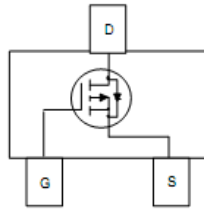
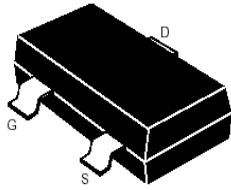


SOT-23

Features

- Ultra low on-resistance.
- Fast switching.

Marking: 6401
Maximum Ratings & Thermal Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified.)

| Parameter | Symbol | Rating | Unit |
|---|------------|------------|--------------|
| Drain-Source Voltage | V_{DS} | -12 | V |
| Gate-Source Voltage | V_{GS} | ± 8 | |
| Continuous Drain Current $V_{GS}=4.5V$ @ $T_A=25^\circ C$ | I_D | -4.3 | A |
| Pulsed Drain Current a | I_{DM} | -13 | |
| Power Dissipation @ $T_A=25^\circ C$ | P_D | 1.3 | W |
| Thermal Resistance Junction- to-Ambient | R_{thJA} | 100 | $^\circ C/W$ |
| Linear Derating Factor | | 0.01 | $W/^\circ C$ |
| Junction Temperature | T_J | 150 | $^\circ C$ |
| Junction and Storage Temperature Range | T_{stg} | -55 to 150 | |

Notes:

- a. Repetitive Rating :Pulse width limited by maximum junction temperature
 b. Starting $T_J=25^\circ C$, $L=3.5mH$, $R_G=25\Omega$, $I_{AS}=-4.3A$

Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified).

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------------|--------------|---|------|-----|-----------|------------|
| Drain-Source Breakdown Voltage | V_{DSS} | $I_D=-250 \mu A$, $V_{GS}=0V$ | -12 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-12V$, $V_{GS}=0V$ | | | -1 | μA |
| | | $V_{DS}=-9.6V$, $V_{GS}=0V$, $T_J=55^\circ C$ | | | -25 | |
| Gate-Body leakage current | I_{GSS} | $V_{DS}=0V$, $V_{GS}=\pm 8V$ | | | ± 100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=-250 \mu A$ | -0.4 | | -0.95 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V$, $I_D=-4.3A$ | | | 50 | m Ω |
| | | $V_{GS}=2.5V$, $I_D=-2.5A$ | | | 85 | |
| | | $V_{GS}=1.8V$, $I_D=-2A$ | | | 125 | |
| Forward Transconductance | g_{FS} | $V_{DS}=-10V$, $I_D=-4.3A$ | 8.6 | | | S |
| Input Capacitance | C_{iss} | $V_{GS}=0V$, $V_{DS}=-10V$, $f=1MHz$ | | 830 | | pF |
| Output Capacitance | C_{oss} | | | 180 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 125 | | |
| Turn-On DelayTime | $t_{d(on)}$ | $I_D=-1.0A$, $V_{DS}=-6.0V$, $R_{GEN}=6 \Omega$ | | 11 | | ns |
| Turn-Off DelayTime | $t_{d(off)}$ | | | 250 | | |
| Body Diode Reverse Recovery Time | t_{rr} | $I_F=-1.3A$, $di/dt=-100A/\mu s$ | | 22 | 33 | |
| Maximum Body-Diode Continuous Current | I_S | | | | 1.3 | A |
| Diode Forward Voltage | V_{SD} | $I_S=-1.3A$, $V_{GS}=0V$ | | | -1.2 | V |

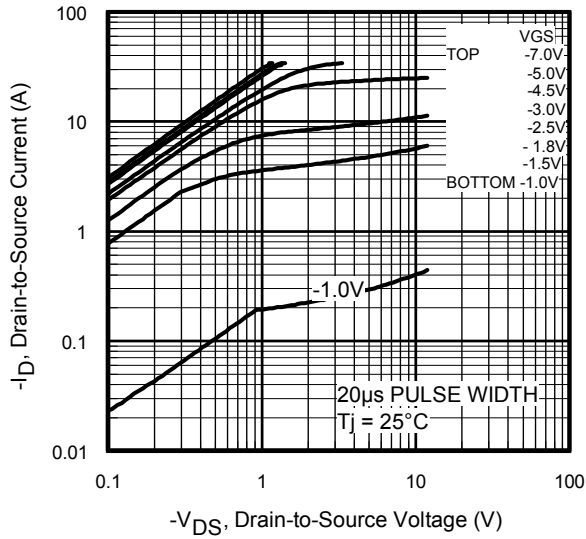


Fig 1. Typical Output Characteristics

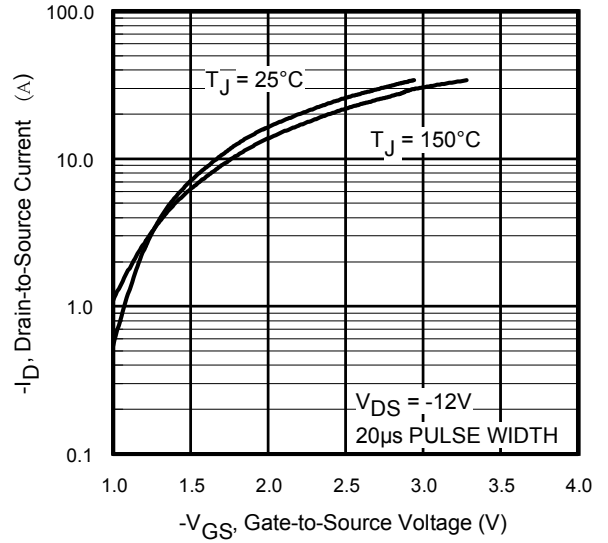


Fig 2. Typical Transfer Characteristics

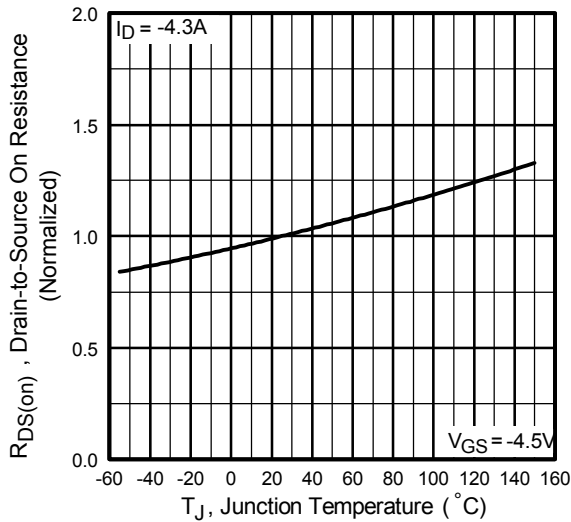


Fig 3. Normalized On-Resistance Vs. Temperature

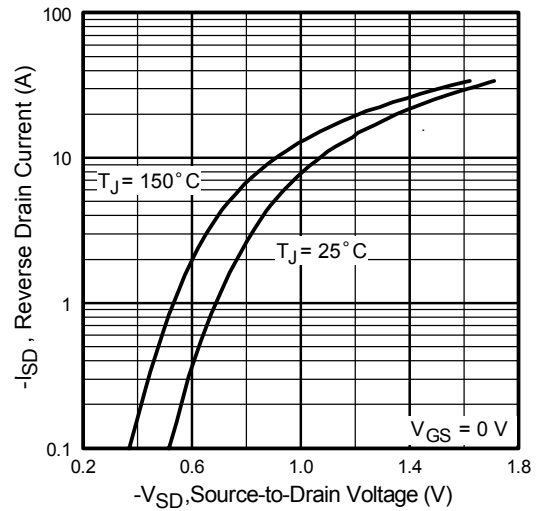


Fig 4. Typical Source-Drain Diode Forward Voltage

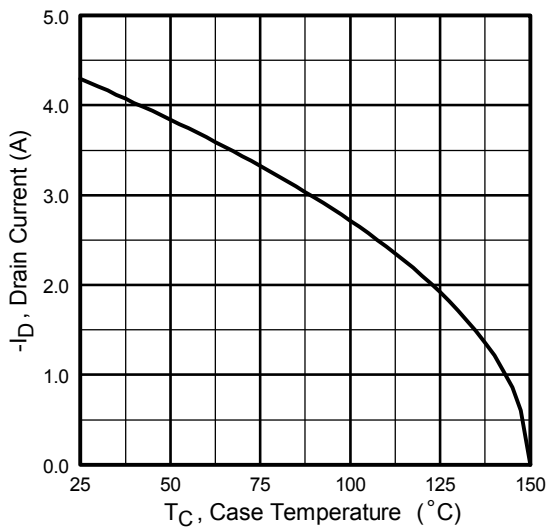


Fig 5. Maximum Drain Current Vs. Case Temperature

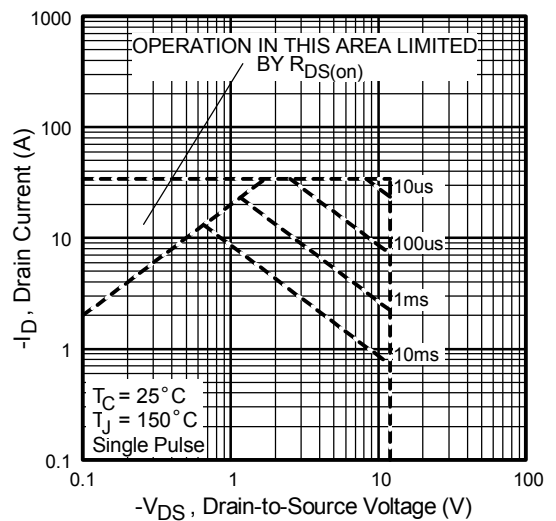
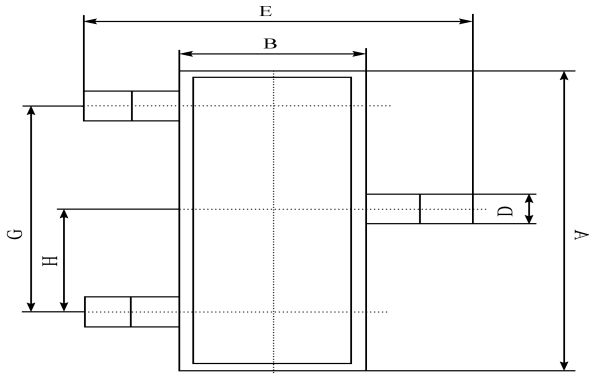


Fig 6. Maximum Safe Operating Area

SOT-23 PACKAGE OUTLINE Plastic surface mounted package



| SOT-23 | |
|--------|-------------|
| A | 2.90 ± 0.10 |
| B | 1.30 ± 0.10 |
| C | 1.00 ± 0.10 |
| D | 0.40 ± 0.10 |
| E | 2.40 ± 0.20 |
| G | 1.90 ± 0.10 |
| H | 0.95 ± 0.05 |
| J | 0.13 ± 0.05 |
| K | 0.00-0.10 |
| M | ≥ 0.2 |
| N | 0.60 ± 0.10 |
| P | 7 ± 2° |

(UNIT): mm

