# FRED
# Ultrafast Soft Recovery Diode, 600V, 30A×2

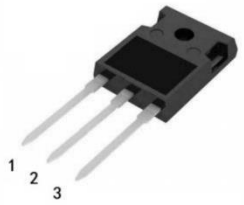
## Description:

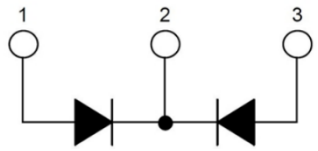
These diodes are optimized to less losses and EMI/RFI in high frequency power conditioning system. The soft recovery character of the diodes offers buffer in most applications. These devices are suited for power converters and other applications where the switching losses are not significant portion of the total losses.

## Features:

- Ultrafast Recovery
- 175℃ operating junction temperature
- High frequency operation
- Low IR value
- High surge capacity
- Epitaxial chip construction

| Product Summary | |
|---|---|
| $V_R$ | 600 V |
| $I_{F(AV)}$ | 2×30 A |
| $t_{rr}$ | 35 ns |




## Applications:

- Switched mode power supply
- Freewheeling diode, Snubber diode
- UPS

| **Absolute Maximum Ratings** | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Test Conditions** | | **Values** | | **Units** |
| Repetitive peak reverse voltage | $V_{RRM}$ | | | 600 | | V |
| Continuous forward current | $I_{F(AV)}$ | $T_A$=110℃ | | 30 | | A |
| Single pulse forward current | $I_{FSM}$ | $T_A$=25℃ | | 480 | | A |
| Maximum repetitive forward current | $I_{FRM}$ | Square wave, 20kHZ | | 100 | | A |
| Operating junction | $T_j$ | | | 175 | | ℃ |
| Storage temperatures | $T_{stg}$ | | | -55 to +175 | | ℃ |
| **Electrical characteristics (Ta=25℃unless otherwise specified)** | | | | | | |
| **Parameter** | **Symbol** | **Test Conditions** | **Min.** | **Typ.** | **Max.** | **Units** |
| Breakdown voltage<br>Blocking voltage | $V_{BR}$<br>$V_R$ | $I_R$=100μA | 600 | | | V |
| Forward voltage | $V_F$ | $I_F$=30 A | | 1.80 | 2.60 | V |
| | | $I_F$=30 A, Tj =125℃ | | 1.60 | 2.40 | V |
| Reverse leakage current | $I_R$ | $V_R$= $V_{RRM}$ | | | 30 | μA |
| | | $T_j$=150℃, $V_R$=600V | | | 300 | μA |
| Reverse recovery time | trr | $I_F$=0.5A, $I_R$=1A, $I_{RR}$=0.25A | | | 40 | ns |
| | | $I_F$=1A,$V_R$=30V, di/dt =200A/us | | 23 | 35 | ns |
| **Thermal characteristics** | | | | | | |
| **Parameter** | **Symbol** | **Typ** | | **MAX** | | **Units** |
| Junction-to-Case | $R_{thJC}$ | - | | 0.70 | | ℃/W |

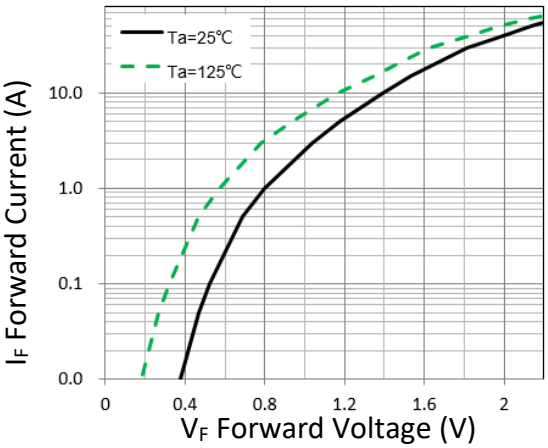



**Figure 1.** Forward Characteristic(typ.)

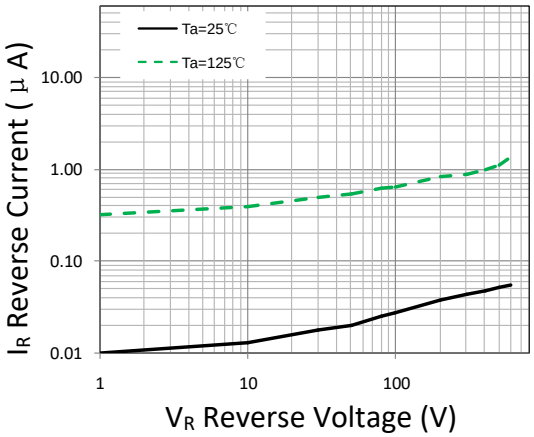
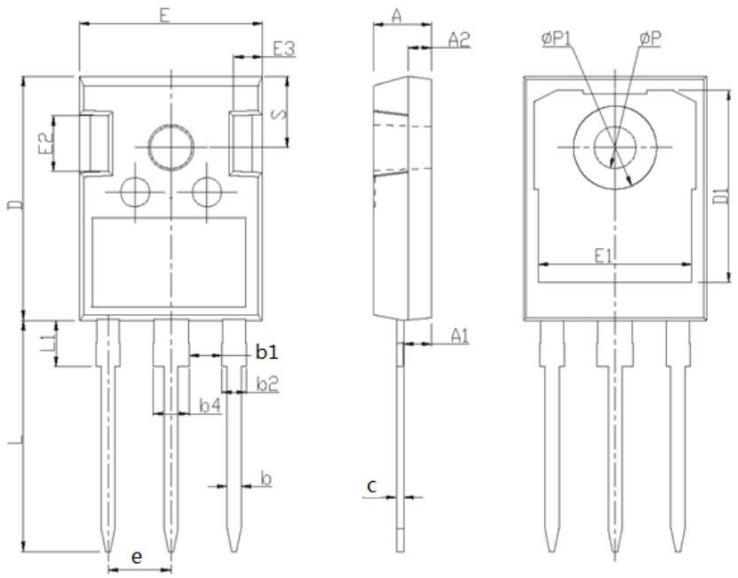



**Figure 2.** Reverse Characteristic (typ.)

**Package Information**

**TO-247 PACKAGE**




| Symbol | Dimensions(millimeters) | |
|---|---|---|
| | Min. | Max. |
| A | 4.80 | 5.20 |
| A1 | 2.21 | 2.61 |
| A2 | 1.85 | 2.15 |
| b | 1.10 | 1.30 |
| b1 | 2.55 | 2.85 |
| b2 | 1.90 | 2.15 |
| c | 0.50 | 0.75 |
| D | 20.70 | 21.30 |
| D1 | 16.25 | 16.85 |
| e | 5.25 | 5.65 |
| E | 15.60 | 16.00 |
| E1 | 13.06 | 13.46 |
| E2 | 4.80 | 5.20 |
| E3 | 1.80 | 2.50 |
| L | 19.62 | 20.22 |
| L1 | 4.00 | 4.30 |
| ΦP | 3.40 | 3.80 |
| ΦP1 | 7.00 | 7.30 |
| S | 5.95 | 6.35 |