

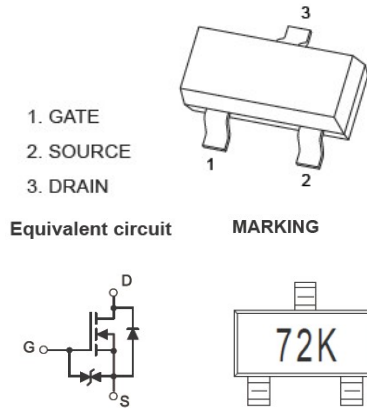


2N7002K

MOSFET(N-Channel)

| V(BR)DSS | RDS(ON)MAX | ID |
|----------|------------|-------|
| 60V | 5Ω@10V | 340mA |
| | 5.3Ω@4.5V | |

SOT-23



特征 Features

- High density cell design for low $R_{DS(ON)}$.
- Voltage controlled small signal switch.
- Rugged and reliable.
- High saturation current capability.
- ESD protected
- Load Switch for Portable Devices.
- DC/DC Converter.

机械数据 Mechanical Data

- 封装: SOT-23 封装 SOT-23 Small Outline Plastic Package.
- 环氧树脂 UL 易燃等级 Epoxy UL: 94V-0.
- 安装位置: 任意 Mounting Position: Any.

极限值和温度特性($T_A = 25^\circ\text{C}$ 除非另有规定)

Maximum Ratings & Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

| 参数 Parameters | 符号 Symbol | 数值 Value | 单位 Unit |
|---|-----------------|----------|--------------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | 340 | mA |
| Power Dissipation | P_D | 350 | mW |
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -50-+150 | $^\circ\text{C}$ |
| Thermal Resistance From Junction to Ambient | $R_{\theta JA}$ | 357 | $^\circ\text{C/W}$ |

电特性 ($T_A = 25^\circ\text{C}$ 除非另有规定)

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

| 参数 Parameter | 符号 Symbols | 测试条件 Test Condition | 界限 Limits | | | 单位 Unit |
|---------------------------------|---------------|--|------------|-----|-----------|------------|
| | | | Min | Typ | Max | |
| Drain-Source Breakdown Voltage | V_{DS} | $V_{GS}=0V, I_D=250\mu A$ | 60 | | | V |
| Gate-Threshold voltage* | $V_{th(GS)}$ | $V_{DS}=V_{GS}, I_D=1mA$ | 1 | 1.3 | 2.5 | V |
| Gate-body Leakage | I_{GSS1} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 10 | μA |
| | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 10V$ | | | ± 200 | nA |
| | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 5V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain current | I_{DSS} | $V_{DS}=48V, V_{GS}=0V$ | | | 1 | μA |
| Drain-Source On-Resistance* | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=500mA$ | | 0.9 | 5 | Ω |
| | | $V_{GS}=4.5V, I_C=200mA$ | | 1.1 | 5.3 | |
| Diode Forward voltage | V_{SD} | $I_S=300mA, V_{GS}=0V$ | | | 1.50 | V |
| Input capacitance** | C_{iss} | $V_{DS}=10V, V_{GS}=0V, f=1MHz$ | | | 40 | pF |
| Output capacitance** | C_{oss} | | | | 30 | |
| Reverse Transfer capacitance** | C_{rss} | | | | 10 | |
| SWITCHING TIME | | | | | | |
| Turn-on Time** | $t_d(on)$ | $V_{DD}=50V, R_L=250\Omega, V_{GS}=10V, R_{GS}=50\Omega, R_G=50\Omega$ | | | 10 | ns |
| Turn-off Time** | $t_d(off)$ | | | | 15 | |
| Reverse recovery Time | t_{rr} | $V_{GS}=0V, I_S=300mA, V_R=25V, Dis/dt=-100a/\mu S$ | | 30 | | ns |
| GATE-SOURCE ZENER DIODE | | | | | | |
| Gate-Source Breakdown Voltage | BV_{GSO} | $I_{GS}=\pm 1mA(\text{Open Drain})$ | ± 21.5 | | ± 30 | V |

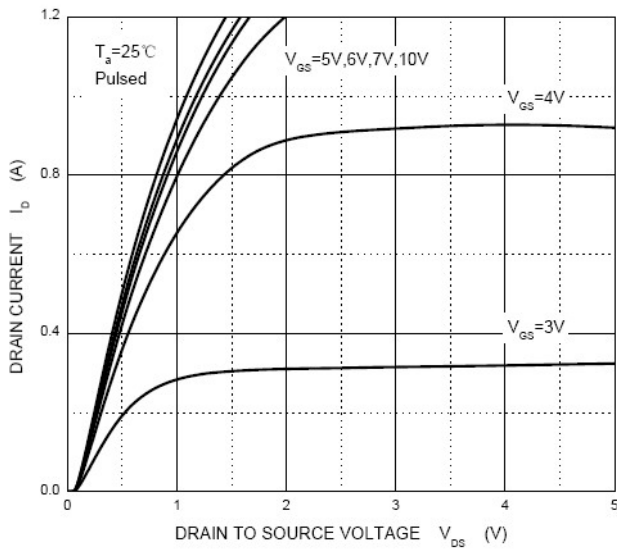
Notes: * Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

** These parameters have on way to verify.

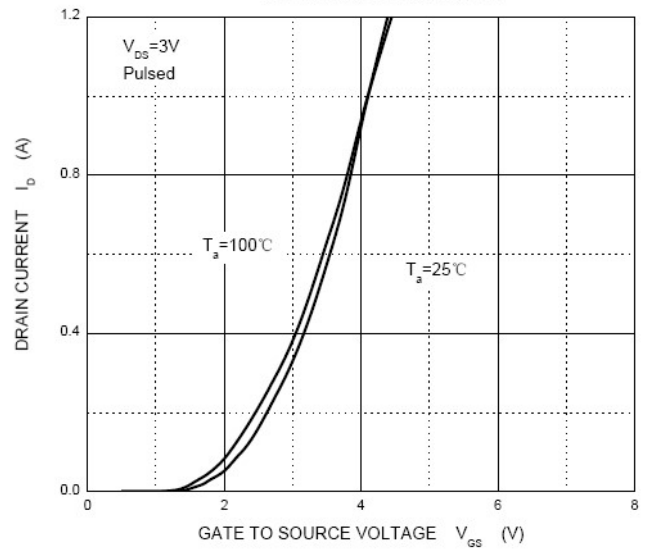


Typical characteristics

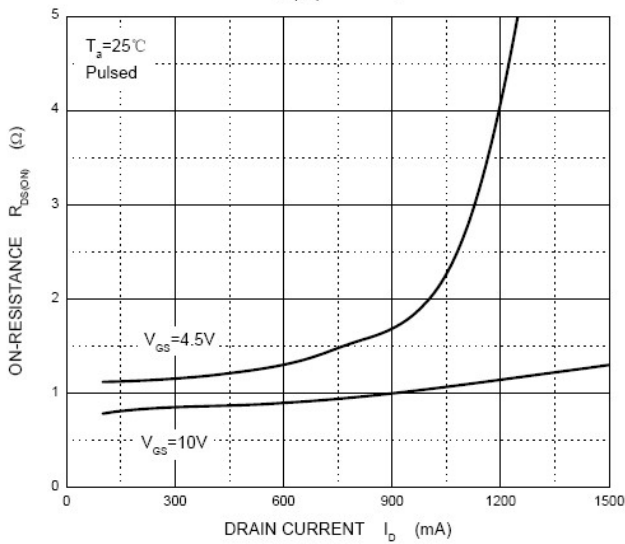
Output Characteristics



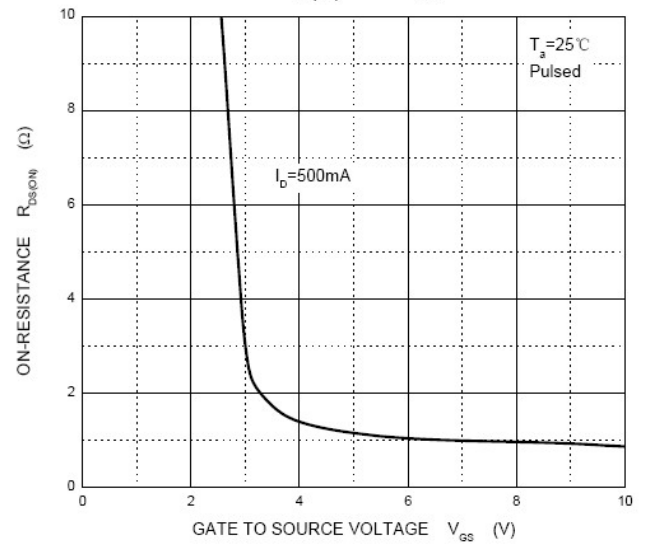
Transfer Characteristics



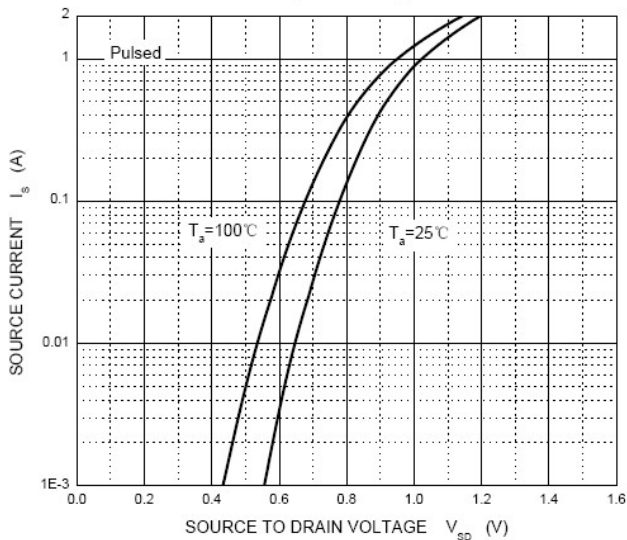
$R_{DS(ON)}$ — I_D



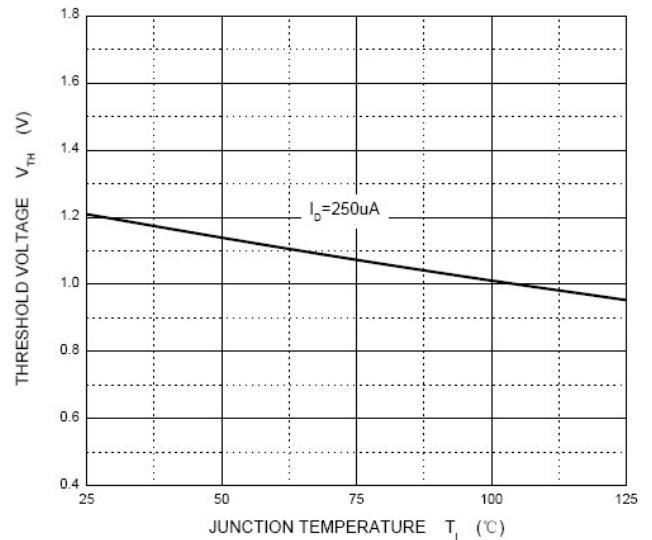
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

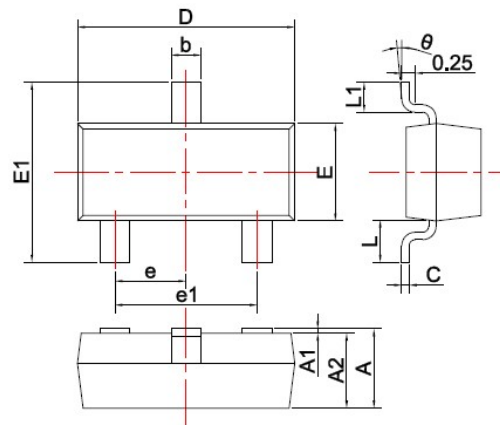


Threshold Voltage





SOT-23 PACKAGE OUTLINE Plastic surface mounted package

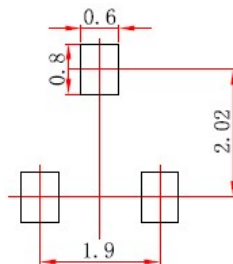


| SYMBOL | DIMENSIONS | |
|--------|------------|-------|
| | MIN. | MAX. |
| A | 0.900 | 1.150 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.050 |
| b | 0.300 | 0.500 |
| c | 0.080 | 0.150 |
| D | 2.800 | 3.000 |
| E | 1.200 | 1.400 |
| E1 | 2.250 | 2.550 |
| e | 0.950TYP | |
| e1 | 1.800 | 2.000 |
| L | 0.550REF | |
| L1 | 0.300 | 0.500 |
| θ | 0° | 8° |

Unit: mm

焊盘设计参考 Precautions: PCB Design

Recommended land dimensions for SOT-23 diode. Electrode patterns for PCBs



Note:

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

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