## ◆ Features & Applications

TrenchFET Power MOSFET.

Super high dense cell design.

Battery management,
High speed switch,
low power DC to DC converter.

## ◆ Absolute Maximum Ratings(Ta=25℃)

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 20 | V |
| $V_{GS}$ | Gate-Source Voltage | ±10 | V |
| $I_D$ | Continuous Drain Current | 2.3 | A |
| $I_S$ | Continuous Source-Drain Current(Diode Conduction) | 0.6 | A |
| $P_D$ | Power Dissipation | 400 | mW |
| $R_{\Theta JA}$ | Thermal Resistance From Junction To Ambient (t≤5s) | 300 | ℃/W |
| $T_J$, $T_{stg}$ | Operation Junction And Storage Temperature Range | -55～+150 | ℃ |

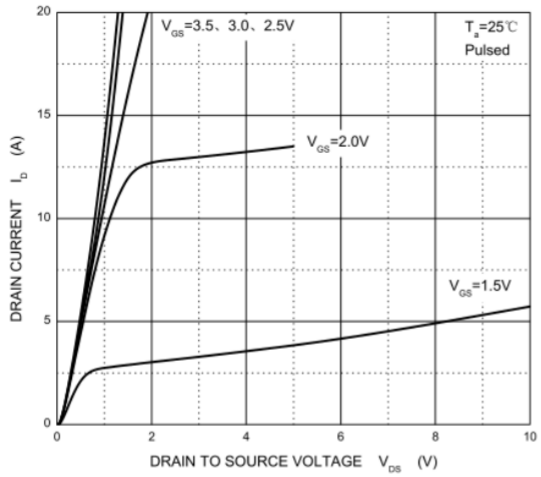
## ◆ Electrical Characteristics (Ta=25℃ unless otherwise specified)

| Symbol | Parameter | Test conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| $V_{(BR)DSS}$ | Drain-source breakdown voltage | $V_{GS}$=0, $I_D$=10μA | 20 | | | V |
| $V_{GS(th)}$ | Gate-threshold voltage | $V_{DS}$= $V_{GS}$, $I_D$=250μA | 0.6 | | 1.1 | V |
| $I_{GSS}$ | Collector cut-off current | $V_{DS}$=0, $V_{GS}$=±10V | | | 100 | nA |
| $I_{DSS}$ | Collector cut-off current | $V_{DS}$=20V, $V_{GS}$=0V | | | 1 | μA |
| $R_{DS(on)}$ | Drain-source on-resistance[a] | $V_{GS}$=4.5V, $I_D$=2A | | 50 | 60 | mΩ |
| | | $V_{GS}$=2.5V, $I_D$=1A | | 65 | 85 | mΩ |
| $g_{FS}$ | Forward transconductance[a] | $V_{DS}$=5V, $I_D$=2.5A | | 10 | | S |
| $V_{SD}$ | Diode forward voltage | $I_S$=1A,$V_{GS}$=0V | | | 1.2 | V |
| **Dynamic** | | | | | | |
| $Q_g$ | Total gate charge | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=2.5A | | 5.0 | 10 | nC |
| $Q_{gs}$ | Gate-source charge | | | 0.65 | | |
| $Q_{gd}$ | Gate-drain charge | | | 1.5 | | |
| $C_{iss}$ | Input capacitance[b] | $V_{DS}$=10V, $V_{GS}$=0V, f=1MHz | | 340 | | pF |
| $C_{oss}$ | Output capacitance[b] | | | 120 | | |
| $C_{rss}$ | Reverse transfer capacitance[b] | | | 80 | | |
| **Switching[b]** | | | | | | |
| $t_{d(on)}$ | Turn-on delay time | $V_{DS}$=10V, RL=5.5Ω, $I_D$≈2.5A, $V_{GEN}$=4.5V, Rg=6Ω | | 12 | | nS |
| $t_r$ | Rise time | | | 36 | | |
| $t_{d(off)}$ | Turn-off delay time | | | 34 | | |
| $t_f$ | Fall time | | | 10 | | |

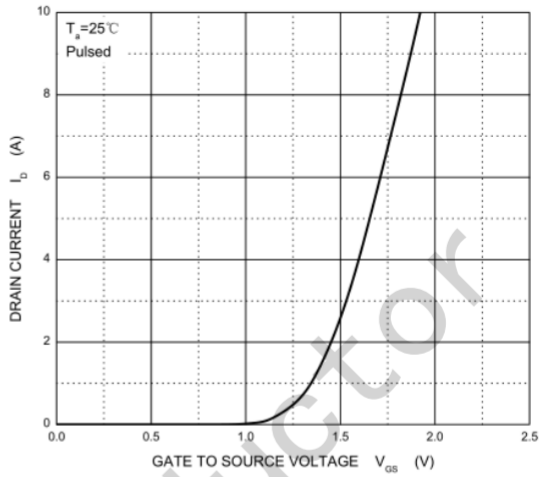
Notes :
a. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
b. These parameters have no way to verify.

## ◆ Typical Characteristics

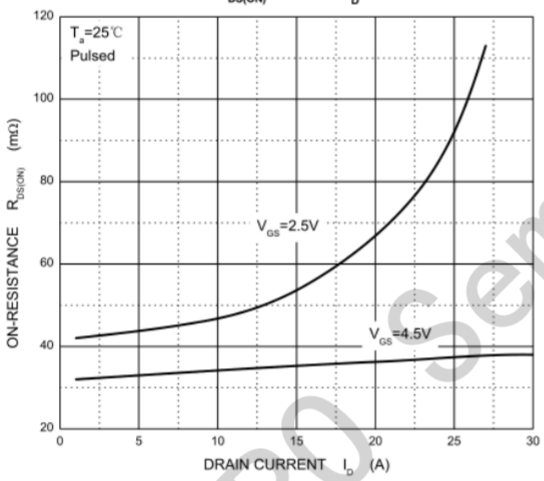
**Output Characteristics**



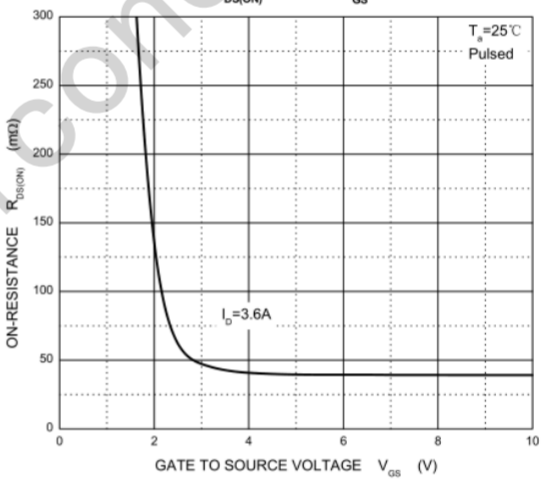

**Transfer Characteristics**



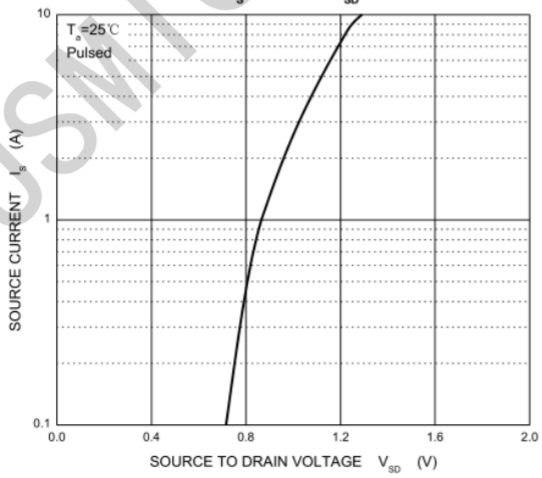

**$R_{DS(ON)}$ — $I_D$**




**$R_{DS(ON)}$ — $V_{GS}$**

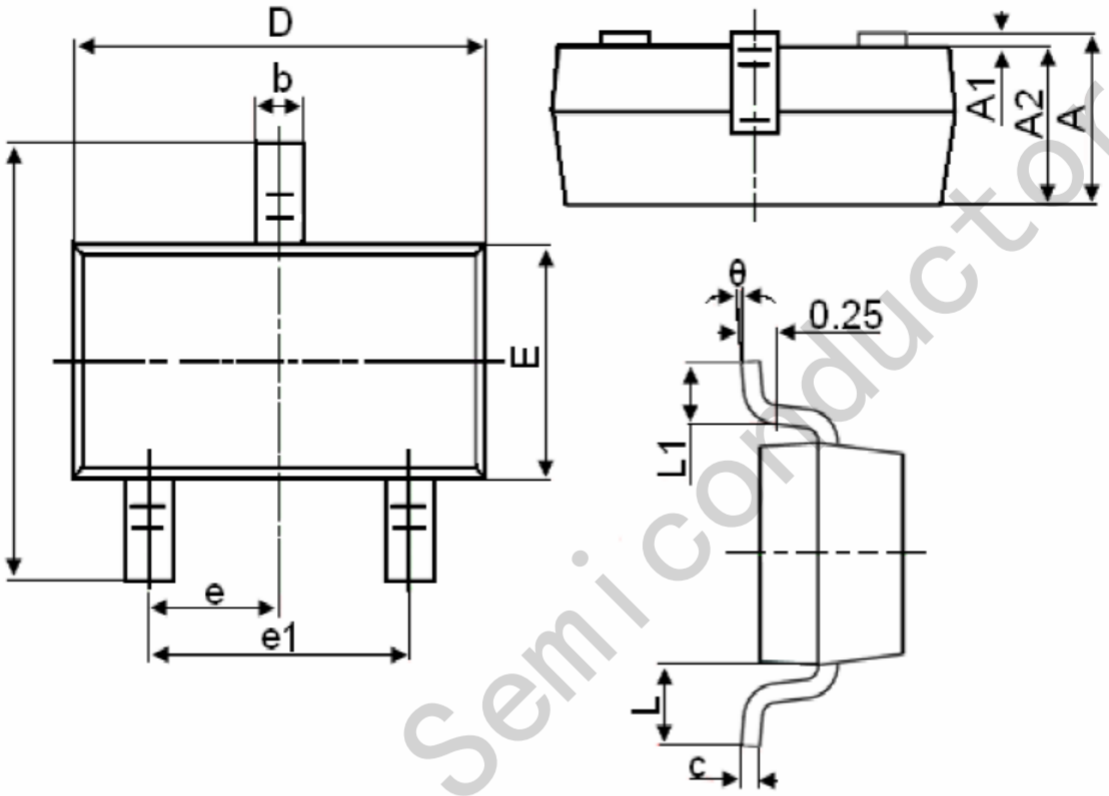



**$I_S$ — $V_{SD}$**



## Package Information

SOT-23






| Symbol | Dimensions in Millimeters(mm) | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950TYP | | 0.037TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550REF | | 0.022REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |