# Dual N-Channel Enhancement Mode MOSFET

# BL8810DF2

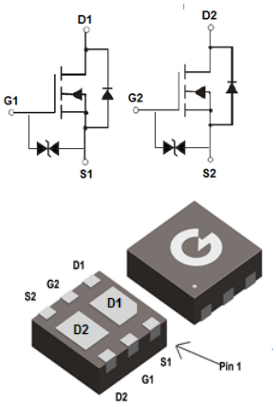
## Features

HF

- Low on-resistance
- Low threshold
- Fast switching speed
- Low gate drive

## Mechanical Data

- Case: DFN2020-6LC
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208




DFN2020-6LC

## Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|---|---|---|---|
| BL8810DF2 | DFN2020-6LC | 3000 pcs / Tape & Reel | 8810 |

## Maximum Ratings (@ $T_A$ = 25℃ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | 20 | V |
| Gate-to-Source Voltage | $V_{GSS}$ | ±10 | V |
| Continuous Drain Current | $I_D$ | 5 | A |
| Pulsed Drain Current | $I_{DM}$ | 20 | A |

## Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation | $P_D$ | 1.13 | W |
| Thermal Resistance Junction-to-Air | $R_{\theta JA}$ | 110 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -55 ~ +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 ~ +150 | °C |

## Electrical Characteristics (@ $T_A$ = 25℃ unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| $V_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$ = 0V, $I_D$ = 250μA | 20 | - | - | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$ = 20V, $V_{GS}$ = 0V | - | - | 1 | μA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$ = ±10V, $V_{DS}$ = 0V | - | - | ±10 | μA |
| **On Characteristics** | | | | | | |
| $R_{DS(ON)}$ | Static Drain-Source On-resistance | $V_{GS}$ = 4.5V, $I_D$ = 4A | - | - | 22 | mΩ |
| | | $V_{GS}$ = 2.5V, $I_D$ = 3A | - | - | 36 | mΩ |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 0.45 | 0.7 | 1 | V |
| **Dynamic Characteristics** | | | | | | |
| $C_{ISS}$ | Input Capacitance | $V_{GS}$ = 0V<br>$V_{DS}$ = 10V<br>f = 1.0MHz | - | 697 | - | pF |
| $C_{OSS}$ | Output Capacitance | | - | 110 | - | |
| $C_{RSS}$ | Reverse Transfer Capacitance | | - | 101 | - | |
| **Switching Characteristics** | | | | | | |
| $t_{d(ON)}$ | Turn-on Delay Time | $V_{DD}$ = 10V<br>$V_{GS}$ = 5V<br>$R_G$ = 3Ω<br>$R_L$ = 1.5Ω | - | 0.5 | - | ns |
| $t_r$ | Turn-on Rise Time | | - | 1 | - | |
| $t_{d(OFF)}$ | Turn-Off Delay Time | | - | 12 | - | |
| $t_f$ | Turn-Off Fall Time | | - | 4 | - | |
| $Q_G$ | Total Gate-Charge | $V_{DD}$ = 4.5V<br>$V_{GS}$ = 10V<br>$I_D$ = 7A | - | 11.2 | - | nC |
| $Q_{GS}$ | Gate to Source Charge | | - | 1.6 | - | |
| $Q_{GD}$ | Gate to Drain (Miller) Charge | | - | 3.2 | - | |
| **Source-Drain Diode Characteristics** | | | | | | |
| $V_{SD}$ | Diode Forward Voltage | $I_{SD}$ = 1A, $V_{GS}$ = 0V | - | - | 1 | V |

## Ratings and Characteristics Curves (@ $T_A$ = 25°C unless otherwise specified)

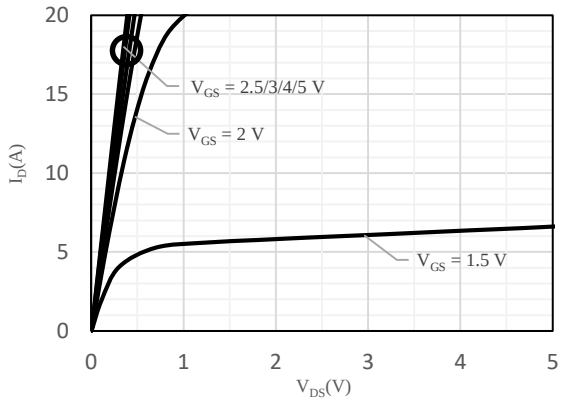



Fig 1 Typical Output Characteristics

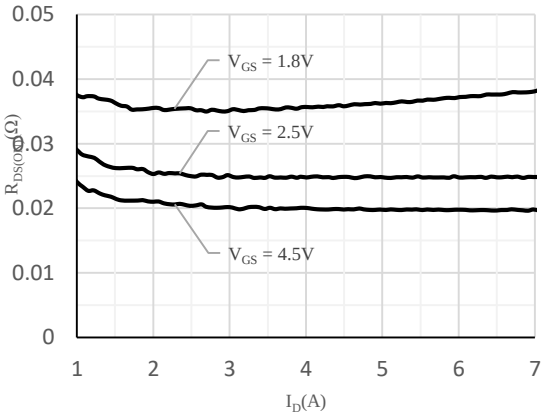



Fig 2 On-Resistance vs. Drain Current and Gate Voltage

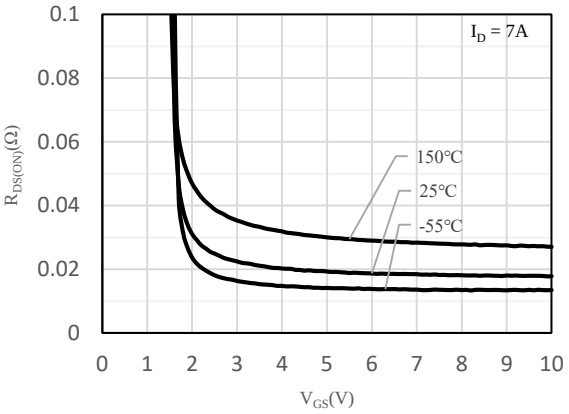



Fig 3 On-Resistance vs. Gate-Source Voltage

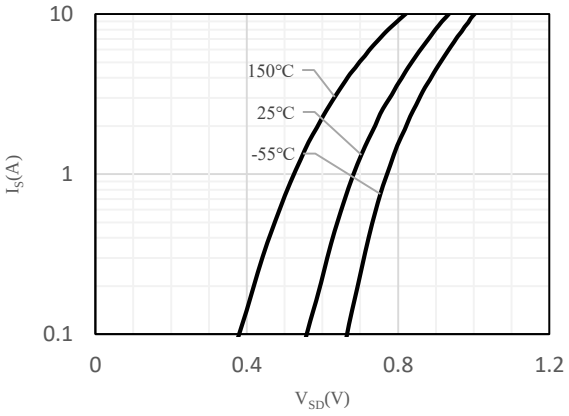



Fig 4 Body-Diode Characteristics

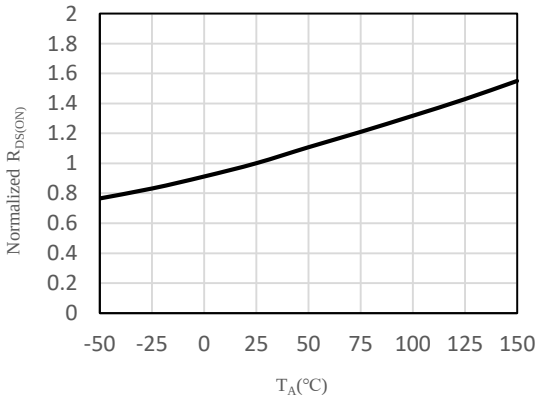



Fig 5 On-Resistance vs. Junction Temperature

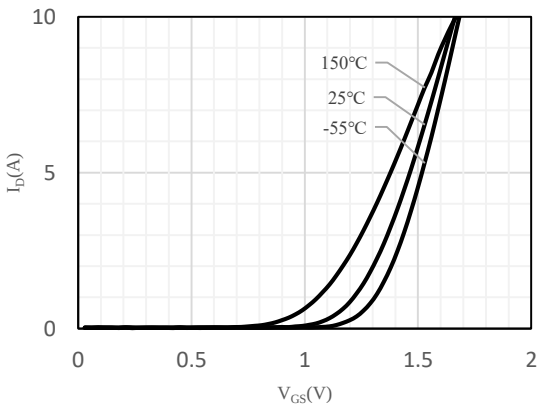



Fig 6 Transfer Characteristics

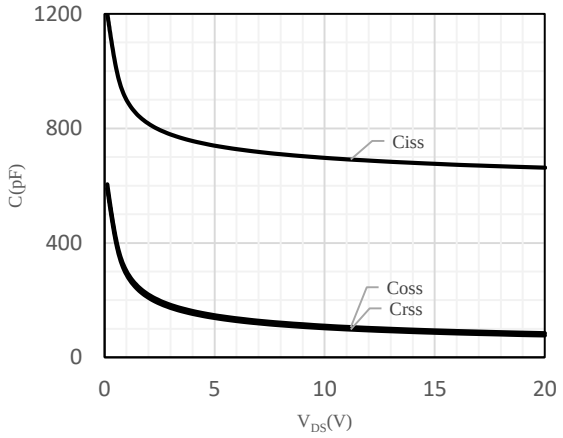



Fig 7 Capacitance Characteristics

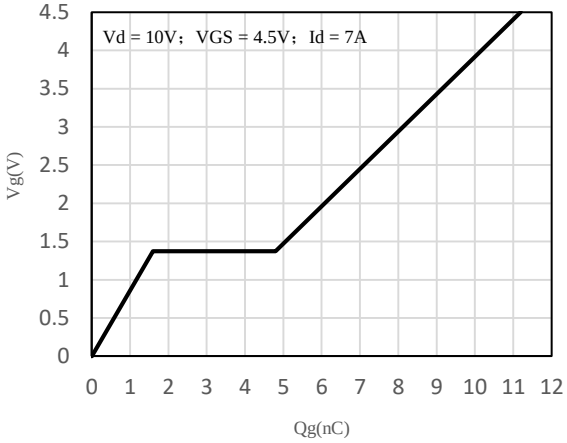



Fig 8 Gate-Charge Characteristics

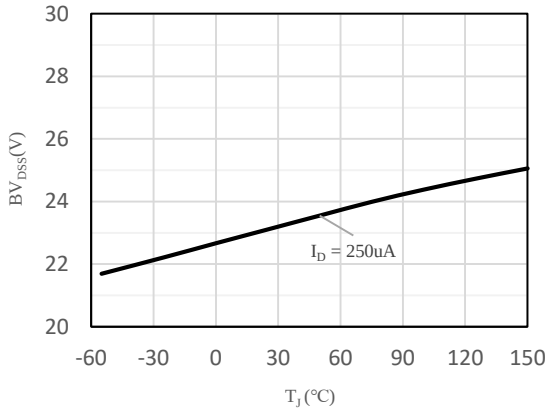



Fig 9 Breakdown Voltage vs. Junction Temperature

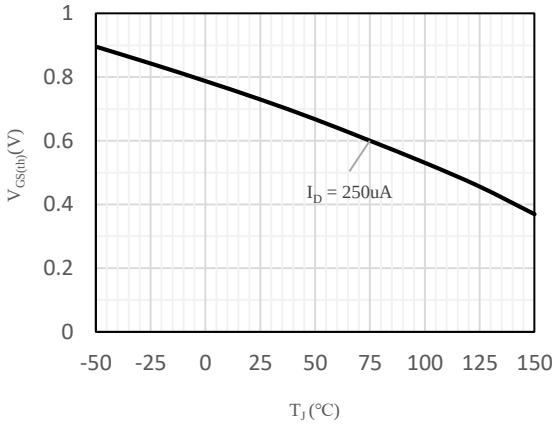
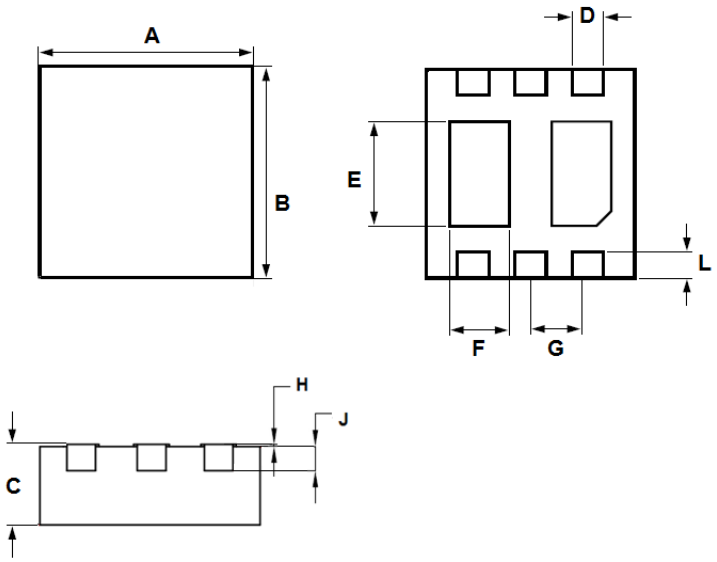



Fig 10 $V_{GS(th)}$ vs. Junction Temperature

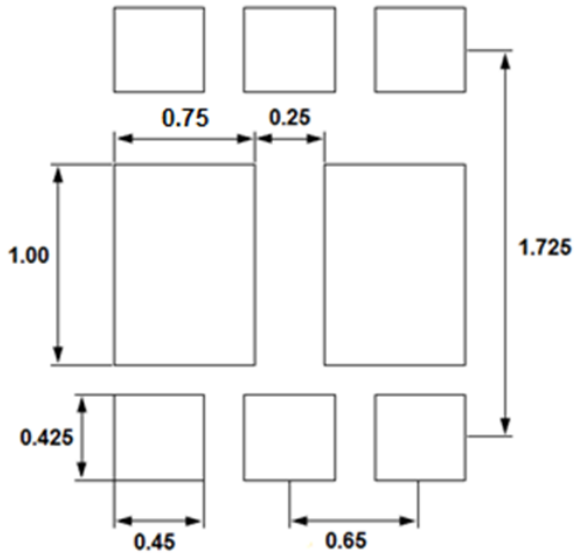
## Package Outline Dimensions (Unit: mm)




| DFN2020-6LC | | |
|---|---|---|
| **Dimension** | **Min.** | **Max.** |
| A | 1.900 | 2.100 |
| B | 1.900 | 2.100 |
| C | 0.500 | 0.600 |
| D | 0.250 | 0.350 |
| E | 0.800 | 1.000 |
| F | 0.600 | 0.800 |
| G | 0.550 | 0.750 |
| H | 0.000 | 0.050 |
| J | 0.103 | 0.303 |
| L | 0.174 | 0.326 |

## Mounting Pad Layout (Unit: mm)

### DFN2020-6LC

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