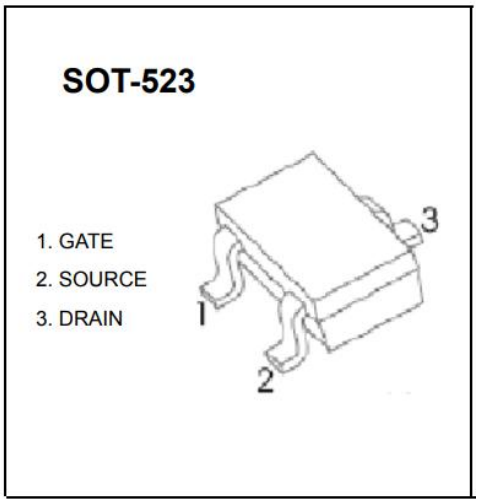
# Plastic-Encapsulate MOSFETS

N-Channel MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$MAX | $I_D$ |
|---|---|---|
| 20V | 380 mΩ@4.5V | 0.75A |
| | 450 mΩ@2.5V | |
| | 800 mΩ@1.8V | |




**FEATURE**

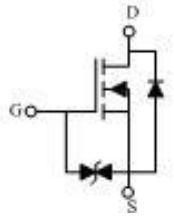
- High-Side Switching
- Low On-Resistance
- Low Threshold
- Fast Switching Speed

**APPLICATION**

- Drivers:Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

**MARKING:**34K

**Equivalent Circuit**




**Maximum ratings ($T_a$=25℃ unless otherwise noted)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source voltage | $V_{DSS}$ | 20 | V |
| Typical Gate-Source Voltage | $V_{GS}$ | ±12 | |
| Drain Current-Continuous | $I_D$ | 0.75 | A |
| Drain Current -Pulsed(note1) | $I_{DM}$ | 1.5 | |
| Power Dissipation (note 2) | $P_D$ | 200 | mW |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 625 | ℃/W |
| Storage Temperature | $T_j$ | 150 | ℃ |
| Junction Temperature | $T_{stg}$ | -55 ~+150 | |

## MOSFET ELECTRICAL CHARACTERISTICS

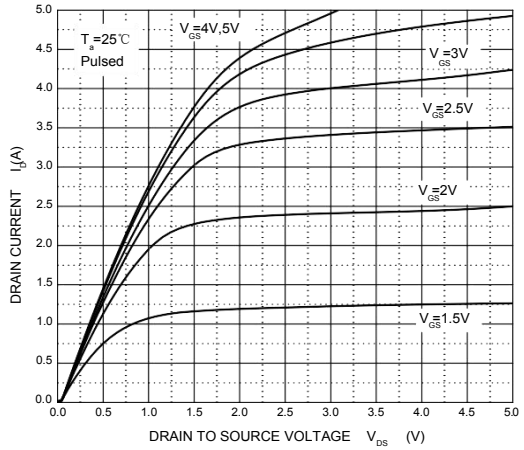
**$T_a$=25 ℃ unless otherwise specified**

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **On/Off States** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 20 | | | V |
| Gate-Threshold Voltage(note 3) | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 0.35 | | 1.1 | |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±10V | | | ±20 | μA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ =20V, $V_{GS}$ =0V | | | 1 | μA |
| Drain-Source On-State Resistance(note 3) | $R_{DS(on)}$ | $V_{GS}$ =4.5V, $I_D$ =650mA | | | 380 | mΩ |
| | | $V_{GS}$ =2.5V, $I_D$ =550mA | | | 450 | |
| | | $V_{GS}$ =1.8V, $I_D$ =450mA | | | 800 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$ =10V, $I_D$ =800mA | 1 | | | S |
| **Switching Times (note 4)** | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}$=10V,$I_D$=500mA, $V_{GS}$=4.5V,$R_G$=10Ω | | 6.7 | | ns |
| Rise Time | $t_r$ | | | 4.8 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 17.3 | | |
| Fall Time | $t_f$ | | | 7.4 | | |
| **Drain-Source Diode Characteristics** | | | | | | |
| Drain-Source Diode Forward Voltage (note 3) | $V_{SD}$ | $I_S$=0.15A, $V_{GS}$ = 0V | | | 1.2 | V |

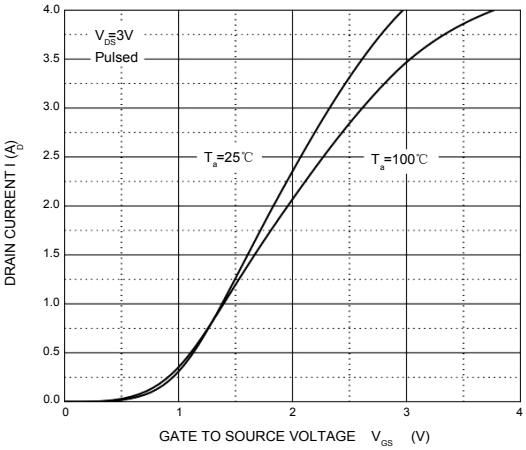
**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at $T_a$=25℃.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.
4. These parameters have no way to verify.

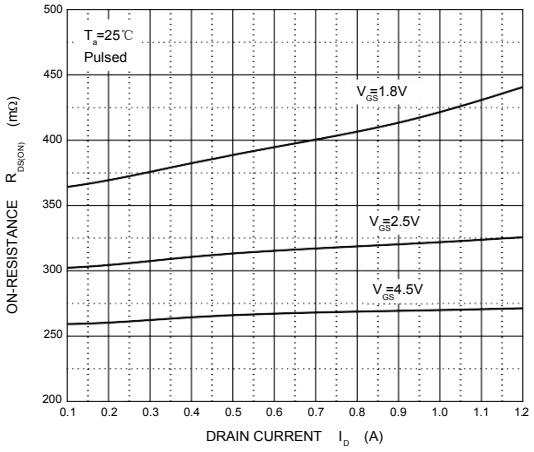
**Output Characteristics**



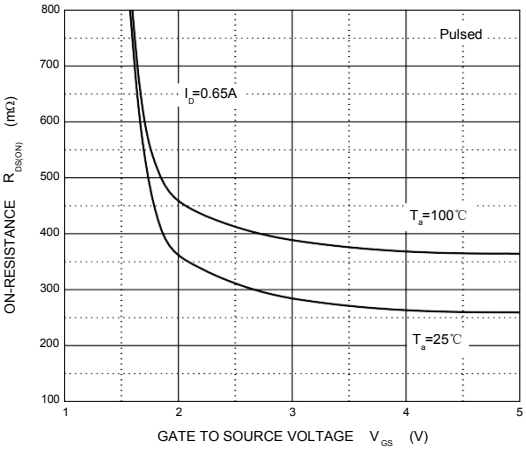

**Transfer Characteristics**



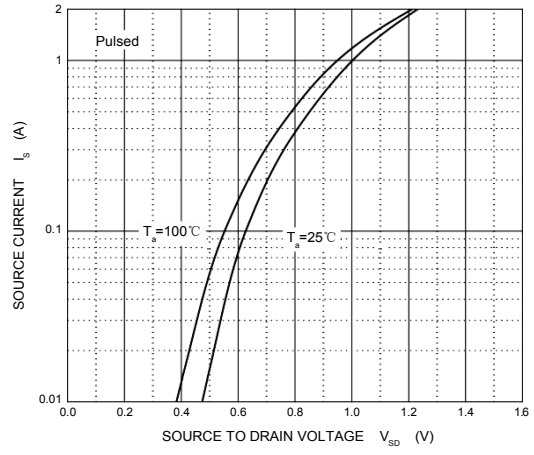

**$R_{DS(ON)}$ —— $I_D$**



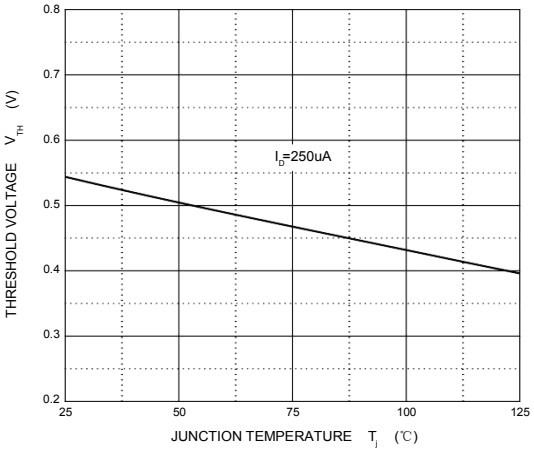

**$R_{DS(ON)}$ —— $V_{GS}$**




**$I_S$ —— $V_{SD}$**




**Threshold Voltage**



## PACKAGE OUTLINE

**Plastic surface mounted package; 3 leads** **SOT-523**

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