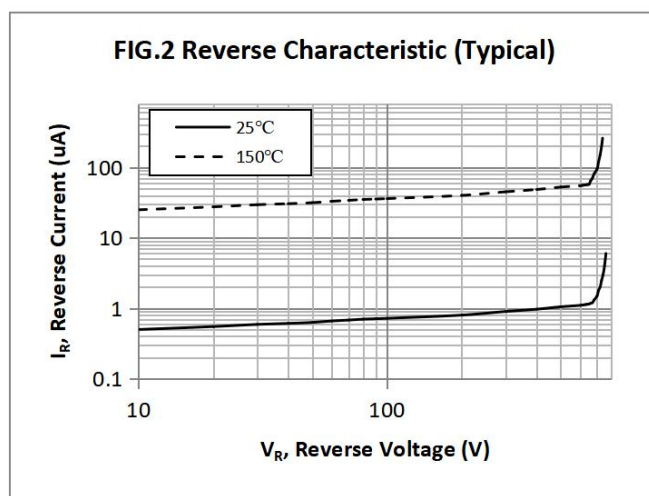
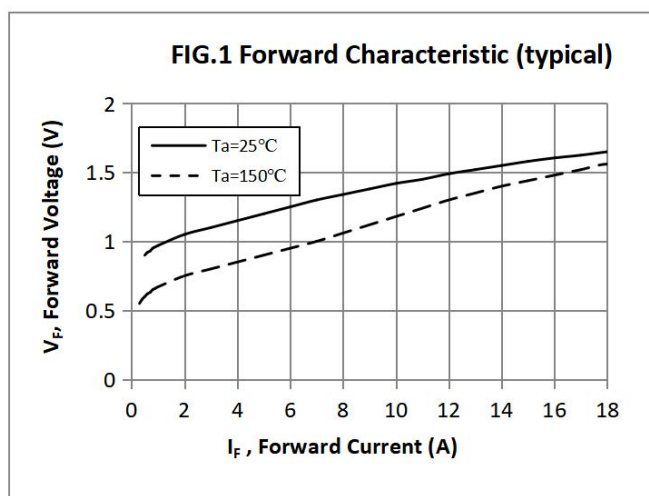


FIG.3 Reverse Recover Time vs. Current Rate of Change

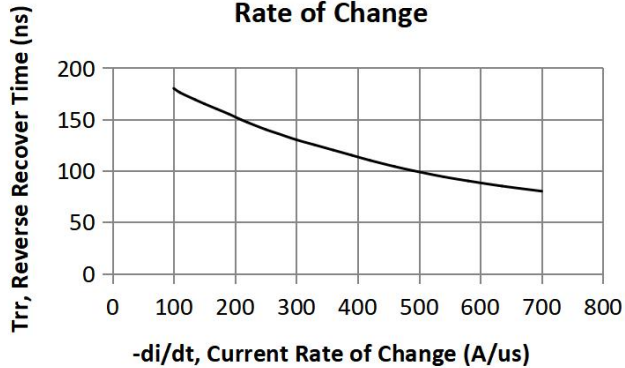


FIG.4 Reverse Recover Charge vs. Current Rate of Change

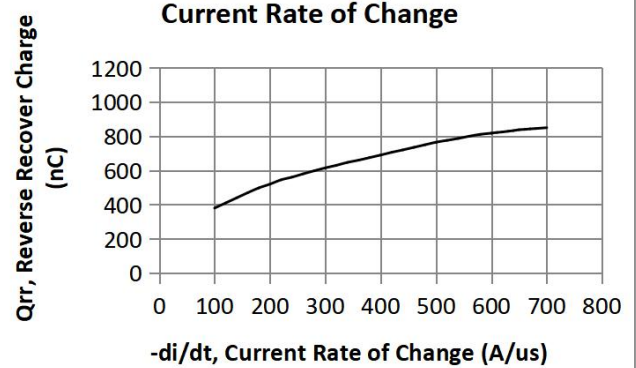


FIG.5 Reverse Recover Current vs. Current Rate of Change

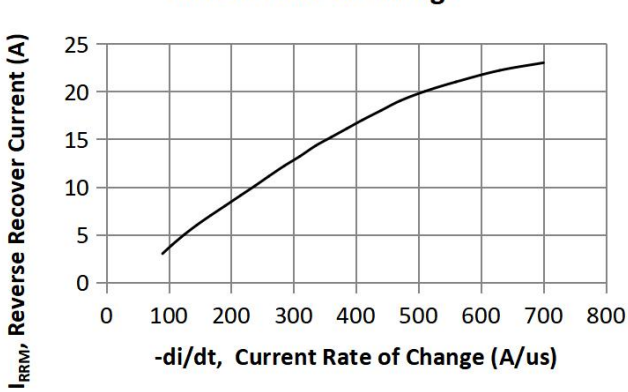


FIG.6 Average Forward Current vs. Case Temperature

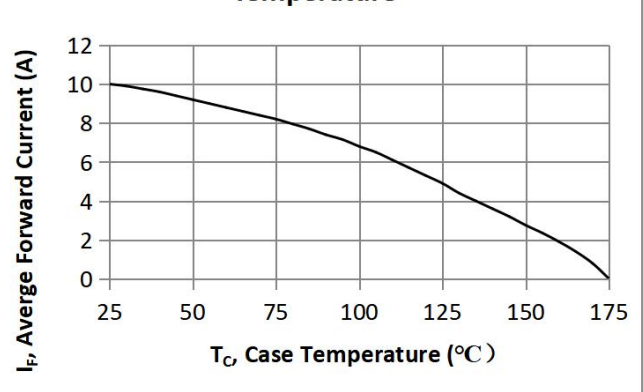
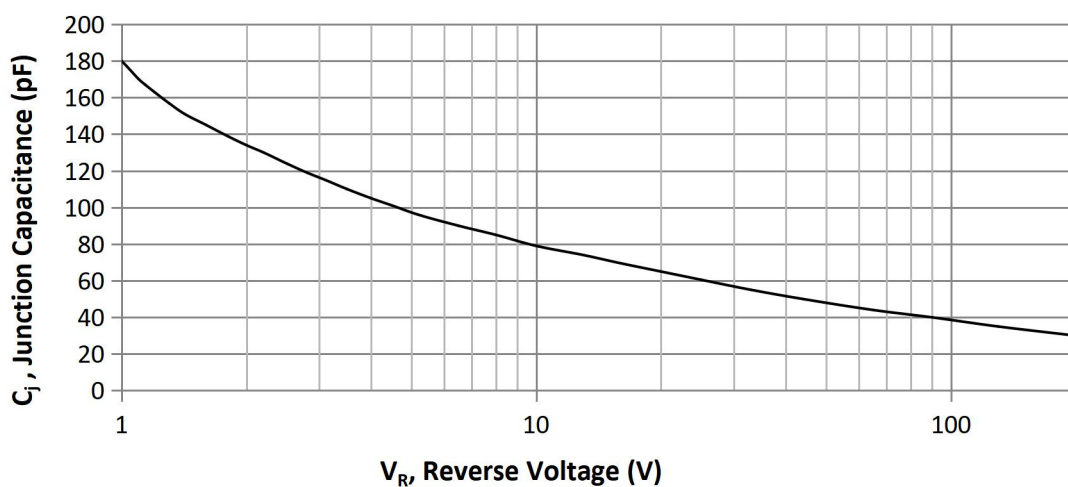
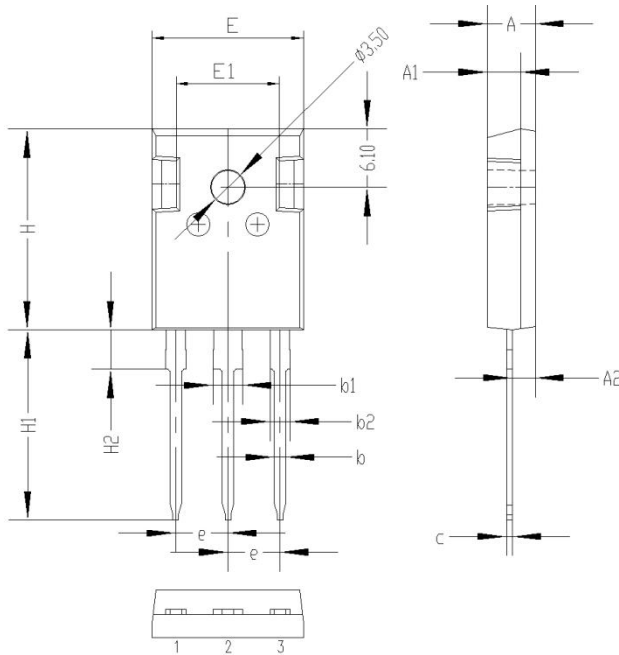


FIG.7 Junction Capacitance vs. Reverse Voltage



Package Information

TO-247 PACKAGE



Symbol	Unit mm		
	Min	Typ	Max
A	4.8	5.00	5.20
A1	3.3	3.5	3.7
A2	2.20	2.40	2.60
b	1.00	1.2	1.40
b1	2.90	3.10	3.30
b2	1.80	2.00	2.20
c	0.50	0.60	0.70
e	5.25	5.45	5.65
E	15.2	15.7	16.2
H	20.8	21	21.2
H1	19.5	20.0	20.5
H2	3.9	4.1	4.3
G	5.9	6.1	6.3
ΦP	3.30	3.50	3.70

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