

### Product Summary

- $V_{DS} = -20V, I_D = -2A$   
 $R_{DS(ON)} < 70m\Omega @ V_{GS} = -4.5V$   
 $R_{DS(ON)} < 110m\Omega @ V_{GS} = -2.5V$

### Application

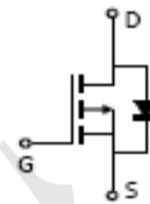
- Load/Power Switching
- Interfacing Switching
- Logic Level Shift

### Package and Pin Configuration

SOT-23



### Circuit diagram



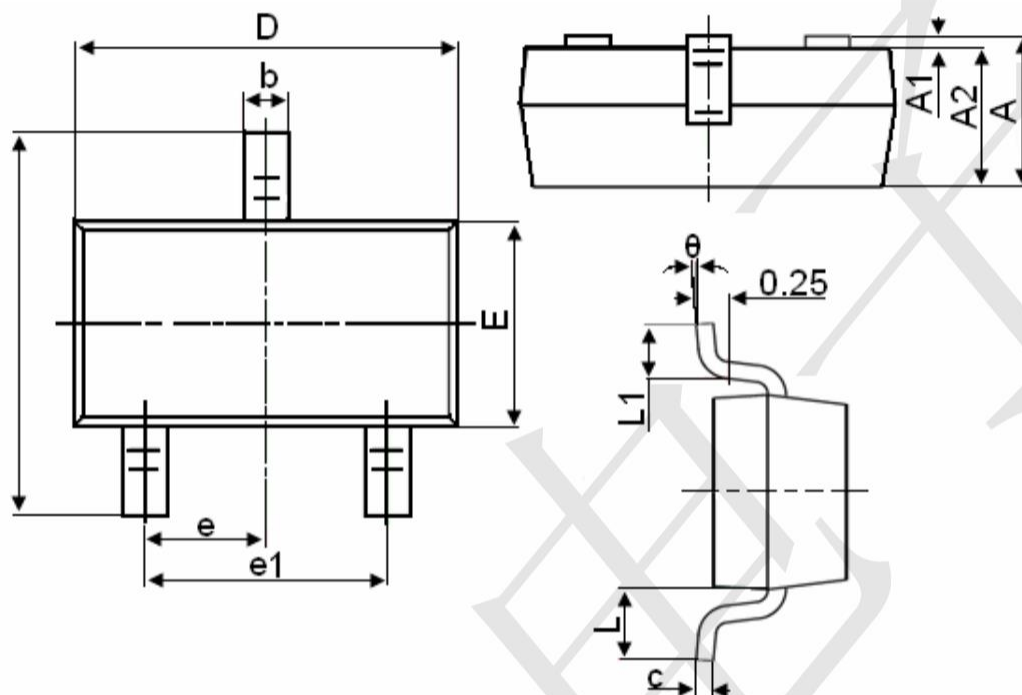
### Absolute Maximum Ratings ( $T_A = 25^\circ C$ unless otherwise noted)

| Parameter                                                    | Symbol        | Value    | Unit         |
|--------------------------------------------------------------|---------------|----------|--------------|
| Drain-Source Voltage                                         | VDS           | -20      | V            |
| Gate-Source Voltage                                          | VGS           | $\pm 8$  |              |
| Continuous Drain Current                                     | ID            | -2       | A            |
| Pulsed Diode Current                                         | IDM           | -10      |              |
| Power Dissipation                                            | PD            | 1.1      | W            |
| Thermal Resistance from Junction to Ambient ( $t \leq 10s$ ) | R $\theta$ JA | 250      | $^\circ C/W$ |
| Operating Junction                                           | TJ            | 150      | $^\circ C$   |
| Storage Temperature                                          | TSTG          | -55~+150 | $^\circ C$   |

**Electrical Characteristics (  $T_A = 25^\circ\text{C}$  unless otherwise noted )**

| Parameter                                 | Symbol   | Test Condition                                       | Min  | Typ  | Max  | Unit |
|-------------------------------------------|----------|------------------------------------------------------|------|------|------|------|
| Static                                    |          |                                                      |      |      |      |      |
| Drain-source breakdown voltage            | V(BR)DSS | VGS = 0V, ID = -250μA                                | -20  |      |      | V    |
| Gate-source threshold voltage             | VGS(th)  | VDS =VGS, ID = -250μA                                | -0.4 |      | -1.5 | V    |
| Gate-source leakage                       | IGSS     | VDS =0V, VGS = ±8V                                   |      |      | ±100 | nA   |
| Zero gate voltage drain current           | IDSS     | VDS = -16V, VGS =0V                                  |      |      | -1   | μA   |
| Drain-source on-state resistancea         | RDS(on)  | VGS = -4.5V, ID = -2A                                |      | 52   | 70   | mΩ   |
|                                           |          | VGS = -2.5V, ID = -1.7A                              |      | 78   | 110  | mΩ   |
|                                           |          | VGS = -1.8V, ID = -1.2A                              |      |      | 210  | mΩ   |
| Forward transconductancea                 | gfs      | VDS = -4.5V, ID = -2A                                |      | 8    |      | S    |
| Diode forward voltage                     | VSD      | IS= -1A,VGS=0V                                       |      | -0.8 | -1.2 | V    |
| Dynamic                                   |          |                                                      |      |      |      |      |
| Input capacitance                         | Ciss     | VDS = -10V,VGS =0V, f=1MHz                           |      | 600  |      | pF   |
| Output capacitance                        | Coss     |                                                      |      | 175  |      | pF   |
| Reverse transfer capacitanceb             | Crss     |                                                      |      | 80   |      | pF   |
| Total gate charge                         | Qg       | VDS = -10V,VGS = -4.5V, ID = -2A                     |      | 8    |      | nC   |
| Gate-source charge                        | Qgs      |                                                      |      | 1.3  |      | nC   |
| Gate-drain charge                         | Qgd      |                                                      |      | 2.2  |      | nC   |
| Gate resistance                           | Rg       | f=1MHz                                               | 0.5  |      | 3.2  | Ω    |
| Switchingbtr                              |          |                                                      |      |      |      |      |
| Turn-on delay time                        | td(on)   | VDS= -10V<br>RL=3.5Ω, ID ≈ -1A,<br>VGEN= -4.5V,Rg=3Ω |      | 6    |      | ns   |
| Rise time                                 | tr       |                                                      |      | 9    |      | ns   |
| Turn-off delay time                       | td(off)  |                                                      |      | 31   |      | ns   |
| Fall time                                 | tf       |                                                      |      | 26   |      | ns   |
| Drain-source body diode characteristicstr |          |                                                      |      |      |      |      |
| Continuous Source-Drain Diode Current     | IS       | Tc=25℃                                               |      |      | -1.2 | A    |
| Pulsed Diode forward Curren               | ISM      |                                                      |      |      | -10  | A    |

**SOT-23 Package Information**



| Symbol | Dimensions in Millimeters |       |
|--------|---------------------------|-------|
|        | 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°    |