

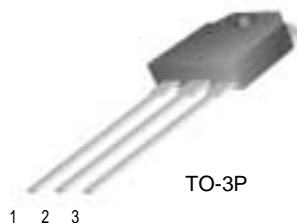
## FFA20U120DN

### Features

- High voltage and high reliability
- High speed switching
- Low forward voltage

### Applications

- General purpose
- Switching mode power supply
- Free-wheeling diode for motor application
- Power switching circuits



## ULTRA FAST RECOVERY POWER RECTIFIER

### Absolute Maximum Ratings (per diode) $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol         | Parameter   | Value        | Units            |
|----------------|---|--------------|------------------|
| $V_{RRM}$      | Peak Repetitive Reverse Voltage                                 | 1200         | V                |
| $I_{F(AV)}$    | Average Rectified Forward Current @ $T_C = 100^\circ\text{C}$   | 20           | A                |
| $I_{FSM}$      | Non-repetitive Peak Surge Current<br>60Hz Single Half-Sine Wave | 120          | A                |
| $T_J, T_{STG}$ | Operating Junction and Storage Temperature                      | - 65 to +150 | $^\circ\text{C}$ |

### Thermal Characteristics

| Symbol          | Parameter                                    | Value | Units                     |
|-----------------|--|-------|---------------------------|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case | 0.84  | $^\circ\text{C}/\text{W}$ |

### Electrical Characteristics (per diode) $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol     | Parameter   | Min.                      | Typ. | Max. | Units |               |
|------------|---|---------------------------|------|------|-------|---------------|
| $V_{FM}^*$ | Maximum Instantaneous Forward Voltage<br>$I_F = 20\text{A}$                                   | $T_C = 25^\circ\text{C}$  | -    | -    | 3.5   | V             |
|            |   | $T_C = 100^\circ\text{C}$ | -    | -    | 3.2   |               |
| $I_{RM}^*$ | Maximum Instantaneous Reverse Current<br>@ rated $V_R$  | $T_C = 25^\circ\text{C}$  | -    | -    | 20    | $\mu\text{A}$ |
|            |   | $T_C = 100^\circ\text{C}$ | -    | -    | 1.2   | mA            |
| $t_{rr}$   | Maximum Reverse Recovery Time   | -                         | -    | 120  | ns    |               |
| $I_{rr}$   | Maximum Reverse Recovery Current  | -                         | -    | 10   | A     |               |
| $Q_{rr}$   | Maximum Reverse Recovery Charge<br>( $I_F = 20\text{A}$ , $di/dt = 200\text{A}/\mu\text{s}$ ) | -                         | -    | 500  | nC    |               |
| $W_{AVL}$  | Avalanche Energy  | 1.0                       | -    | -    | mJ    |               |

\* Pulse Test: Pulse Width=300 $\mu\text{s}$ , Duty Cycle=2%

# Typical Characteristics

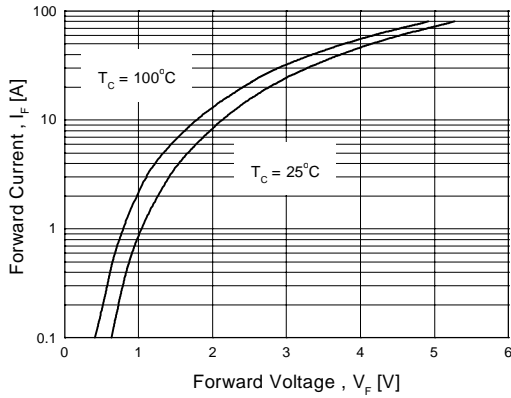


Figure 1. Typical Forward Voltage Drop vs. Forward Current

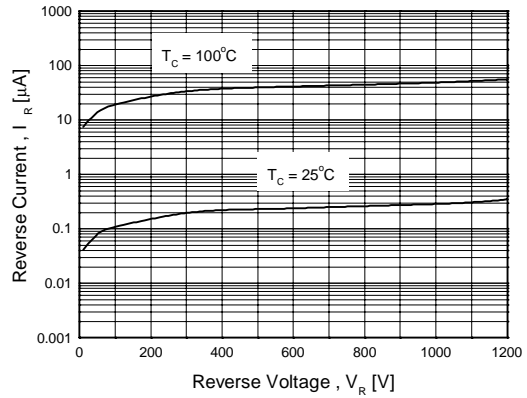


Figure 2. Typical Reverse Current vs. Reverse Voltage

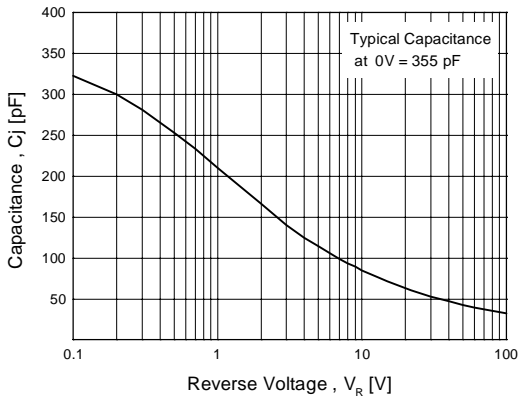


Figure 3. Typical Junction Capacitance

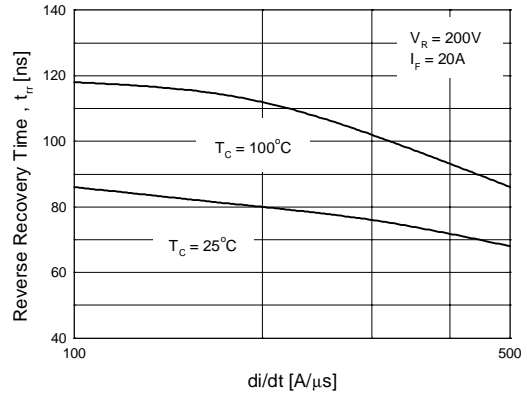


Figure 4. Typical Reverse Recovery Time vs. di/dt

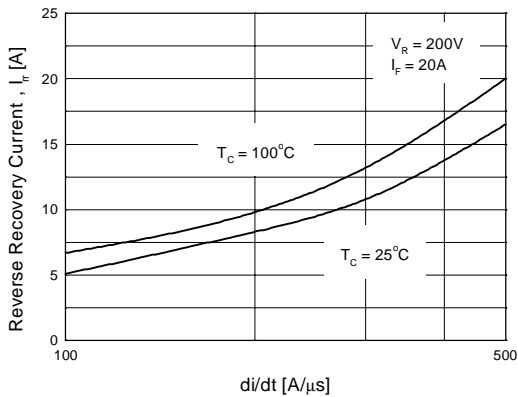


Figure 5. Typical Reverse Recovery Current vs. di/dt

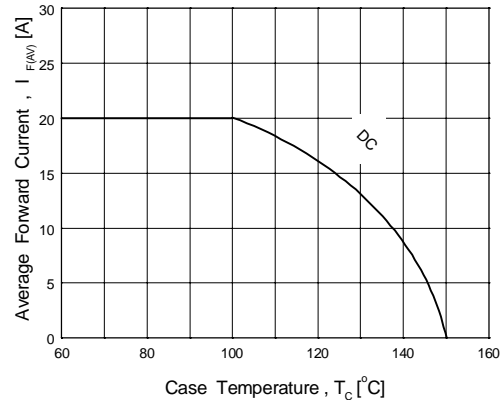
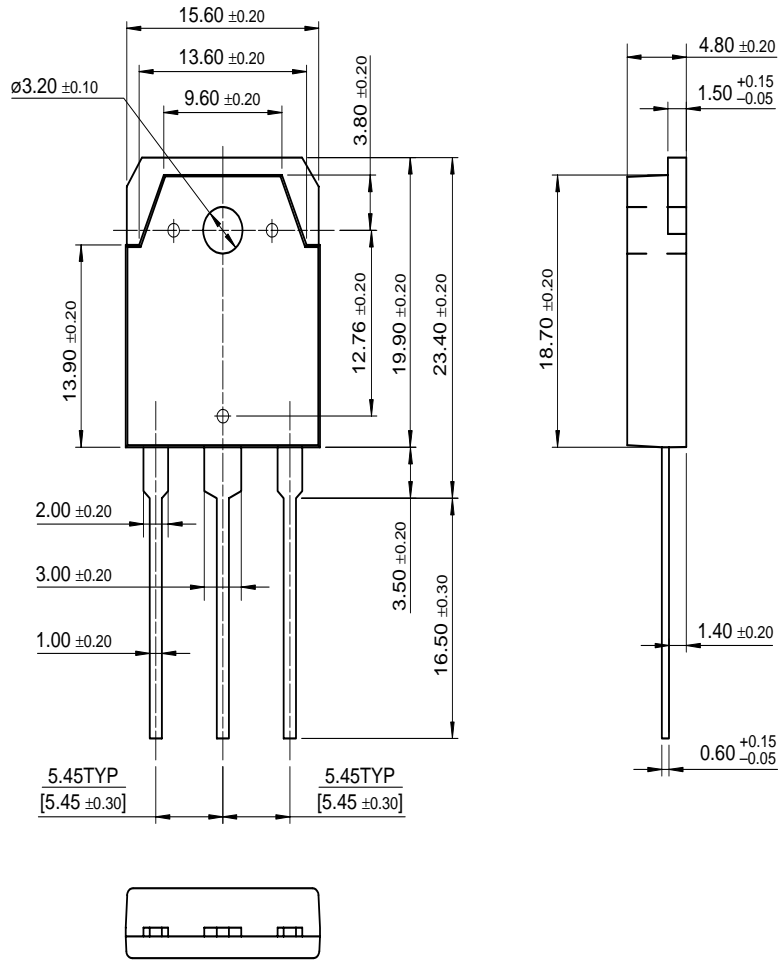


Figure 6. Forward Current Derating Curve

# Package Dimensions

## TO-3P

FFA20U120DN



Dimensions in Millimeters

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| CoolFET™             | GTO™                | QT Optoelectronics™ |      |
| CROSSVOLT™           | HiSeC™              | Quiet Series™       |      |
| DOME™                | ISOPANAR™           | SuperSOT™-3         |      |
| E <sup>2</sup> CMOS™ | MICROWIRE™          | SuperSOT™-6         |      |
| EnSigna™             | OPTOLOGIC™          | SuperSOT™-8         |      |
| FACT™                | OPTOPLANAR™         | SyncFET™            |      |
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