

## FRED Ultrafast Soft Recovery Diode, 60A/1200V

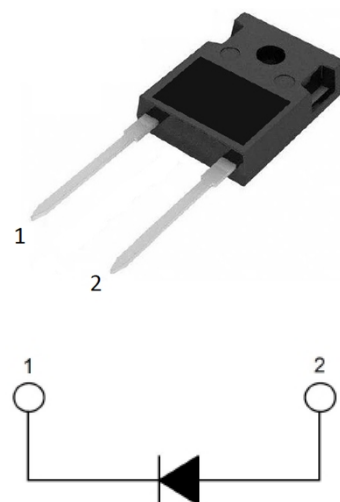
### Description

These diodes are optimized to low loss 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°C operating junction temperature
- High frequency operation
- Low IR value
- High surge capacity
- Epitaxial chip construction

| Product Summary |        |
|-----------------|--------|
| $V_R$           | 1200 V |
| $I_{F(AV)}$     | 60A    |
| $t_{rr}$        | 35ns   |



### Application

- Freewheeling diode, snubber diode
- Rectifiers in switched mode power supply
- Uninterruptible power supplies(UPS)

### Absolute Maximum Ratings

| Parameter                          | Symbol      | Test Conditions           | Values      | Units            |
|------------------------------------|-------------|---------------------------|-------------|------------------|
| Repetitive peak reverse voltage    | $V_{RRM}$   |                           | 1200        | V                |
| Continuous forward current         | $I_{F(AV)}$ | $T_C = 110^\circ\text{C}$ | 60          | A                |
| Single pulse forward current       | $I_{FSM}$   | $T_C = 25^\circ\text{C}$  | 380         |                  |
| Maximum repetitive forward current | $I_{FRM}$   | Square wave, 20kHz        | 110         |                  |
| 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<br>Blocking voltage                           | $V_{BR}, V_R$ | $I_R=100\mu A$                    | 1200 |      |      | V       |
| Forward voltage<br>(Per Diode)                                  | $V_F$         | $I_F=60 A$                        |      | 2.80 | 3.30 |         |
|                                                                 |               | $I_F=60 A, T_j =125^\circ C$      |      | 2.40 | 3.00 |         |
| Reverse leakage<br>current(Per Diode)                           | $I_R$         | $V_R= 1200V$                      |      |      | 50   | $\mu A$ |
|                                                                 |               | $T_j=150^\circ C, V_R=1200V$      |      |      | 500  |         |
| Reverse recovery<br>time(Per Diode)                             | $t_{rr}$      | $I_F=0.5A, I_R=1A, I_{RR}=0.25A$  |      |      | 80   | ns      |
|                                                                 |               | $I_F=1A, V_R=30V, di/dt =200A/us$ |      | 35   | 50   |         |

### Thermal characteristics

| Symbol          | Parameter        | Typ. | Max. | Units        |
|-----------------|------------------|------|------|--------------|
| $R_{\theta JC}$ | Junction-to-Case | —    | 0.70 | $^\circ C/W$ |

### Typical Characteristics

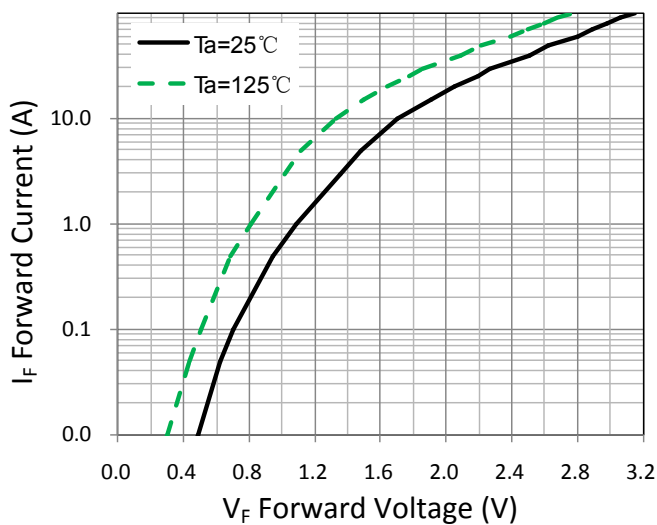


Figure 1. Forward Characteristic(typ.)

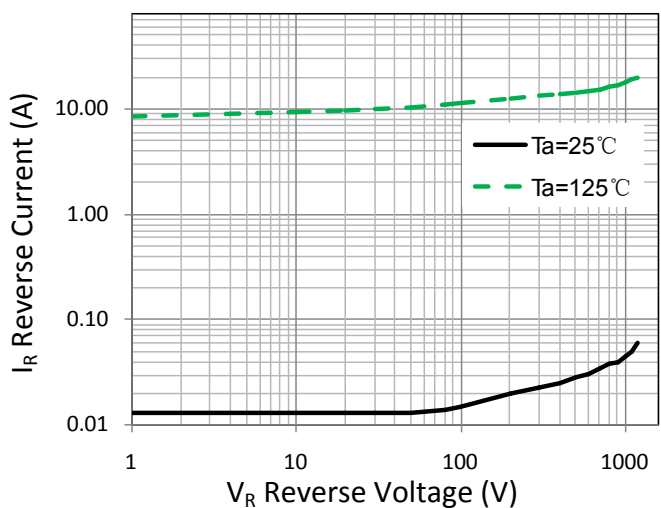
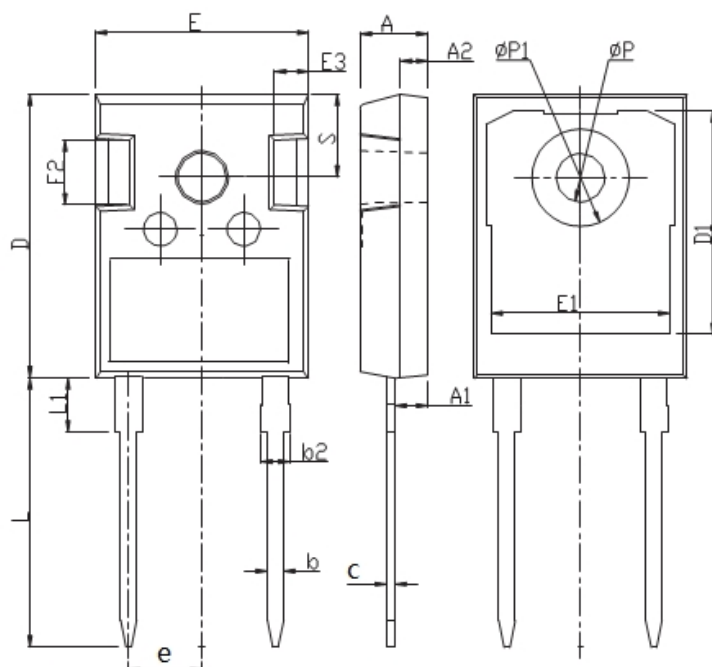


Figure 2. Reverse Characteristic (typ.)

### Package Information (TO-247-2 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  |
| 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  |
| $\phi P$  | 3.40                    | 3.80  |
| $\phi P1$ | 7.00                    | 7.30  |
| S         | 5.95                    | 6.35  |