

Product Summary

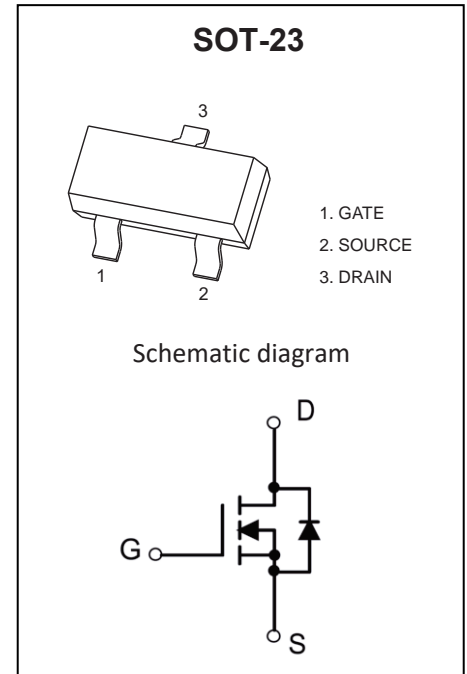
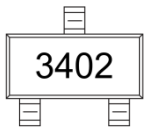
| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|--------------------|-------|
| 30V | 34m Ω @10V | 4A |
| | 37m Ω @4.5V | |
| | 45m Ω @2.5V | |

Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

MARKING:

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

| Parameter | Symbol | Value | Unit |
|--|-----------------|-----------|----------------------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | V |
| Continuous Drain Current | I_D | 4 | A |
| Pulsed Drain Current ⁽¹⁾ | I_{DM} | 15 | A |
| Power Dissipation | P_D | 1.5 | W |
| Thermal Resistance from Junction to Ambient ⁽²⁾ | $R_{\theta JA}$ | 83.3 | $^{\circ}\text{C/W}$ |
| Junction Temperature | T_J | 150 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -55~ +150 | $^{\circ}\text{C}$ |

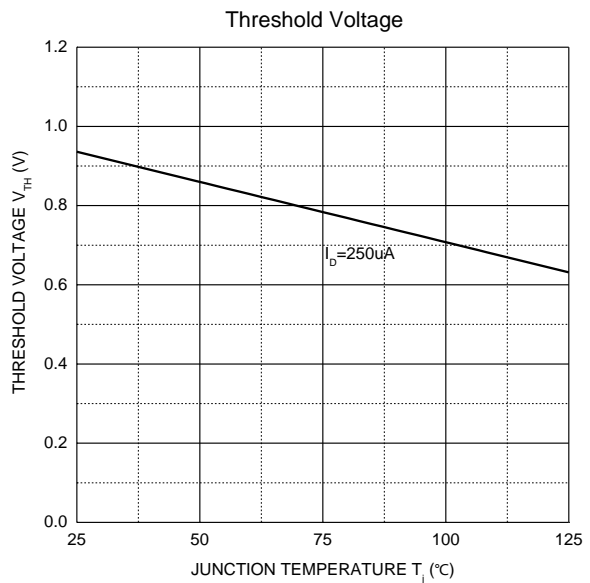
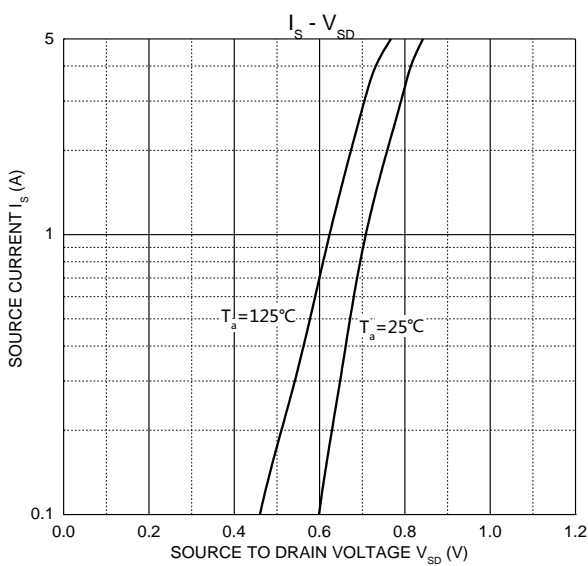
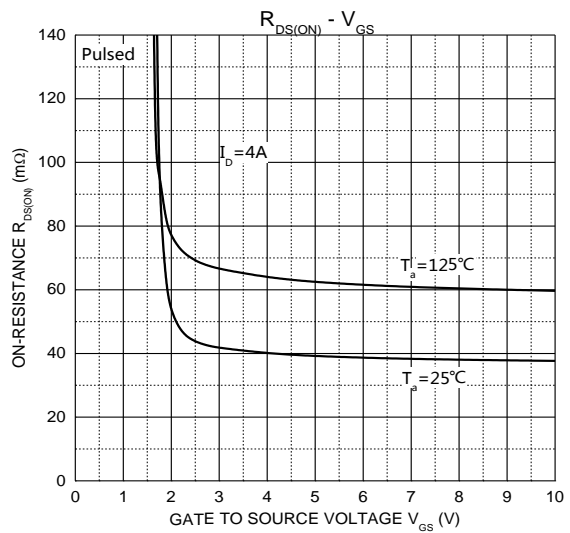
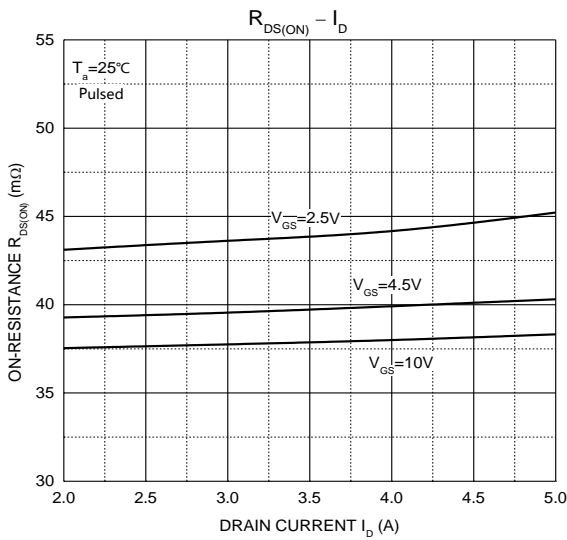
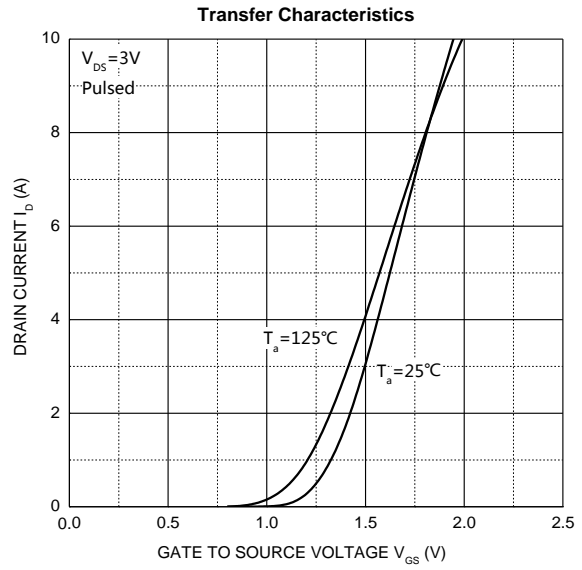
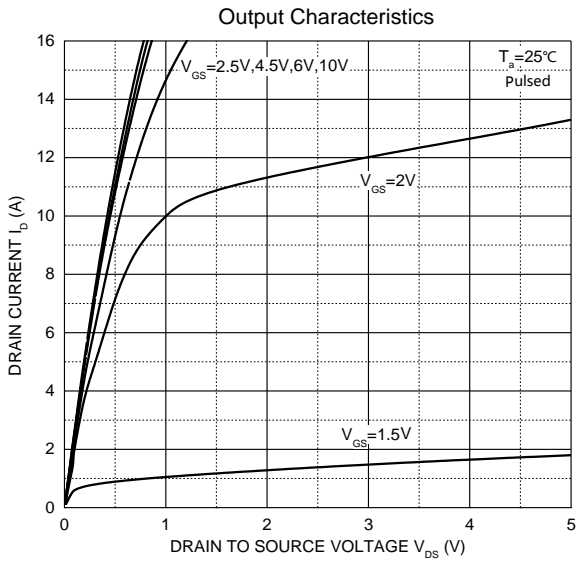
MOSFET ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise noted)

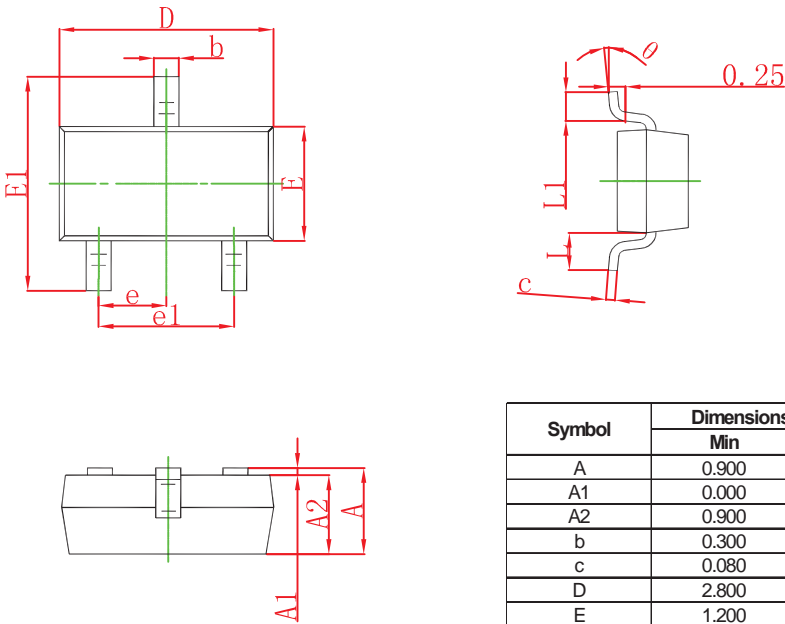
| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|--|---------------|--|-----|------|-----------|------------|
| STATIC CHARACTERISTICS | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 30 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = 30V, V_{GS} = 0V$ | | | 1 | μA |
| Gate-body leakage current | I_{GSS} | $V_{GS} = \pm 12V, V_{DS} = 0V$ | | | ± 100 | nA |
| Gate threshold voltage ⁽³⁾ | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 0.5 | 0.95 | 1.5 | V |
| Drain-source on-resistance ⁽³⁾ | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 4A$ | | 34 | 52 | m Ω |
| | | $V_{GS} = 4.5V, I_D = 3A$ | | 37 | 65 | |
| | | $V_{GS} = 2.5V, I_D = 2A$ | | 45 | 85 | |
| Forward transconductance ⁽³⁾ | g_{FS} | $V_{DS} = 5V, I_D = 3.6A$ | | 13 | | S |
| DYNAMIC CHARACTERISTICS⁽⁴⁾ | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$ | | 389 | | pF |
| Output Capacitance | C_{oss} | | | 54 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 40 | | |
| Gate resistance | R_g | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$ | | 3.5 | | Ω |
| SWITCHING CHARACTERISTICS⁽⁴⁾ | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GS} = 10V, V_{DS} = 15V,$ $R_L = 3.75\Omega, R_{GEN} = 6\Omega$ | | 3.5 | | ns |
| Turn-on rise time | t_r | | | 1.2 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 22 | | |
| Turn-off fall time | t_f | | | 2.2 | | |
| Total gate charge | Q_g | $V_{DS} = 15V, V_{GS} = 4.5V, I_D = 4A$ | | 4.4 | | nC |
| Gate-source charge | Q_{gs} | | | 0.7 | | |
| Gate-drain charge | Q_{gd} | | | 1.3 | | |
| SOURCE-DRAIN DIODE CHARACTERISTICS | | | | | | |
| Body Diode Voltage ⁽³⁾ | V_{SD} | $I_S = 1A, V_{GS} = 0V$ | | | 1 | V |
| Continuous Source-Drain Diode Current | I_S | $T_C = 25^\circ\text{C}$ | | | 1.5 | A |
| Body diode reverse recovery time | t_r | $I_F = 4A, di/dt = 100A/\mu s$ | | 1.3 | | ns |
| Body diode reverse recovery charge | Q_{rr} | | | | 6.2 | |

Notes:

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , $t_s \leq 10s$.
3. Pulse Test : Pulse Width $\leq 80\mu s$, Duty Cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to producing.

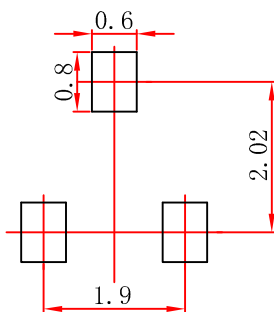
Typical Electrical and Thermal Characteristics





| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 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 | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |

SOT-23 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.