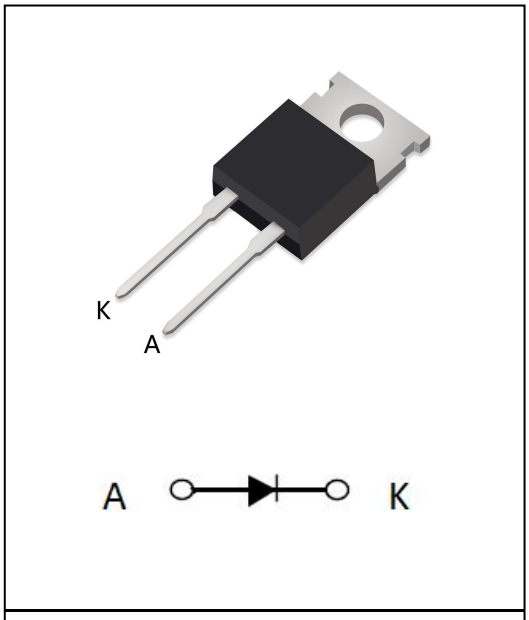
Thunder High Power Products

FRED
Ultrafast Soft Recovery Diode, 8A

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
$I_{F(AV)}$	8A
t_{rr}	34ns



THUNDER TO-220C-2L

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	$I_{F(AV)}$	Tc =110°C	8	A
Single pulse forward current	I_{FSM}	Tc =25°C	50	
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHZ	16	
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	1200			V
Forward voltage	V_F	I_F=8A		2.3	3.3	
		I_F=8A, Tj =125°C		2.1	3.0	
Reverse leakage current	I_R	V_R= V_{RRM}			20	μA
		Tj=150°C, V_R=1200V			200	
Reverse recovery time	t_{rr}	I_F=0.5A, I_R=1A, I_{RR}=0.25A		31	50	ns
Reverse recovery time	t_{rr}	I_F=8A, di_F/dt= - 200A/us, V_R=600V,T_C=25℃		34		ns
Reverse recovery charge	Q_{rr}			173		nC
Maximum reverse recovery current	I_{RRM}			4.6		A
Reverse recovery time	t_{rr}	I_F=8A, di_F/dt= - 200A/us, V_R=600V,T_C=125℃		78		ns
Reverse recovery charge	Q_{rr}			1148		nC
Maximum reverse recovery current	I_{RRM}			7.3		A

Thermal characteristics

Paramter	Symbol	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.9	℃/W

Electrical performance (typical)

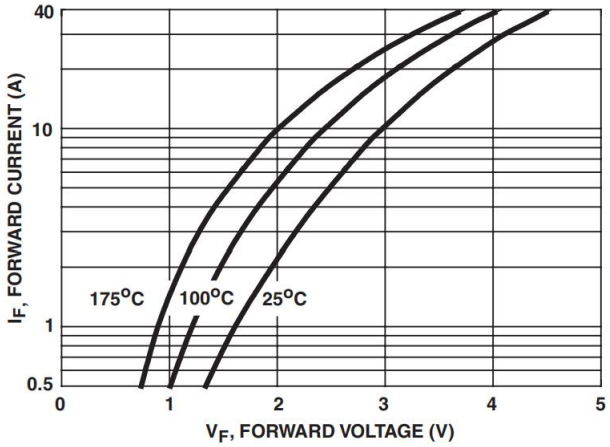


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

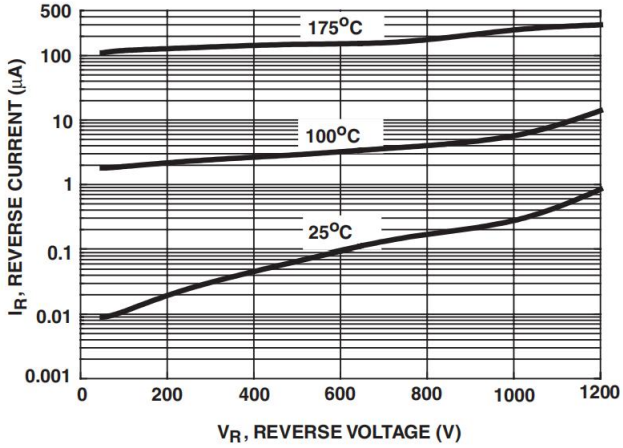


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

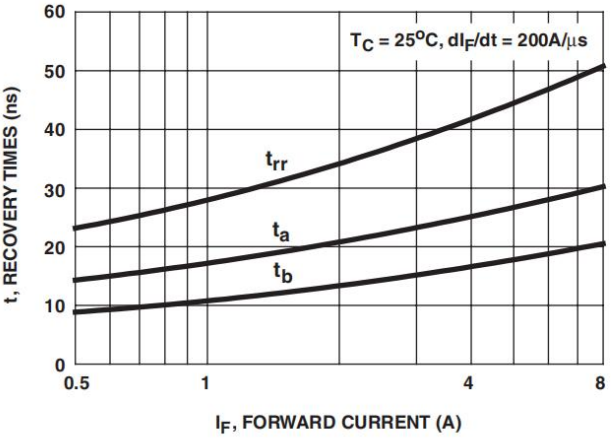


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

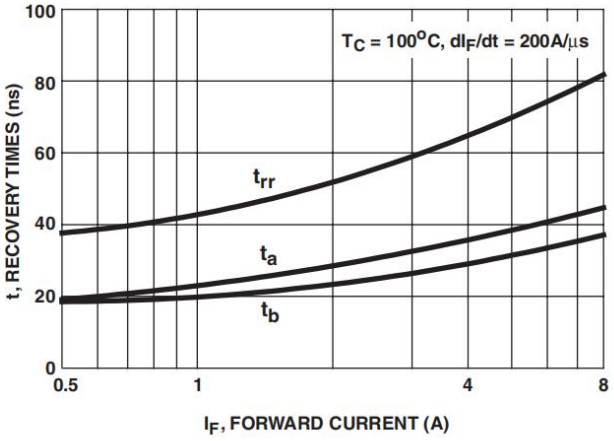


FIGURE 4. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

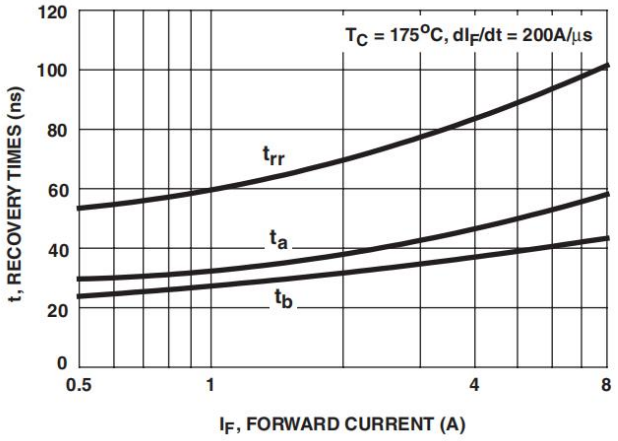


FIGURE 5. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

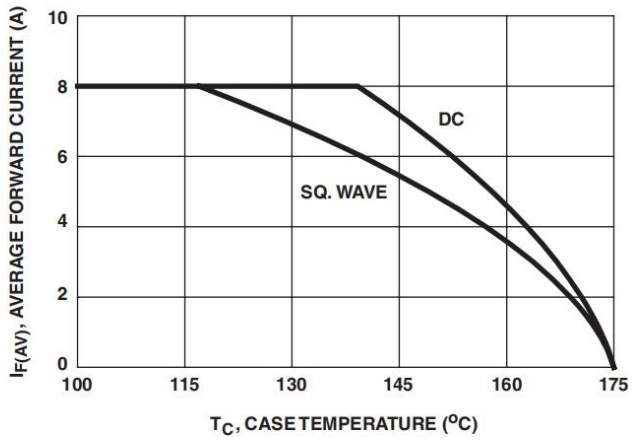


FIGURE 6. CURRENT DERATING CURVE

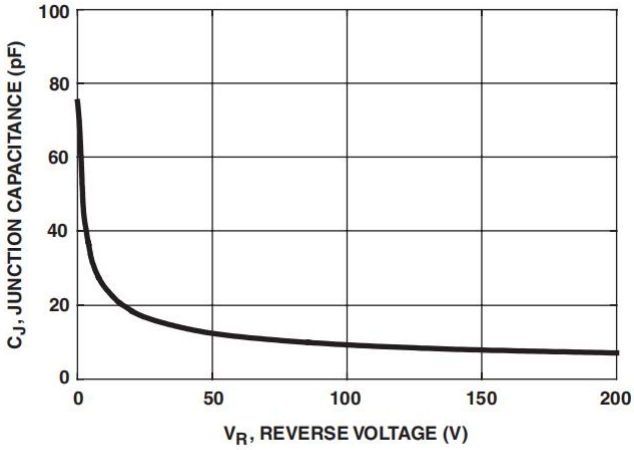
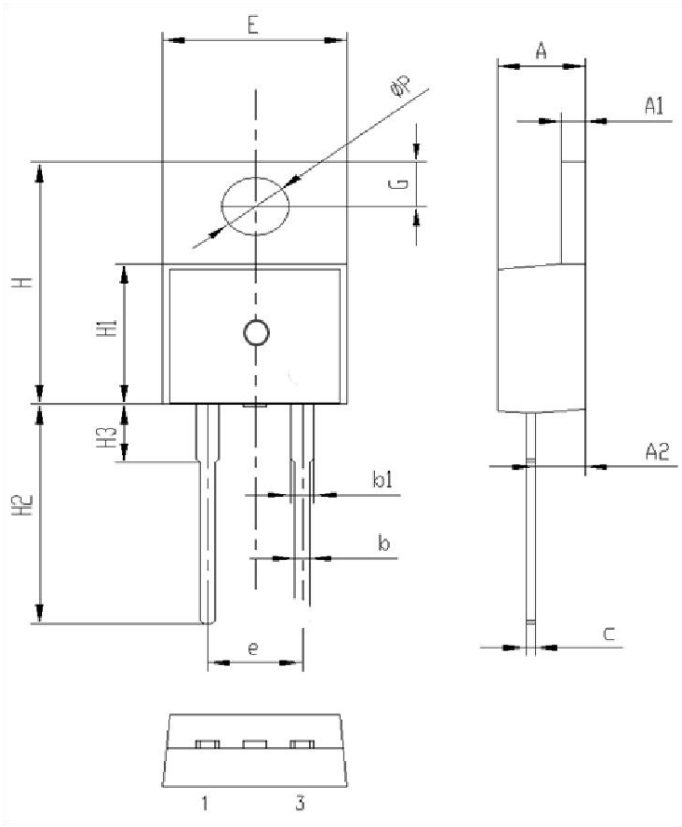


FIGURE 7. JUNCTION CAPACITANCE vs REVERSE VOLTAGE

Package Information

TO-220C-2L PACKAGE



基本尺寸

Symbol	单位 mm		
	Min	Nom	Max
A	4.30	4.50	4.70
A1	1.2	1.3	1.4
A2	2.30	2.40	2.50
b	0.60	0.8	1.00
b1	1.15	1.35	1.55
c	0.40	0.50	0.60
e	4.88	5.08	5.28
E	9.8	10.0	10.2
H	15.5	15.7	15.9
H1	9.00	9.20	9.40
H2	12.5	13.0	13.5
H3	2.80	3.0	3.20
G	2.60	2.8	3.00
ΦP	3.40	3.6	3.80

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-Headquarters

WuXi Thunder Microelectronics Incorporated Limited

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

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