

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$     | $I_D$ |
|---------------|---------------------|-------|
| 100V          | 110m $\Omega$ @10V  | 3A    |
|               | 140m $\Omega$ @4.5V |       |

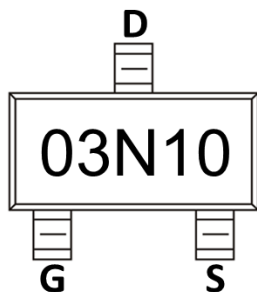
### Feature

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

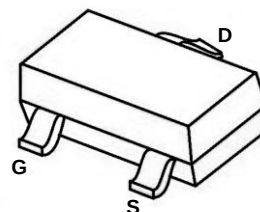
### Application

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

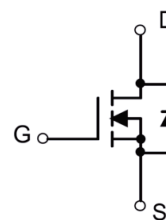
### MARKING:



SOT-23



Schematic diagram



### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                                                  | Symbol          | Value    | Unit                 |
|------------------------------------------------------------|-----------------|----------|----------------------|
| Drain-Source Voltage                                       | $V_{DS}$        | 100      | V                    |
| Gate-Source Voltage                                        | $V_{GS}$        | $\pm 20$ | V                    |
| Continuous Drain Current <sup>1,2</sup>                    | $I_D$           | 3        | A                    |
| Pulsed Drain Current ( $t_p=10\mu\text{s}$ )               | $I_{DM}$        | 12       | A                    |
| Power Dissipation                                          | $P_D$           | 1.25     | W                    |
| Thermal Resistance from Junction to Ambient <sup>1,2</sup> | $R_{\theta JA}$ | 100      | $^{\circ}\text{C/W}$ |
| Junction Temperature                                       | $T_J$           | 150      | $^{\circ}\text{C}$   |
| Storage Temperature                                        | $T_{STG}$       | -55~+150 | $^{\circ}\text{C}$   |

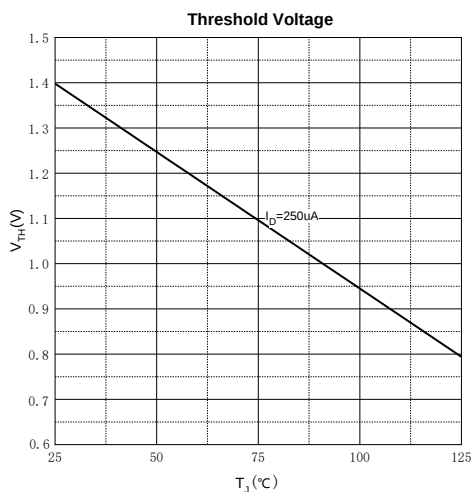
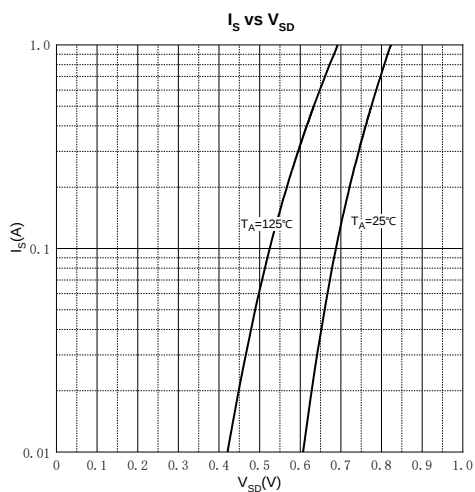
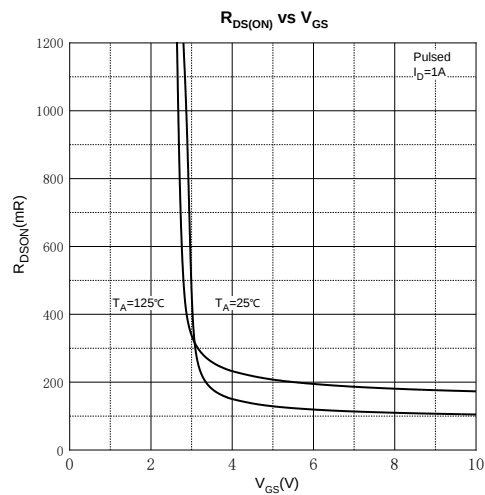
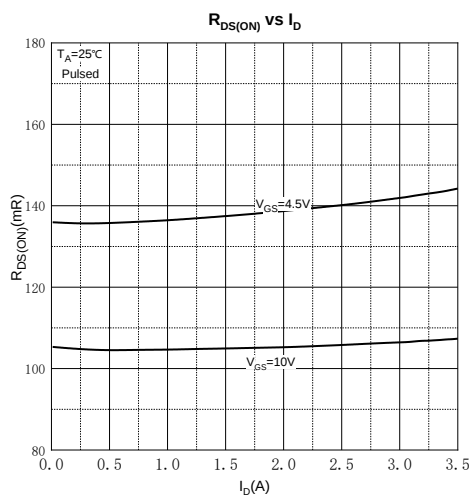
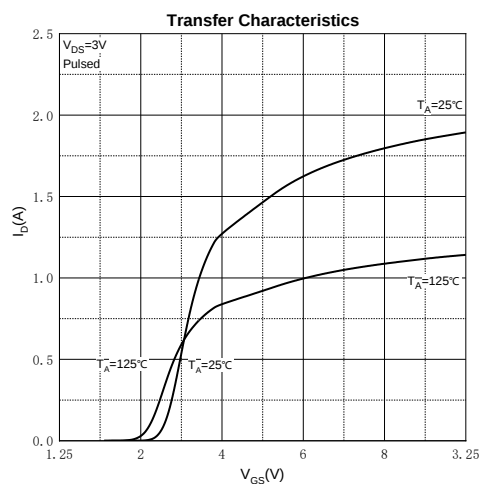
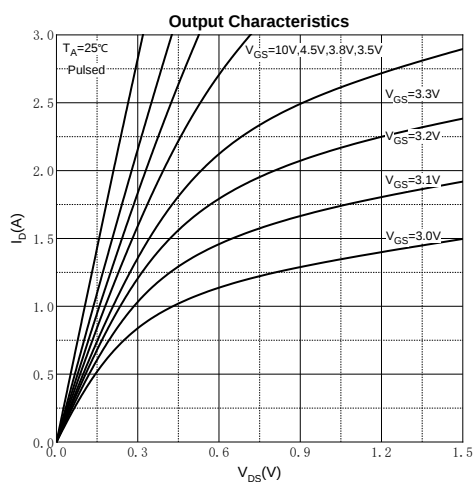
**MOSFET ELECTRICAL CHARACTERISTICS**( $T_a = 25^{\circ}\text{C}$  unless otherwise noted)

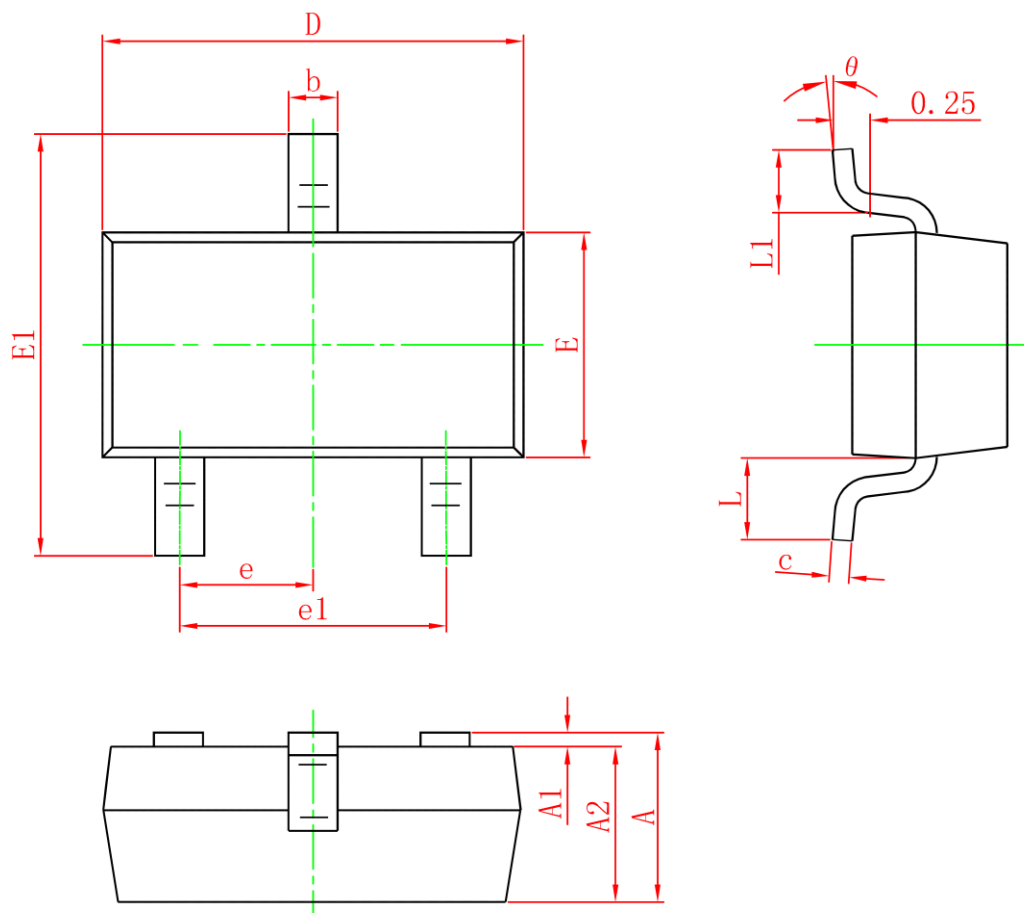
| Parameter                          | Symbol               | Test Condition                                                                             | Min | Type  | Max  | Unit |
|------------------------------------|----------------------|--------------------------------------------------------------------------------------------|-----|-------|------|------|
| Off Characteristics                |                      |                                                                                            |     |       |      |      |
| Drain-source breakdown voltage     | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA                                               | 100 |       |      | V    |
| Zero gate voltage drain current    | I <sub>DSS</sub>     | V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V                                                |     |       | 1    | μA   |
| Gate-body leakage current          | I <sub>GSS</sub>     | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V                                               |     |       | ±100 | nA   |
| On Characteristics <sup>3</sup>    |                      |                                                                                            |     |       |      |      |
| Gate threshold voltage             | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                 | 1   | 1.5   | 3    | V    |
| Drain-source on-resistance         | R <sub>DS(on)</sub>  | V <sub>GS</sub> = 10V, I <sub>D</sub> = 1A                                                 |     | 110   | 140  | mΩ   |
|                                    |                      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 1A                                                |     | 140   | 190  |      |
| Forward tranconductance            | g <sub>FS</sub>      | V <sub>DS</sub> = 5V, I <sub>D</sub> = 3A                                                  |     | 5     |      | S    |
| Dynamic Characteristics            |                      |                                                                                            |     |       |      |      |
| Input Capacitance                  | C <sub>iss</sub>     | V <sub>DS</sub> = 45V, V <sub>GS</sub> = 0V, f = 1MHz                                      |     | 142.4 |      | pF   |
| Output Capacitance                 | C <sub>oss</sub>     |                                                                                            |     | 56.18 |      |      |
| Reverse Transfer Capacitance       | C <sub>rss</sub>     |                                                                                            |     | 4.45  |      |      |
| Switchig Characteristics           |                      |                                                                                            |     |       |      |      |
| Turn-on delay time                 | t <sub>d(on)</sub>   | V <sub>GS</sub> = 10V, V <sub>DD</sub> = 50V, R <sub>L</sub> = 19Ω,<br>R <sub>G</sub> = 3Ω |     | 6     |      | ns   |
| Turn-on rise time                  | t <sub>r</sub>       |                                                                                            |     | 4     |      |      |
| Turn-off delay time                | t <sub>d(off)</sub>  |                                                                                            |     | 20    |      |      |
| Turn-off fall time                 | t <sub>f</sub>       |                                                                                            |     | 4     |      |      |
| Total Gate Charge                  | Q <sub>g</sub>       | V <sub>DS</sub> =50V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V                             |     | 3.29  |      | nC   |
| Gate-Source Charge                 | Q <sub>gs</sub>      |                                                                                            |     | 0.21  |      |      |
| Gate-Drain Charge                  | Q <sub>gd</sub>      |                                                                                            |     | 1.06  |      |      |
| Diode Characteristics              |                      |                                                                                            |     |       |      |      |
| Diode forward voltage <sup>3</sup> | V <sub>SD</sub>      | I <sub>S</sub> = 1A, V <sub>GS</sub> = 0V                                                  |     | 0.8   | 1.2  | V    |

**Notes :**

1.  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR4 board with 1oz. 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-23 Package Information**


| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0                         | 0.100 | 0                    | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.150                     | 1.500 | 0.045                | 0.059 |
| E1     | 2.250                     | 2.650 | 0.089                | 0.104 |
| e      | 0.950TYP                  |       | 0.037TYP             |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550REF                  |       | 0.022REF             |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |