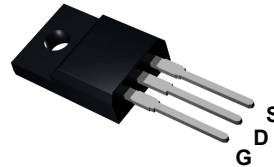
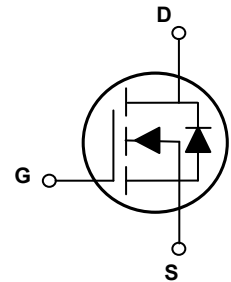


Main Product Characteristics

| | |
|---------------|---------------------|
| $V_{(BR)DSS}$ | 800V |
| $R_{DS(ON)}$ | 2.1 Ω (Typ.) |
| I_D | 5.3A |



TO-220F



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The GSFU8005 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supplies and a wide variety of other applications.

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

| Parameter | Symbol | Max. | Units |
|--|-----------------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 800 | V |
| Gate-to-Source Voltage | V_{GS} | ±30 | V |
| Continuous Drain Current, @ $V_{GS}=10V$ (T _C =25°C) | I_D | 5.2 | A |
| Continuous Drain Current, @ $V_{GS}=10V$ (T _C =100°C) | | 3.3 | |
| Pulsed Drain Current ¹ | | I_{DM} | |
| Single Pulse Avalanche Energy @ L=33.6mH | E_{AS} | 507 | mJ |
| Avalanche Current @ L=33.6mH | I_{AS} | 5.3 | A |
| Power Dissipation (T _C =25°C) ² | P_D | 51 | W |
| Linear Derating Factor (T _C =25°C) | | 0.41 | W/°C |
| Thermal Resistance, Junction-to-Case ² | $R_{\theta JC}$ | 2.45 | °C/W |
| Thermal Resistance, Junction-to-Ambient (t ≤ 10s) ³ | $R_{\theta JA}$ | 62.5 | °C/W |
| Junction-to-Ambient (PCB Mounted, Steady-State) ³ | | 40 | °C/W |
| Operating Junction and Storage Temperature Range | T_J/T_{STG} | -55 to +150 | °C |

Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|---|---------------|--|------|-------|------|---------------|
| On / Off Characteristics | | | | | | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0\text{V}, I_D=250\mu\text{A}$ | 800 | - | - | V |
| Drain-to-Source Leakage Current | I_{DSS} | $V_{DS}=800\text{V}, V_{GS}=0\text{V}$ | - | - | 1 | μA |
| | | $V_{DS}=800\text{V}, V_{GS}=0\text{V}, T_J=125^\circ\text{C}$ | - | - | 50 | |
| Gate-to-Source Forward Leakage | I_{GSS} | $V_{GS}=30\text{V}$ | - | - | 100 | nA |
| | | $V_{GS}=-30\text{V}$ | - | - | -100 | nA |
| Static Drain-to-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10\text{V}, I_D=2.5\text{A}$ | - | 2.1 | 2.6 | Ω |
| | | $V_{GS}=10\text{V}, I_D=2.5\text{A}, T_J=125^\circ\text{C}$ | - | 5.08 | - | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$ | 2 | 3 | 4 | V |
| | | $V_{DS}=V_{GS}, I_D=250\mu\text{A}, T_J=125^\circ\text{C}$ | - | 1.84 | - | |
| Dynamic and Switching Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS}=0\text{V}, V_{DS}=25\text{V}, F=1\text{MHz}$ | - | 742 | - | pF |
| Output Capacitance | C_{oss} | | - | 81 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 3.2 | - | |
| Total Gate Charge | Q_g | $I_D=5.3\text{A}, V_{DS}=400\text{V}, V_{GS}=10\text{V}$ | - | 16.2 | - | nC |
| Gate-to-Source Charge | Q_{gs} | | - | 5.3 | - | |
| Gate-to-Drain ("Miller") Charge | Q_{gd} | | - | 5.5 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}=10\text{V}, V_{DS}=400\text{V}, R_L=75\Omega, R_{GEN}=25\Omega, I_D=5.3\text{A}$ | - | 14.4 | - | nS |
| Rise Time | t_r | | - | 24.1 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 39.4 | - | |
| Fall Time | t_f | | - | 27.6 | - | |
| Source-Drain Ratings and Characteristics | | | | | | |
| Continuous Source Current (Body Diode) | I_S | MOSFET symbol showing the integral reverse p-n junction diode. | - | - | 5.3 | A |
| Pulsed Source Current (Body Diode) | I_{SM} | | - | - | 20.8 | A |
| Diode Forward Voltage | V_{SD} | $I_S=5.3\text{A}, V_{GS}=0\text{V}$ | - | 0.87 | 1.43 | V |
| Reverse Recovery Time | T_{rr} | $T_J=25^\circ\text{C}, I_F=5.3\text{A}, di/dt=100\text{A}/\mu\text{s}$ | - | 548.7 | - | nS |
| Reverse Recovery Charge | Q_{rr} | | - | 2950 | - | nC |

Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
3. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz Copper, in a still air environment with $T_A=25^\circ\text{C}$.

Typical Electrical and Thermal Characteristic Curves

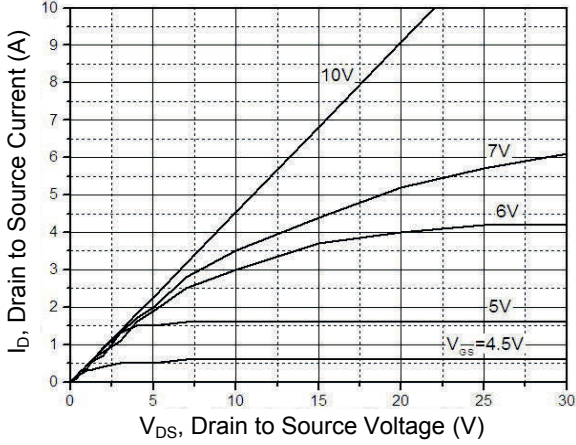


Figure 1. Typical Output Characteristics

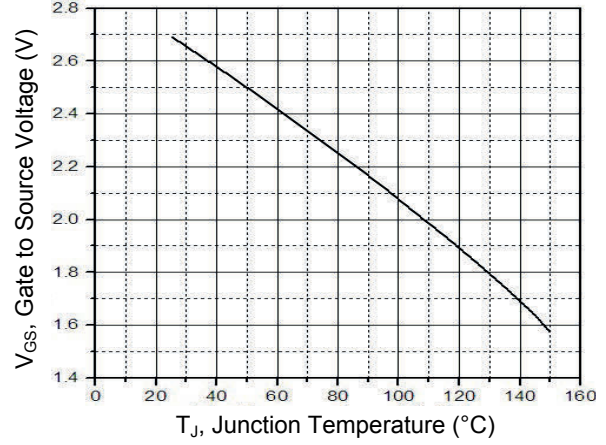


Figure 2. Gate to Source Cut-Off Voltage

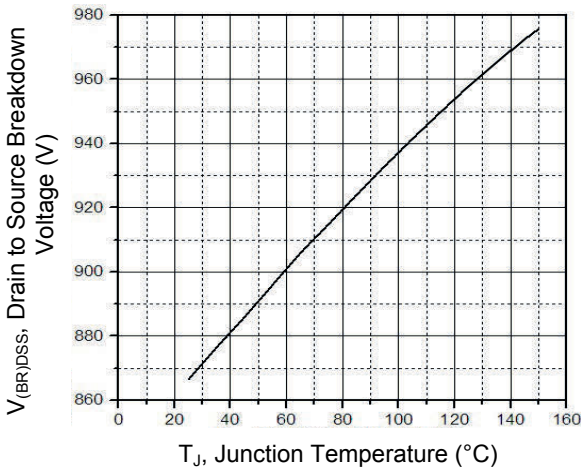


Figure 3. Drain to Source Breakdown Voltage vs. Case Temperature

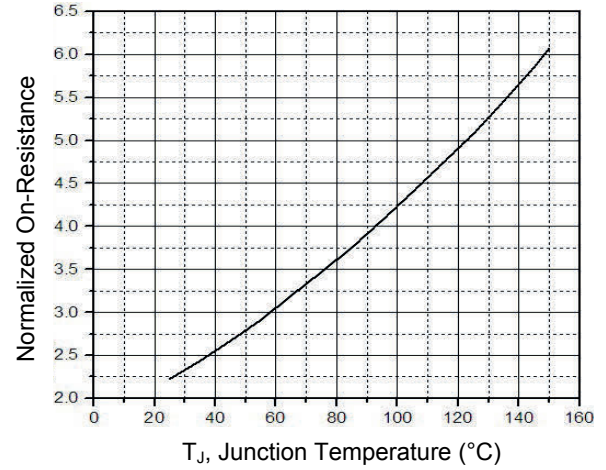


Figure 4. Normalized On-Resistance vs. Junction Temperature

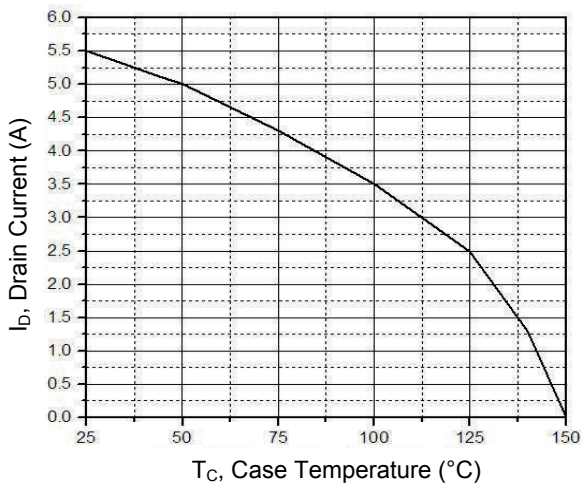


Figure 5. Maximum Drain Current vs. Case Temperature

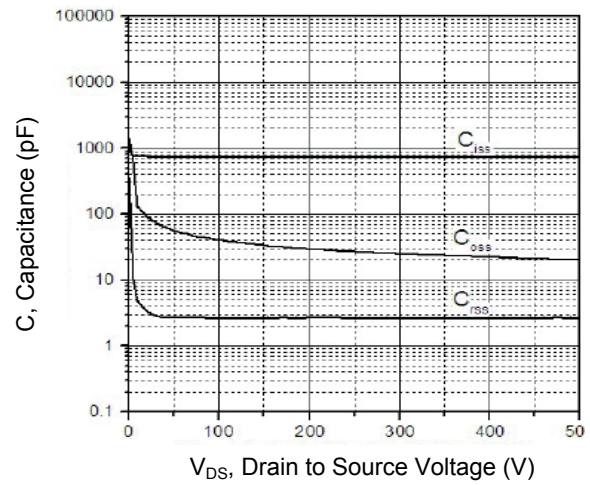


Figure 6. Typical Capacitance vs. Drain to Source Voltage

Typical Electrical and Thermal Characteristic Curves

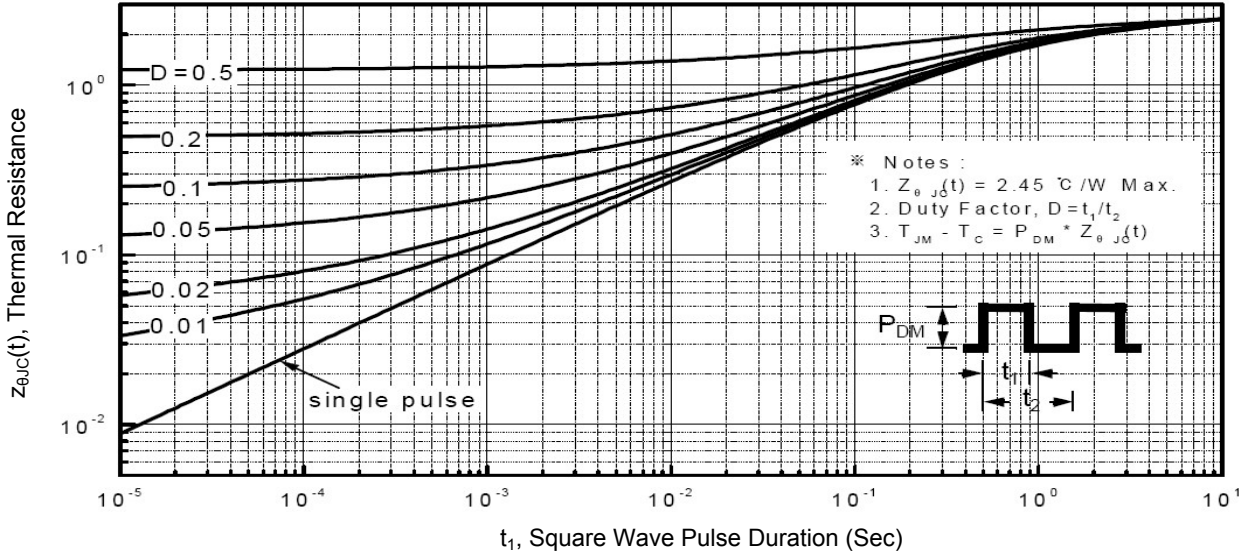
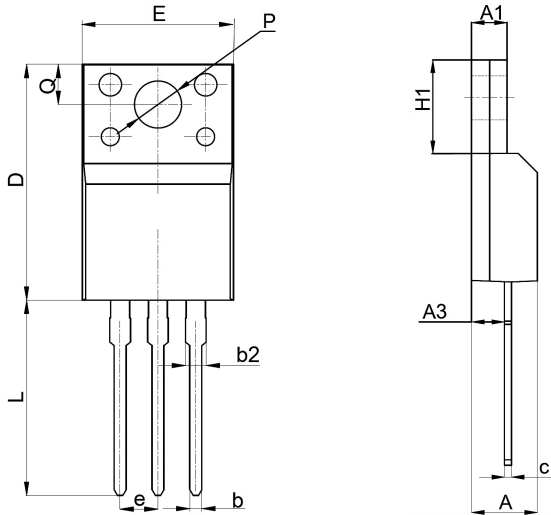


Figure 7. Maximum Effective Transient Thermal Impedance, Junction to Case

Package Outline Dimensions (TO-220F)



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.42 | 5.02 | 0.174 | 0.198 |
| A1 | 2.30 | 2.83 | 0.091 | 0.111 |
| A3 | 2.15 | 3.10 | 0.085 | 0.122 |
| b | 0.55 | 0.85 | 0.022 | 0.033 |
| b2 | 0.96 | 1.46 | 0.038 | 0.057 |
| c | 0.35 | 0.65 | 0.014 | 0.026 |
| D | 15.25 | 16.25 | 0.600 | 0.640 |
| E | 9.73 | 10.50 | 0.383 | 0.413 |
| e | 2.50 | 2.60 | 0.098 | 0.102 |
| H1 | 6.40 | 6.70 | 0.252 | 0.264 |
| L | 12.48 | 13.70 | 0.491 | 0.539 |
| P | 3.00 | 3.60 | 0.118 | 0.142 |
| Q | 3.05 | 3.60 | 0.120 | 0.142 |

Order Information

| Device | Package | Marking | Packaging | SPQ |
|----------|---------|---------|-----------|---------------|
| GSFU8005 | TO-220F | FU8005 | Tube | 50 Pcs / Tube |

For more information, please contact us at: inquiry@goodarksemi.com