

Pb Free Plating Product

## STTH6003CW



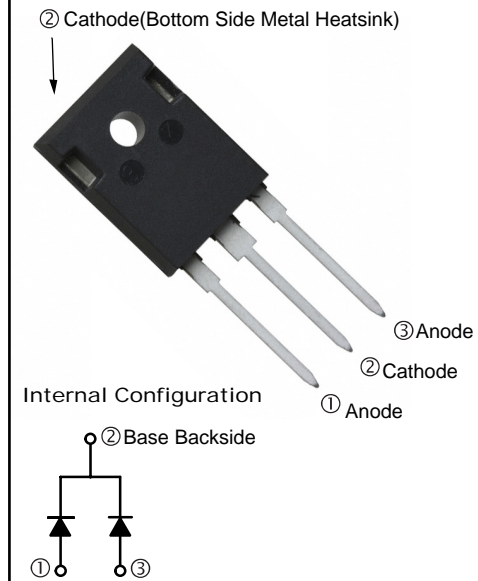
60.0 Ampere, 300 Volt Common Cathode Fast Recovery Epitaxial Diode

**APPLICATION**

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

**PRODUCT FEATURE**

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

**TO-247AD/TO-3P****GENERAL DESCRIPTION**

STTH6003CW using the latest FRED FAB process(planar passivation chip) with ultrafast and soft recovery characteristic.

**ABSOLUTE MAXIMUM RATINGS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol        | Parameter                            | Test Conditions   | Values      | Unit                        |
|---------------|--------------------------------------|---|-------------|-----------------------------|
| $V_R$         | Maximum D.C. Reverse Voltage         |   | 300         | V                           |
| $V_{RRM}$     | Maximum Repetitive Reverse Voltage   |   | 300         | V                           |
| $I_{F(AV)}$   | Average Forward Current              | $T_C=110^{\circ}\text{C}$ , Per Diode                   | 30          | A                           |
|               |                                      | $T_C=110^{\circ}\text{C}$ , Per Package                 | 60          | A                           |
| $I_{F(RMS)}$  | RMS Forward Current                  | $T_C=110^{\circ}\text{C}$ , Per Diode                   | 42          | A                           |
| $I_{FSM}$     | Non-Repetitive Surge Forward Current | $T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine | 480         | A                           |
| $P_D$         | Power Dissipation                    |   | 156         | W                           |
| $T_J$         | Junction Temperature                 |   | -55to +150  | $^{\circ}\text{C}$          |
| $T_{STG}$     | Storage Temperature Range            |   | -55 to +150 | $^{\circ}\text{C}$          |
| Torque        | Module-to-Sink                       | Recommended (M3)  | 1.1         | N·m                         |
| $R_{th(J-C)}$ | Thermal Resistance                   | Junction-to-Case, Per Diode                             | 0.8         | $^{\circ}\text{C}/\text{W}$ |
| Weight        |                                      |   | 6           | g                           |

**ELECTRICAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol    | Parameter                     | Test Conditions   | Min. | Typ. | Max. | Unit          |
|-----------|-------------------------------|---|------|------|------|---------------|
| $I_{RM}$  | Reverse Leakage Current       | $V_R=300\text{V}$   | --   | --   | 10   | $\mu\text{A}$ |
|           |                               | $V_R=300\text{V}$ , $T_J=125^{\circ}\text{C}$                           | --   | --   | 10   | mA            |
| $V_F$     | Forward Voltage               | $I_F=30\text{A}$  | --   | 1.25 | 1.8  | V             |
|           |                               | $I_F=30\text{A}$ , $T_J=125^{\circ}\text{C}$                            | --   | 1.12 | --   | V             |
| $t_{rr}$  | Reverse Recovery Time         | $I_F=1\text{A}$ , $V_R=30\text{V}$ , $di_F/dt=-200\text{A}/\mu\text{s}$ | --   | 22   | --   | ns            |
| $t_{rr}$  | Reverse Recovery Time         | $V_R=150\text{V}$ , $I_F=30\text{A}$                                    | --   | 35   | --   | ns            |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}$ , $T_J=25^{\circ}\text{C}$           | --   | 2.5  | --   | A             |
| $t_{rr}$  | Reverse Recovery Time         | $V_R=150\text{V}$ , $I_F=30\text{A}$                                    | --   | 70   | --   | ns            |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}$ , $T_J=125^{\circ}\text{C}$          | --   | 6.8  | --   | A             |

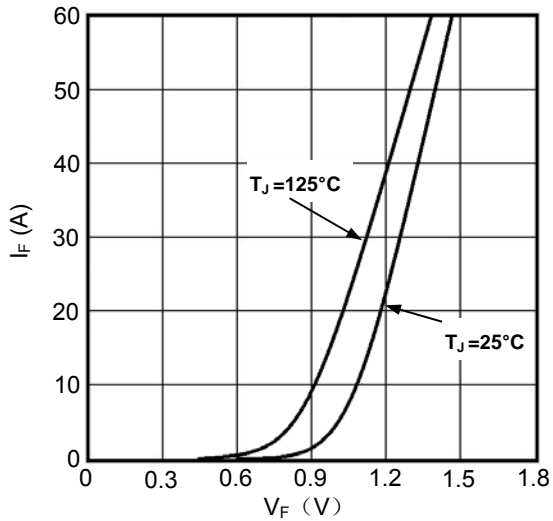


Fig1. Forward Voltage Drop vs Forward Current

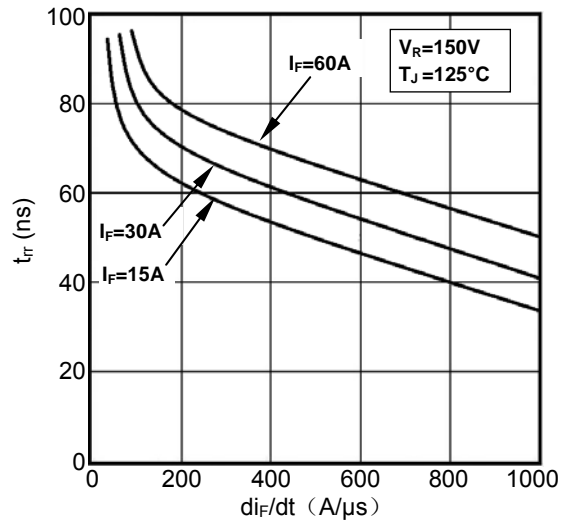


Fig2. Reverse Recovery Time vs  $di_F/dt$

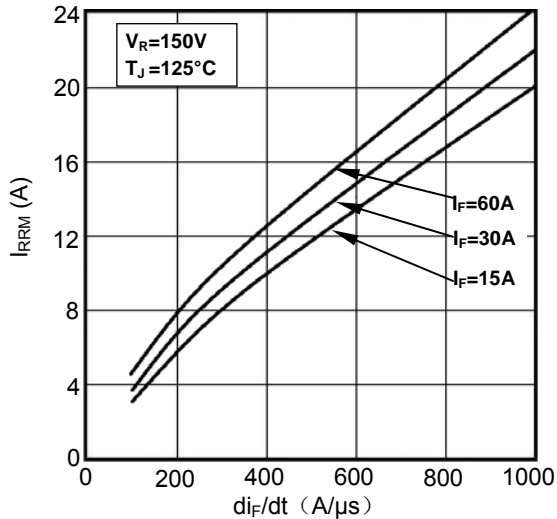


Fig3. Reverse Recovery Current vs  $di_F/dt$

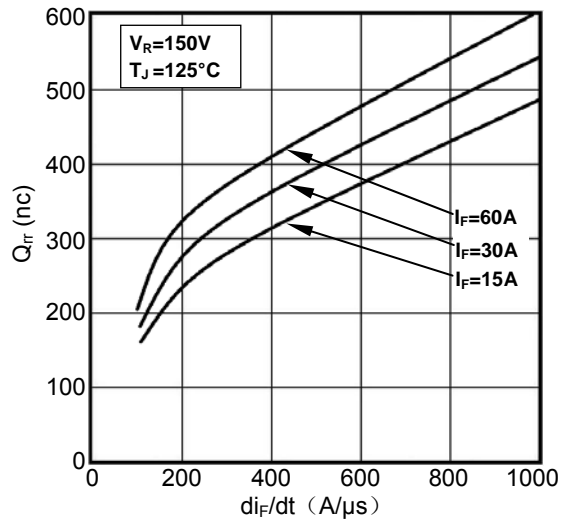


Fig4. Reverse Recovery Charge vs  $di_F/dt$

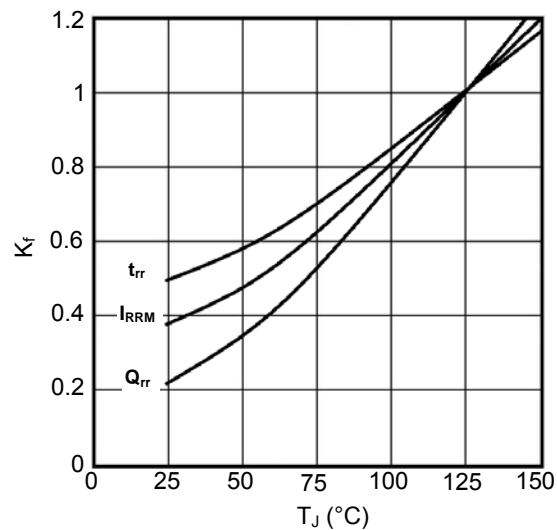


Fig5. Dynamic Parameters vs Junction Temperature

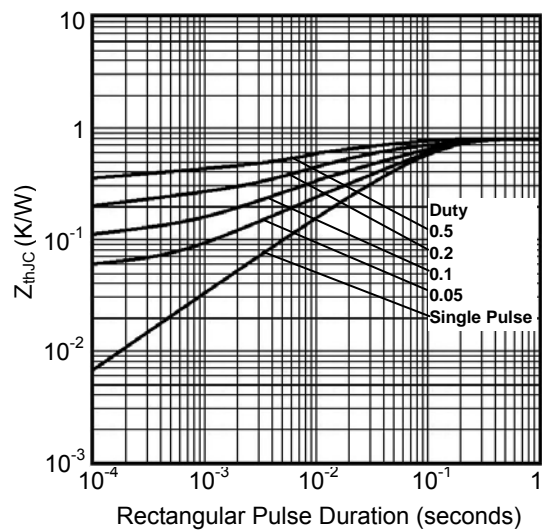


Fig6. Transient Thermal Impedance

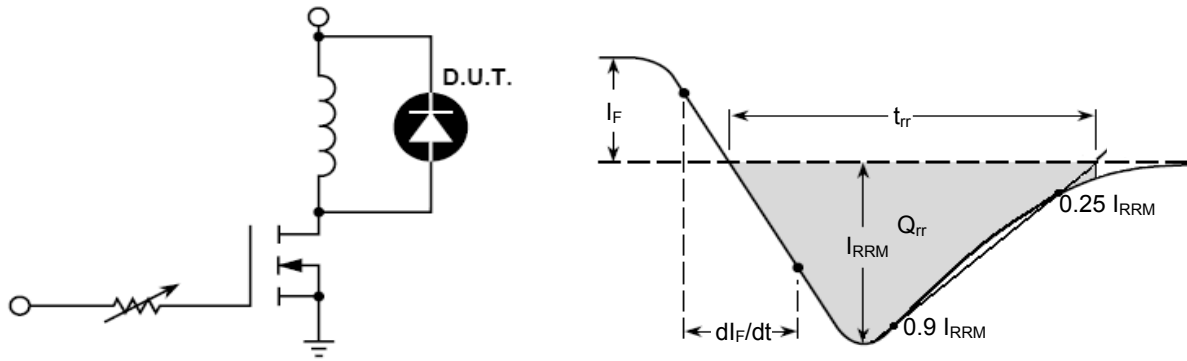
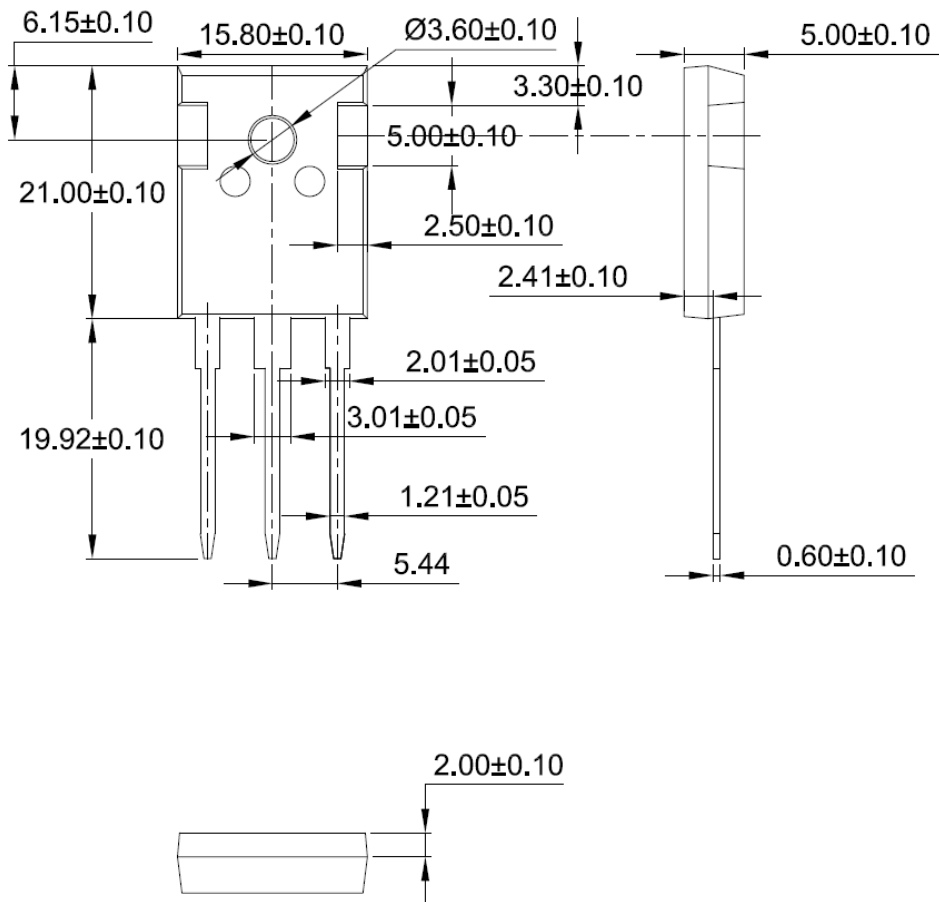


Fig7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in Millimeters  
Fig8. Package Outline