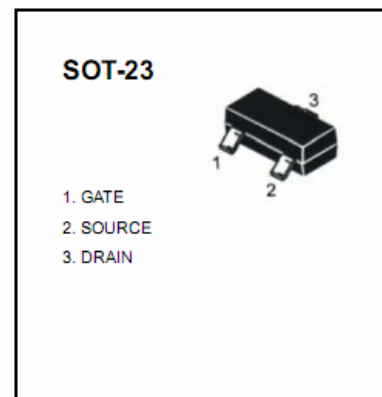
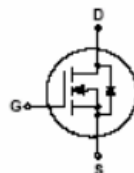


## SOT-23 Plastic-Encapsulate Transistors

**2N7002** MOSFET(N-Channel)

### FEATURES

High density cell design for low  $R_{DS(ON)}$   
Voltage controlled small signal switch  
Rugged and reliable  
High saturation current capability



MARKING:7002

### MAXIMUM RATINGS (TA=25°C unless otherwise noted)

| Symbol<br>(符号) | Parameter<br>(参数名称)  | Value<br>(额定值) | Units<br>(单位) |
|----------------|----------------------|----------------|---------------|
| $V_{DS}$       | Drain-Source voltage | 60             | V             |
| $I_D$          | Drain current        | 115            | mA            |
| $P_D$          | Power Dissipation    | 225            | mW            |
| $T_j$          | Junction Temperature | 150            | °C            |
| $T_{stg}$      | Storage Temperature  | -55-150        | °C            |

### ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

| Parameter                       | Symbol        | Test conditions                 | MIN  | TYP | MAX       | UNIT     |
|---------------------------------|---------------|---------------------------------|------|-----|-----------|----------|
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$       | 60   |     |           | V        |
| Gate-Threshold Voltage          | $V_{th(GS)}$  | $V_{DS}=V_{GS}, I_D=250\mu A$   | 1    | 1.7 | 2.5       | V        |
| Gate-body Leakage               | $I_{GSS}$     | $V_{DS}=0V, V_{GS}=\pm 20V$     |      |     | $\pm 100$ | nA       |
| Zero Gate Voltage Drain Current | $I_{DSS}$     | $V_{DS}=60V, V_{GS}=0V$         |      |     | 1         | $\mu A$  |
| On-state Drain Current          | $I_{D(ON)}$   | $V_{DS}=7V, V_{GS}=10V$         | 500  |     |           | mA       |
| Drain-Source On-Resistance      | $r_{DS(ON)}$  | $V_{GS}=10V, I_D=100mA$         |      | 1   | 2         | $\Omega$ |
|                                 |               | $V_{GS}=4.5V, I_D=50mA$         |      | 1.1 | 3         | $\Omega$ |
| Forward Trans conductance       | $g_{fs}$      | $V_{DS}=10V, I_D=200mA$         | 80   |     | 500       | ms       |
| Drain-source on-voltage         | $V_{DS(ON)}$  | $V_{GS}=10V, I_D=500mA$         | 0.5  |     | 3.75      | V        |
|                                 |               | $V_{GS}=5V, I_D=50mA$           | 0.05 |     | 0.375     | V        |
| Diode Forward Voltage           | $V_{SD}$      | $I_S=115mA, V_{GS}=0V$          | 0.55 |     | 1.2       | V        |
| Input Capacitance               | $C_{iss}$     | $V_{DS}=25V, V_{GS}=0V, f=1MHz$ |      |     | 50        | pF       |
| Output Capacitance              | $C_{oss}$     |                                 |      |     | 25        |          |
| Reverse Transfer Capacitance    | $C_{rss}$     |                                 |      |     | 5         |          |

### SWITCHING TIME

|               |              |                                                         |  |  |    |    |
|---------------|--------------|---------------------------------------------------------|--|--|----|----|
| Turn-on Time  | $t_{d(on)}$  | $V_{DD}=25V, R_L=50\Omega$<br>$I_D=500mA, V_{GEN}=10V,$ |  |  | 20 | ns |
| Turn-off Time | $t_{d(off)}$ | $R_G=25\Omega$                                          |  |  | 40 | ns |

# Typical Characteristics

2N7002

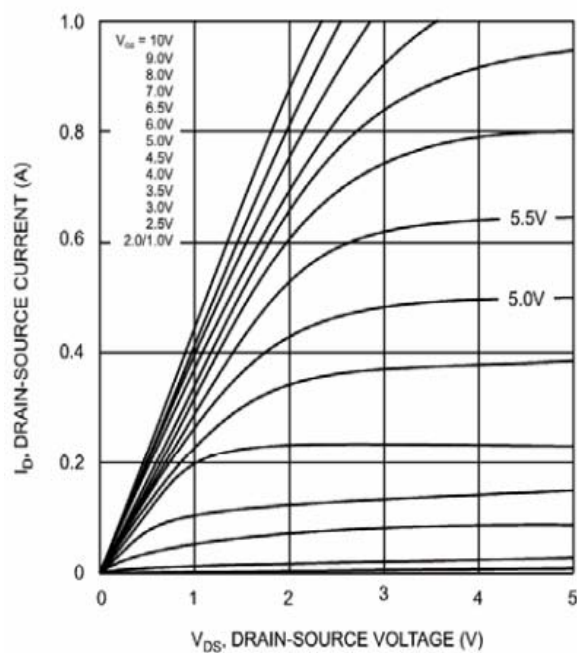


Fig. 1 On-Region Characteristics

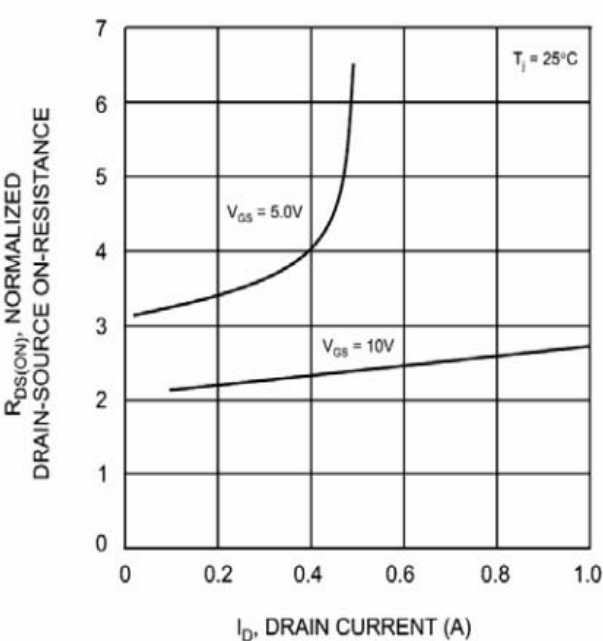


Fig. 2 On-Resistance vs Drain Current

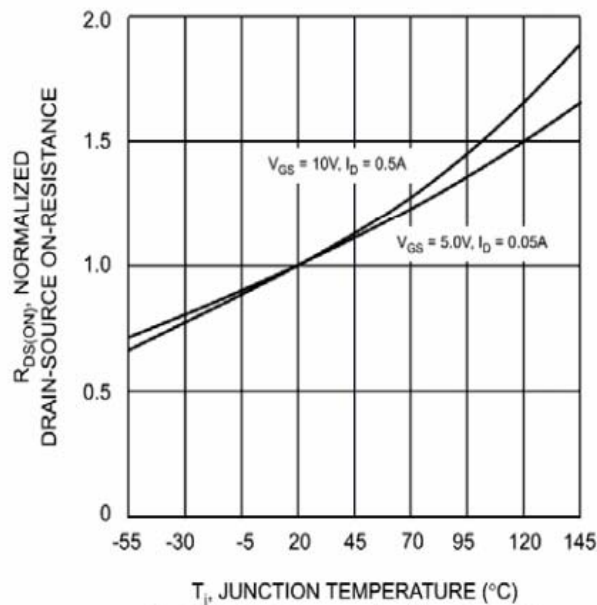


Fig. 3 On-Resistance vs Junction Temperature

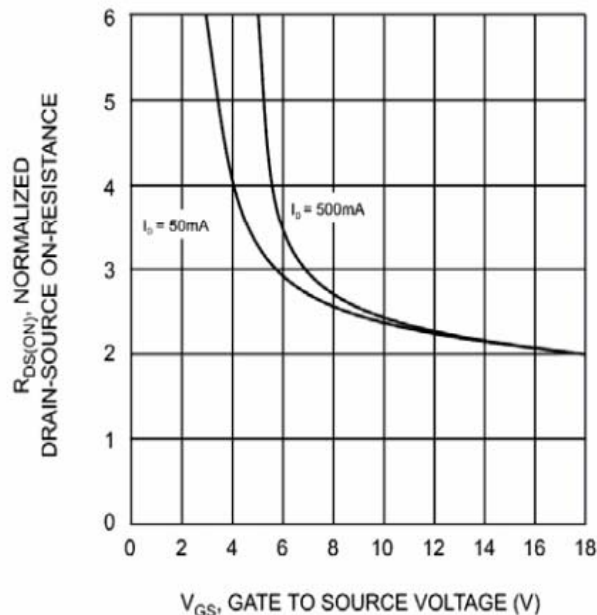


Fig. 4 On-Resistance vs. Gate-Source Voltage