

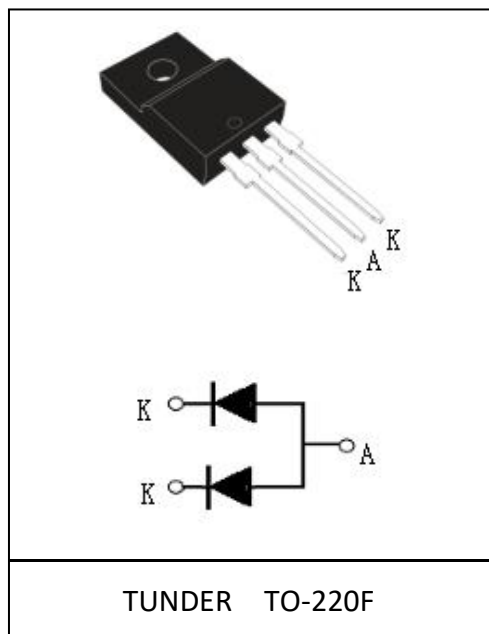
FRED

Ultrafast Soft Recovery Diode, 20A

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 | 600 V |
| $I_{F(AV)}$ | 2*10A |
| t_{rr} | 24 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} | | 600 | V |
| Continuous forward current | $I_{F(AV)}$ | $T_c = 110^\circ\text{C}$ | 20 | A |
| Single pulse forward current | I_{FSM} | $T_c = 25^\circ\text{C}$ | 180 | |
| 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 | $I_R=100\mu A$ | 600 | | | V |
| Forward voltage (Per Diode) | V_F | $I_F=10A$ | | 1.3 | 1.7 | |
| | | $I_F=10A, T_j=125^\circ C$ | | 1.2 | 1.6 | |
| Reverse leakage current(Per Diode) | I_R | $V_R=V_{RRM}$ | | | 20 | μA |
| | | $T_j=150^\circ C, V_R=600V$ | | | 200 | |
| Reverse recovery time(Per Diode) | t_{rr} | $I_F=0.5A, I_R=1A, I_{RR}=0.25A$ | | 35 | 50 | ns |
| | | $I_F=1A, V_R=30V, di/dt=200A/\mu s$ | | 24 | 35 | |

Thermal characteristics

| Paramter | Symbol | Typ | Units |
|------------------|-----------------|-----|--------------|
| Junction-to-Case | $R_{\theta JC}$ | 1.2 | $^\circ C/W$ |

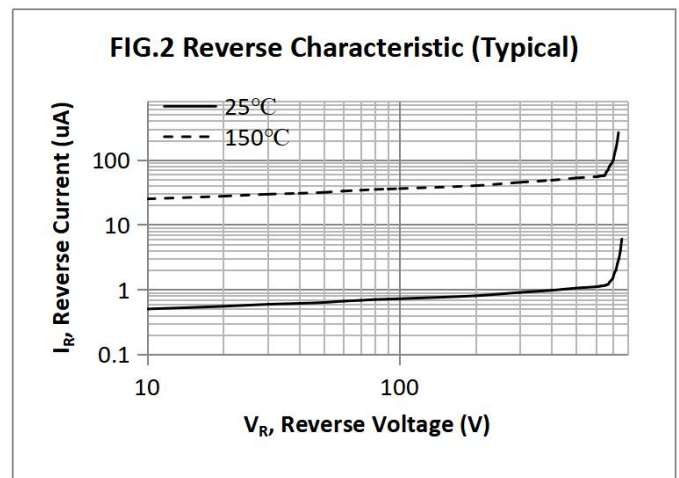
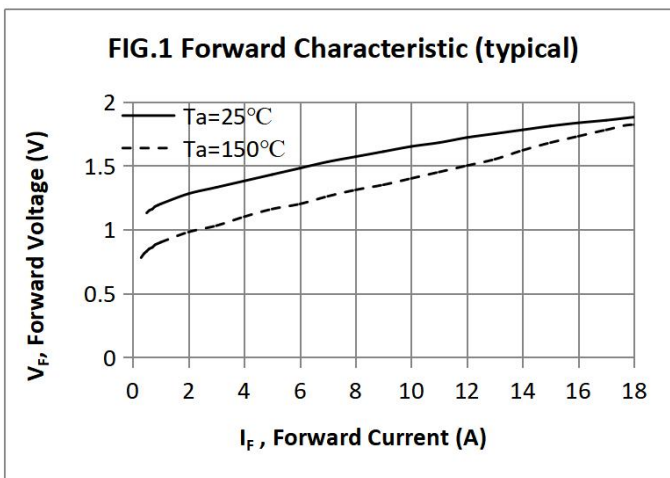
Electrical performance (typical)


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

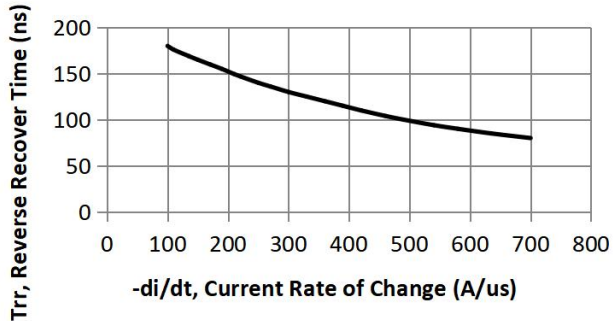


FIG.4 Reverse Recover Charge vs. Current Rate of Change

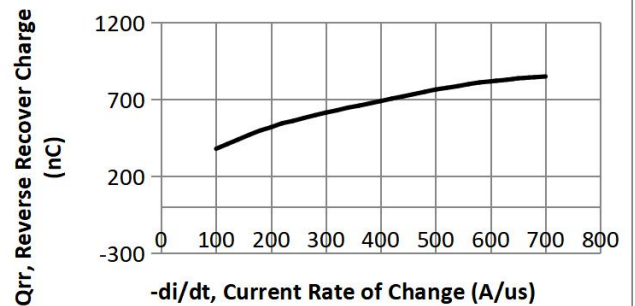


FIG.5 Reverse Recover Current vs. Current Rate of Change

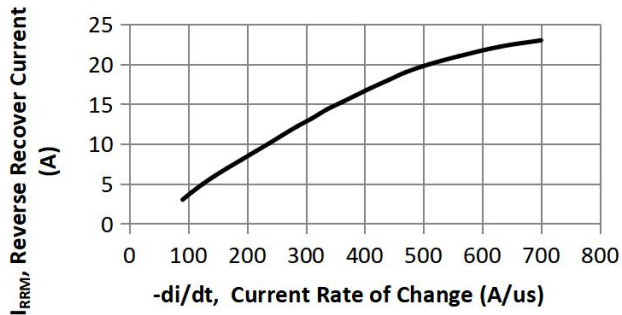


FIG.6 Average Forward Current vs. Case Temperature

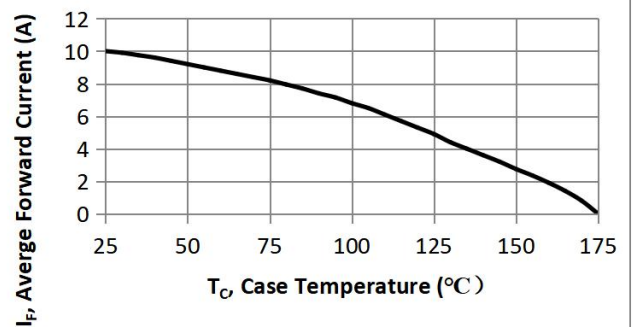
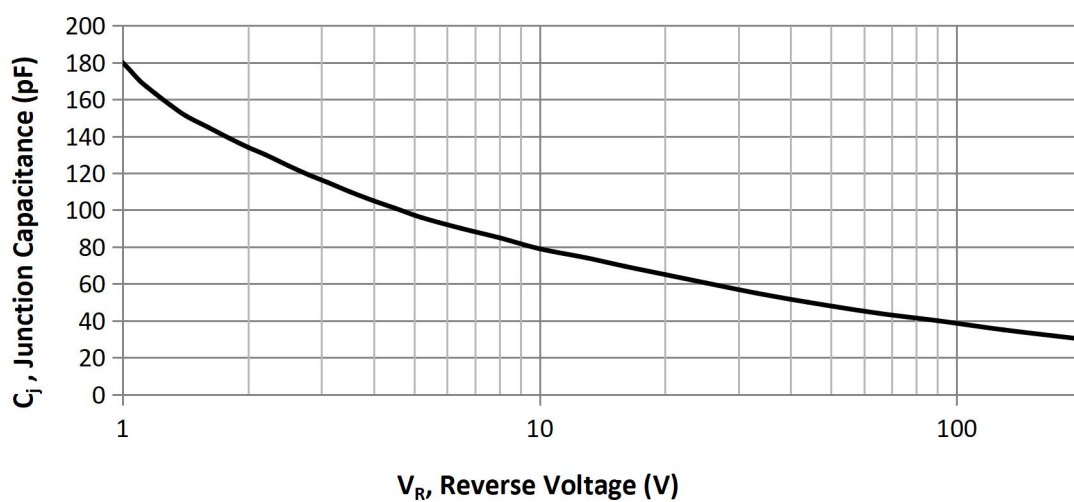
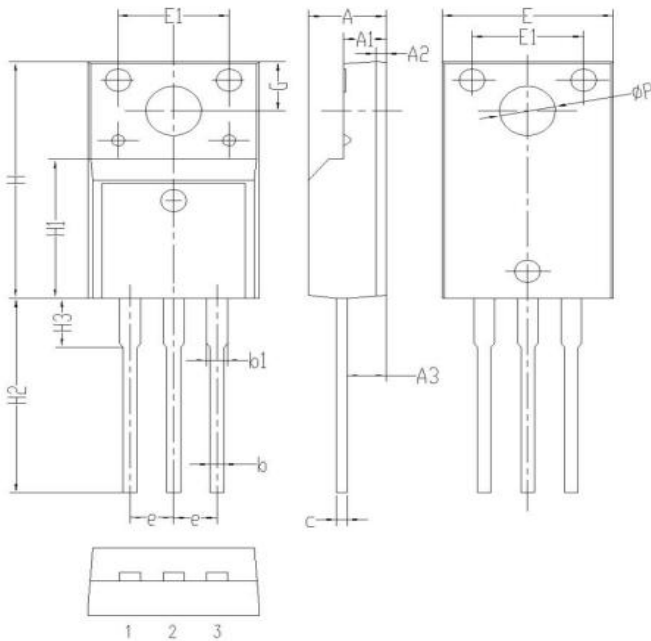


FIG.7 Junction Capacitance vs. Reverse Voltage



Package Information

TO-220F PACKAGE



| Symbol | 单位 mm | | |
|--------|-------|------|------|
| | Min | Nom | Max |
| A | 4.55 | 4.75 | 4.95 |
| A1 | 2.40 | 2.60 | 2.80 |
| A2 | 0.40 | 0.60 | 0.80 |
| b | 0.60 | 0.80 | 1.00 |
| c | 0.42 | 0.50 | 0.58 |
| e | 2.30 | 2.50 | 2.70 |
| E | 9.9 | 10.1 | 10.3 |
| E1 | 0.68 | 0.70 | 0.72 |
| H | 15.8 | 16.0 | 16.2 |
| H1 | 9.10 | 9.30 | 9.50 |
| H2 | 12.9 | 13.2 | 13.5 |
| H3 | 3.10 | 3.30 | 3.50 |
| G | 3.10 | 3.30 | 3.50 |
| ΦP | 3.00 | 3.20 | 3.40 |

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