

SI2301 P-Channel 1.25-W, 2.5-V MOSFET

SI2301是二三级管的一种，属于场效应管。

主要参数：

晶体管类型：P沟道MOSFET

最大功耗PD：1.25W

栅极门限电压VGS：2.5V（典型值）

漏源电压VDS：-20V（极限值）

漏极电流ID：-2.3A

通态电阻RDS(on)：0.145ohm（典型值）

栅极漏电流IGSS：±100nA

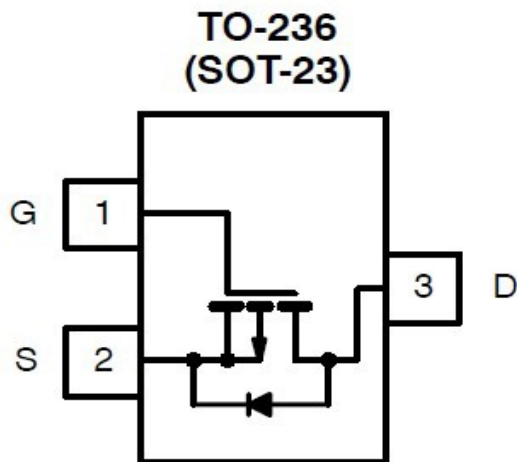
结温：55 to +150

封装：SOT-23(TO-236)

替代型号：

WT-2301 WTC2301 SMG2301 CES2301 KI2301BDS

PIN 配置：



Top View

Si2301DS (A1)*

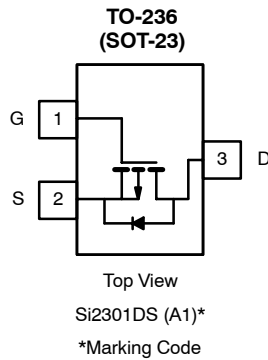
*Marking Code



P-Channel 1.25-W, 2.5-V MOSFET

PRODUCT SUMMARY

| V_{DS} (V) | $r_{DS(on)}$ (Ω) | I_D (A) |
|--------------|---------------------------|-----------|
| -20 | 0.130 @ $V_{GS} = -4.5$ V | -2.3 |
| | 0.190 @ $V_{GS} = -2.5$ V | -1.9 |



Ordering Information: Si2301DS-T1

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

| Parameter | | Symbol | Limit | Unit |
|---|--------------------------|----------------|------------|------------------|
| Drain-Source Voltage | | V_{DS} | -20 | V |
| Gate-Source Voltage | | V_{GS} | ± 8 | |
| Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^b | $T_A = 25^\circ\text{C}$ | I_D | -2.3 | A |
| | $T_A = 70^\circ\text{C}$ | | -1.5 | |
| Pulsed Drain Current ^a | | I_{DM} | -10 | |
| Continuous Source Current (Diode Conduction) ^b | | I_S | -1.6 | |
| Power Dissipation ^b | $T_A = 25^\circ\text{C}$ | P_D | 1.25 | W |
| | $T_A = 70^\circ\text{C}$ | | 0.8 | |
| Operating Junction and Storage Temperature Range | | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ |

THERMAL RESISTANCE RATINGS

| Parameter | Symbol | Limit | Unit |
|--|------------|-------|--------------------|
| Maximum Junction-to-Ambient ^b | R_{thJA} | 100 | $^\circ\text{C/W}$ |
| Maximum Junction-to-Ambient ^c | | 166 | |

Notes

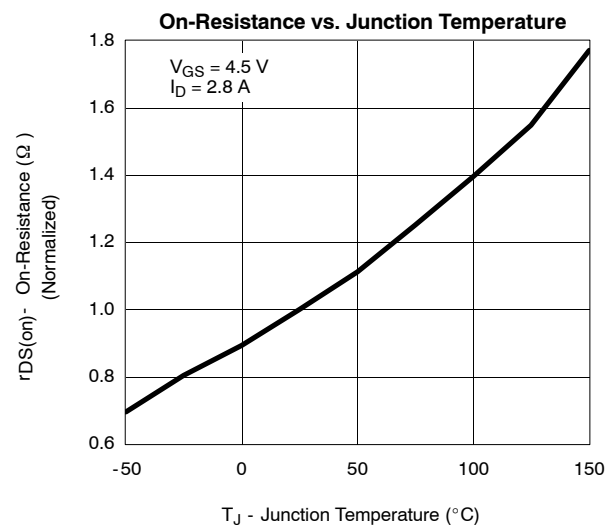
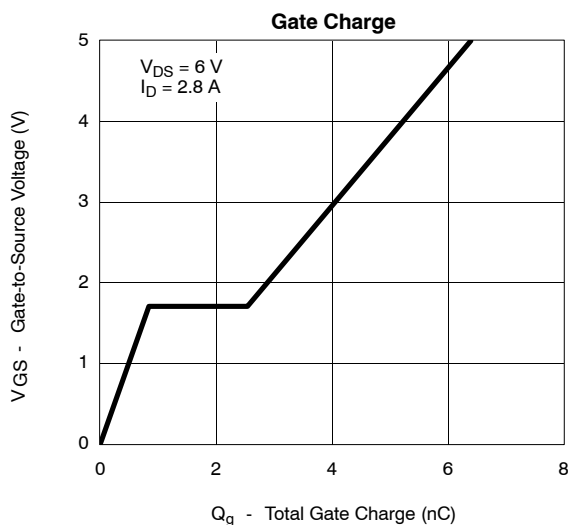
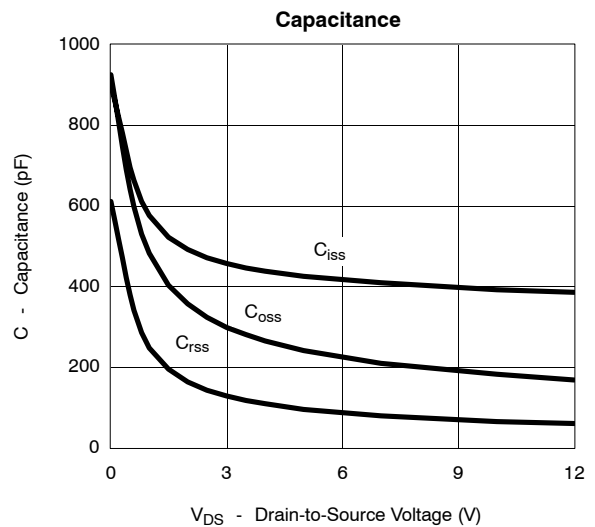
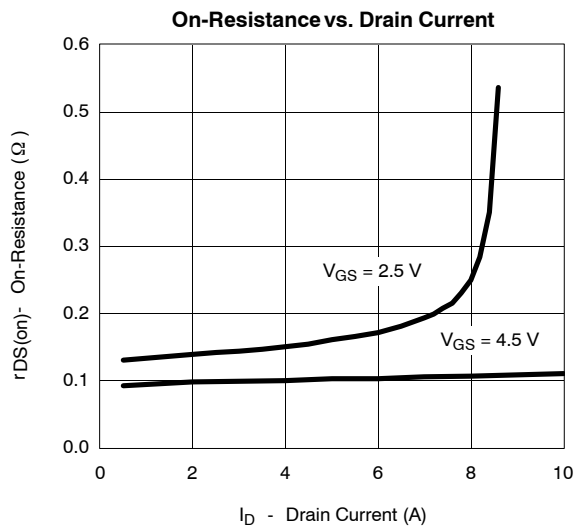
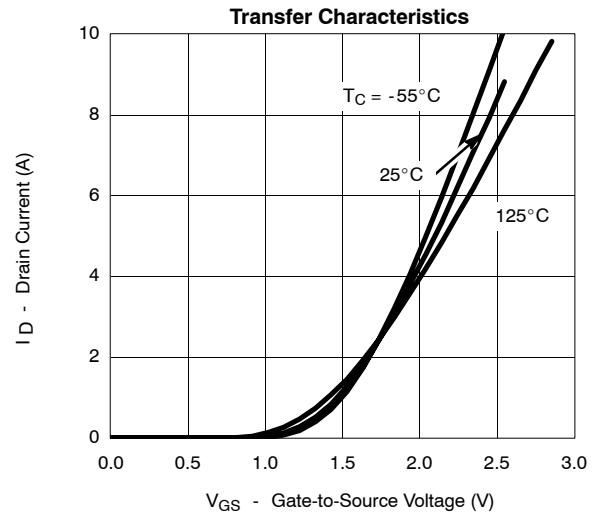
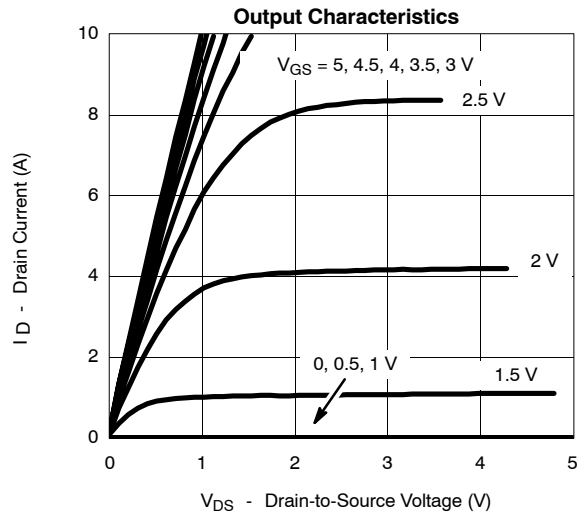
- Pulse width limited by maximum junction temperature.
- Surface Mounted on FR4 Board, $t \leq 5$ sec.
- Surface Mounted on FR4 Board.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

| SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|--|----------------------|--|--------|-------|-------|------|
| Parameter | Symbol | Test Conditions | Limits | | | Unit |
| | | | Min | Typ | Max | |
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} = 0 V, I _D = -250 μA | -20 | | | V |
| Gate-Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250 μA | -0.45 | | | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ±8 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -20 V, V _{GS} = 0 V | | | -1 | μA |
| | | V _{DS} = -20 V, V _{GS} = 0 V, T _J = 55 °C | | | -10 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≤ -5 V, V _{GS} = -4.5 V | -6 | | | A |
| | | V _{DS} ≤ -5 V, V _{GS} = -2.5 V | -3 | | | |
| Drain-Source On-Resistance ^a | r _{DS(on)} | V _{GS} = -4.5 V, I _D = -2.8 A | | 0.105 | 0.130 | Ω |
| | | V _{GS} = -2.5 V, I _D = -2.0 A | | 0.145 | 0.190 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = -5 V, I _D = -2.8 A | | 6.5 | | S |
| Diode Forward Voltage | V _{SD} | I _S = -1.6 A, V _{GS} = 0 V | | -0.80 | -1.2 | V |
| Dynamic ^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = -6 V, V _{GS} = -4.5 V I _D ≅ -2.8 A | | 5.8 | 10 | nC |
| Gate-Source Charge | Q _{gs} | | | 0.85 | | |
| Gate-Drain Charge | Q _{gd} | | | 1.70 | | |
| Input Capacitance | C _{iss} | V _{DS} = -6 V, V _{GS} = 0, f = 1 MHz | | 415 | | pF |
| Output Capacitance | C _{oss} | | | 223 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 87 | | |
| Switching ^c | | | | | | |
| Turn-On Time | t _{d(on)} | V _{DD} = -6 V, R _L = 6 Ω I _D ≅ -1.0 A, V _{GEN} = -4.5 V R _G = 6 Ω | | 13.0 | 25 | ns |
| | t _r | | | 36.0 | 60 | |
| Turn-Off Time | t _{d(off)} | | | 42 | 70 | |
| | t _f | | | 34 | 60 | |

Notes

- a. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.
b. For DESIGN AID ONLY, not subject to production testing.
c. Switching time is essentially independent of operating temperature.

**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

