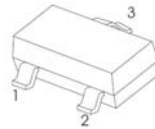# SI2310

## SOT-23 Plastic-Encapsulate MOSFETS

### FEATURE
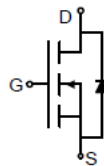
- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

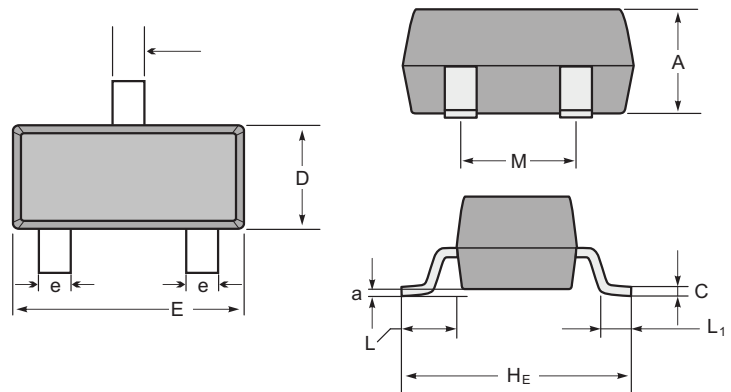### SOT-23

1. GATE
2. SOURCE
3. DRAIN

### Equivalent Circuit



### Marking

| Type number | Marking code |
|---|---|
| SI2310 | S10 |

### SOT-23 mechanical data

| UNIT | | A | C | D | E | H$_E$ | e | M | L | L$_1$ | a |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 1.1 | 0.15 | 1.4 | 3.0 | 2.6 | 0.5 | 1.95 | 0.55 (ref) | 0.36 (ref) | 0.0 |
| | min | 0.9 | 0.08 | 1.2 | 2.8 | 2.2 | 0.3 | 1.7 | | | 0.15 |
| mil | max | 43 | 6 | 55 | 118 | 102 | 20 | 77 | 22 (ref) | 14 (ref) | 0.0 |
| | min | 35 | 3 | 47 | 110 | 87 | 12 | 67 | | | 6 |

### Maximum ratings (T$_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | V$_{DS}$ | 60 | V |
| Gate-Source Voltage | V$_{GS}$ | ±20 | V |
| Continuous Drain Current | I$_D$ | 3 | A |
| Pulsed Drain Current (note 1) | I$_{DM}$ | 10 | A |
| Power Dissipation | P$_D$ | 1.5 | W |
| Thermal Resistance from Junction to Ambient (note 2) | R$_{θJA}$ | 357 | ℃/W |
| Junction Temperature | T$_J$ | 150 | ℃ |
| Storage Temperature | T$_{STG}$ | -55~+150 | ℃ |

# SI2310

**T$_a$=25℃ unless otherwise specified**

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC CHARACTERISTICS** | | | | | | |
| Drain-source breakdown voltage | V $_{(BR)DSS}$ | V$_{GS}$ = 0V, I$_D$ =250µA | 60 | | | V |
| Zero gate voltage drain current | I$_{DSS}$ | V$_{DS}$ =60V,V$_{GS}$ = 0V | | | 1 | µA |
| Gate-body leakage current | I$_{GSS}$ | V$_{GS}$ =±20V, V$_{DS}$ = 0V | | | ±100 | nA |
| Gate threshold voltage (note 3) | V$_{GS(th)}$ | V$_{DS}$ =V$_{GS}$, I$_D$ =250µA | 0.5 | | 2 | V |
| Drain-source on-resistance (note 3) | R$_{DS(on)}$ | V$_{GS}$ =10V, I$_D$ =3A | | 78 | 105 | mΩ |
| | | V$_{GS}$ =4.5V, I$_D$ =3A | | | 125 | mΩ |
| Forward tranconductance (note 3) | g$_{FS}$ | V$_{DS}$ =15V, I$_D$ =2A | 1.4 | | | S |
| Diode forward voltage (note 3) | V$_{SD}$ | I$_S$=3A, V$_{GS}$ = 0V | | | 1.2 | V |
| **DYNAMIC CHARACTERISTICS (note 4)** | | | | | | |
| Input Capacitance | C$_{iss}$ | V$_{DS}$ =30V,V$_{GS}$ =0V,f =1MHz | | 247 | | pF |
| Output Capacitance | C$_{oss}$ | | | 34 | | pF |
| Reverse Transfer Capacitance | C$_{rss}$ | | | 19.5 | | pF |
| **SWITCHING CHARACTERISTICS (note 4)** | | | | | | |
| Turn-on delay time | t$_{d(on)}$ | V$_{GS}$=10V,V$_{DD}$=30V, I$_D$=1.5A,R$_{GEN}$=1Ω | | 6 | | ns |
| Turn-on rise time | t$_r$ | | | 15 | | ns |
| Turn-off delay time | t$_{d(off)}$ | | | 15 | | ns |
| Turn-off fall time | t$_f$ | | | 10 | | ns |
| Total Gate Charge | Q$_g$ | V$_{DS}$ =30V,V$_{GS}$ =4.5V,I$_D$ =3A | | 6 | | nC |
| Gate-Source Charge | Q$_{gs}$ | | | 1 | | nC |
| Gate-Drain Charge | Q$_{gd}$ | | | 1.3 | | nC |

**Notes :**

1. Repetitive rating : Pulse width limited by junction temperature.

2. Surface mounted on FR4 board , t≤10s.

3. Pulse Test : Pulse Width≤300µs, Duty Cycle≤0.5%.

4. Guaranteed by design, not subject to producting.

# RATING AND CHARACTERISTIC CURVES (SI2310)

## Output Characteristics



## Transfer Characteristics



## $R_{DS(ON)}$ — $I_D$



## $R_{DS(ON)}$ — $V_{GS}$



## $I_S$ — $V_{SD}$



## Threshold Voltage
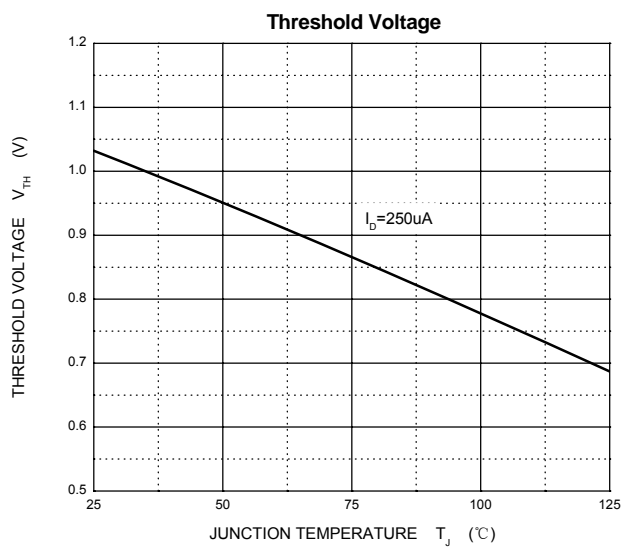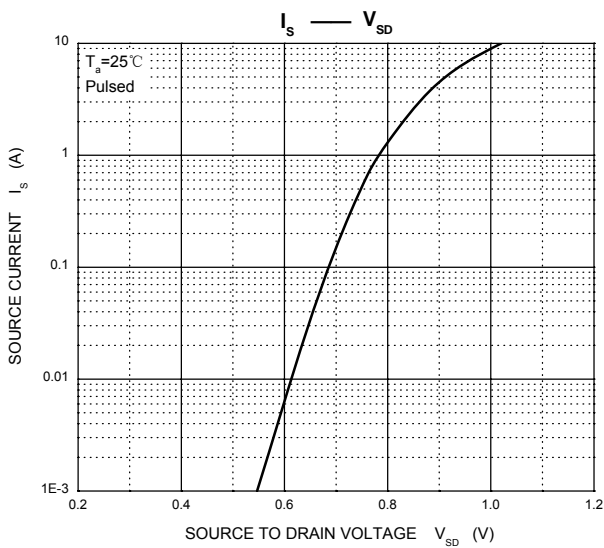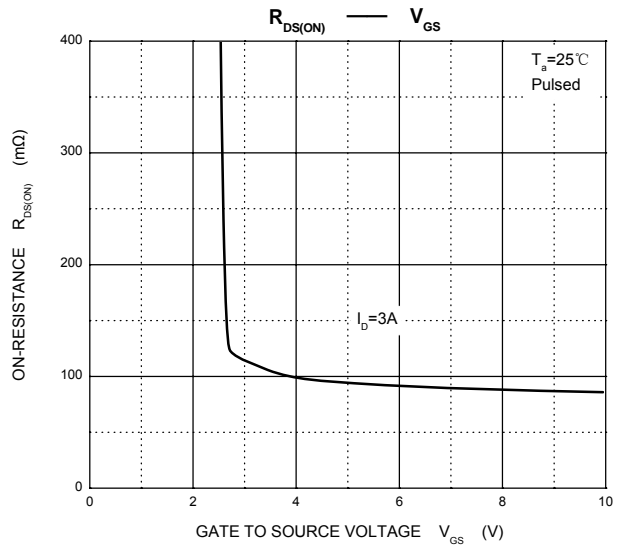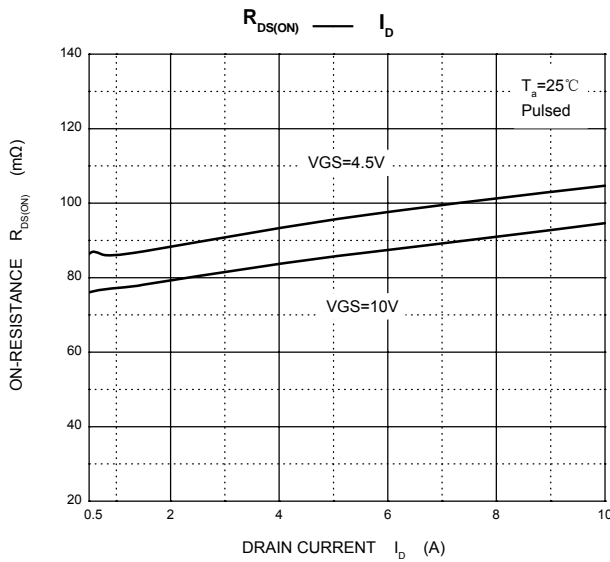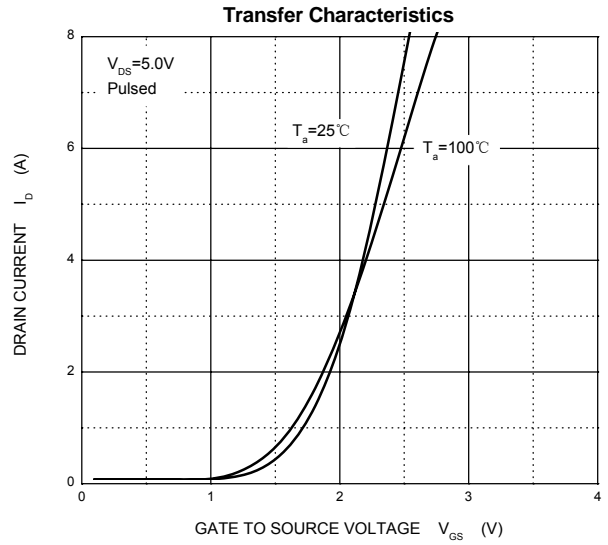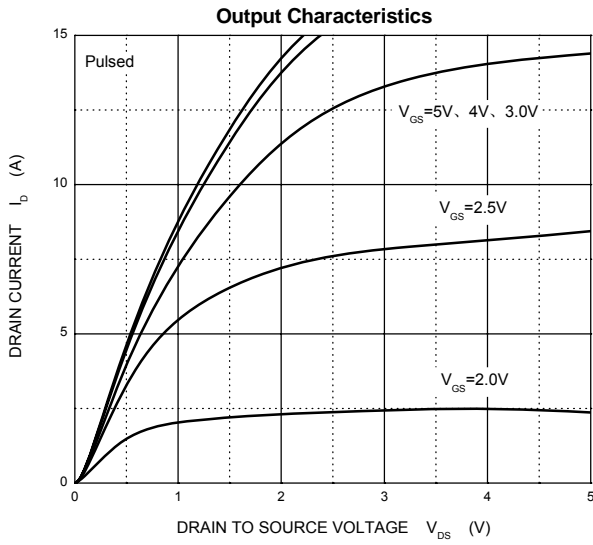
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