

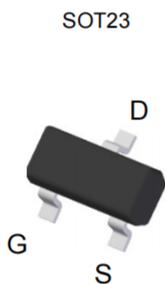
Product Summary

- $V_{DS} = -30V, I_D = -2A$
 $R_{DS(ON)} < 190m\Omega @ V_{GS} = -2.5V$
 $R_{DS(ON)} < 330m\Omega @ V_{GS} = -4.5V$
- Package SOT-23

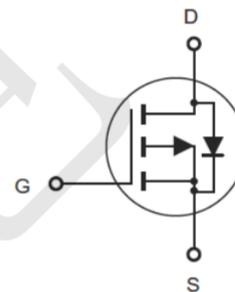
Application

- Battery protection
- Load switch
- Power management

Package and Pin Configuration



Circuit diagram



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

| Parameter | Symbol | Limit | Unit |
|--|----------------|------------|------------|
| Drain-Source Voltage | V_{DS} | -30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Drain Current-Continuous | I_D | -2 | A |
| Drain Current -Pulsed ^(Note 1) | I_{DM} | -10 | A |
| Maximum Power Dissipation | P_D | 1 | W |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 To 150 | $^\circ C$ |

Thermal Characteristic

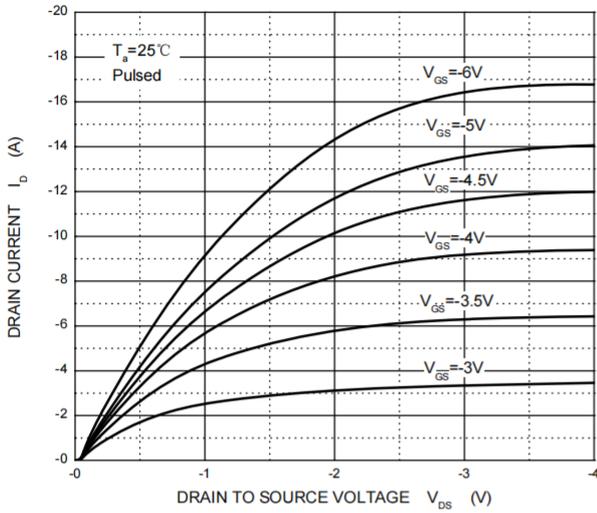
| | | | |
|---|-----------------|-----|--------------|
| Thermal Resistance, Junction-to-Ambient ^(Note 2) | $R_{\theta JA}$ | 125 | $^\circ C/W$ |
|---|-----------------|-----|--------------|

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

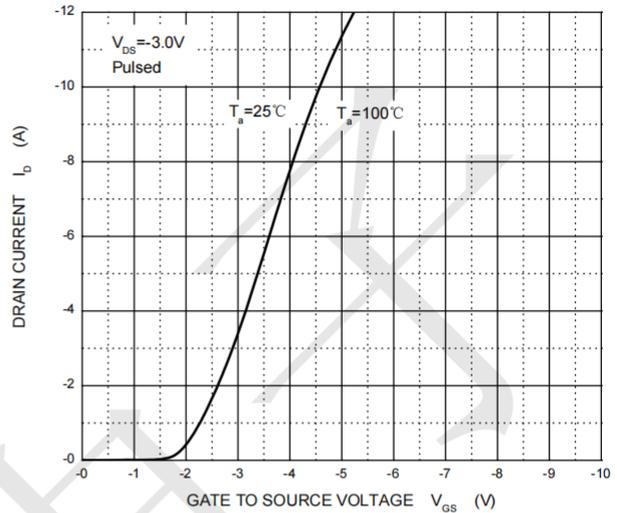
| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|--|---------------|--|-----|------|-----------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -30 | | | V |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -1 | -1.6 | -3 | |
| Gate-Source Leakage | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 20V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -30V, V_{GS} = 0V$ | | | -1 | μA |
| Drain-Source On-State Resistance ^a | $R_{DS(on)}$ | $V_{GS} = -10V, I_D = -1.9A$ | | | 0.190 | Ω |
| | | $V_{GS} = -4.5V, I_D = -1.4A$ | | | 0.330 | |
| Forward Transconductance ^a | g_{fs} | $V_{DS} = -5V, I_D = -1.9A$ | 1 | | | S |
| Dynamic^b | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$ | | 155 | | pF |
| Output Capacitance | C_{oss} | | | 35 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 25 | | |
| Total Gate Charge | Q_g | $V_{DS} = -15V, V_{GS} = -10V, I_D = -1.9A$ | | 4 | 8 | nC |
| | | | | 2 | 4 | |
| Gate-Source Charge | Q_{gs} | $V_{DS} = -15V, V_{GS} = -4.5V, I_D = -1.9A$ | | 0.6 | | |
| Gate-Drain Charge | Q_{gd} | | | 1 | | |
| Gate Resistance | R_g | $f = 1MHz$ | 1.7 | 8.5 | 17 | Ω |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = -15V,$ $R_L = 10\Omega, I_D = -1.5A,$ $V_{GEN} = -10V, R_g = 1\Omega$ | | 4 | 8 | ns |
| Rise Time | t_r | | | 11 | 18 | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 11 | 18 | |
| Fall Time | t_f | | | 8 | 16 | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = -15V,$ $R_L = 10\Omega, I_D = -1.5A,$ $V_{GEN} = -4.5V, R_g = 1\Omega$ | | 36 | 44 | |
| Rise Time | t_r | | | 37 | 45 | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 12 | 18 | |
| Fall Time | t_f | | | 9 | 14 | |
| Drain-source Body diode characteristics | | | | | | |
| Continuous Source-Drain Diode Current | I_S | $T_C = 25^\circ\text{C}$ | | | -2 | A |
| Pulse Diode Forward Current ^a | I_{SM} | | | | -10 | |
| Body Diode Voltage | V_{SD} | $I_S = -1.5A$ | | -0.8 | -1.2 | V |

Typical Electrical and Thermal Characteristics

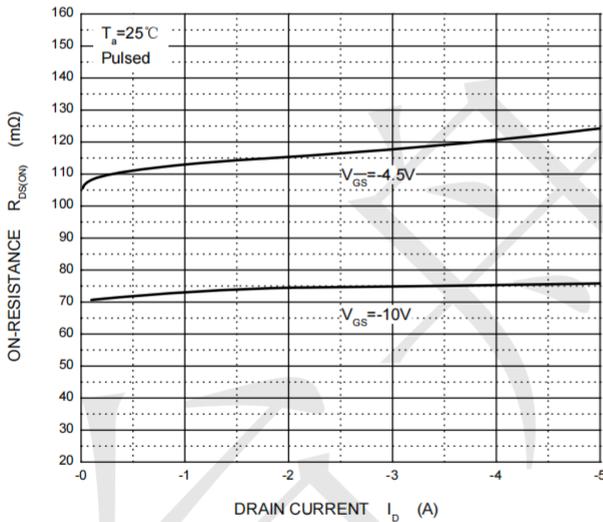
Output Characteristics



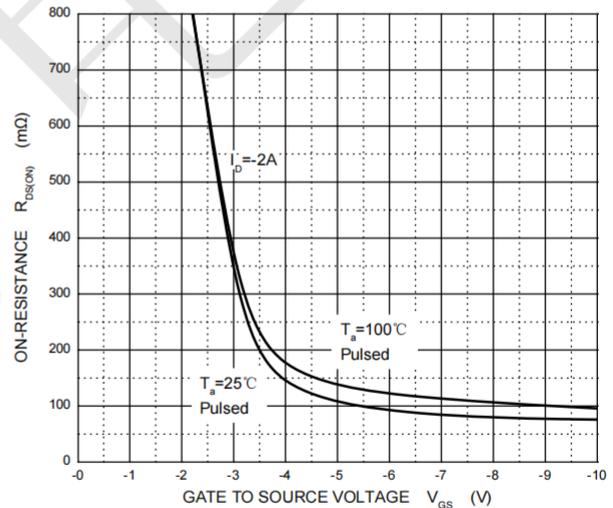
Transfer Characteristics



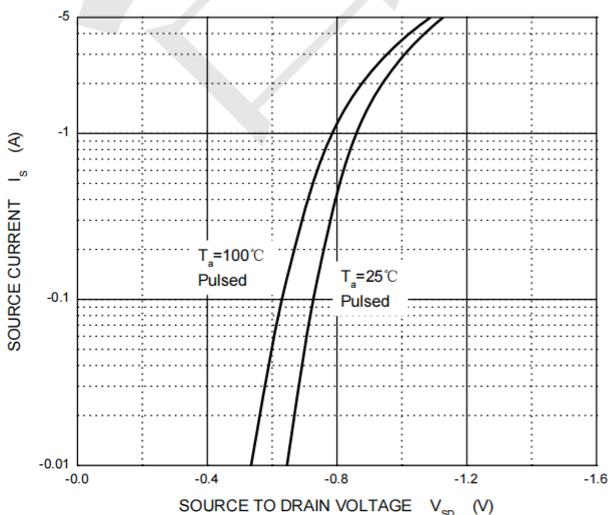
$R_{DS(ON)}$ — I_D



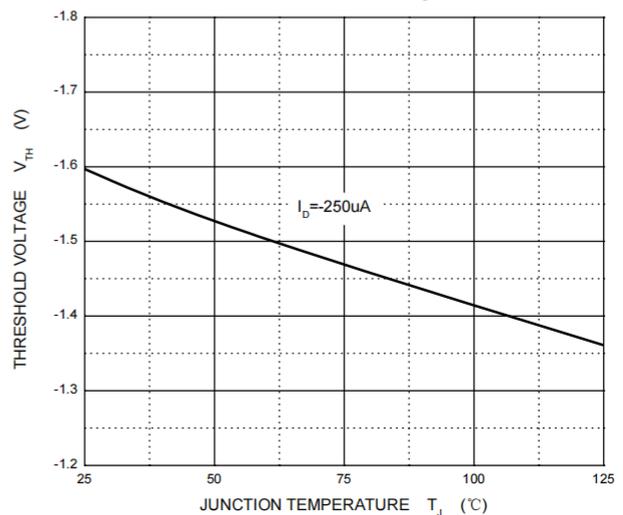
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

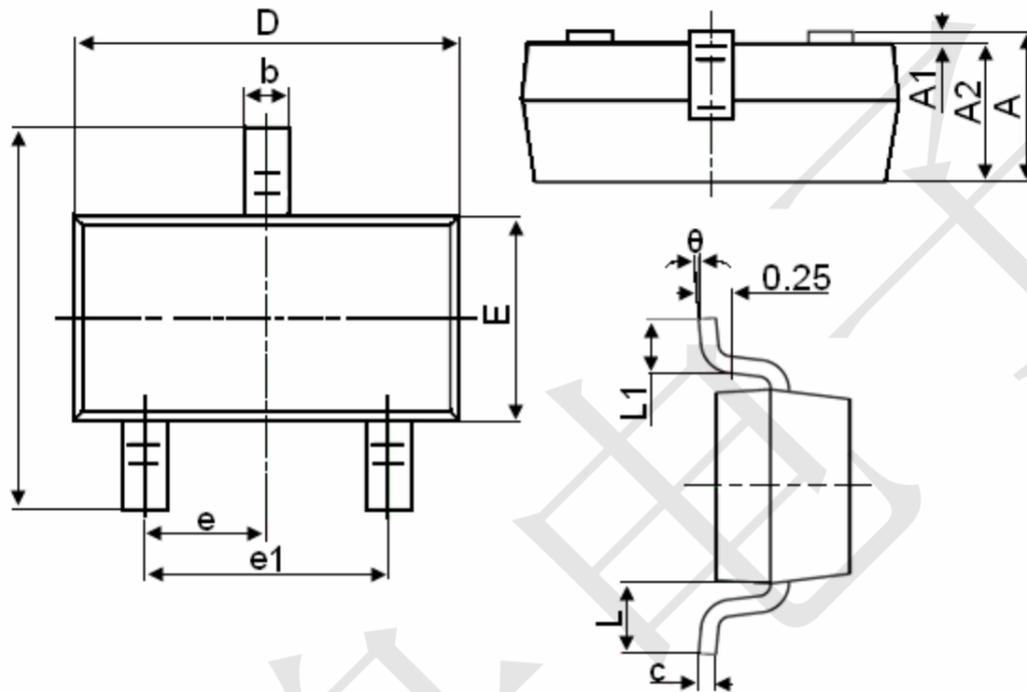


Threshold Voltage



SOT-23 Package Information

(UNIT): mm



| 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° |