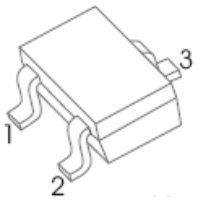
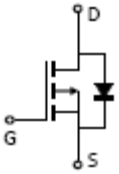
# SOT-323 Plastic-Encapsulate MOSFETS

**CJ2101** P-Channel MOSFET

**SOT-323**




1. GATE
2. SOURCE
3. DRAIN




**FEATURE**

- Leading Trench Technology for Low $R_{DS(on)}$ Extending Battery Life

**APPLICATIONS**

- High Side Load Switch
- Charging Circuit
- Single Cell Battery Applications such as Cell Phones, Digital Cameras ,PDAs, etc

**MARKING: TS1**

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

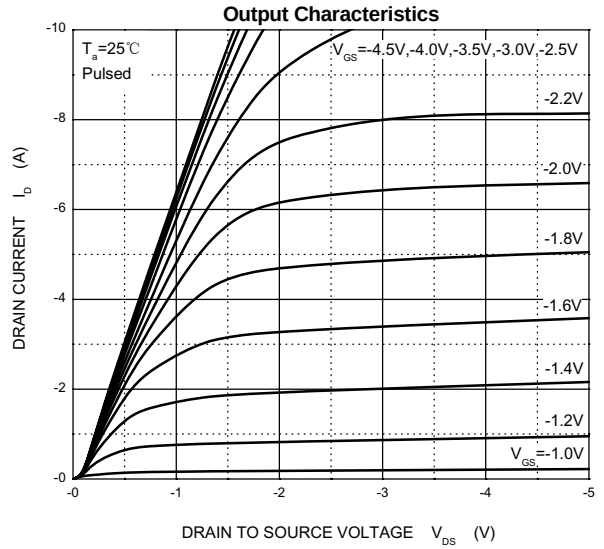
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | - 20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±8.0 | |
| Continuous Drain Current | $I_D$ | -1.4 | A |
| Pulsed Drain Current ($t_p$=10μs) | $I_{DM}$ | -3.0 | |
| Power Dissipation | $P_D$ | 0.29 | W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 431 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{stg}$ | -50 ~+150 | |

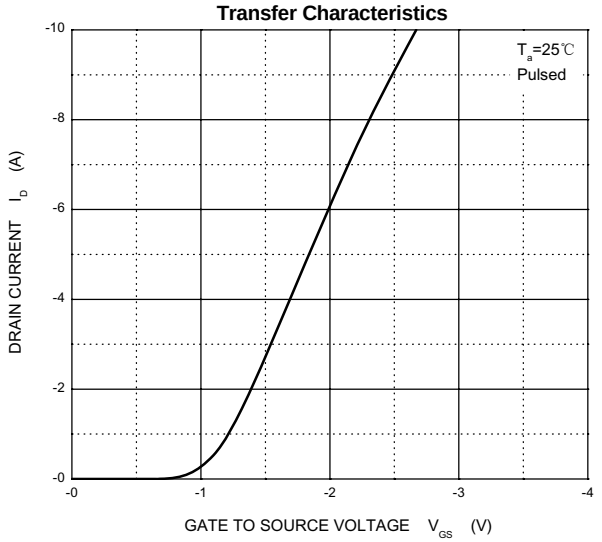
## Electrical characteristics ($T_a$=25℃ unless otherwise noted)

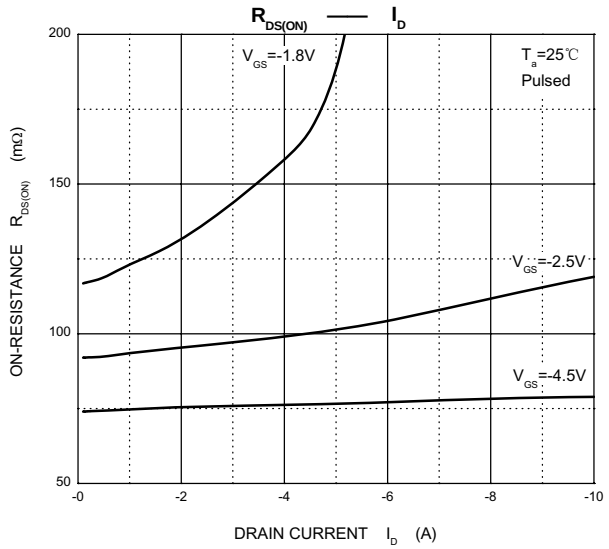
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISSTICS** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{DSS}$ | $V_{GS}$ = 0V, $I_D$ =-250μA | -20 | | | V |
| Gate-Source Leakage | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±8V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ =-20V, $V_{GS}$ =0V | | | -1.0 | μA |
| **OFF CHARACTERISSTICS (note 1)** | | | | | | |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =-250μA | -0.45 | -0.7 | | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$ =-4.5V, $I_D$ =-1.0A | | | 100 | mΩ |
| | | $V_{GS}$ =-2.5V, $I_D$ =-0.5A | | | 140 | |
| | | $V_{GS}$ =-1.8V, $I_D$ =-0.3A | | | 210 | |
| **CHARGES AND CAPACITANCES (note 3)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =-8.0V,$V_{GS}$ =0V,f =1MHz | | 640 | | pF |
| Output Capacitance | $C_{oss}$ | | | 120 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 82 | | |
| **SWITCHING CHARACTERISSTICS (note 2,3)** | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}$=-4.5V,$V_{DD}$=-4.0V, $I_D$ =-1.0A,$R_G$=6.2Ω | | 6.2 | | ns |
| Rise Time | $t_r$ | | | 15 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 26 | | |
| Fall Time | $t_f$ | | | 18 | | |
| **Drain-source Body diode characteristics** | | | | | | |
| Forward Diode Voltage | $V_{SD}$ | $V_{GS}$ =0V,$I_S$=-0.3A | | -0.62 | -1.2 | V |

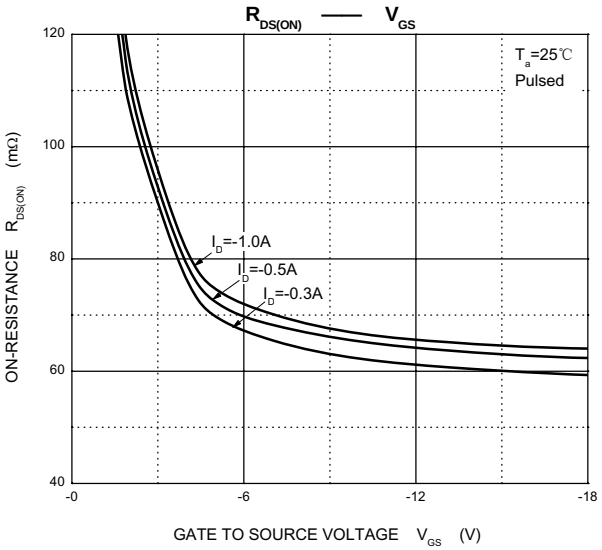
**Notes :**

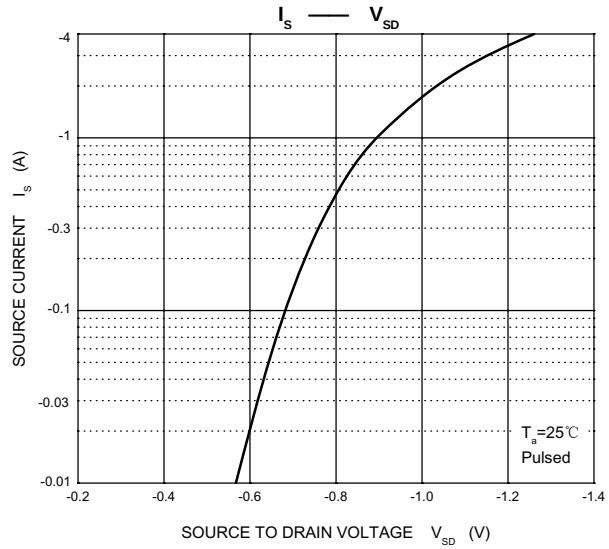
1. Pulse Test : pulse width ≤300μs, duty cycle ≤2%.
2. Switching characteristics are independent of operating junction temperatures.
3. These parameters have no way to verify.


Output Characteristics
T_a=25℃
Pulsed
V_GS=-4.5V,-4.0V,-3.5V,-3.0V,-2.5V
-2.2V
-2.0V
-1.8V
-1.6V
-1.4V
-1.2V
V_GS=-1.0V
DRAIN CURRENT I_D (A)
DRAIN TO SOURCE VOLTAGE V_DS (V)


Transfer Characteristics
T_a=25℃
Pulsed
DRAIN CURRENT I_D (A)
GATE TO SOURCE VOLTAGE V_GS (V)


R_DS(ON) —— I_D
V_GS=-1.8V
T_a=25℃
Pulsed
V_GS=-2.5V
V_GS=-4.5V
ON-RESISTANCE R_DS(ON) (mΩ)
DRAIN CURRENT I_D (A)


R_DS(ON) —— V_GS
T_a=25℃
Pulsed
I_D=-1.0A
I_D=-0.5A
I_D=-0.3A
ON-RESISTANCE R_DS(ON) (mΩ)
GATE TO SOURCE VOLTAGE V_GS (V)


I_S —— V_SD
T_a=25℃
Pulsed
SOURCE CURRENT I_S (A)
SOURCE TO DRAIN VOLTAGE V_SD (V)