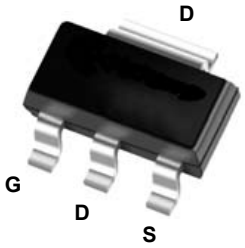
GOOD-ARK SEMICONDUCTOR

# GSFL25110

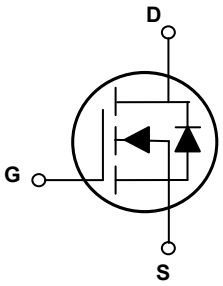
**100V N-Channel MOSFET**

## Main Product Characteristics

| | |
|---|---|
| $V_{(BR)DSS}$ | 100V |
| $R_{DS(ON)}$ | 250mΩ (Max.) |
| $I_D$ | 3.1A |




SOT-223




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 GSFL25110 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°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 100 | V |
| Gate-to-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current, @ Steady-State ($T_C$=25°C) | $I_D$ | 3.1 | A |
| Continuous Drain Current, @ Steady-State ($T_C$=70°C) | | 2.5 | A |
| Pulsed Drain Current ($T_C$=25°C)[1] | $I_{DM}$ | 12.4 | A |
| Power Dissipation ($T_C$=25°C) | $P_D$ | 4.0 | W |
| Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) | $R_{\theta JA}$ | 62 | °C/W |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 31.5 | °C/W |
| Operating Junction and Storage Temperature Range | $T_J/T_{STG}$ | -55 to +150 | °C |
| Soldering Temperature (SMD) | $T_{sold}$ | 260 | °C |

## Electrical Characteristics ($T_J$=25°C unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **On / Off Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=250μA | 100 | - | - | V |
| $BV_{DSS}$ Temperature Coefficient | $\triangle BV_{DSS}/\triangle T_J$ | Reference to 25°C, $I_D$=1mA | - | 0.1 | - | V/°C |
| Drain-Source Leakage Current | $I_{DSS}$ | $V_{DS}$=100V, $V_{GS}$=0V, $T_J$=25°C | - | - | 1 | μA |
| | | $V_{DS}$=80V, $V_{GS}$=0V, $T_J$=125°C | - | - | 10 | μA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V, $V_{DS}$=0V | - | - | ±100 | nA |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=3A | - | 210 | 250 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=2A | - | 230 | 300 | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 1.1 | - | 2.9 | V |
| $V_{GS(th)}$ Temperature Coefficient | $\triangle V_{GS(th)}$ | | - | -4 | - | mV/°C |
| **Dynamic and Switching Characteristics** | | | | | | |
| Total Gate Charge[2,3] | $Q_g$ | $V_{DS}$=50V, $I_D$=2A, $V_{GS}$=10V | - | 6.8 | - | nC |
| Gate-Source Charge[2,3] | $Q_{gs}$ | | - | 1.5 | - | |
| Gate-Drain Charge[2,3] | $Q_{gd}$ | | - | 2.1 | - | |
| Turn-On Delay Time[2,3] | $t_{d(on)}$ | $V_{DD}$=50V, $R_G$=1Ω, $V_{GS}$=10V, $I_D$=2A | - | 6.0 | - | nS |
| Rise Time[2,3] | $t_r$ | | - | 10 | - | |
| Turn-Off Delay Time[2,3] | $t_{d(off)}$ | | - | 12 | - | |
| Fall Time[2,3] | $t_f$ | | - | 8.0 | - | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=50V, $V_{GS}$=0V, F=1MHz | - | 362 | - | pF |
| Output Capacitance | $C_{oss}$ | | - | 15 | - | |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 12 | - | |
| Gate Resistance | $R_g$ | $V_{GS}$=0V, $V_{DS}$=0V, F=1MHz | - | 2.3 | - | Ω |
| **Source-Drain Ratings and Characteristics** | | | | | | |
| Continuous Source Current | $I_S$ | $V_G$=$V_D$=0V, Force Current | - | - | 3.1 | A |
| Pulsed Source Current | $I_{SM}$ | | - | - | 12.4 | A |
| Diode Forward Voltage | $V_{SD}$ | $V_{GS}$=0V, $I_S$=2A, $T_J$=25°C | - | - | 1.4 | V |
| Reverse Recovery Time | $T_{rr}$ | $I_S$=1.2A, dv/dt=100A/us | - | 19 | - | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | - | 10 | - | nC |

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤300uS, duty cycle ≤2%.
3. Essentially independent of operating temperature.

## Typical Electrical and Thermal Characteristic Curves

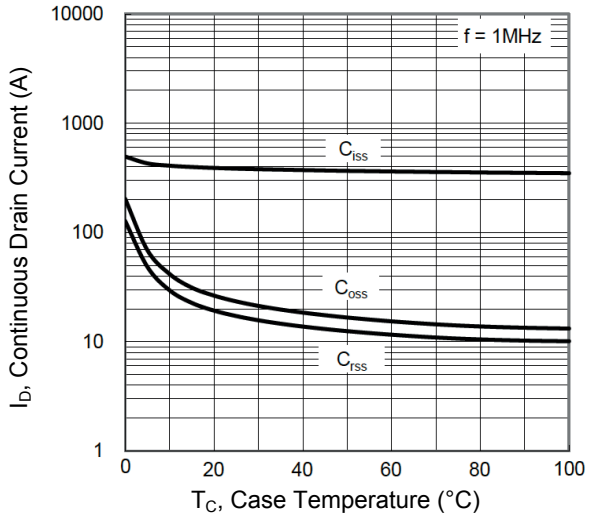



**Figure 1. Continuous Drain Current vs. $T_C$**

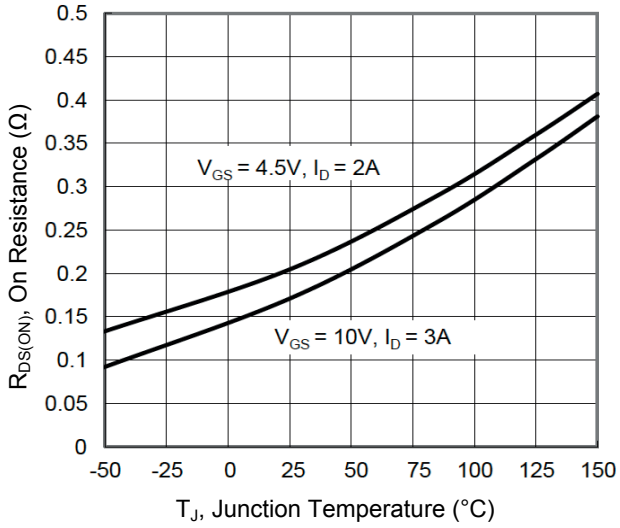



**Figure 2. $R_{DS(ON)}$ vs. $T_J$**

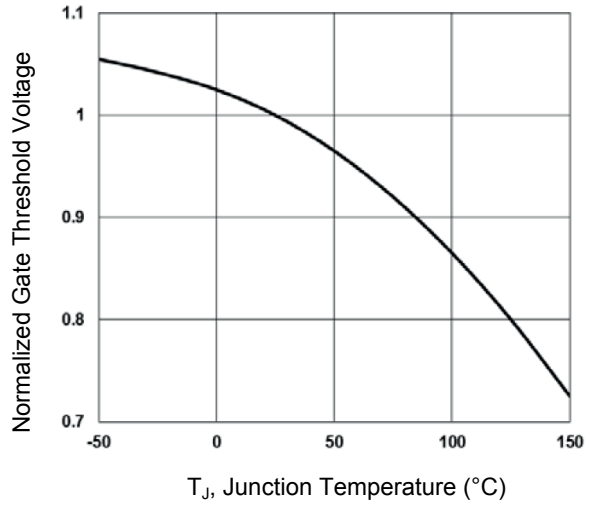



**Figure 3. Normalized $V_{th}$ vs. $T_J$**

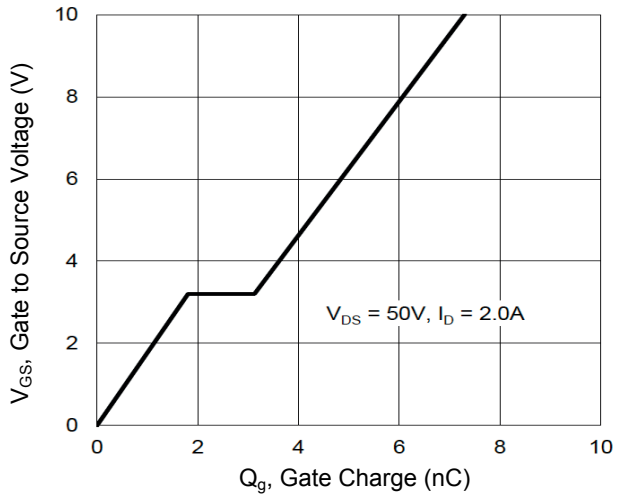



**Figure 4. Gate Charge Waveform**

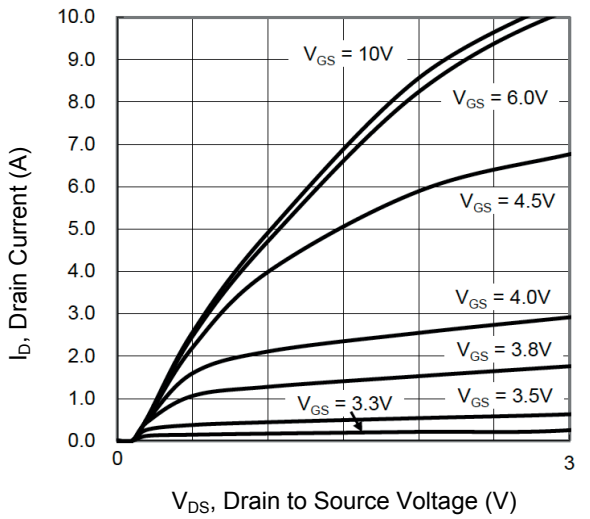



**Figure 5. Typical Output Characteristics**

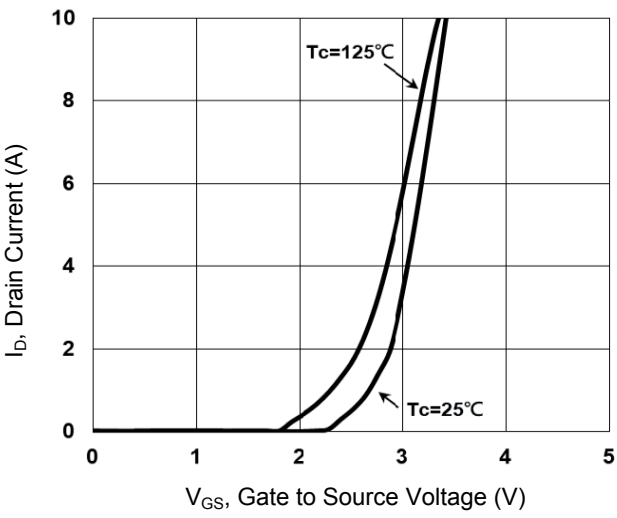
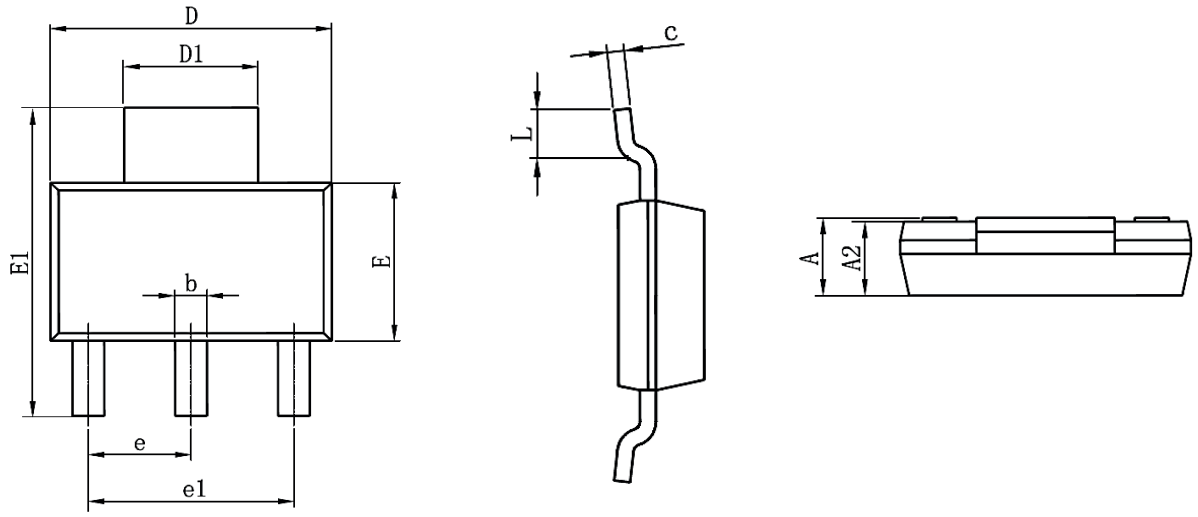



**Figure 6. Transfer Characteristics**

## Package Outline Dimensions (SOT-223)




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.50 | 1.80 | 0.059 | 0.071 |
| A2 | 1.45 | 1.80 | 0.057 | 0.071 |
| b | 0.60 | 0.84 | 0.024 | 0.033 |
| c | 0.20 | 0.35 | 0.008 | 0.014 |
| D | 6.20 | 6.70 | 0.244 | 0.264 |
| D1 | 2.90 | 3.10 | 0.114 | 0.122 |
| E | 3.30 | 3.70 | 0.130 | 0.146 |
| E1 | 6.70 | 7.30 | 0.264 | 0.287 |
| e | 2.30 TYP | | 0.091 TYP | |
| e1 | 4.40 | 4.70 | 0.173 | 0.185 |
| L | 0.70 | 1.10 | 0.028 | 0.043 |

## Order Information

| Device | Package | Marking | Packaging | SPQ |
|---|---|---|---|---|
| GSFL25110 | SOT-223 | L25110 | Tape & Reel | 3,000 Pcs / Reel |