
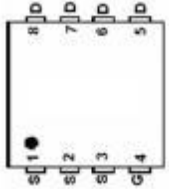



P-Channel Enhancement Mode Power MOSFET

| | |
|--|---|
| <p>Description</p> <p>The G65P06D5 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● V_{DS} -60V ● I_D (at $V_{GS} = -10V$) -65A ● $R_{DS(ON)}$ (at $V_{GS} = -10V$) < 18mΩ ● 100% Avalanche Tested ● RoHS Compliant <p>Application</p> <ul style="list-style-type: none"> ● Power switch ● DC/DC converters |  <p>Schematic diagram</p>  <p>pin assignment</p>  <p>DFN5*6-8L</p> |
|--|---|

Ordering Information

| Device | Package | Marking | Packaging |
|----------|-----------|---------|--------------|
| G65P06D5 | DFN5*6-8L | G65P06 | 5000pcs/Reel |

Absolute Maximum Ratings $T_C = 25^{\circ}C$, unless otherwise noted

| Parameter | Symbol | Value | Unit |
|--|----------------|------------|-------------|
| Drain-Source Voltage | V_{DS} | -60 | V |
| Continuous Drain Current | I_D | -65 | A |
| Pulsed Drain Current (note1) | I_{DM} | -260 | A |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Power Dissipation | P_D | 104 | W |
| Single pulse avalanche energy (note2) | E_{AS} | 156 | mJ |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 To 150 | $^{\circ}C$ |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|---|------------|-------|---------------|
| Thermal Resistance, Junction-to-Ambient | R_{thJA} | 55 | $^{\circ}C/W$ |
| Maximum Junction-to-Case | R_{thJC} | 1.2 | $^{\circ}C/W$ |

| Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted | | | | | | |
|--|---------------|---|-------|------|-----------|------------|
| Parameter | Symbol | Test Conditions | Value | | | Unit |
| | | | Min. | Typ. | Max. | |
| Static Parameters | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -60 | -- | -- | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -60V, V_{GS} = 0V$ | -- | -- | -1 | μA |
| Gate-Source Leakage | I_{GSS} | $V_{GS} = \pm 20V$ | -- | -- | ± 100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -2 | -2.5 | -3.5 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = -10V, I_D = -20A$ | -- | 13.5 | 18 | m Ω |
| Forward Transconductance | g_{FS} | $V_{DS} = -5V, I_D = -20A$ | -- | 37 | -- | S |
| Dynamic Parameters | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0V,$ $V_{DS} = -30V,$ $f = 1.0\text{MHz}$ | -- | 6138 | -- | pF |
| Output Capacitance | C_{oss} | | -- | 333 | -- | |
| Reverse Transfer Capacitance | C_{rss} | | -- | 345 | -- | |
| Total Gate Charge | Q_g | $V_{DD} = -30V,$ $I_D = -30A,$ $V_{GS} = -10V$ | -- | 75 | -- | nC |
| Gate-Source Charge | Q_{gs} | | -- | 16 | -- | |
| Gate-Drain Charge | Q_{gd} | | -- | 19 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD} = -30V,$ $I_D = -30A,$ $R_G = 3\Omega$ | -- | 18 | -- | ns |
| Turn-on Rise Time | t_r | | -- | 20 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 55 | -- | |
| Turn-off Fall Time | t_f | | -- | 35 | -- | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Body Diode Current | I_S | $T_C = 25^\circ\text{C}$ | -- | -- | -65 | A |
| Body Diode Voltage | V_{SD} | $T_J = 25^\circ\text{C}, I_{SD} = -20A, V_{GS} = 0V$ | -- | -- | -1.2 | V |
| Reverse Recovery Charge | Q_{rr} | $I_F = -30A, V_{GS} = 0V$ $di/dt = -100A/\mu s$ | -- | 0.77 | -- | nC |
| Reverse Recovery Time | T_{rr} | | -- | 0.13 | -- | ns |

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G
3. EAS condition : $T_J = 25^\circ\text{C}, V_{DD} = -50V, V_{GS} = -10V, L = 0.5\text{mH}, R_G = 25\Omega$

Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

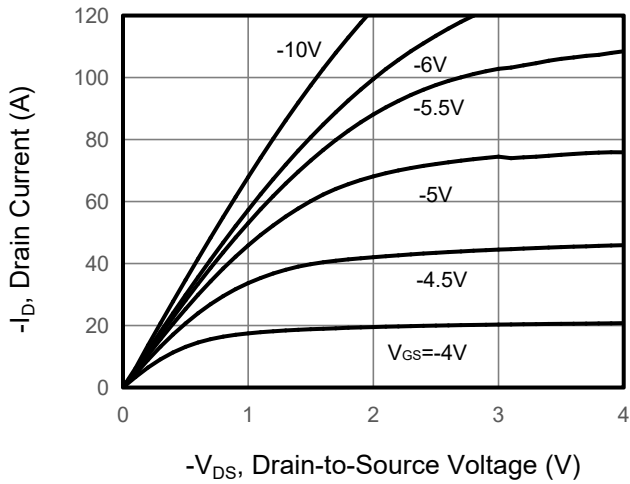


Figure 2. Transfer Characteristics

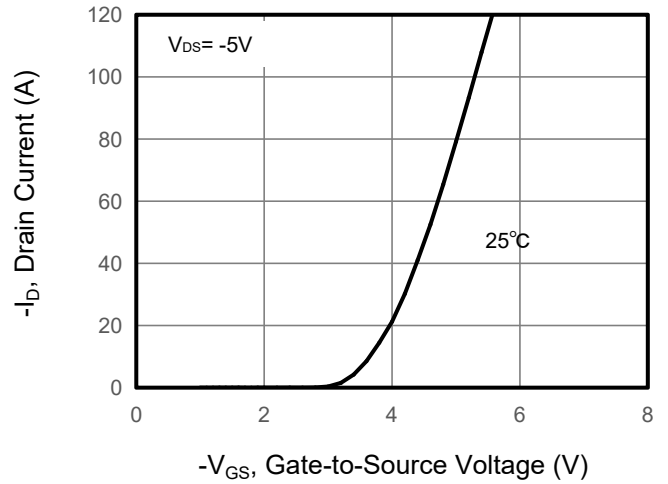


Figure 3. Drain Source On Resistance

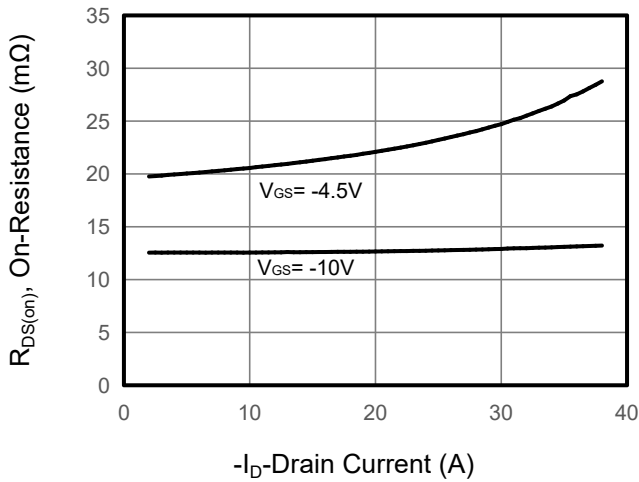


Figure 4. Gate Charge

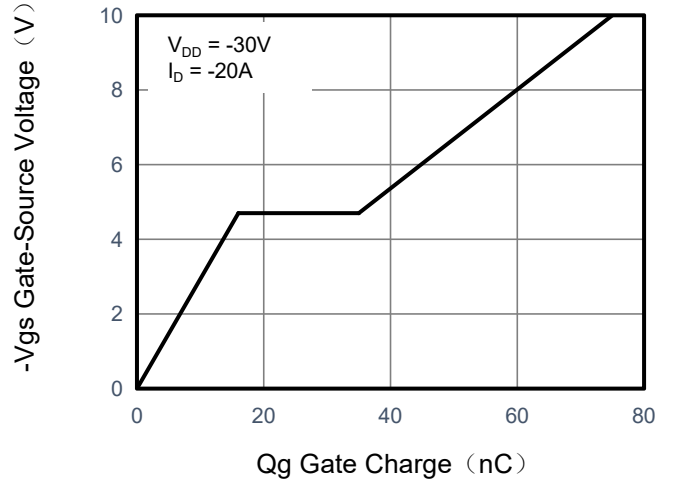


Figure 5. Capacitance

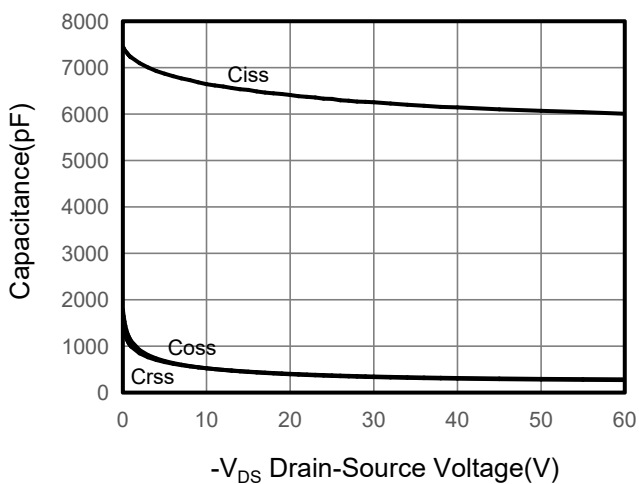
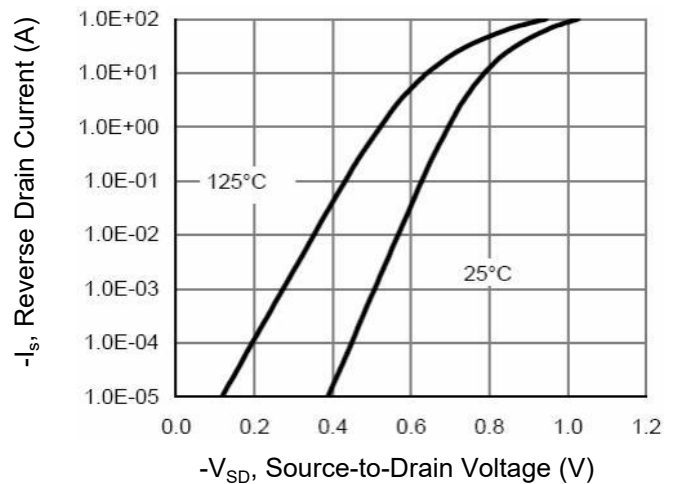


Figure 6. Source-Drain Diode Forward



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Drain-Source On-Resistance

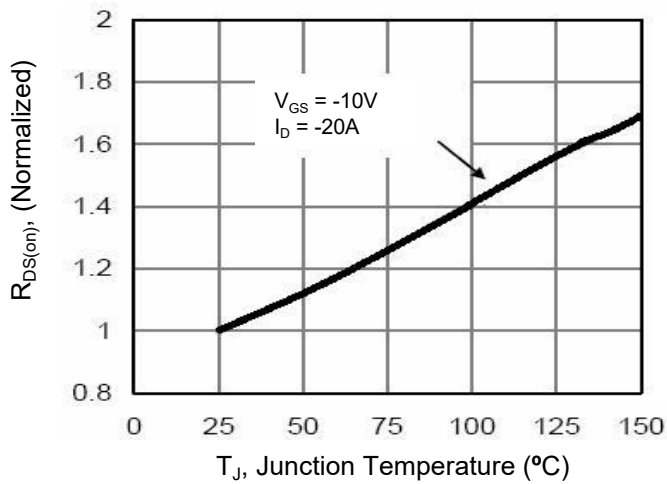


Figure 10. Safe Operation Area

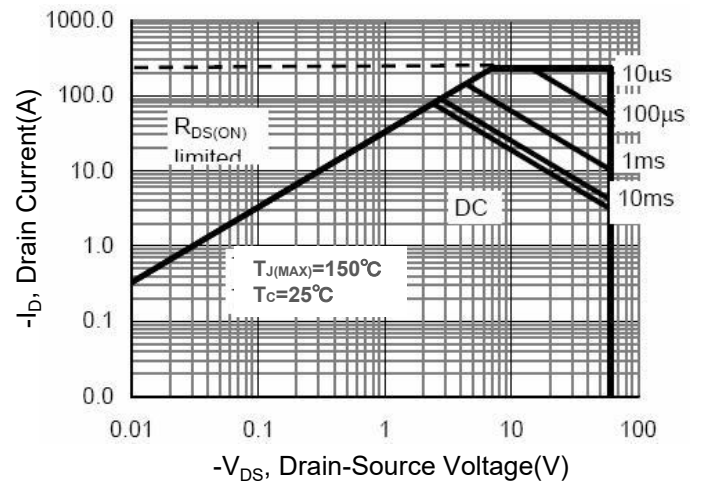
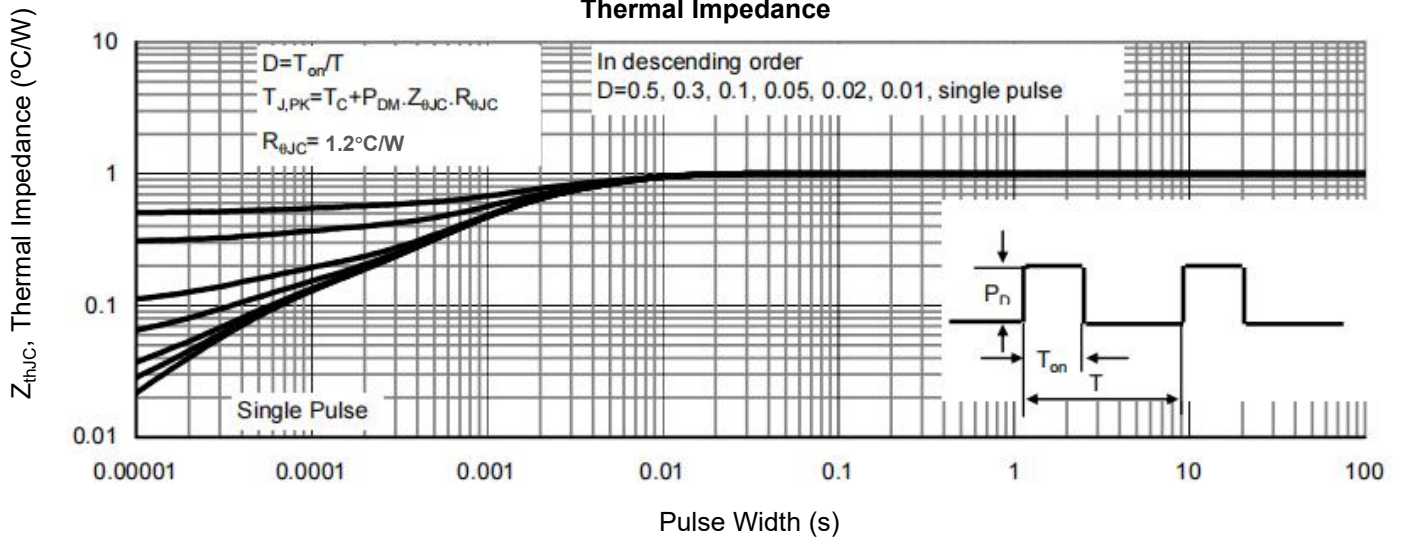
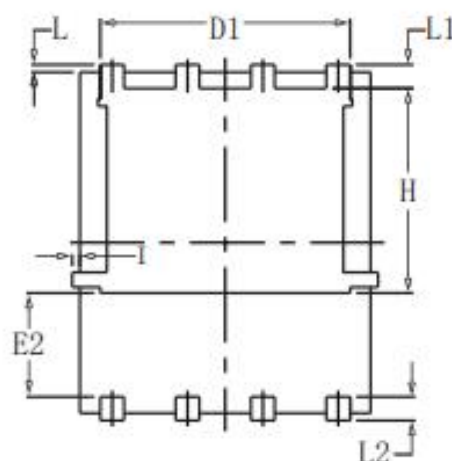
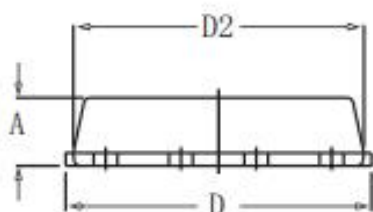
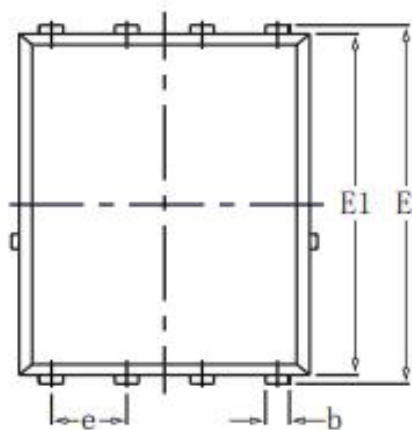


Figure 9. Normalized Maximum Transient Thermal Impedance



DFN5X6-8L Package information



| SYMBOL | COMMON | | | |
|--------|----------|-------|----------|--------|
| | MM | | INCH | |
| | MIN | MAX | MIN | MAX |
| A | 1.03 | 1.17 | 0.0406 | 0.0461 |
| b | 0.34 | 0.48 | 0.0134 | 0.0189 |
| c | 0.824 | 0.970 | 0.0324 | 0.0382 |
| D | 4.80 | 5.40 | 0.1890 | 0.2126 |
| D1 | 4.11 | 4.31 | 0.1618 | 0.1697 |
| D2 | 4.80 | 5.00 | 0.1890 | 0.1969 |
| E | 5.59 | 6.15 | 0.2343 | 0.2421 |
| E1 | 5.65 | 5.85 | 0.2224 | 0.2303 |
| E2 | 1.60 | - | 0.0630 | - |
| e | 1.27 BSC | | 0.05 BSC | |
| L | 0.05 | 0.25 | 0.0020 | 0.0098 |
| L1 | 0.38 | 0.50 | 0.0150 | 0.0197 |
| L2 | 0.38 | 0.50 | 0.0150 | 0.0197 |
| H | 3.30 | 3.50 | 0.1299 | 0.1378 |
| I | - | 0.18 | - | 0.0070 |