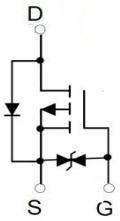
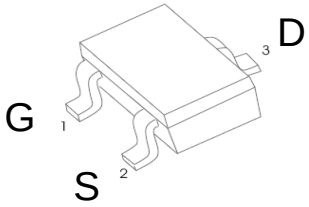
迈拓电子
MAITUO ELECTRONIC

# MT2301ET P-Channel MOSFET




## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---|---|---|
| -20V | 510mΩ@-4.5V | -0.75A |
| | 750mΩ@-2.5V | |
| | 960mΩ(TYP)@-1.8V | |




SOT-523

## Feature

- Surface Mount Package
- P-Channel Switch with Low RDS(on)
- Operated at Low Logic Level Gate Drive

## Application

- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics

## MARKING: S1

## ABSOLUTE 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 | V |
| Continuous Drain Current | $I_D$ | -0.75 | A |
| Pulsed Drain Current(1) | $I_{DM}$ | -1.2 | A |
| Power Dissipation(2) | $P_D$ | 150 | mW |
| Thermal Resistance from Junction to Ambient(1) | $R_{\theta JA}$ | 833 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~ +150 | ℃ |

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## MOSFET ELECTRICAL CHARACTERISTICS($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =-250μA | -20 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =-20V,$V_{GS}$ = 0V | | | -1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±10V, $V_{DS}$ = 0V | | | ±20 | μA |
| Gate threshold voltage(3 | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =-250μA | -0.35 | -0.61 | -1.1 | V |
| Drain-source on-resistance(3) | $R_{DS(on)}$ | $V_{GS}$ =-4.5V, $I_D$ =-1A | | 420 | 510 | mΩ |
| | | $V_{GS}$ =-2.5V, $I_D$ =-0.8A | | 630 | 750 | |
| | | $V_{GS}$ =-1.8V, $I_D$ =-0.5A | | 960 | | |
| Forward tranconductance | $g_{FS}$ | $V_{DS}$ =-10V, $I_D$ =-0.54A | 0.8 | | | S |
| **Dynamic characteristics**(4) | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =-16V,$V_{GS}$ =0V,f =1MHz | | 113 | | pF |
| Output Capacitance | $C_{oss}$ | | | 15 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 9 | | |
| **Switching Characteristics**(4) | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DS}$=-10V,$I_D$=-200mA, $V_{GS}$=-4.5V,$R_G$=10Ω | | 9 | | ns |
| Turn-on rise time | $t_r$ | | | 5.7 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 32.6 | | |
| Turn-off fall time | $t_f$ | | | 20.3 | | |
| **Source-Drain Diode characteristics** | | | | | | |
| Diode forward voltage(3) | $V_{DS}$ | $I_S$=-0.5A, $V_{GS}$ = 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 Ta=25℃.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.
4. These parameters have no way to verify.

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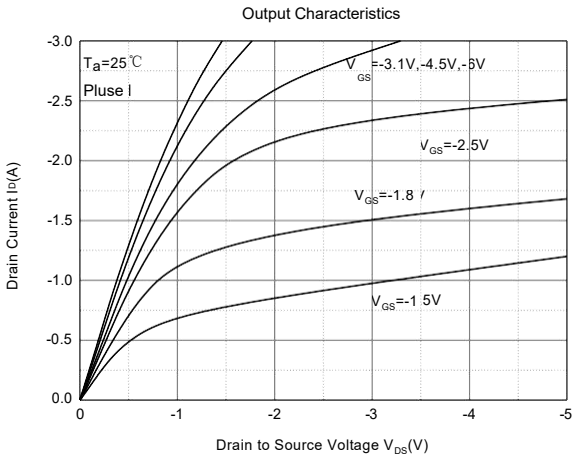
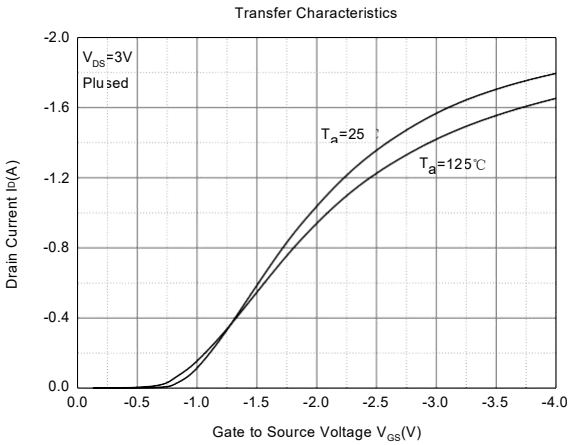
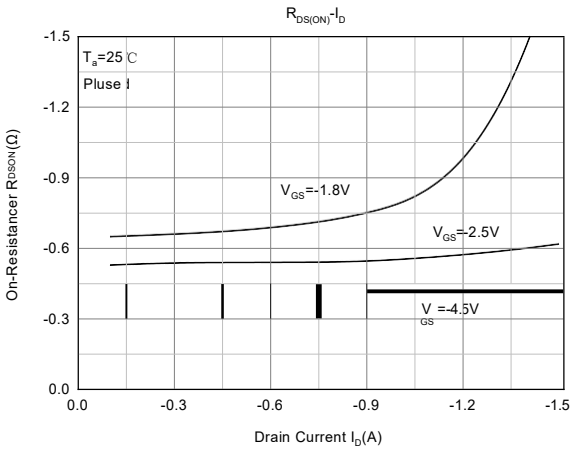
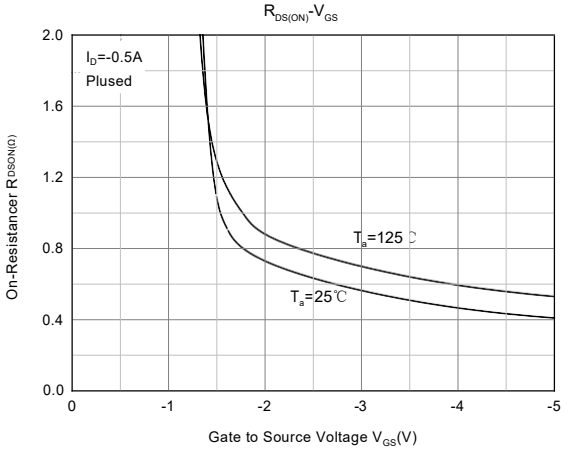
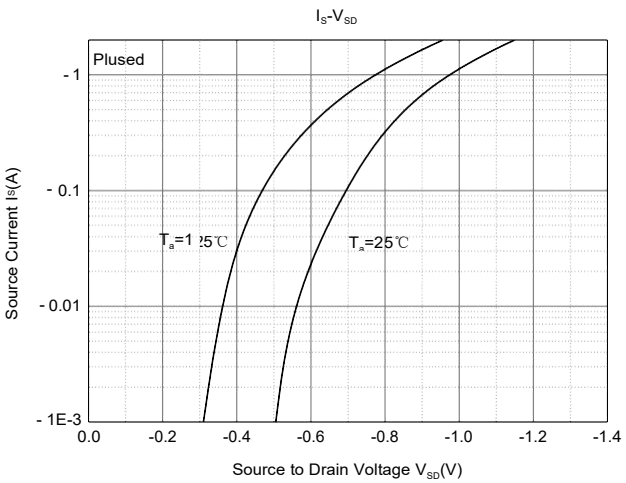
## Typical Electrical and Thermal Characteristics

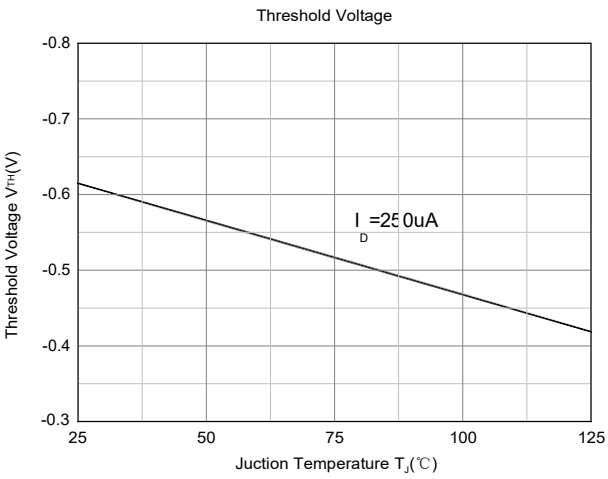


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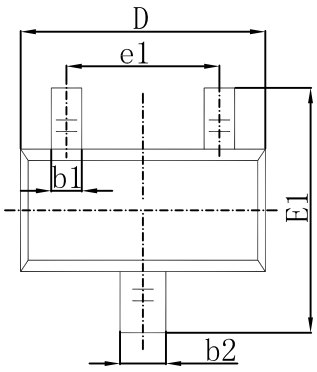
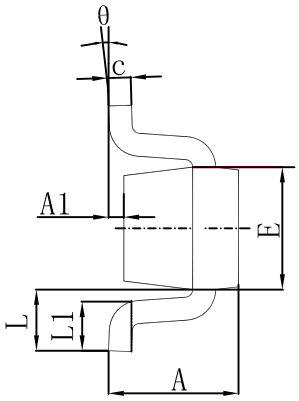
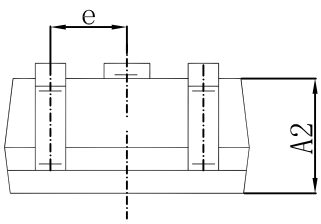
## SOT-523 Package Outline Dimensions

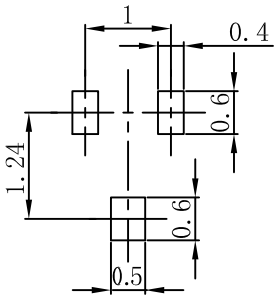



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500 TYP. | | 0.020 TYP. | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400 REF. | | 0.016 REF. | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

## SOT-523 Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.