# GSM3404

## 30V N-Channel Enhancement Mode MOSFET

### Product Description

GSM3404, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$ ,low gate charge.
These devices are particularly suited for low Voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

### Features

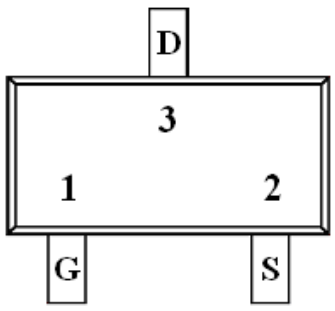
- 30V/4.0A,$R_{DS(ON)}$=30mΩ@$V_{GS}$=10V
- 30V/3.2A,$R_{DS(ON)}$=34mΩ@$V_{GS}$=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- SOT-23-3L package design

### Applications

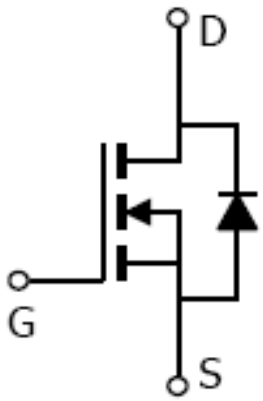
- Power Management in Note book
- LED Display
- DC-DC System
- LCD Panel

### Packages & Pin Assignments

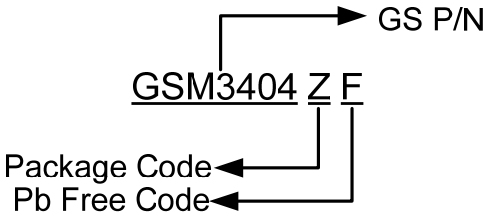
**GSM3404ZF(SOT-23-3L)**




| Pin | Description |
|---|---|
| 1 | Gate |
| 2 | Source |
| 3 | Drain |

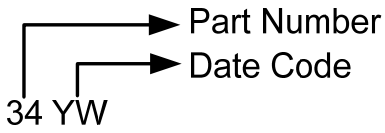


## Ordering Information




| Part Number | Package | Quantity Reel |
|---|---|---|
| GSM3404ZF | SOT-23-3L | 3000 PCS |

## Marking Information




## Absolute Maximum Ratings

($T_A$=25ºC unless otherwise noted)

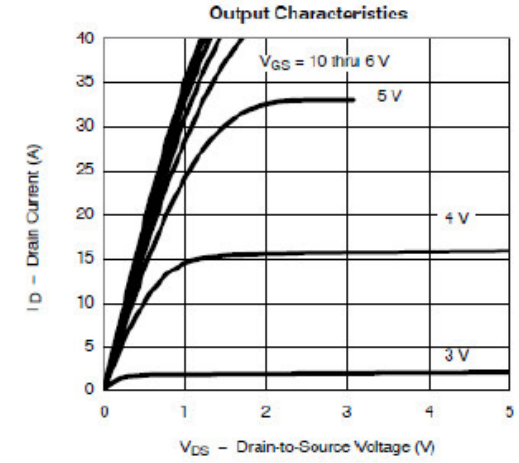
| Symbol | Parameter | | Typical | Unit |
|---|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | | 30 | V |
| $V_{GSS}$ | Gate –Source Voltage | | ±20 | V |
| $I_D$ | Continuous Drain Current($T_J$=150℃) | $T_A$=25ºC | 4.0 | A |
| | | $T_A$=70ºC | 3.2 | |
| $I_{DM}$ | Pulsed Drain Current | | 20 | A |
| $I_S$ | Continuous Source Current(Diode Conduction) | | 1.5 | A |
| $P_D$ | Power Dissipation | $T_A$=25ºC | 1.25 | W |
| | | $T_A$=70ºC | 0.8 | |
| $T_J$ | Operating Junction Temperature | | 150 | ºC |
| $T_{STG}$ | Storage Temperature Range | | -55/150 | ºC |
| $R_{\theta JA}$ | Thermal Resistance-Junction to Ambient | | 120 | ºC/ W |

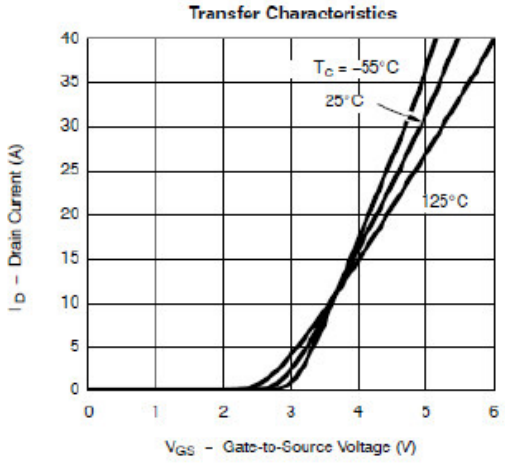
## Electrical Characteristics

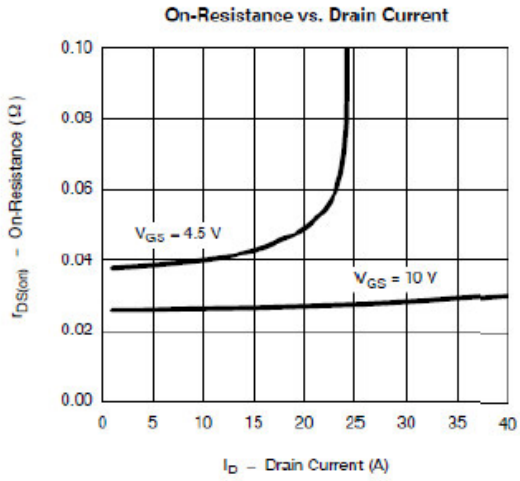
($T_A$=25ºC unless otherwise noted)

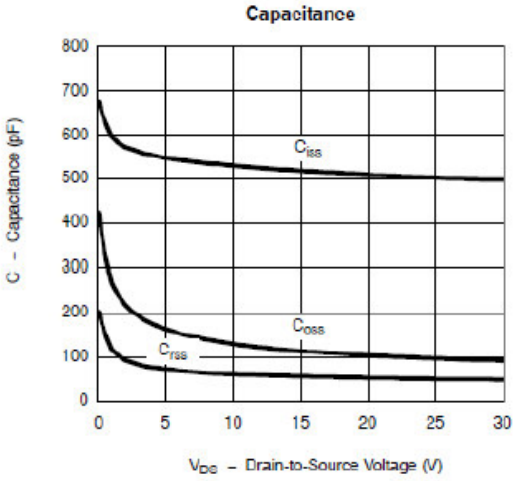
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V,$I_D$=250uA | 30 | | | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$,$I_D$=250uA | 0.5 | | 1.8 | |
| $I_{GSS}$ | Gate Leakage Current | $V_{DS}$=0V,$V_{GS}$=±20V | | | ±100 | nA |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=30V,$V_{GS}$=0V | | | 1 | uA |
| | | $V_{DS}$=30V,$V_{GS}$=0V $T_J$=85℃ | | | 10 | |
| $I_{D(on)}$ | On-State Drain Current | $V_{DS}$≧5V,$V_{GS}$=10V | 15 | | | A |
| $R_{DS(on)}$ | Drain-Source On-Resistance | $V_{GS}$=10V,$I_D$=4.0A | | 27 | 30 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=3.2A | | 31 | 34 | |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=15V,$I_D$=10A | | 24 | | S |
| $V_{SD}$ | Diode Forward Voltage | $I_S$=1.0A,$V_{GS}$=0V | | 0.8 | 1.3 | V |
| **Dynamic** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=15V,$V_{GS}$=4.5V, $I_D$=2.0A | | 8 | 12 | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 2.0 | | |
| $Q_{gd}$ | Gate-Drain Charge | | | 2.3 | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=15V,$V_{GS}$=0V, f=1MHz | | 800 | | pF |
| $C_{oss}$ | Output Capacitance | | | 180 | | |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 70 | | |
| $t_{d(on)}$ | Turn-On Time | $V_{DD}$=15V,$R_L$=1.5Ω, $I_D$=2.0A,$V_{GEN}$=10V, $R_G$=1Ω | | 8 | 15 | ns |
| $t_r$ | | | | 8 | 15 | |
| $t_{d(off)}$ | Turn-Off Time | | | 16 | 28 | |
| $t_f$ | | | | 8 | 16 | |

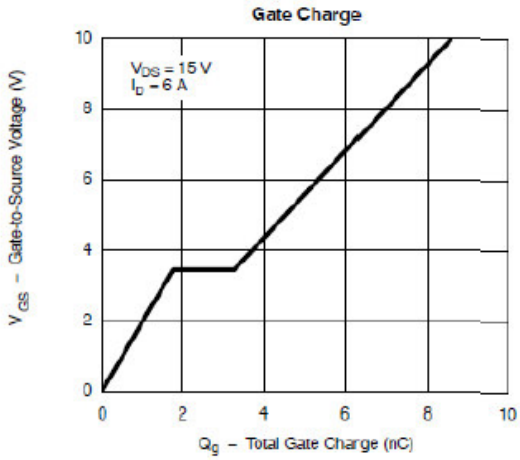
## Typical Performance Characteristics

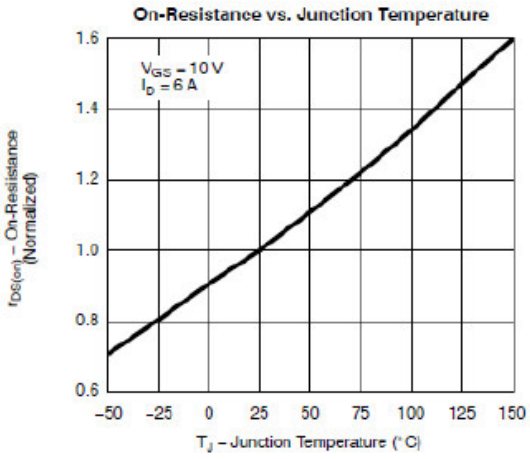


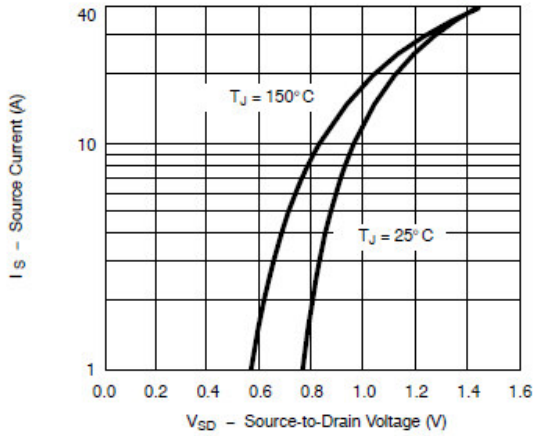



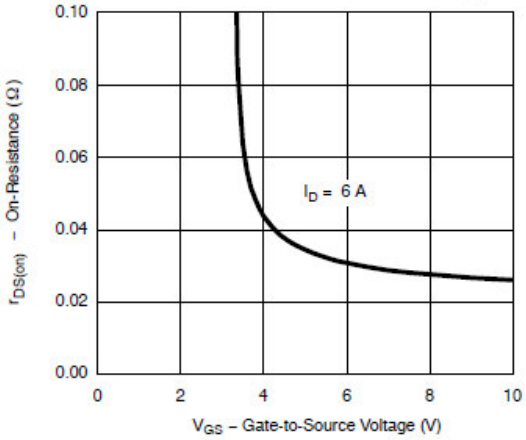



## Typical Performance Characteristics (continue)

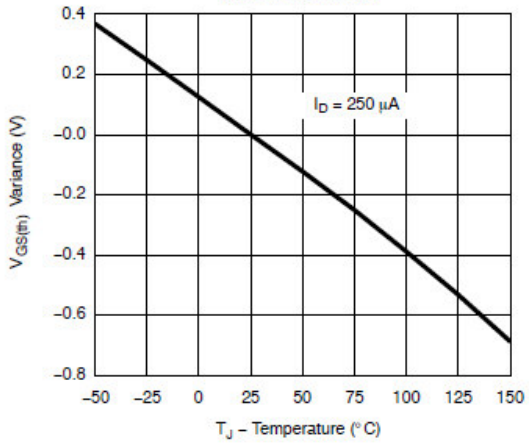
Source-Drain Diode Forward Voltage



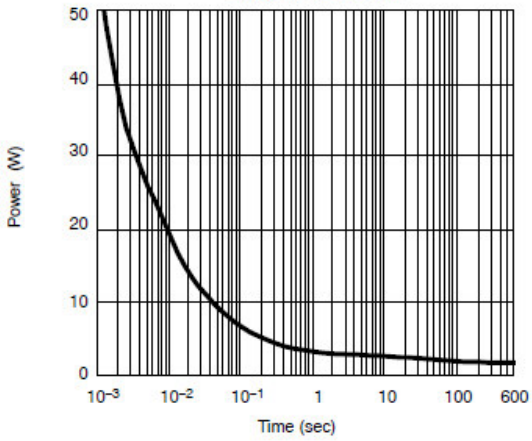

On-Resistance vs. Gate-to-Source Voltage



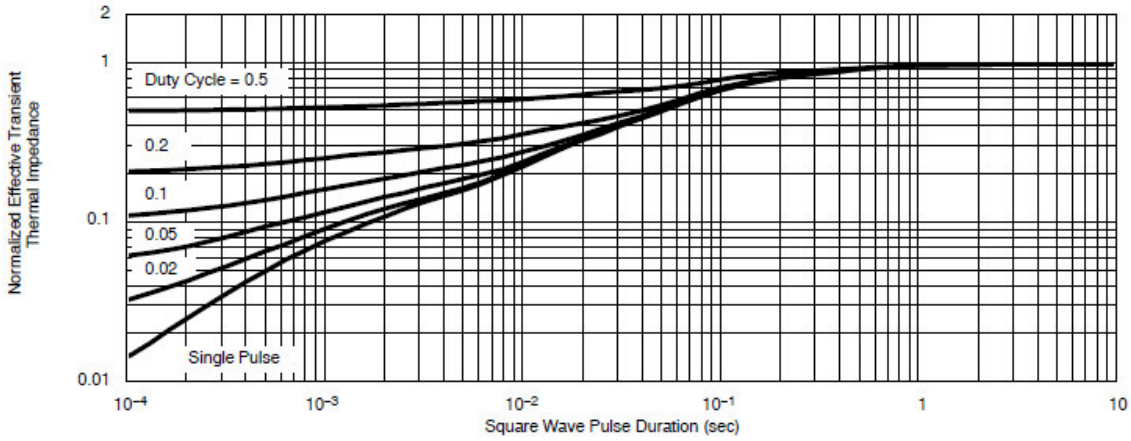

Threshold Voltage




Single Pulse Power

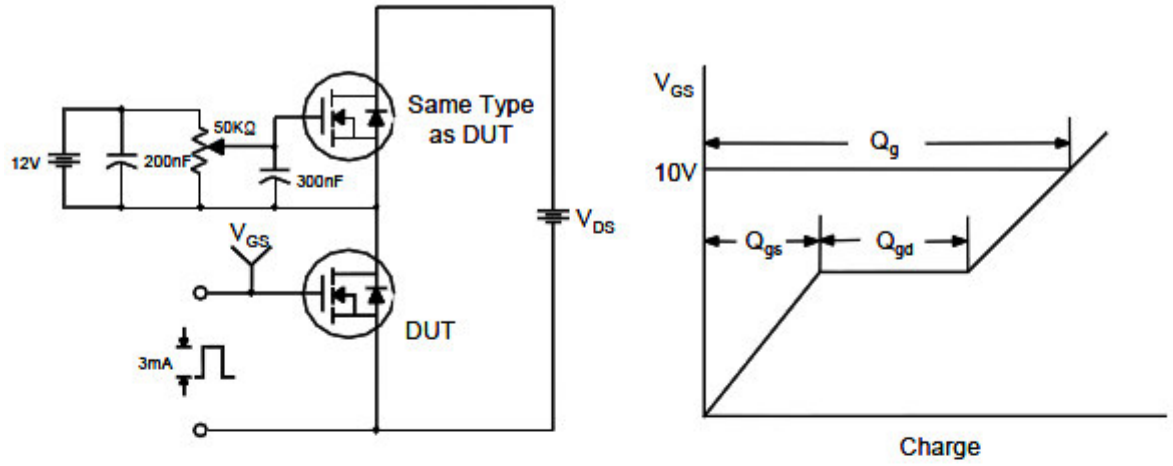



Normalized Thermal Transient Impedance, Junction-to-Foot

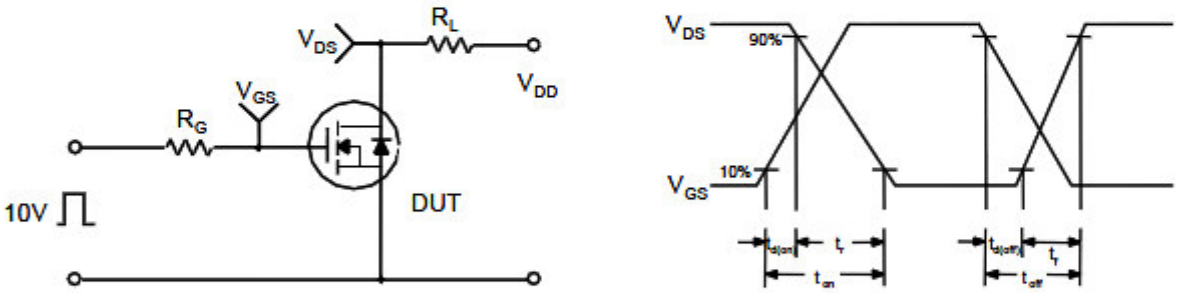


## Typical Performance Characteristics (continue)

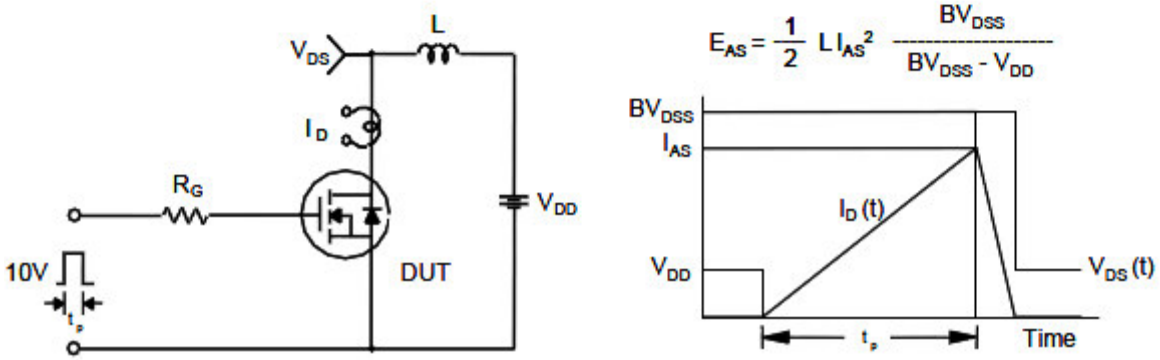
Gate Charge Test Circuit & Waveform




Resistive Switching Test Circuit & Waveforms

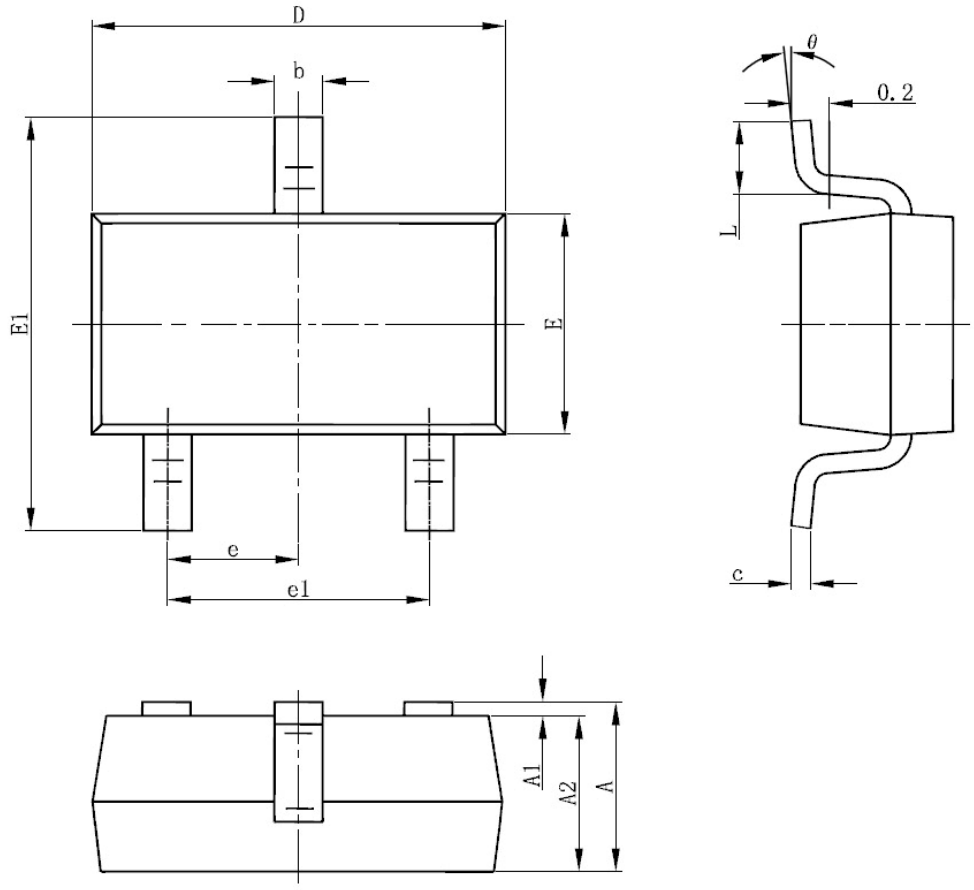



Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

# SOT-23-3L




| Dimensions | | | | |
|---|---|---|---|---|
| SYMBOL | Millimeters | | Inches | |
| | MIN | MAX | MIN | MAX |
| A | 1.05 | 1.25 | 0.041 | 0.049 |
| A1 | 0 | 0.1 | 0 | 0.004 |
| A2 | 1.05 | 1.15 | 0.041 | 0.045 |
| b | 0.3 | 0.4 | 0.012 | 0.016 |
| c | 0.1 | 0.2 | 0.004 | 0.008 |
| D | 2.82 | 3.02 | 0.111 | 0.119 |
| E | 1.5 | 1.7 | 0.059 | 0.067 |
| E1 | 2.65 | 2.95 | 0.104 | 0.116 |
| e | 0.950 (TYP) | | 0.037 (TYP) | |
| e1 | 1.8 | 2 | 0.071 | 0.079 |
| L | 0.700 REF | | 0.028 REF | |
| L1 | 0.3 | 0.6 | 0.012 | 0.024 |
| Q | 0° | 8° | 0° | 8° |

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