

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 60V           | 1.8Ω@10V        | 0.34A |
|               | 2.1Ω@4.5V       |       |

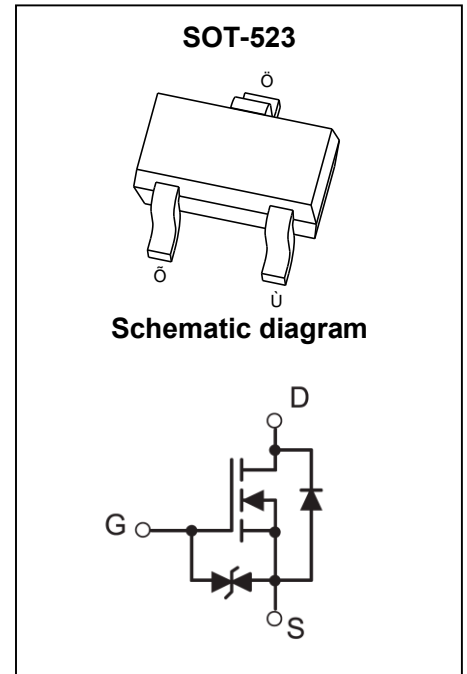
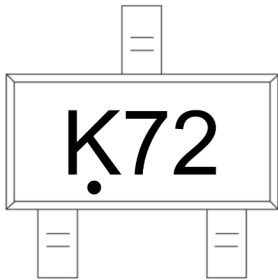
### Feature

- Surface Mount Package
- High Density Cell Design for Extremely Low RDS(ON)
- Voltage Controlled Small Signal Switch
- Rugged and Reliable
- ESD Protcet

### Application

- Small Servo Motor Controls
- Power MOSFET Gate Drivers
- Switching Application

### MARKING:



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

| Parameter  | Symbol    | Value     | Unit |
|--|-----------|-----------|------|
| Drain-Source Voltage                                       | $V_{DS}$  | 60        | V    |
| Gate-Source Voltage  | $V_{GS}$  | ±20       | V    |
| Continuous Drain Current <sup>1,2</sup>                    | $I_D$     | 0.34      | A    |
| Pulsed Drain Current (tp=10μs)                             | $I_{DM}$  | 1.36      | A    |
| Power Dissipation  | $P_D$     | 0.15      | W    |
| Thermal Resistance from Junction to Ambient <sup>1,2</sup> | $R_{θJA}$ | 833       | °C/W |
| Junction Temperature                                       | $T_J$     | 150       | °C   |
| Storage Temperature  | $T_{STG}$ | -55~ +150 | °C   |

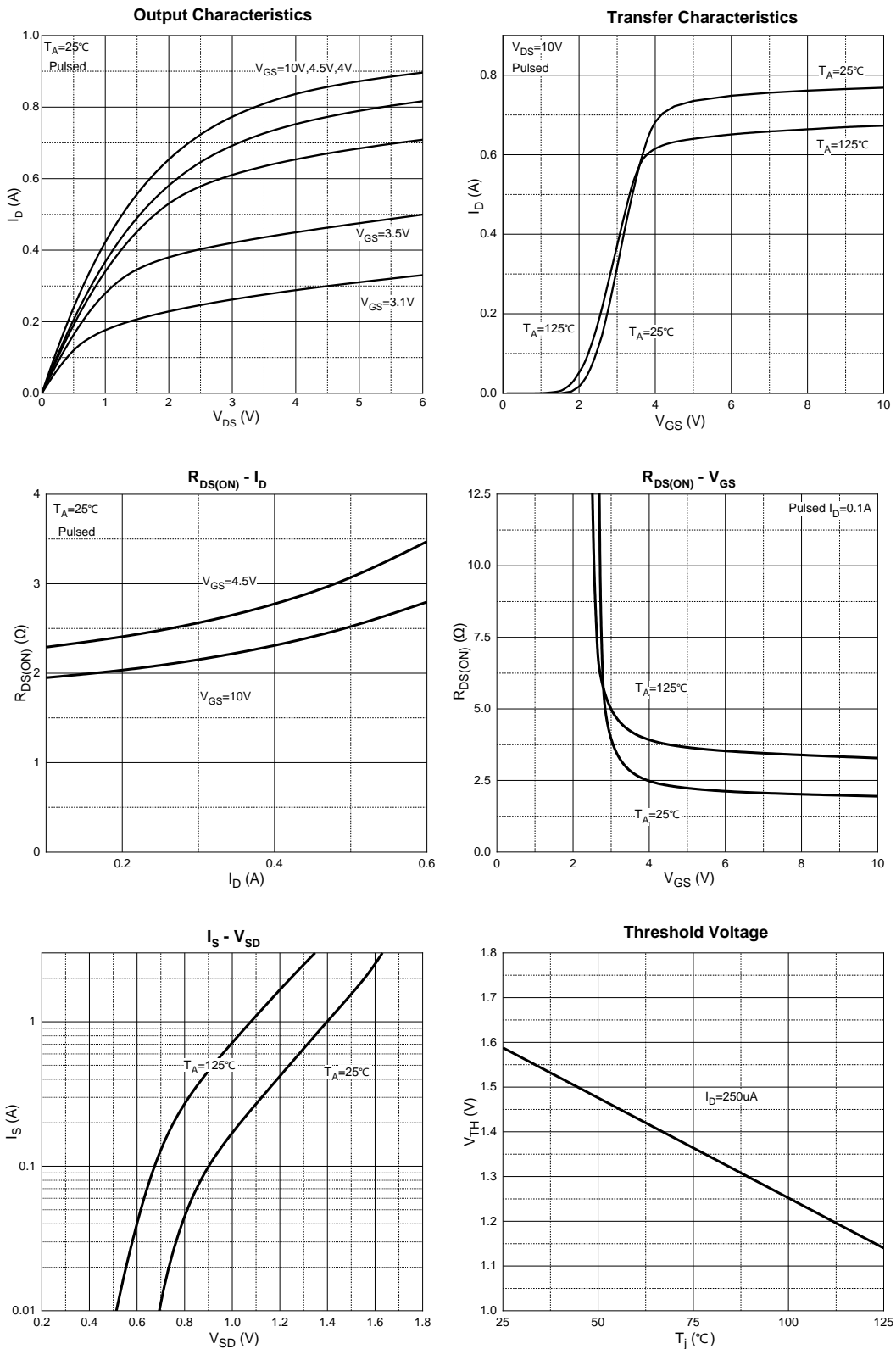
**MOSFET ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$  unless otherwise noted)**

| Parameter                             | Symbol        | Test Condition   | Min | Type | Max     | Unit     |
|---------------------------------------|---------------|--|-----|------|---------|----------|
| <b>Off Characteristics</b>            |               |  |     |      |         |          |
| Drain-source breakdown voltage        | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                | 60  |      |         | V        |
| Zero gate voltage drain current       | $I_{DSS}$     | $V_{DS} = 48V, V_{GS} = 0V$                                  |     |      | 1       | $\mu A$  |
| Gate-body leakage current             | $I_{GSS}$     | $V_{GS} = \pm 20V, V_{DS} = 0V$                              |     |      | $\pm 5$ | $\mu A$  |
| <b>On Characteristics<sup>3</sup></b> |               |  |     |      |         |          |
| Gate threshold voltage                | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                            | 1.0 | 1.5  | 2.5     | V        |
| Drain-source on-resistance            | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 0.3A$                                   |     | 1.8  | 3.5     | $\Omega$ |
|                                       |               | $V_{GS} = 4.5V, I_D = 0.2A$                                  |     | 2.1  | 4.0     |          |
| Forward transconductance              | $g_{FS}$      | $V_{GS} = 10V, I_D = 0.2A$                                   | 80  |      |         | mS       |
| <b>Dynamic Characteristics</b>        |               |  |     |      |         |          |
| Input Capacitance                     | $C_{iss}$     | $V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$                        |     | 17.6 |         | $\mu F$  |
| Output Capacitance                    | $C_{oss}$     |  |     | 4.4  |         |          |
| Reverse Transfer Capacitance          | $C_{rss}$     |  |     | 1.2  |         |          |
| <b>Switching Characteristics</b>      |               |  |     |      |         |          |
| Turn-on Delay Time                    | $t_{d(on)}$   | $V_{DD} = 30V, V_{GS} = 10V, R_L = 100\Omega, R_G = 3\Omega$ |     | 3.8  |         | ns       |
| Turn-on Rise Time                     | $t_r$         |  |     | 2.9  |         |          |
| Turn-off Delay Time                   | $t_{d(off)}$  |  |     | 14   |         |          |
| Turn-off Fall Time                    | $t_f$         |  |     | 8    |         |          |
| Total Gate Charge                     | $Q_g$         | $V_{DS} = 30V, I_D = 0.3A, V_{GS} = 10V$                     |     | 1.6  |         | nC       |
| Gate-Source Charge                    | $Q_{gs}$      |  |     | 0.2  |         |          |
| Gate-Drain Charge                     | $Q_{gd}$      |  |     | 0.8  |         |          |
| <b>Diode Characteristics</b>          |               |  |     |      |         |          |
| Diode forward voltage <sup>3</sup>    | $V_{SD}$      | $I_S = 0.3A, V_{GS} = 0V$                                    |     |      | 1.2     | V        |

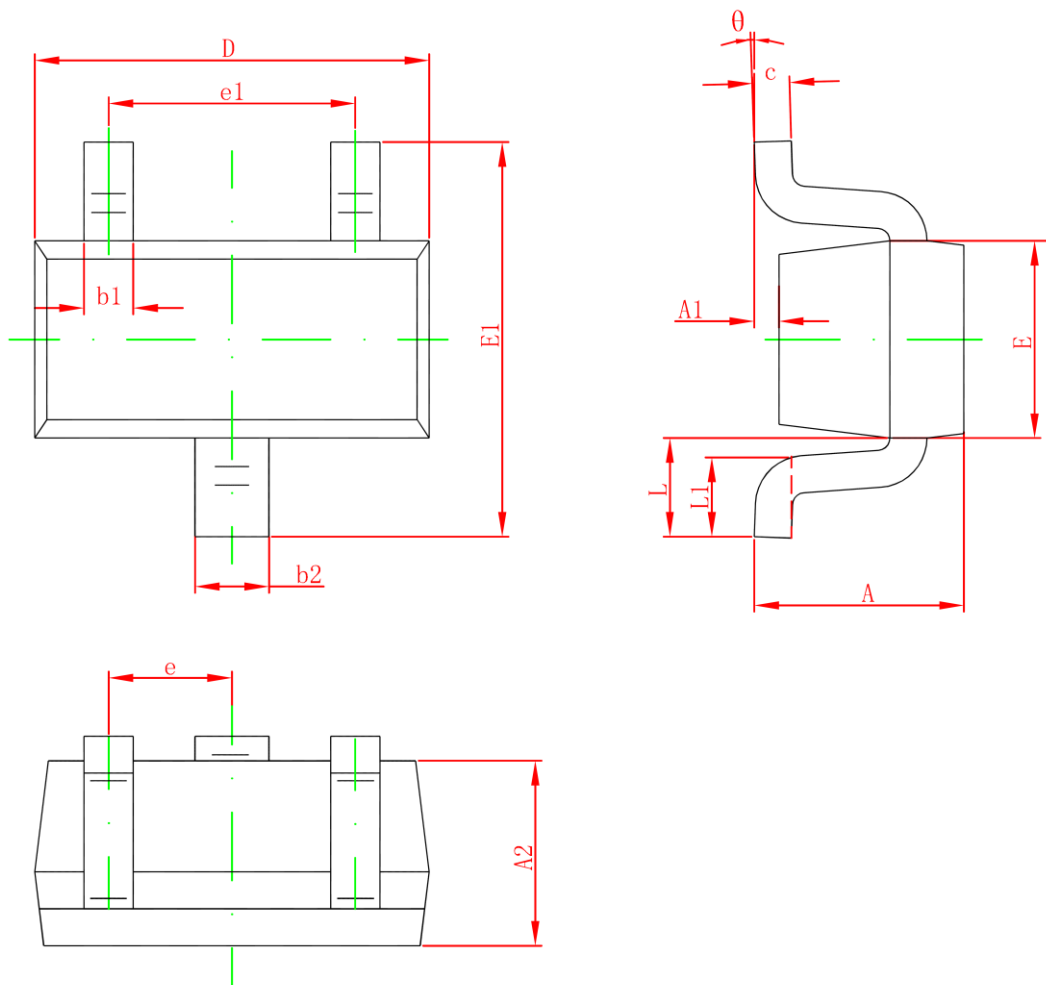
Notes :

1.  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR4 board with 1 oz. single side copper, in a still air environment with  $T_a = 25^\circ\text{C}$ .
2.  $R_{\theta JA}$  is measured in the steady state
3. Pulse test : Pulse width  $\leq 380\mu s$ , duty cycle  $\leq 2\%$ .

**Typical Characteristics**



## SOT-523 Package Information



| 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        | 0.900                     | 1.100 | 0.035                | 0.043 |
| e1       | 0.500TYP                  |       | 0.020TYP             |       |
| L        | 0.400REF                  |       | 0.016REF             |       |
| L1       | 0.260                     | 0.460 | 0.010                | 0.018 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |

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