# GSM2730EX7F

## 20V Dual N-Channel MOSFETs

### Product Description

The N-Channel enhancement mode power field effect transistor is using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

The device is well suited for high efficiency fast switching applications.

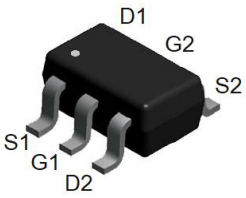
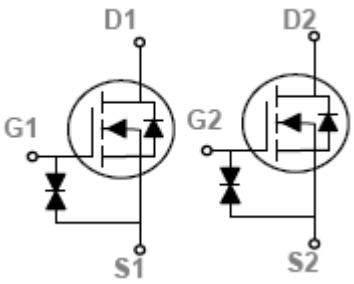
### Features

- $R_{DS(ON)}$ = 300mΩ @ $V_{GS}$=4.5V
- ESD Protected
- SOT-563 Package
- RoHS Compliant and Halogen Free

### Applications

- Notebook
- Networking
- Hand-Held Instruments

### Packages & Pin Assignments

| SOT-563 | Equivalent Circuit |
|---|---|
|  |  |





| Pin | Symbol | Description | Pin | Symbol | Description |
|---|---|---|---|---|---|
| 1 | S1 | Source 1 | 6 | D1 | Drain 1 |
| 2 | G1 | Gate 1 | 5 | G2 | Gate 2 |
| 3 | D2 | Drain 2 | 4 | S2 | Source 2 |

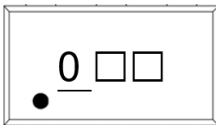
## Ordering and Marking Information

| Ordering Information | | | |
|---|---|---|---|
| **Part Number** | **Package** | **Part Marking** | **Quantity / Reel** |
| GSM2730EX7F | SOT-563 | 0 □□ | 3,000 PCS |

**GSM2730E** 1 2

- **Product Code:** GSM2730E
- **Package Code:** 1 is **X7** for SOT-563
- **Green Level:** 2 is **F** for RoHS Compliant and Halogen Free

**Marking Information**




- **Product Code:**
  0
  • The dot denotes Pin 1
- **GS Code:**
  □□

## Absolute Maximum Ratings ($T_A$ = 25ºC unless otherwise specified)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | | 20 | V |
| $V_{GSS}$ | Gate-Source Voltage | | ±10 | V |
| $I_D$ | Continuous Drain Current | $T_A$=25ºC | 1.02 | A |
| | | $T_A$=70ºC | 0.81 | |
| $I_{DM}$ | Pulsed Drain Current | | 3 | A |
| $P_D$ | Power Dissipation | $T_A$=25ºC | 504 | mW |
| $R_{\theta JA}$ | Thermal Resistance-Junction to Ambient [1] | | 248 | ºC/W |
| $T_J$ | Operating Junction Temperature Range | | -55 to +150 | ºC |
| $T_{STG}$ | Storage Temperature Range | | -55 to +150 | ºC |

**NOTE**:
1. The device is mounted on 1in$^2$ FR-4 board with 2oz. Copper

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

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V, $I_D$=250μA | 20 | - | - | V |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$=20V, $V_{GS}$=0V | - | - | 1 | μA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{DS}$=0V, $V_{GS}$=±10V | - | - | ±10 | μA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 0.3 | - | 1.0 | V |
| $R_{DS(ON)}$ | Drain-Source On-Resistance | $V_{GS}$=4.5V, $I_D$=0.5A | - | 220 | 300 | mΩ |
| | | $V_{GS}$=2.5V, $I_D$=0.4A | - | 280 | 450 | |
| | | $V_{GS}$=1.8V, $I_D$=0.2A | | 390 | 800 | |
| | | $V_{GS}$=1.5V, $I_D$=0.1A | | 540 | 1200 | |
| $V_{SD}$ | Diode Forward Voltage | $V_{GS}$=0V, $I_S$=0.5A | | 0.85 | 1 | V |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=16V, $V_{GS}$=0V, f=1MHz | | 60.7 | | pF |
| $C_{oss}$ | Output Capacitance | | | 9.7 | | |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 5.4 | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=0.25A | | 0.73 | | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 0.23 | | |
| $Q_{gd}$ | Gate-Drain Charge | | | 0.12 | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD}$=10V, $I_D$=0.2A, $V_{GS}$=4.5V, $R_G$=10Ω | | 5.1 | | ns |
| $t_r$ | Turn-On Rise Time | | | 7.4 | | |
| $t_{d(off)}$ | Turn-Off Delay Time | | | 26.7 | | |
| $t_f$ | Turn-Off Fall Time | | | 12.3 | | |

## Typical Performance Characteristics

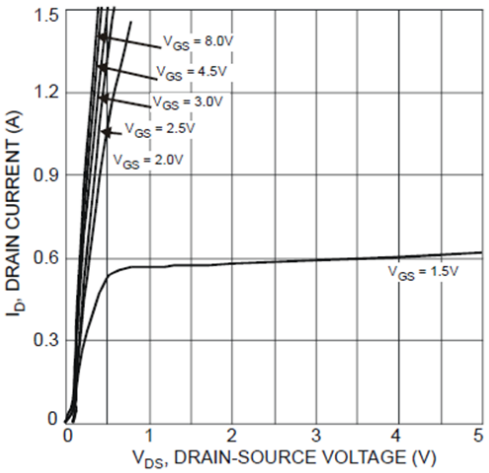



**Fig.1 Output Characteristics**

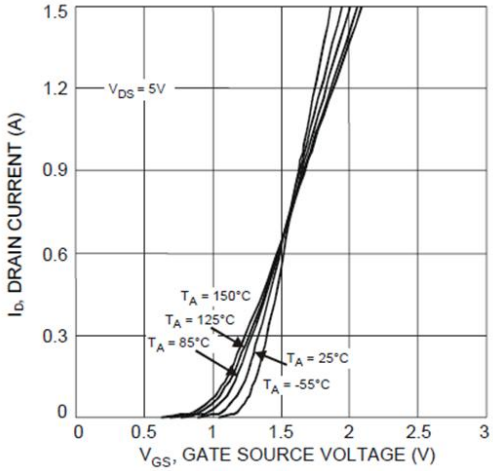



**Fig.2 Transfer Characteristics**

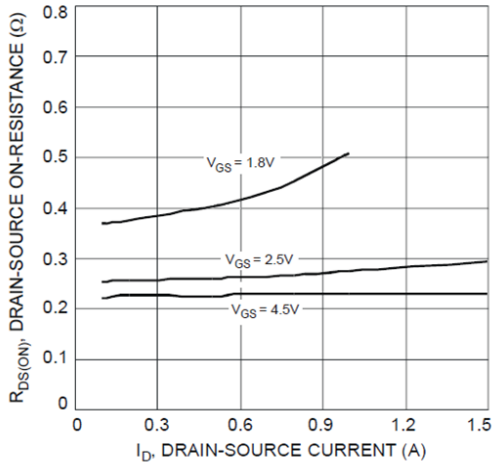



**Fig.3 On-Resistance vs. Gate Voltage**

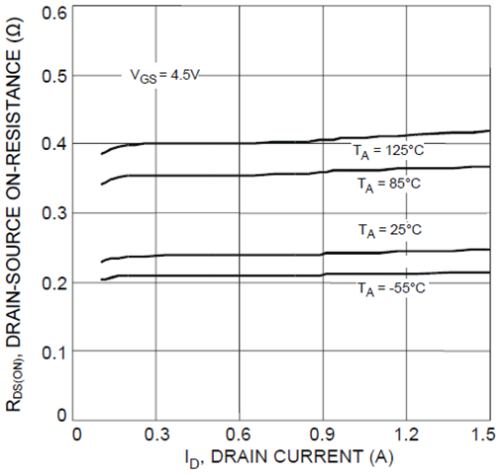



**Fig.4 On-Resistance vs. Drain Current**

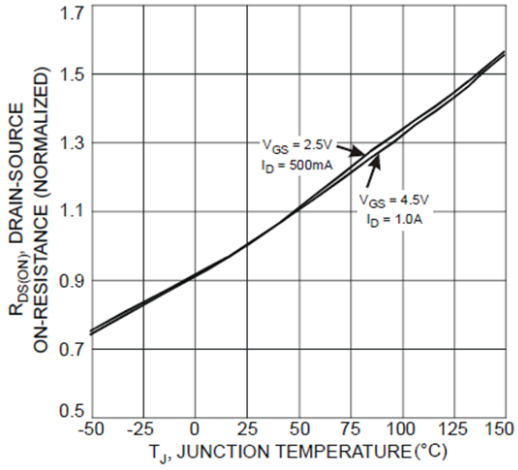



**Fig.5 Normalized On-Resistance vs. $T_J$**

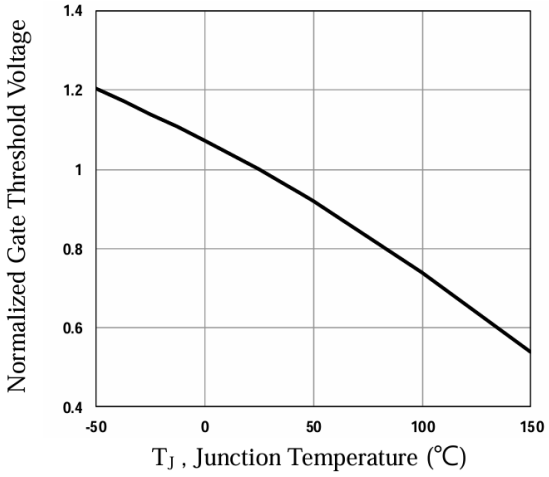



**Fig.6 Normalized $V_{GS(th)}$ vs. $T_J$**

## Typical Performance Characteristics

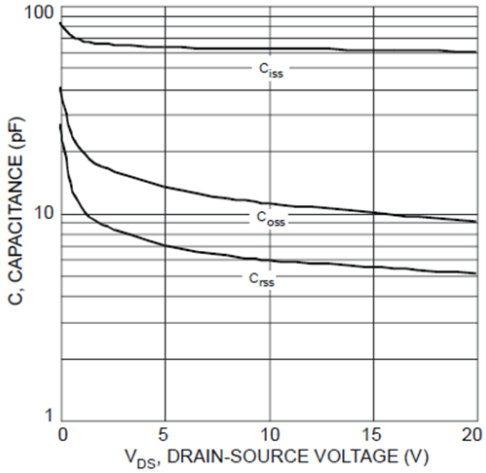
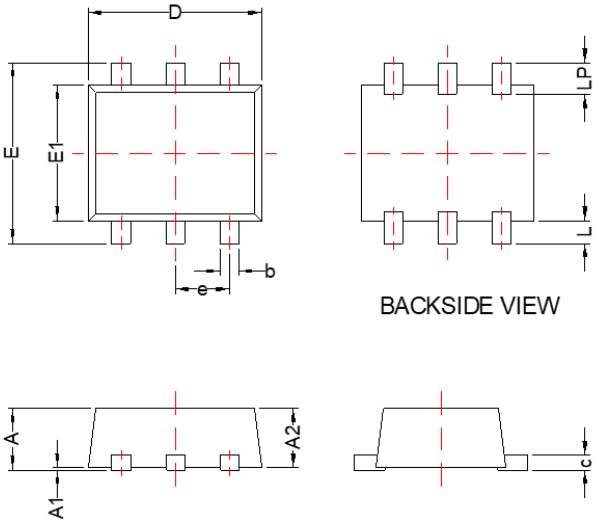


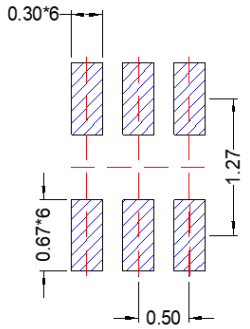

**Fig.7 Capacitance Characteristics**

# SOT-563

## Package Dimension




## Recommended Land Pattern




**Unit: mm**

| Dimensions | | | | |
|---|---|---|---|---|
| Symbol | Millimeters | | Inches | |
| | MIN | MAX | MIN | MAX |
| A | 0.45 | 0.65 | 0.018 | 0.026 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.45 | 0.60 | 0.018 | 0.024 |
| b | 0.15 | 0.30 | 0.006 | 0.012 |
| c | 0.07 | 0.20 | 0.003 | 0.008 |
| D | 1.50 | 1.70 | 0.059 | 0.067 |
| E | 1.50 | 1.70 | 0.059 | 0.067 |
| E1 | 1.10 | 1.30 | 0.043 | 0.051 |
| e | 0.50 BSC | | 0.020 BSC | |
| L | 0.10 | 0.30 | 0.004 | 0.012 |
| LP | 0.16 | 0.4 | 0.006 | 0.016 |

**NOTE:**
Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.

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# CONTACT US


| GS Headquarter | |
|---|---|
|  | 4F, NO.43-1, Lane 11, Sec. 6, Minquan E. Rd Neihu District, Taipei City 114761, Taiwan (R.O.C). |
|  | 886-2-2657-9980 |
|  | 886-2-2657-3630 |
|  | sales_twn@gs-power.com |

| RD Division | |
|---|---|
|  | 824 Bolton Drive Milpitas. CA. 95035 |
|  | 1-408-457-0587 |