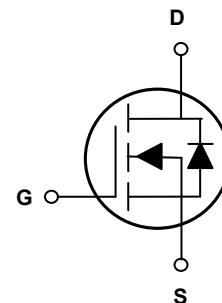
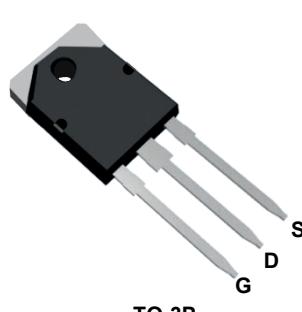


Main Product Characteristics

| | |
|---------------|-------------|
| $V_{(BR)DSS}$ | 650V |
| $R_{DS(ON)}$ | 76mΩ (max.) |
| I_D | 48A |



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 GSJV65RF076 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 ($T_J=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Parameter | Unit |
|--|-----------------|--------------|---------------------------|
| Drain-Source Voltage | V_{DS} | 650 | V |
| Gate-to-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$) | I_D | 48 | A |
| Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$) | | 31 | A |
| Pulsed Drain Current | I_{DM} | 192 | A |
| Power Dissipation ($T_C=25^\circ\text{C}$) | P_D | 330 | W |
| | | 2.64 | W/ $^\circ\text{C}$ |
| Single Pulse Avalanche Energy ¹ | E_{AS} | 1239 | mJ |
| Body Diode Reverse Voltage Slope ² | dv/dt | 50 | V/ns |
| MOS dv/dt Ruggedness ³ | dv/dt | 50 | V/ns |
| Junction-to-Ambient (PCB Mounted, Steady-State) | $R_{\theta JA}$ | 50 | $^\circ\text{C}/\text{W}$ |
| Junction-to-Case | $R_{\theta JC}$ | 0.38 | $^\circ\text{C}/\text{W}$ |
| Operating Junction and Storage Temperature Range | T_J/T_{STG} | -55 to + 150 | $^\circ\text{C}$ |
| Soldering Temperature | T_{sold} | 260 | $^\circ\text{C}$ |

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

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|-----------------------------|---|------|------|------|------------------|
| On / Off Characteristics | | | | | | |
| Drain-to-Source Breakdown Voltage | $V_{(\text{BR})\text{DSS}}$ | $V_{\text{GS}}=0\text{V}, I_D=250\mu\text{A}$ | 650 | - | - | V |
| Drain-to-Source Leakage Current | I_{DSS} | $V_{\text{DS}}=650\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$ | - | - | 1.0 | μA |
| | | $V_{\text{DS}}=650\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$ | - | - | 15 | μA |
| Gate-to-Source Forward Leakage | I_{GSS} | $V_{\text{DS}}=0\text{V}, V_{\text{GS}}=20\text{V}$ | - | - | 100 | nA |
| | | $V_{\text{DS}}=0\text{V}, V_{\text{GS}}=-20\text{V}$ | - | - | -100 | |
| Static Drain-to-Source On-Resistance | $R_{\text{DS}(\text{ON})}$ | $V_{\text{GS}}=10\text{V}, I_D=22\text{A}$ | - | 64 | 76 | $\text{m}\Omega$ |
| Gate Threshold Voltage | $V_{\text{GS}(\text{th})}$ | $V_{\text{DS}}=V_{\text{GS}}, I_D=250\mu\text{A}$ | 3.1 | - | 4.9 | V |
| Dynamic and Switching Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{\text{GS}}=0\text{V}, V_{\text{DS}}=200\text{V}, f=1\text{MHz}$ | - | 4110 | - | pF |
| Output Capacitance | C_{oss} | | - | 108 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 6.3 | - | |
| Total Gate Charge ^{4,5} | Q_g | $I_D=26\text{A}, V_{\text{DD}}=480\text{V}, V_{\text{GS}}=10\text{V}$ | - | 96 | - | nC |
| Gate-to-Source Charge ^{4,5} | Q_{gs} | | - | 34 | - | |
| Gate-to-Drain ("Miller") Charge ^{4,5} | Q_{gd} | | - | 42 | - | |
| Gate Plateau ^{4,5} | V_{plateau} | | - | 7.3 | - | V |
| Turn-On Delay Time ^{4,5} | $t_{\text{d}(\text{on})}$ | $V_{\text{DD}}=400\text{V}, V_{\text{GS}}=13\text{V}, R_G=1.8\Omega, I_D=26\text{A}$ | - | 27 | - | nS |
| Rise Time ^{4,5} | t_r | | - | 27 | - | |
| Turn-Off Delay Time ^{4,5} | $t_{\text{d}(\text{off})}$ | | - | 72 | - | |
| Fall Time ^{4,5} | t_f | | - | 24 | - | |
| Gate Resistance | R_g | $f=1\text{MHz}$ | - | 1.6 | - | Ω |
| Source-Drain Ratings and Characteristics | | | | | | |
| Continuous Source Current (Body Diode) | I_S | $T_C=25^\circ\text{C}$, MOSFET symbol showing the integral reverse p-n junction diode. | - | - | 48 | A |
| Source Pulse Current | I_{SM} | | - | - | 192 | A |
| Diode Forward Voltage | V_{SD} | $I_S=26\text{A}, V_{\text{GS}}=0\text{V}$ | - | - | 1.4 | V |
| Reverse Recovery Time ⁴ | T_{rr} | $I_S=26\text{A}, V_{\text{GS}}=0\text{V}, dI_F/dt=100\text{A/us}$ | - | 124 | - | nS |
| Reverse Recovery Charge ⁴ | Q_{rr} | | - | 0.73 | - | μC |
| Reverse Recovery Peak Current ⁴ | I_{rrm} | | - | 11 | - | A |

Note:

1. $L=79\text{mH}, I_{AS}=5.6\text{A}, V_{DD}=100\text{V}, R_G=25\Omega$, starting temperature $T_J=25^\circ\text{C}$.
2. $V_{DS}=0-400\text{V}, I_{SD} \leq I_S, T_J=25^\circ\text{C}$.
3. $V_{DS}=0-400\text{V}$.
4. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
5. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

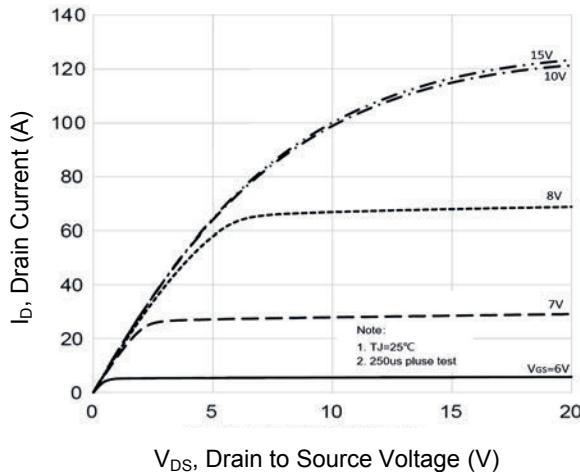


Figure 1. Typical Output Characteristics

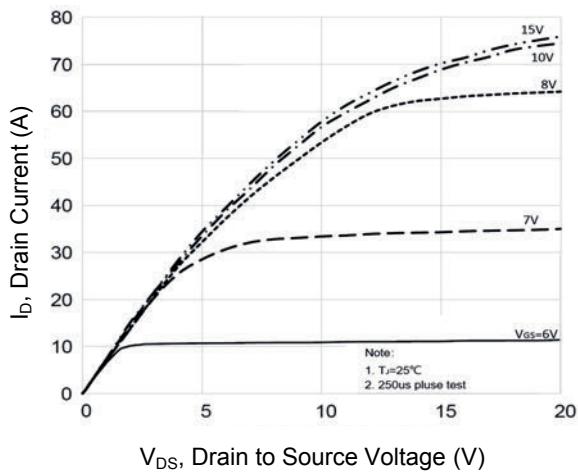


Figure 2. Typical Output Characteristics

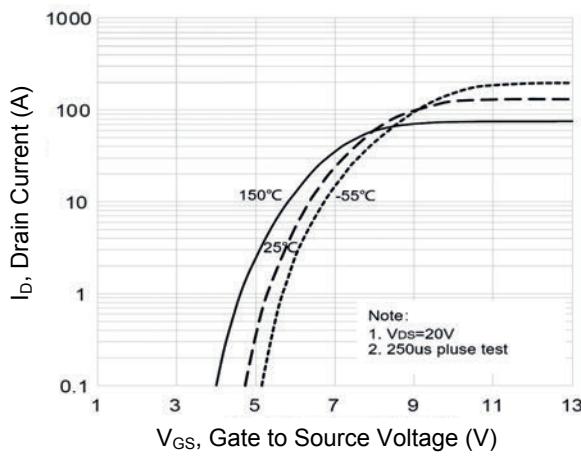


Figure 3. Transfer Characteristics

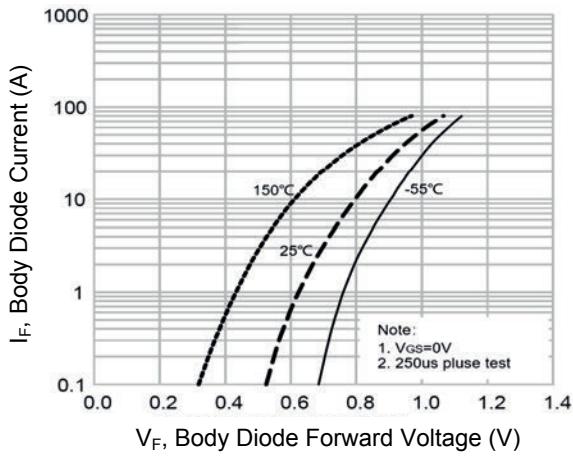


Figure 4. Body Diode Characteristics

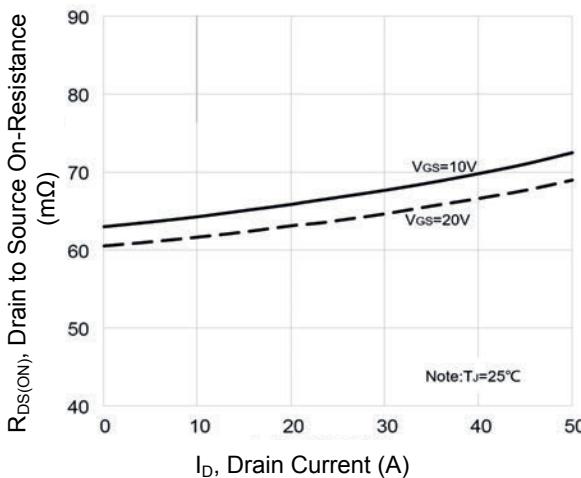


Figure 5. $R_{DS(ON)}$ Vs. Drain Current

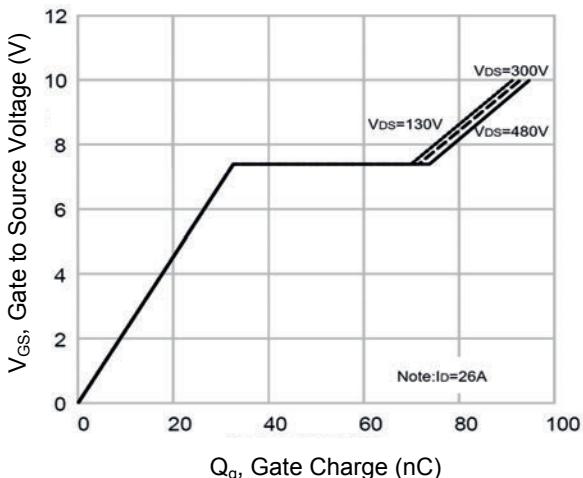


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

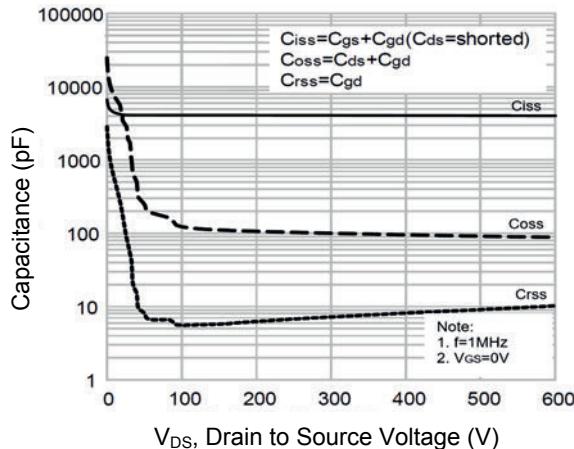


Figure 7. Capacitance Characteristics

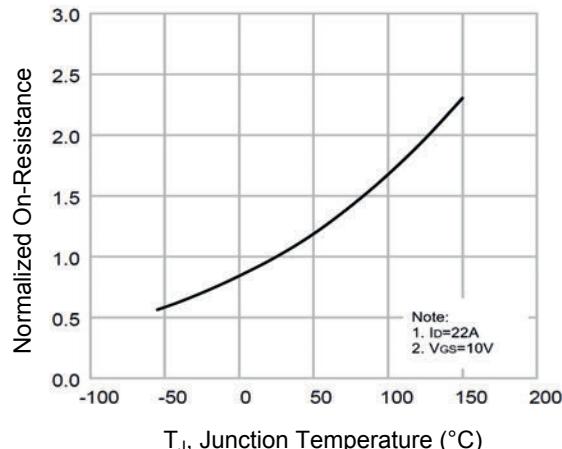


Figure 8. Normalized $R_{DS(ON)}$ Vs. T_J

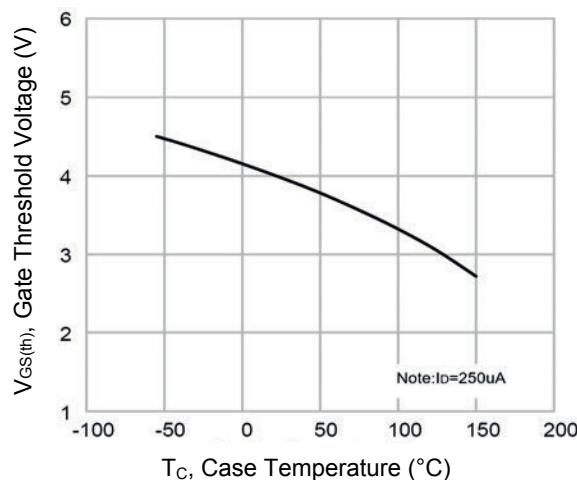


Figure 9. Gate Threshold Voltage Vs. T_C

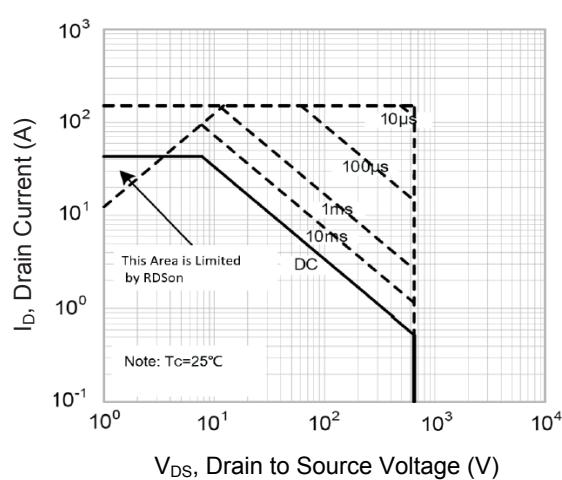


Figure 10. Safe Operation Area

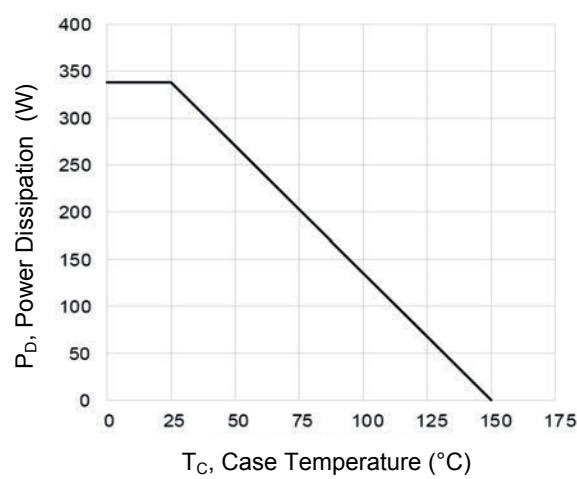


Figure 11. Power Dissipation Vs. T_C

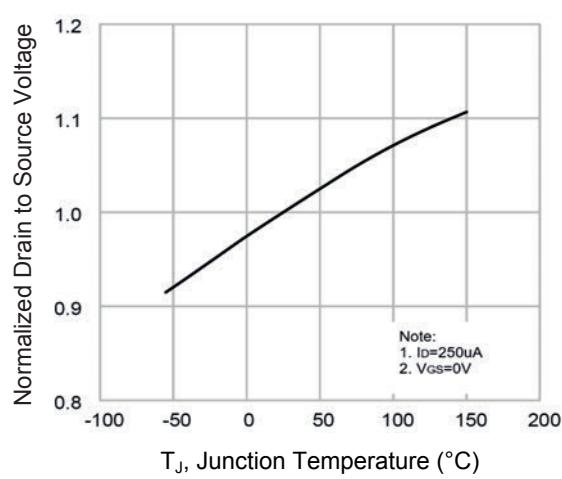
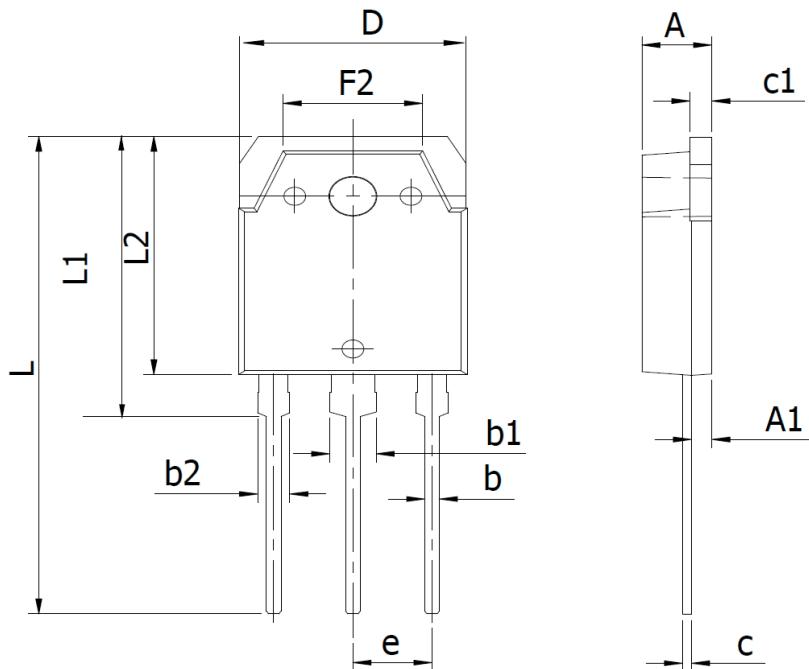


Figure 12. Normalized BV_{DSS} Vs. T_J

Package Outline Dimensions (TO-3P)



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 5.20 | 0.173 | 0.205 |
| C1 | 1.20 | 1.80 | 0.047 | 0.071 |
| A1 | 1.20 | 2.00 | 0.047 | 0.079 |
| b | 0.70 | 1.30 | 0.028 | 0.051 |
| b1 | 2.70 | 3.30 | 0.106 | 0.130 |
| b2 | 1.70 | 2.30 | 0.067 | 0.091 |
| D | 15.00 | 16.00 | 0.591 | 0.630 |
| C | 0.40 | 0.80 | 0.016 | 0.031 |
| F2 | 8.50 | 10.00 | 0.335 | 0.394 |
| e | 5.45 TYP | | 0.215 TYP | |
| L1 | 22.60 | 23.60 | 0.890 | 0.929 |
| L | 39.00 | 41.50 | 1.535 | 1.634 |
| L2 | 19.50 | 21.00 | 0.768 | 0.827 |