

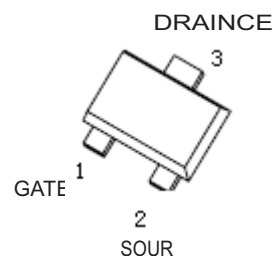
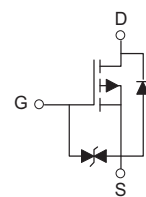


### 2N7002KM N-Channel Enhancement Mode Field Effect Transistor

#### Features

- Low on resistance  $R_{DS(ON)}$
- Low gate threshold voltage
- Low input capacitance
- ESD protected up to 2KV

**MARKING: 72K**



**SOT-723**

#### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

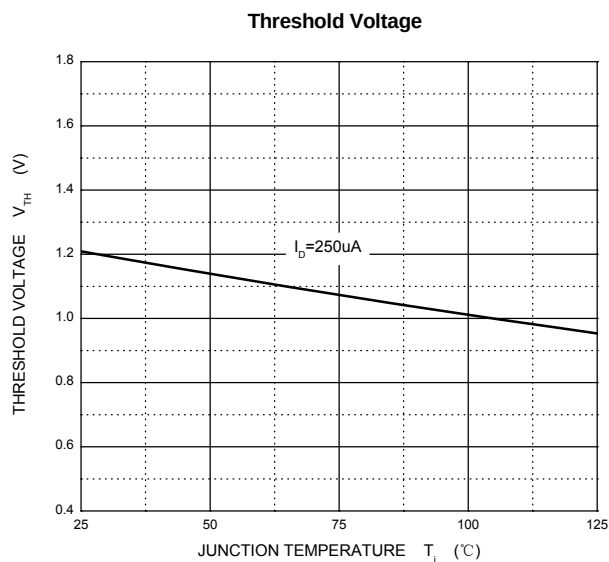
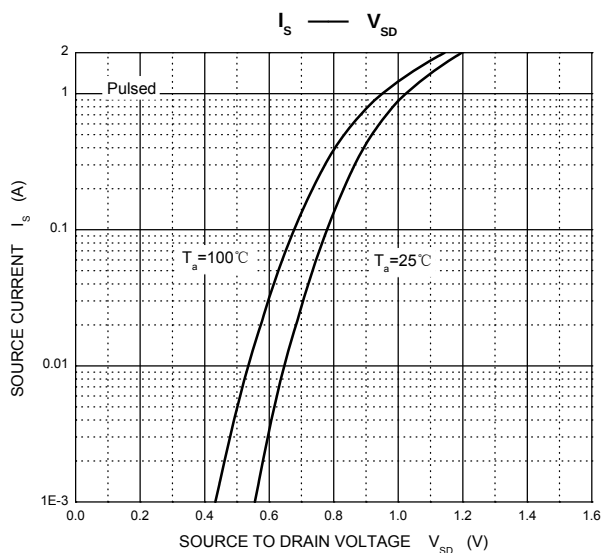
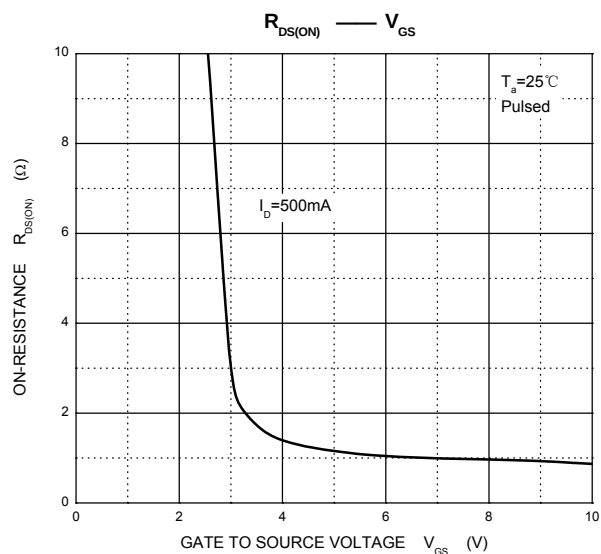
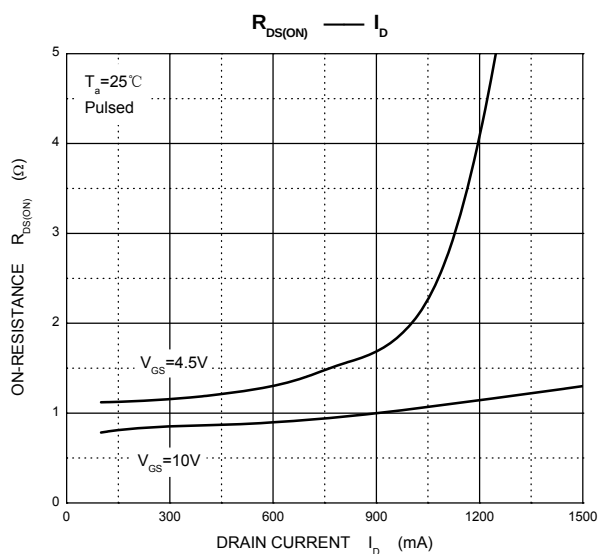
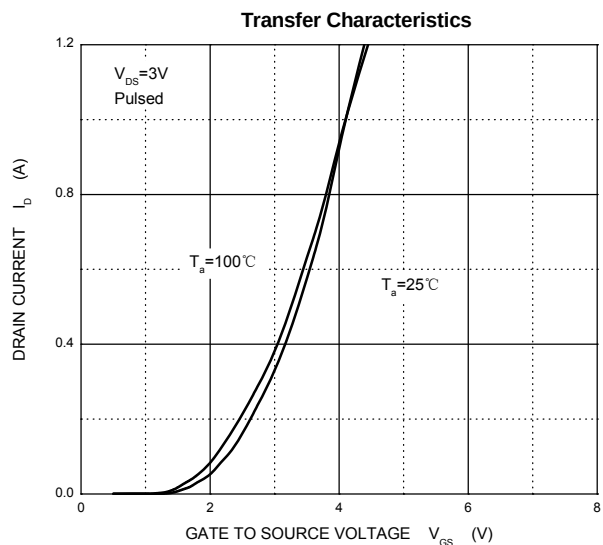
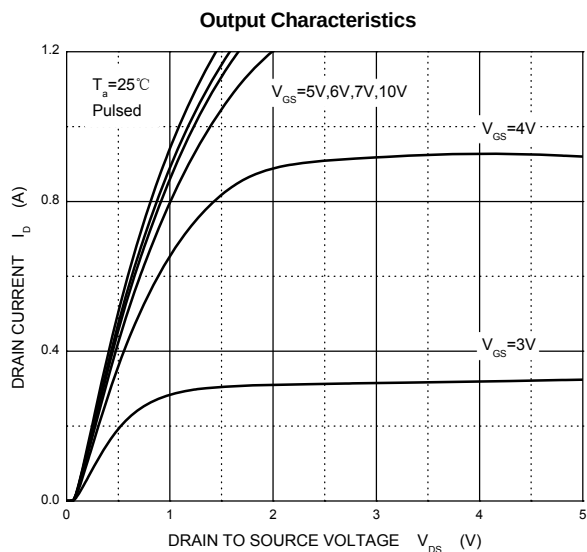
| Parameter                                          | Symbol         | Value         | Unit             |
|----------------------------------------------------|----------------|---------------|------------------|
| Drain-Source Voltage                               | $V_{DSS}$      | 60            | V                |
| Gate-Source Voltage                                | $V_{GSS}$      | $\pm 20$      | V                |
| Drain Current (Continuous)                         | $I_D$          | 300           | mA               |
| Drain Current (Pulse Width $\leq 10 \mu\text{s}$ ) | $I_{DM}$       | 800           | mA               |
| Total Power Dissipation                            | $P_{tot}$      | 150           | mW               |
| Operating and Storage Temperature Range            | $T_j, T_{stg}$ | - 55 to + 150 | $^\circ\text{C}$ |

#### Characteristics at $T_a = 25^\circ\text{C}$

| Parameter                                                                                                                                        | Symbol       | Min.   | Max.     | Unit          |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|----------|---------------|
| Drain Source Breakdown Voltage<br>at $I_D = 10 \mu\text{A}$                                                                                      | $BV_{DSS}$   | 60     | -        | V             |
| Zero Gate Voltage Drain Current<br>at $V_{DS} = 60 \text{ V}$                                                                                    | $I_{DSS}$    | -      | 1        | $\mu\text{A}$ |
| Gate Source Leakage Current<br>at $V_{GS} = \pm 20 \text{ V}$                                                                                    | $I_{GSS}$    | -      | $\pm 10$ | $\mu\text{A}$ |
| Gate Threshold Voltage<br>at $V_{DS} = 10 \text{ V}$ , $I_D = 250 \mu\text{A}$                                                                   | $V_{GS(th)}$ | 1      | 2.5      | V             |
| Static Drain Source On-Resistance<br>at $V_{GS} = 10 \text{ V}$ , $I_D = 500 \text{ mA}$<br>at $V_{GS} = 4.5 \text{ V}$ , $I_D = 200 \text{ mA}$ | $R_{DS(ON)}$ | -<br>- | 3<br>4   | $\Omega$      |
| <b>Diode Forward Voltage</b> $I_S=115\text{mA}$ , $V_{GS}=0 \text{ V}$                                                                           | $V_{SD}$     | 0.55   | 1.2      | V             |
| Forward Transconductance<br>at $V_{DS} = 10 \text{ V}$ , $I_D = 200 \text{ mA}$                                                                  | $g_{fs}$     | 80     | -        | mS            |
| Input Capacitance<br>at $V_{DS} = 25 \text{ V}$ , $f = 1 \text{ MHz}$                                                                            | $C_{iss}$    | -      | 50       | pF            |
| Output Capacitance<br>at $V_{DS} = 25 \text{ V}$ , $f = 1 \text{ MHz}$                                                                           | $C_{oss}$    | -      | 25       | pF            |
| Reverse Transfer Capacitance<br>at $V_{DS} = 25 \text{ V}$ , $f = 1 \text{ MHz}$                                                                 | $C_{rss}$    | -      | 5        | pF            |

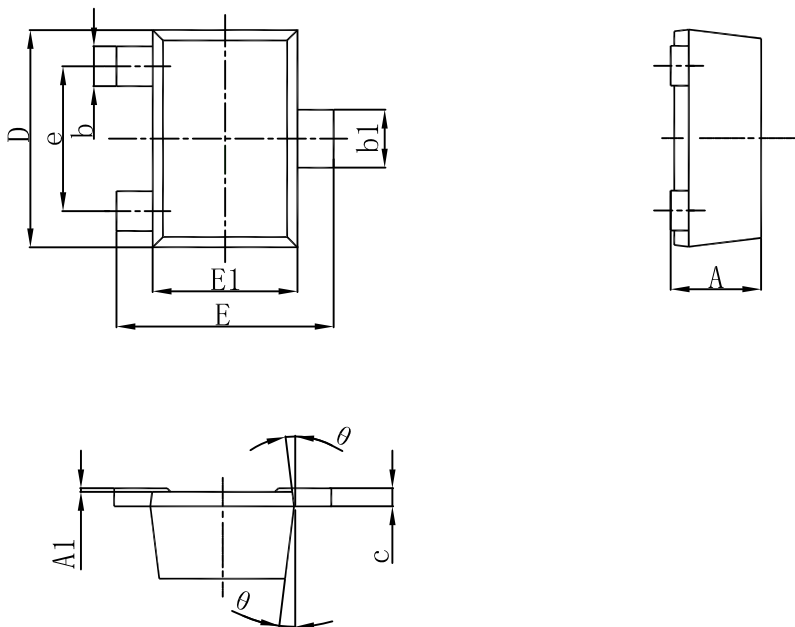


## Typical Characteristics



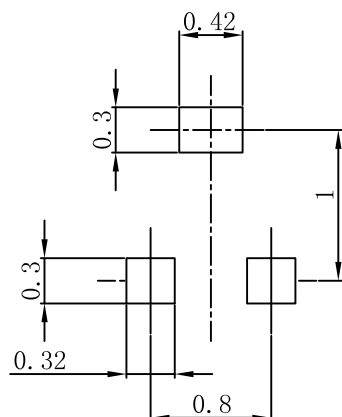


## SOT-723 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.450                     | 0.550 | 0.018                | 0.022 |
| A1     | 0.000                     | 0.050 | 0.000                | 0.002 |
| b      | 0.170                     | 0.270 | 0.007                | 0.011 |
| b1     | 0.270                     | 0.370 | 0.011                | 0.015 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.150                     | 1.250 | 0.045                | 0.049 |
| E      | 1.150                     | 1.250 | 0.045                | 0.049 |
| E1     | 0.750                     | 0.850 | 0.030                | 0.033 |
| e      | 0.800TYP.                 |       | 0.031TYP.            |       |
| θ      | 7° REF.                   |       | 7° REF.              |       |

## SOT-723 Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.