

60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

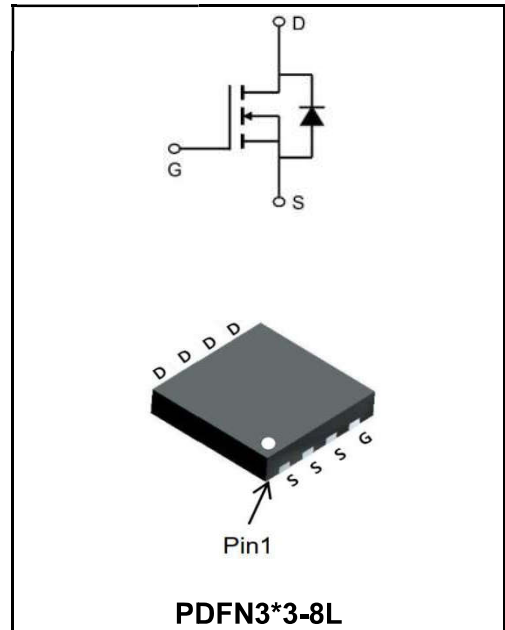
| | |
|--|------------------------------|
| I_D | 65A |
| V_{DSS} | 60V |
| R_{DS(on)-typ(@V_{GS}=10V)} | < 10mΩ(Type:7.5 mΩ) |

Features

◆YFW-SGT technology

Application

- ◆Battery protection
- ◆Load switch
- ◆Uninterruptible power supply



Product Specification Classification

| Part Number | Package | Marking | Pack |
|-------------|------------|-------------------|--------------|
| YFWG65N06DF | PDFN3*3-8L | YFW 65N06DF XXXXX | 5000PCS/Tape |

Maximum Ratings at Tc=25°C unless otherwise specified

| Characteristics | Symbols | Value | Units |
|--|------------------------|-------------|-------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate - Source Voltage | V_{GS} | ±20 | V |
| Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =25°C | I_D | 20 | A |
| Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =70°C | I_D | 11 | A |
| Pulsed Drain Current | I_{DM} | 60 | A |
| Power Dissipation @T _A =25°C | P_D | 60 | W |
| Single Pulse Avalanche Energy | E_{AS} | 30 | mJ |
| Storage Temperature Range | T_{STG} | -55 to +150 | °C |
| Operation and storage temperature | T_J | -55 to +150 | °C |
| Thermal Resistance Junction-Case | R_{θJC} | 2.1 | °C/W |
| Thermal Resistance, Junction-to-Ambient ⁵⁾ | R_{θJA} | 85 | °C/W |

Maximum Ratings at Tc=25°C unless otherwise specified

| Characteristics | Test Condition | Symbols | Min | Typ | Max | Units |
|----------------------------------|--|---------------|-----|--------|-----------|-------|
| Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\mu A$ | BV_{DSS} | 60 | 68 | - | V |
| Gate -Threshold Voltage | $V_{DS}=V_{GS}, I_D=250\mu A$ | $V_{GS(th)}$ | 1.2 | 1.5 | 2.5 | V |
| Drain-source on-state resistance | $V_{GS}=10V, I_D=20A$ | $R_{DS(ON)}$ | - | 7.5 | 10 | mΩ |
| | $V_{GS}=4.5V, I_D=10A$ | | - | 10 | 13 | |
| Gate-Source Leakage Current | $V_{GS}=\pm 20V$ | I_{GSS} | - | - | ± 100 | nA |
| Drain -Source Leakage Current | $V_{DS}=60V, V_{GS}=0V$ | I_{DSS} | - | - | 1 | μA |
| Input Capacitance | $V_{GS}=0V$ $V_{DS}=50V$ $f=100KHz$ | C_{iss} | - | 1182.1 | - | pF |
| Output Capacitance | | C_{oss} | - | 199.5 | - | |
| Reverse Transfer Capacitance | | C_{rss} | - | 4.1 | - | |
| Turn-on delay time | $V_{GS}=10V$ $V_{DD}=50V$ $R_G=2\Omega$ $I_D=10A$ | $t_{d(on)}$ | - | 17.9 | - | ns |
| Rise Time | | T_r | - | 4.0 | - | |
| Turn-Off Delay Time | | $t_{d(OFF)}$ | - | 34.9 | - | |
| Fall Time | | t_f | - | 5.5 | - | |
| Total Gate Charge | $I_D=10A$ $V_{DS}=50V$ $V_{GS}=10V$ | Q_g | - | 18.4 | - | nC |
| Gate-Source Charge | | Q_{gs} | - | 3.3 | - | |
| Gate-Drain Charge | | Q_{gd} | - | 3.1 | - | |
| Gate plateau voltage | | $V_{plateau}$ | - | 2.8 | - | |
| Diode forward current | $V_{GS}<V_{th}$ | I_S | - | - | 60 | A |
| Pulsed Source Current | | I_{SP} | - | - | 180 | |
| Diode Forward Voltage | $V_{GS}=0V, I_S=20A$ | V_{SD} | - | - | 1.3 | V |
| Reverse Recovery Time | $I_F=10A, di/dt=100A/\mu s$ | t_{rr} | - | 41.8 | - | nS |
| Reverse Recovery Charge | | Q_{rr} | - | 36.1 | - | nC |
| Peak reverse recovery current | | I_{rrm} | - | 1.4 | - | A |

Note

- 1、 Calculated continuous current based on maximum allowable junction temperature.
- 2、 Repetitive rating; pulse width limited by max. junction temperature.
- 3、 Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4、 VDD=50 V, RG=50 Ω, L=0.3 mH, starting Tj=25 °C.
- 5、 The value of RθJA is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 °C.

Ratings and Characteristic Curves

Typical Characteristics

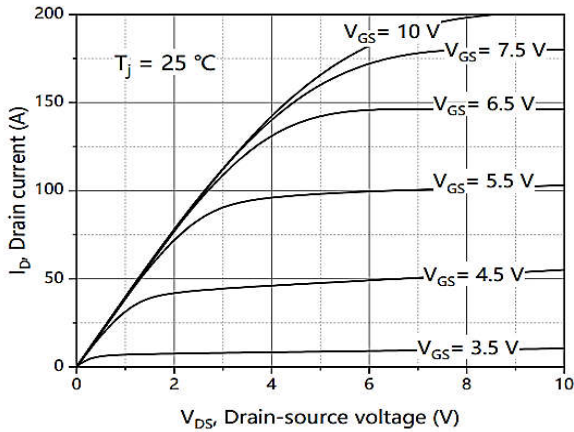


Figure 1. Typ. output characteristics

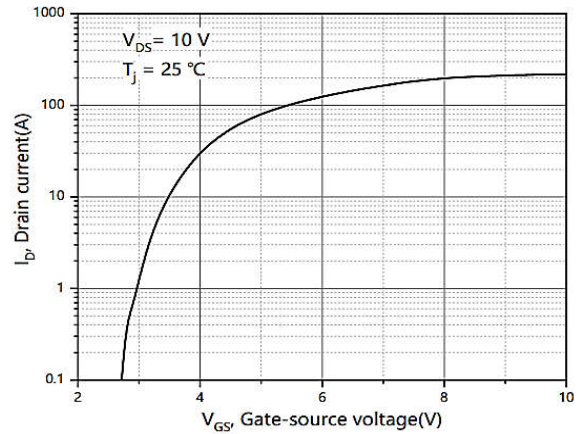


Figure 2. Typ. transfer characteristics

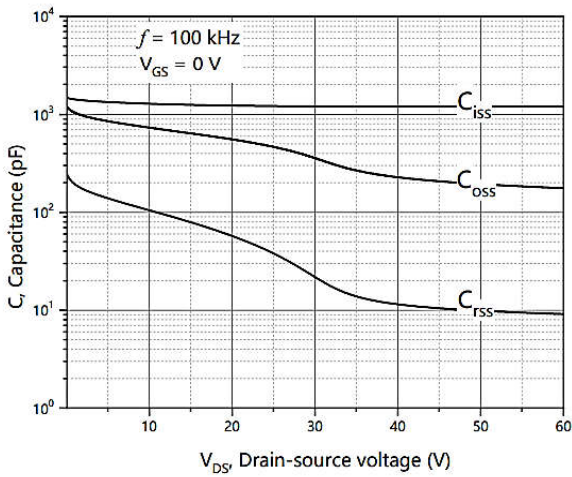


Figure 3. Typ. capacitances

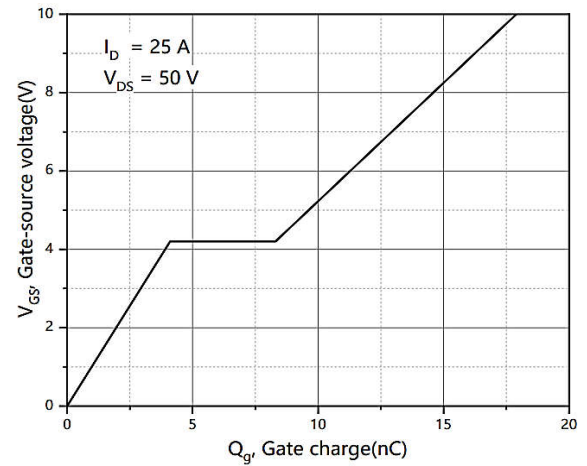


Figure 4. Typ. gate charge

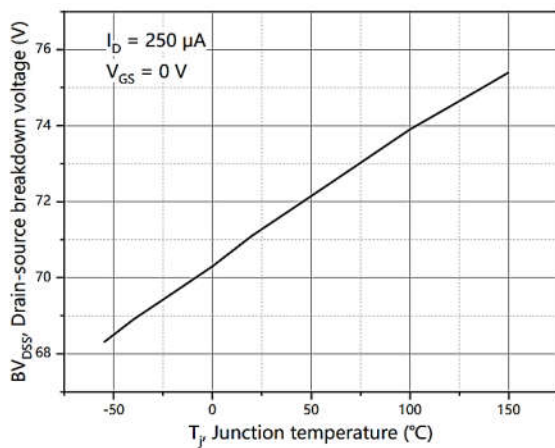


Figure 5. Drain-source breakdown voltage

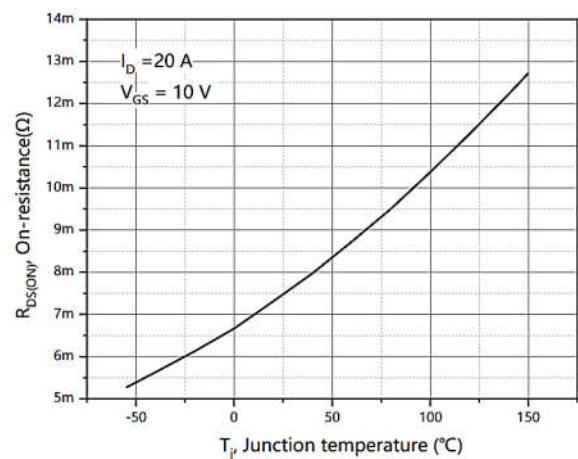


Figure 6. Drain-source on-state resistance

Ratings and Characteristic Curves

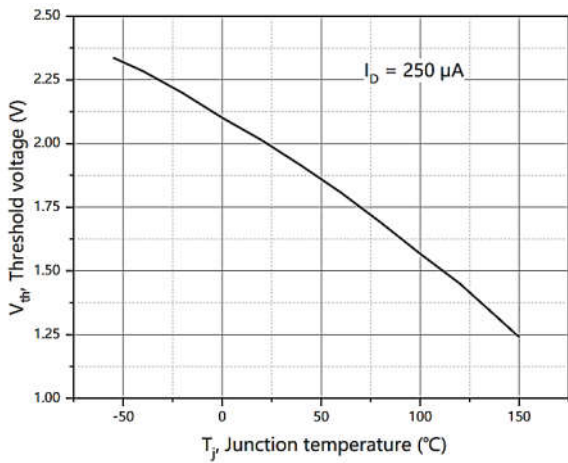


Figure 7. Threshold voltage

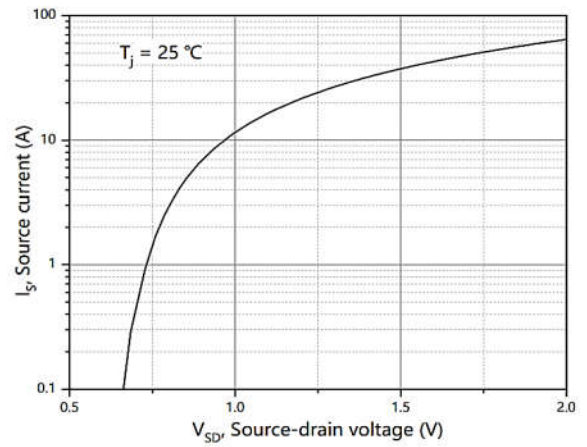


Figure 8. Forward characteristic of body diode

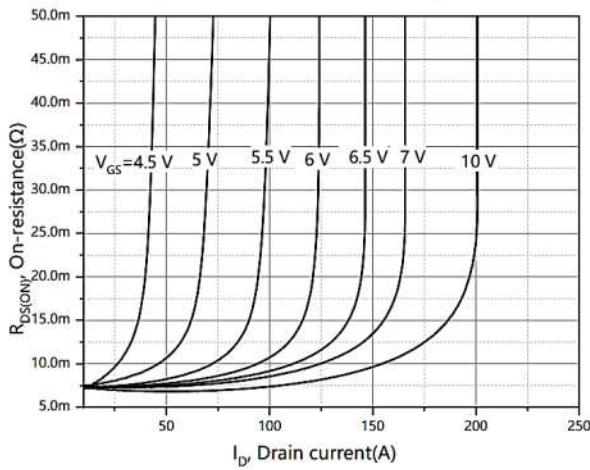


Figure 9. Drain-source on-state resistance

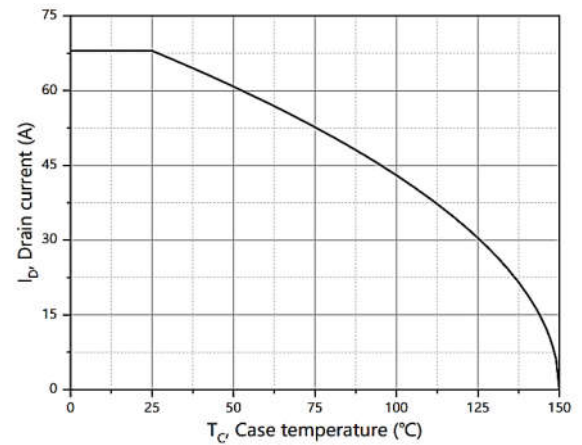


Figure 10. Drain current

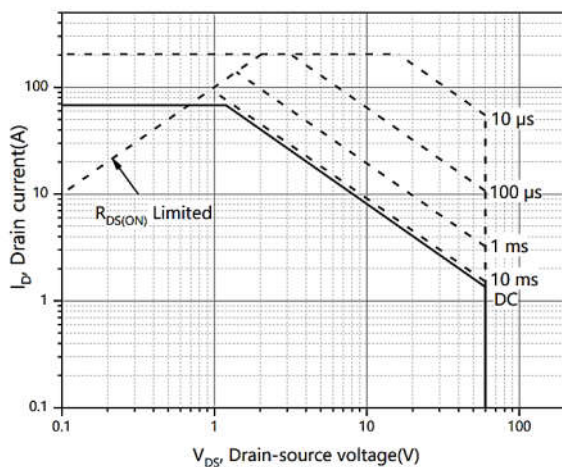


Figure 11. Safe operation area T_C=25 °C

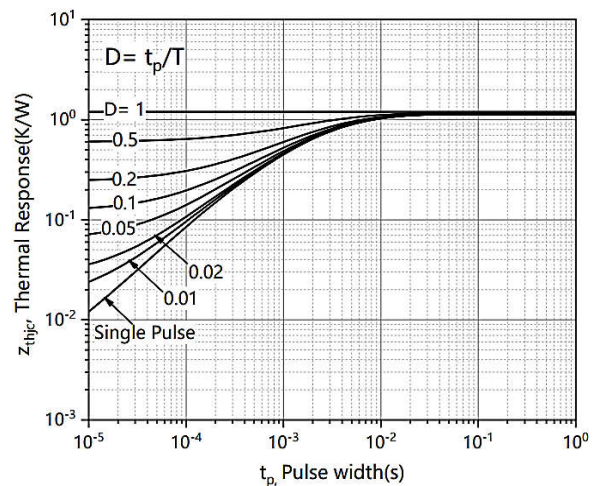
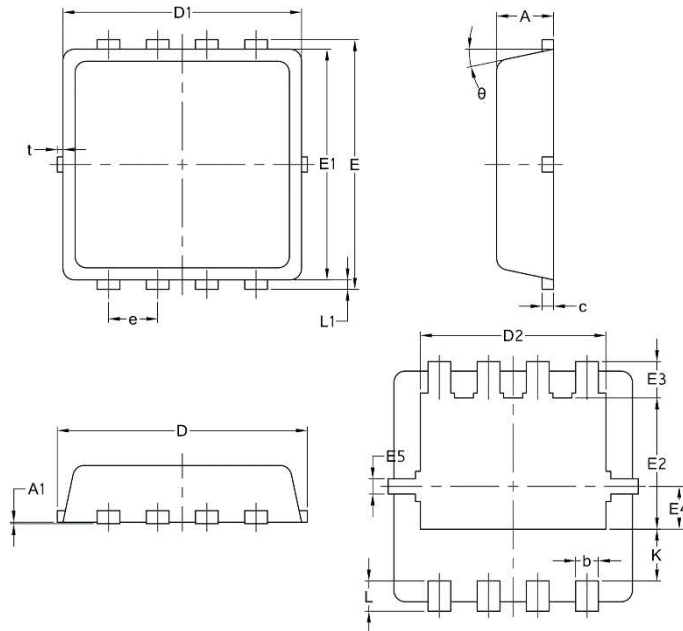


Figure 12. Max. transient thermal impedance

PDFN3*3-8L



| Symbol | Common | | |
|--------|--------|-------|------|
| | mm | | |
| | Mim | Nom | Max |
| A | 0.70 | 0.75 | 0.85 |
| A1 | / | / | 0.05 |
| b | 0.20 | 0.30 | 0.40 |
| c | 0.10 | 0.152 | 0.25 |
| D | 3.15 | 3.30 | 3.45 |
| D1 | 3.00 | 3.15 | 3.25 |
| D2 | 2.29 | 2.45 | 2.65 |
| E | 3.15 | 3.30 | 3.45 |
| E1 | 2.90 | 3.05 | 3.20 |
| E2 | 1.54 | 1.74 | 1.94 |
| E3 | 0.28 | 0.48 | 0.65 |
| E4 | 0.37 | 0.57 | 0.77 |
| E5 | 0.10 | 0.20 | 0.30 |
| e | 0.60 | 0.65 | 0.70 |
| K | 0.59 | 0.69 | 0.89 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | 0.06 | 0.125 | 0.20 |
| t | 0 | 0.075 | 0.13 |
| Φ | 10 | 12 | 14 |