

SOT-23 Plastic-Encapsulate MOSFETS

Features

- $V_{DS} = -12V$
- $I_D = -4.3A$
- $R_{DS(on)}@V_{GS} = -4.5V < 50m\Omega$
- $R_{DS(on)}@V_{GS} = -2.5V < 85m\Omega$
- $R_{DS(on)}@V_{GS} = -1.8V < 125m\Omega$
- Ultra Low On-Resistance
- Fast switching

Applications

- Load Switch
- PWM Application
- Power Mangement

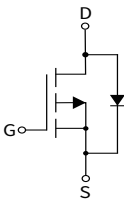
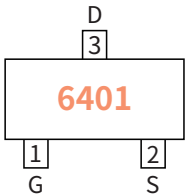
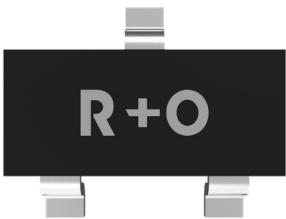
Mechanical Data

- Case: SOT-23  
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram

Drain-source Voltage  
-12 V  
Drain Current  
-4.3 Ampere

SOT-23



Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOT-23  | R1           | 0.008          | 3000      | 30000    | 180000      | 7"            |

Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER                                                            | SYMBOL          | UNIT            | VALUE     |
|----------------------------------------------------------------------|-----------------|-----------------|-----------|
| Drain-source Voltage                                                 | $V_{DS}$        | V               | -12       |
| Gate-source Voltage                                                  | $V_{GS}$        | V               | $\pm 8$   |
| Drain Current                                                        | $I_D$           | A               | -4.3      |
| Pulsed Drain Current <sup>(1)</sup>                                  | $I_{DM}$        | A               | -34       |
| Total Power Dissipation                                              | $P_D$           | W               | 1.3       |
| Thermal Resistance Junction-to-Ambient @ Steady State <sup>(3)</sup> | $R_{\theta JA}$ | $^{\circ}C / W$ | 100       |
| Junction and Storage Temperature Range                               | $T_J, T_{STG}$  | $^{\circ}C$     | -55 ~+150 |

### ● Static Parameter Characteristics (Ta=25°C Unless otherwise specified)

| PARAMETER                                        | SYMBOL       | Condition                      | UNIT       | Min  | Typ  | Max       |
|--------------------------------------------------|--------------|--------------------------------|------------|------|------|-----------|
| Drain-Source Breakdown Voltage                   | $BV_{DSS}$   | $V_{GS}=0V, I_D=-250\mu A$     | V          | -12  | —    | —         |
| Zero Gate Voltage Drain Current                  | $I_{DSS}$    | $V_{DS}=-12V, V_{GS}=0V$       | $\mu A$    | —    | —    | -1.0      |
| Gate-Body Leakage Current                        | $I_{GSS}$    | $V_{GS}=\pm 8V, V_{DS}=0V$     | nA         | —    | —    | $\pm 100$ |
| Gate Threshold Voltage                           | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | V          | -0.4 | -0.7 | -0.95     |
| Static Drain-Source On-Resistance <sup>(2)</sup> | $R_{DS(on)}$ | $V_{GS}=-4.5V, I_D=-4.3A$      | m $\Omega$ | —    | 48   | 50        |
|                                                  |              | $V_{GS}=-2.5V, I_D=-2.5A$      |            | —    | 75   | 85        |
|                                                  |              | $V_{GS}=-1.8V, I_D=-2.0A$      |            | —    | 110  | 125       |

### ● Dynamic Parameters (Ta=25°C Unless otherwise specified)

| PARAMETER                    | SYMBOL    | Condition                                | UNIT | Min | Typ | Max |
|------------------------------|-----------|------------------------------------------|------|-----|-----|-----|
| Input Capacitance            | $C_{iss}$ | $V_{DS}=0V$<br>$V_{GS}=-10V$<br>$f=1MHz$ | pF   | —   | 830 | —   |
| Output Capacitance           | $C_{oss}$ |                                          |      | —   | 461 | —   |
| Reverse Transfer Capacitance | $C_{rss}$ |                                          |      | —   | 404 | —   |

### ● Switching Parameters (Ta=25°C Unless otherwise specified)

| PARAMETER           | SYMBOL       | Condition                                             | UNIT | Min | Typ | Max |
|---------------------|--------------|-------------------------------------------------------|------|-----|-----|-----|
| Total Gate Charge   | $Q_g$        | $V_{GS}=-5V$<br>$V_{DS}=-10V$<br>$I_D=-4.3A^{(2)}$    | nC   | —   | 10  | —   |
| Gate-Source Charge  | $Q_{gs}$     |                                                       |      | —   | 1.4 | —   |
| Gate-Drain Charge   | $Q_{gd}$     |                                                       |      | —   | 2.6 | —   |
| Turn-on Delay Time  | $t_{D(on)}$  | $V_{DS}=-6V$<br>$I_D=-1A$<br>$R_{GEN}=89\Omega^{(2)}$ | nS   | —   | 11  | —   |
| Turn-on Rise Time   | $t_r$        |                                                       |      | —   | 32  | —   |
| Turn-off Delay Time | $t_{D(off)}$ |                                                       |      | —   | 250 | —   |
| Turn-off fall Time  | $t_f$        |                                                       |      | —   | 210 | —   |

### ● Drian-Source Diode Characteristics

| PARAMETER                                            | SYMBOL   | Condition                                                 | UNIT | Min | Typ | Max  |
|------------------------------------------------------|----------|-----------------------------------------------------------|------|-----|-----|------|
| Diode Forward Voltage <sup>(2)</sup>                 | $V_{SD}$ | $I_S=-4.3A, V_{GS}=0V$                                    | V    | —   | —   | -1.2 |
| Maximum Body-Diode Continuous Current <sup>(2)</sup> | $I_S$    | —                                                         | A    | —   | —   | -4.3 |
| Reverse Recovery Time                                | $t_{rr}$ | $T_J=25^\circ C, I_F=-1.3A,$<br>$di/dt=-100A/\mu s^{(2)}$ | nS   | —   | 22  | —    |
| Reverse Recovery Charge                              | $Q_{rr}$ |                                                           | nC   | —   | 8   | —    |

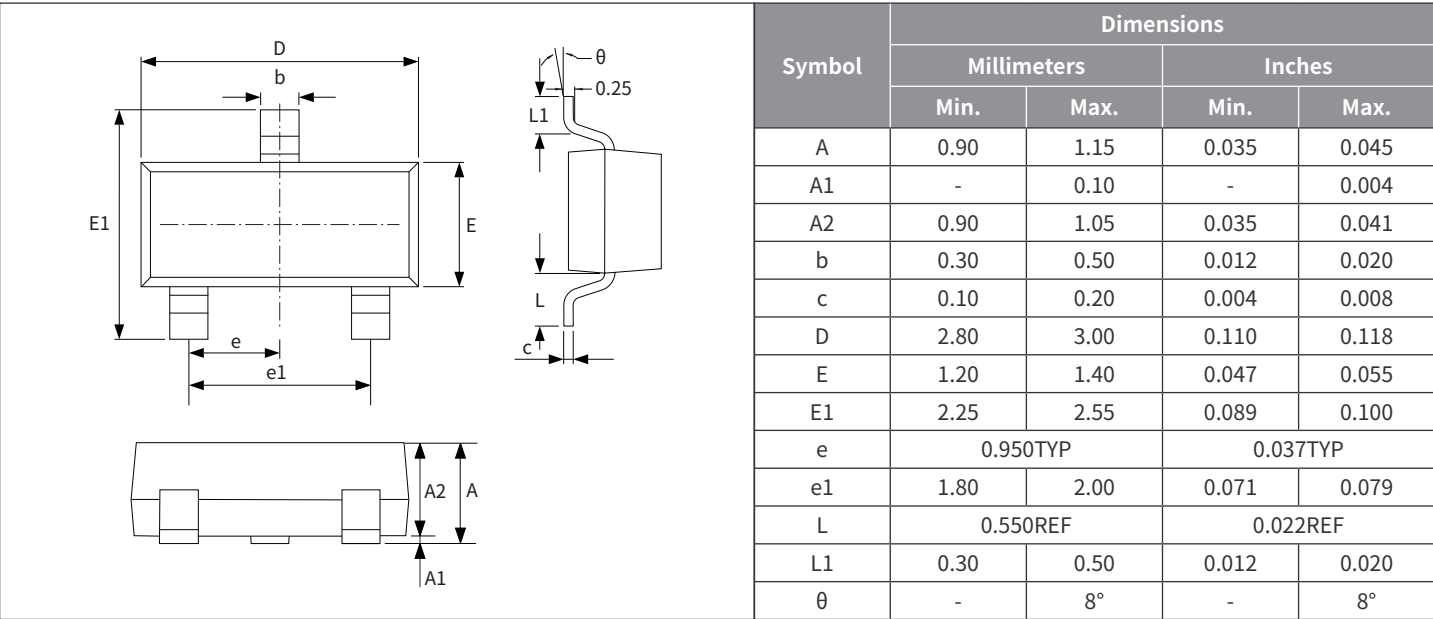
Note :

(1) Repetitive rating: pulse width limited by maximum junction temperature.

(2) Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

(3) Surface mounted on 1" square single layer 1 oz. copper FR4 board, steady state.

● Package Outline Dimensions (SOT-23)



● Suggested Pad Layout

