

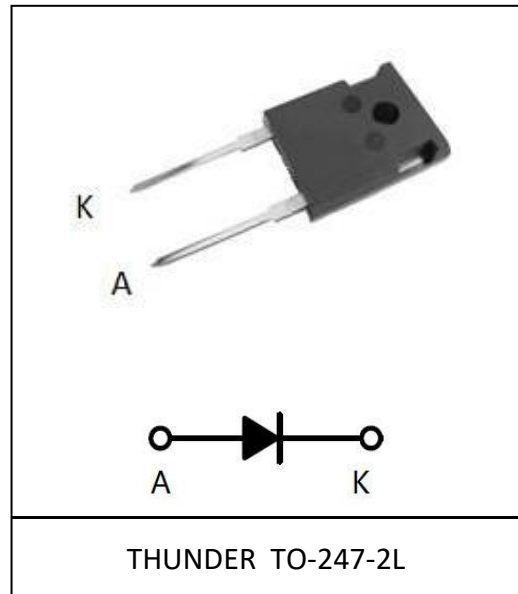
## FRED

### 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	
$V_R$	1200 V
$I_F(AV)$	30A
$t_{rr}$	32 ns



#### 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	$V_{RRM}$		1200	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	60	
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	$V_{BR}$ , $V_R$	$I_R=100\mu A$	1200			V
Forward voltage	$V_F$	$I_F=30A$		2.10	2.70	
		$I_F=30A, T_j=125^\circ C$		1.85	2.50	
Reverse leakage current	$I_R$	$V_R=V_{RRM}$			20	$\mu A$
		$T_j=150^\circ C, V_R=1200V$			200	
Reverse recovery time	$t_{rr}$	$I_F=0.5A, I_R=1A, I_{RR}=0.25A$		50	70	ns
		$I_F=1A, V_R=30V, di/dt=200A/\mu s$		32	50	
Reverse recovery time	$t_{rr}$	$I_F=30A, di_F/dt=-200A/\mu s,$ $V_R=400V, T_C=25^\circ C$		96		ns
Reverse recovery charge	$Q_{rr}$			523		nC
Maximum reverse recovery current	$I_{RRM}$			25		A

**Thermal characteristics**

Paramter	Symbol	Typ	Units
Junction-to-Case	$R_{\theta JC}$	0.8	$^\circ C/W$

## Electrical performance (typical)

FIG.1 Forward Characteristic(typ.)

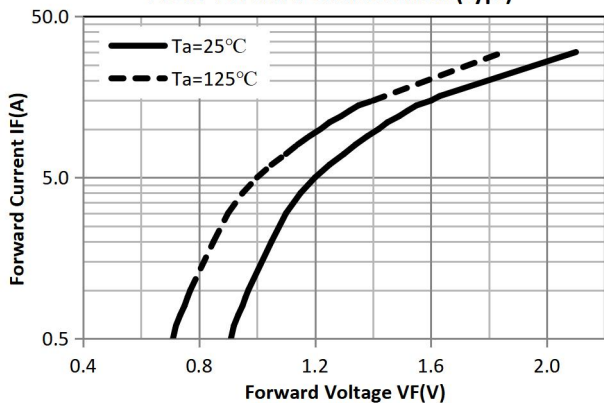


FIG.2 Reverse Characteristic(typ.)

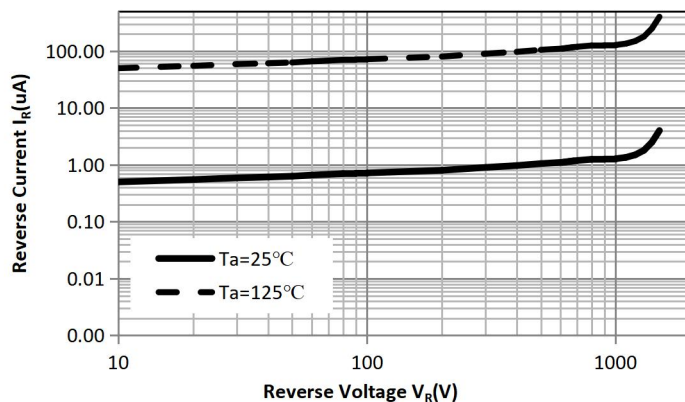


FIG.3 Reverse Recover Time vs. Current Rate of Change

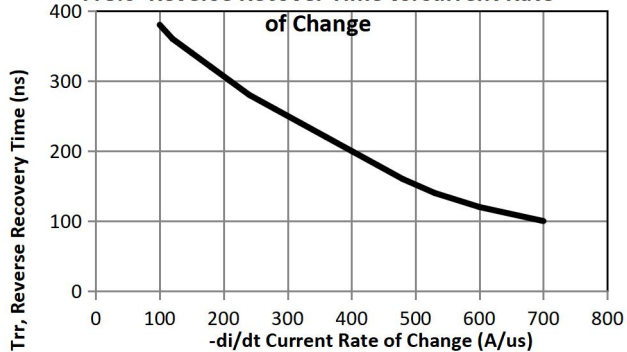


FIG.4 Reverse Recover Charge vs. Current Rate of Change

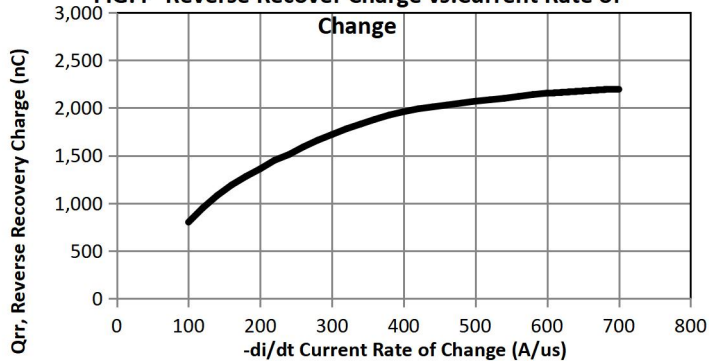


FIG.5 Reverse Recover Current vs. Current Rate of Change

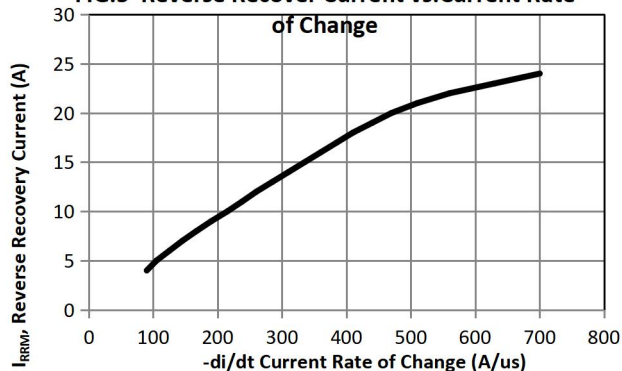


FIG.6 Average Forward Current vs. Case Temperature

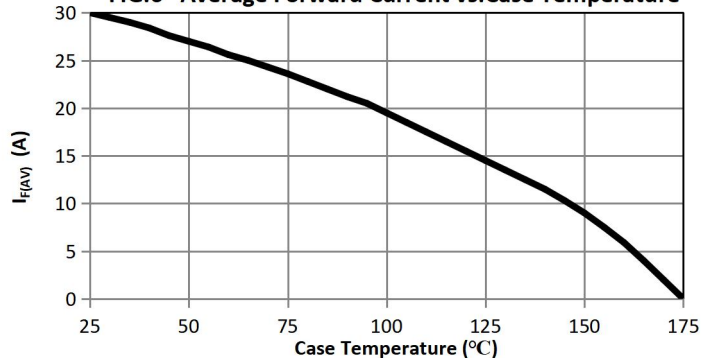
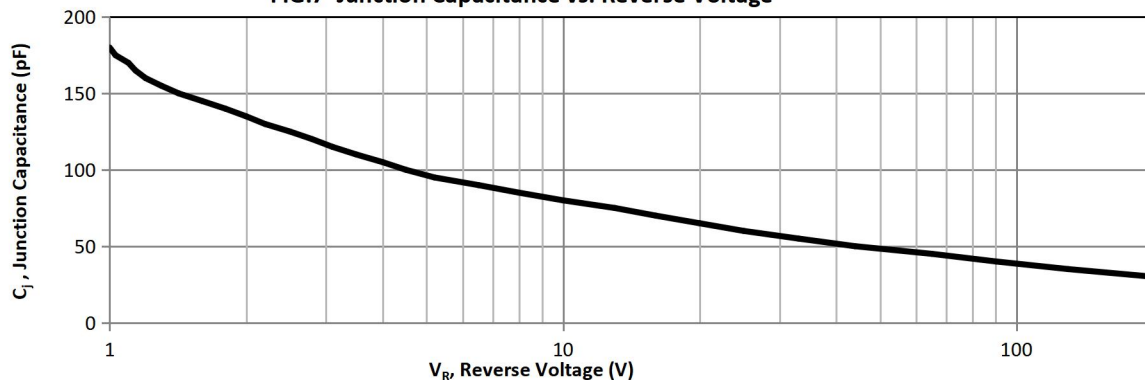
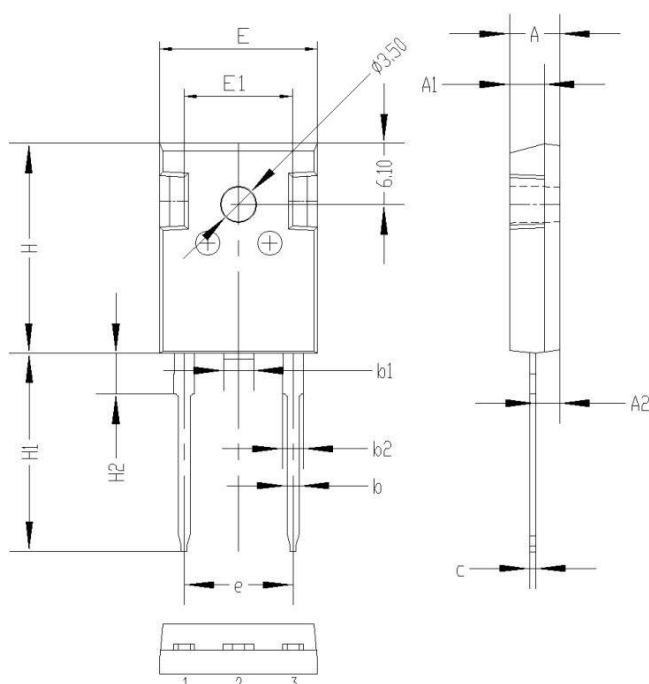


FIG.7 Junction Capacitance vs. Reverse Voltage



## Package Information

### TO-247-2L PACHAGE



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	2.80	3.20
b2	1.90	2.30
c	0.40	0.80
e	10.7	11.1
E	15.6	16.0
E1	10.6	11.0
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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### -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