

## 80A 300V Fast recovery diode

### 1 Description

80A, 300V Ultrafast Diodes The products are made by GPP process They have a low forward. These devices are intended for use as energy steering/clamping diodes and rectifiers in a variety of switching power supplies and other power switching applications.

### 2 Features

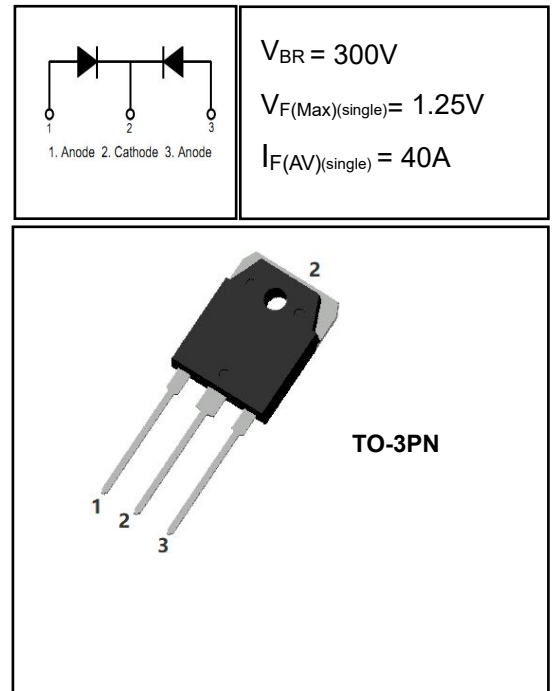
- Low forward voltage drop
- Glass Passivated Die Construction
- Low leakage current
- High reliability
- High forward surge current capability

### 3 Applications

- Switching Power Supply
- Power Switching Circuits
- Inverter power supply

### 4 install

- Recommended torque value (TO-247): 0.8 N.m
- Recommended torque value (TO-3PN/3P): 0.8 N.m
- Maximum torque value (TO-247): 1.2 N.m
- Maximum torque value (TO-3PN/3P): 1.1 N.m



## 5 Electrical Characteristics

### 5.1 Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

| PARAMETER                                 |          | SYMBOL      | VALUE   | UNIT |
|---|----------|-------------|---------|------|
| Peak Repetitive Reverse Voltage           |          | $V_{RRM}$   | 300     | V    |
| Working Peak Reverse Voltage              |          | $V_{RWM}$   | 300     | V    |
| DC Blocking Voltage                       |          | $V_R$       | 300     | V    |
| Average Rectified Forward Current(single) | Tc=135°C | $I_{F(AV)}$ | 40      | A    |
| Average Rectified Forward Current(double) | Tc=135°C |             | 80      | A    |
| Repetitive Peak Surge Current(single)     |          | $I_{FRM}$   | 50      | A    |
| Nonrepetitive Peak Surge Current(single)  | tp=8.3ms | $I_{FSM}$   | 400     | A    |
| Avalanche Energy(single)                  | L=1mH    | $E_{AS}$    | 100     | mJ   |
| Operating Junction Temperature Range      |          | $T_j$       | -55~150 | °C   |
| Storage Temperature Range                 |          | $T_{stg}$   | -55~150 | °C   |

### 5.2 Thermal Characteristics

| PARAMETER                                 | SYMBOL     | VALUE | UNIT |
|---|------------|-------|------|
| Thermal Resistance, Junction to Case-sink | $R_{thJC}$ | 0.75  | °C/W |

## 5.3 Electrical Characteristics (Tc=25°C, unless otherwise noted)

| PARAMETER                             | SYMBOL           | TEST CONDITION                                       | MIN | TYP  | MAX  | UNIT |
|---------------------------------------|------------------|--|-----|------|------|------|
| Maximum Instantaneous Forward Voltage | V <sub>F</sub>   | I <sub>F</sub> = 30A                                 | -   | 1.00 | 1.15 | V    |
|                                       |                  | I <sub>F</sub> = 30A, T <sub>C</sub> = 150°C         | -   | 0.88 | -    | V    |
|                                       |                  | I <sub>F</sub> = 40A                                 | -   | 1.10 | 1.25 | V    |
| Maximum Instantaneous Reverse         | I <sub>R</sub>   | V <sub>R</sub> = 300V                                | -   | -    | 10   | uA   |
|                                       |                  | V <sub>R</sub> = 300V, T <sub>C</sub> = 150°C        | -   | -    | 2.0  | mA   |
| Maximum Reverse Recovery Time         | t <sub>rr</sub>  | V <sub>R</sub> =30V I <sub>F</sub> =1A -di/dt=50A/us | -   | 36   | 50   | ns   |
| Total capacitance                     | C <sub>tot</sub> | V <sub>R</sub> =0V f=1MHz                            | -   | 710  | -    | pF   |
| DC Blocking Voltage                   | V <sub>BR</sub>  | I <sub>R</sub> =100uA                                | 300 | 350  | -    | V    |

### DEFINITIONS

V<sub>F</sub> = Instantaneous forward voltage (pw = 300μs, D = 2%).

I<sub>R</sub> = Instantaneous reverse current.

R<sub>θJC</sub> = Thermal resistance junction to case.

pw = pulse width.

D = duty cycle.

## 6 Typical characteristics diagrams

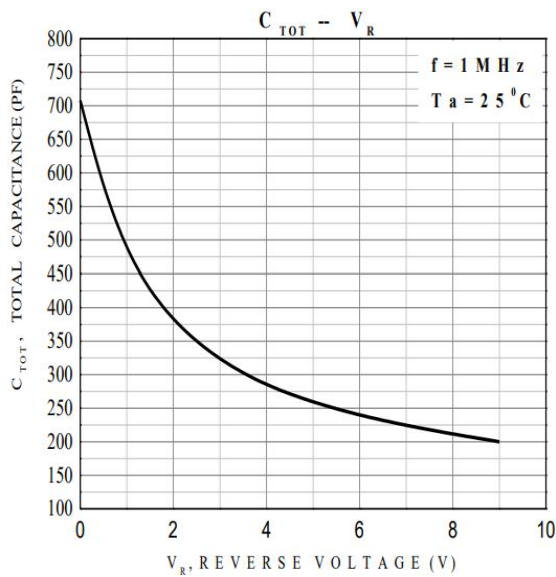


FIGURE 1. Total capacitance vs Voltage

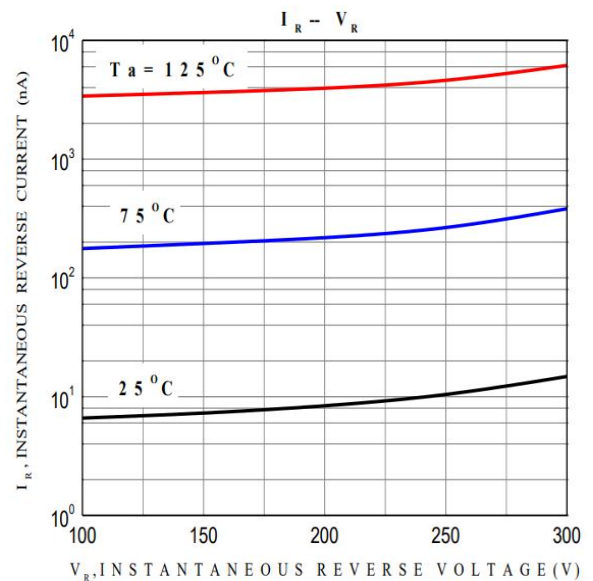


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

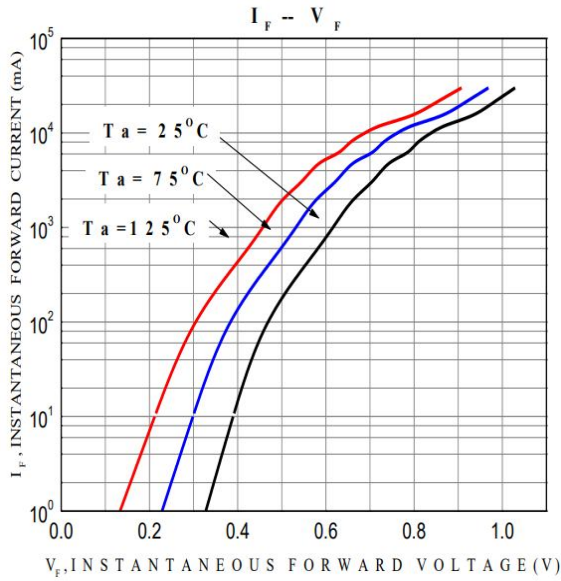


FIGURE 3. FORWARD CURRENT vs FORWARD VOLTAGE

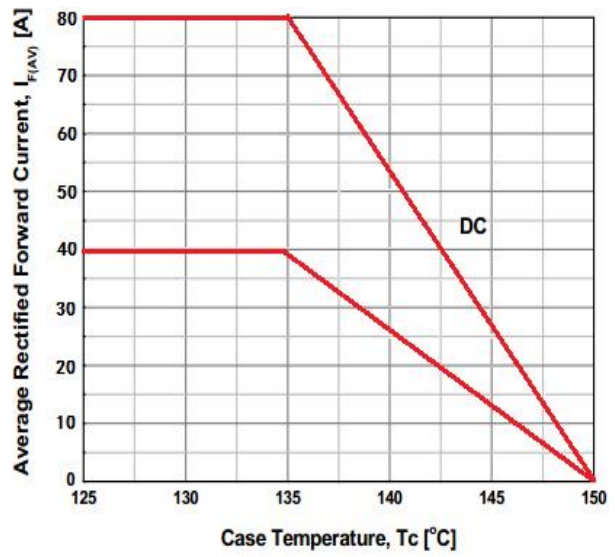


FIGURE 4. CURRENT DERATING CURVE

## 7 Typical Test Circuit and Waveform

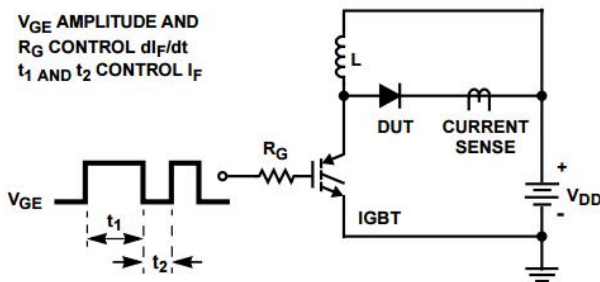


FIGURE 5. trr TEST CIRCUIT

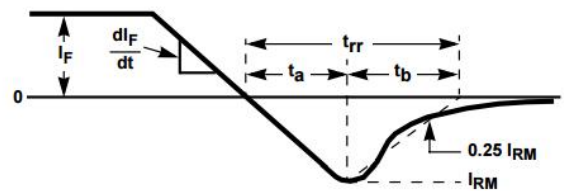


FIGURE 6. trr WAVEFORMS AND DEFINITIONS

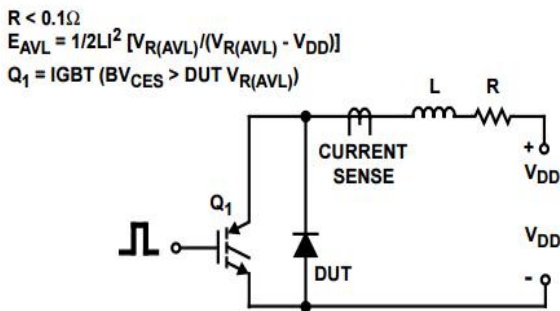


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT FIGURE

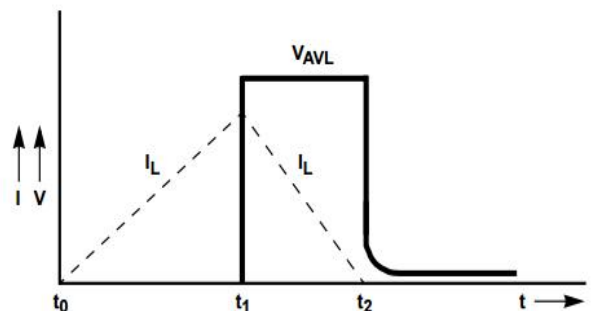


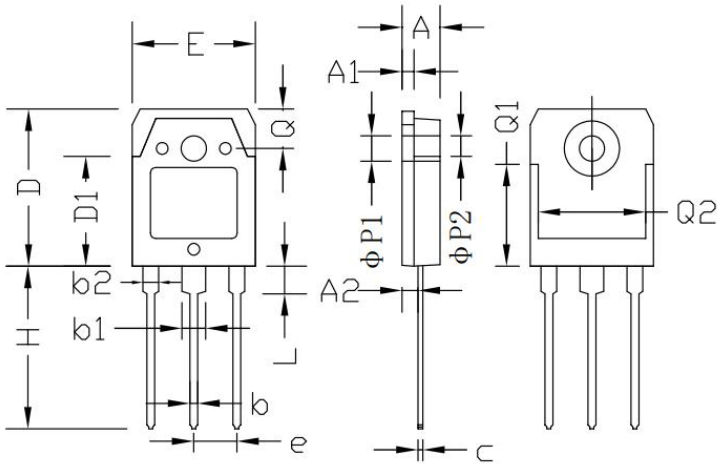
FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

## 8 Product Specifications and Packaging Models

| Product Model | Package Type | Mark Name   | RoHS    | Package | Quantity |
|---------------|--------------|-------------|---------|---------|----------|
| MUR80G30NCT   | TO-3PN       | MUR80G30NCT | Pb-free | Tube    | 300/box  |

## 9 Dimensions

### TO-3PN PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | min.                      | max.  | min.                 | max.  |
| A      | 4.60                      | 5.00  | 0.181                | 0.197 |
| A1     | 1.45                      | 1.65  | 0.057                | 0.065 |
| A2     | 2.20                      | 2.60  | 0.087                | 0.102 |
| b      | 0.80                      | 1.20  | 0.032                | 0.047 |
| b1     | 2.80                      | 3.20  | 0.110                | 0.126 |
| b2     | 1.80                      | 2.20  | 0.071                | 0.087 |
| C      | 0.55                      | 0.75  | 0.022                | 0.030 |
| D      | 19.20                     | 19.80 | 0.756                | 0.780 |
| D1     | 13.10                     | 14.70 | 0.516                | 0.578 |
| E      | 15.40                     | 15.80 | 0.607                | 0.623 |
| e      | 5.45 TYP                  |       | 0.215 TYP            |       |
| H      | 19.80                     | 20.50 | 0.780                | 0.807 |
| L      | 3.20                      | 3.70  | 0.126                | 0.146 |
| ΦP1    | 3.20 TYP                  |       | 0.126 TYP            |       |
| ΦP2    | 3.50 TYP                  |       | 0.138 TYP            |       |
| Q      | 5.00 TYP                  |       | 0.197 TYP            |       |
| Q1     | 12.40 TYP                 |       | 0.488 TYP            |       |
| Q2     | 12.6                      | -     | 0.496                | -     |

## 10 Attentions

- Jiangsu Donghai Semiconductor Co.,Ltd.. reserves the right to change the specification without prior notice! The customer should obtain the latest version of the information before making the order and verify that the information is complete and up to date.
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- Product promotion is endless, our company will be dedicated to provide customers with better products.

## 11 Appendix

Revision history:

| Date      | REV. | Description | Page |
|-----------|------|-------------|------|
| 2022.8.12 | 1.0  | Original    |      |