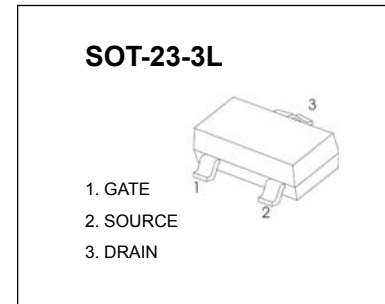


# AO3401

P-Channel 20-V(D-S) MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---------------|-----------------|-------|
| -20V          | 90 mΩ@-4.5V     | -3 A  |
|               | 110 mΩ@-2.5V    |       |



## FEATURE

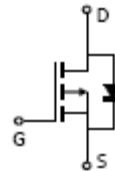
- TrenchFET Power MOSFET

## APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

**MARKING** : A19T

**Equivalent Circuit**



**Maximum ratings ( $T_a=25^{\circ}\text{C}$  unless otherwise noted)**

| Parameter  | Symbol          | Value      | Unit                        |
|--|-----------------|------------|-----------------------------|
| Drain-Source Voltage                                       | $V_{DS}$        | -20        | V                           |
| Gate-Source Voltage  | $V_{GS}$        | ±8         |                             |
| Continuous Drain Current                                   | $I_D$           | -3         | A                           |
| Pulsed Drain Current                                       | $I_{DM}$        | -10        |                             |
| Continuous Source-Drain Diode Current                      | $I_S$           | -0.72      |                             |
| Maximum Power Dissipation                                  | $P_D$           | 0.4        | W                           |
| Thermal Resistance from Junction to Ambient( $t \leq 5s$ ) | $R_{\theta JA}$ | 312.5      | $^{\circ}\text{C}/\text{W}$ |
| Junction Temperature                                       | $T_J$           | 150        | $^{\circ}\text{C}$          |
| Storage Temperature  | $T_{stg}$       | -55 ~ +150 |                             |

## MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25^\circ\text{C}$  unless otherwise specified

| Parameter                                      | Symbol        | Test Condition   | Min  | Typ   | Max       | Units    |
|--|---------------|--|------|-------|-----------|----------|
| <b>Static</b>                                  |               |  |      |       |           |          |
| Drain-source breakdown voltage                 | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$   | -20  |       |           | V        |
| Gate-source threshold voltage                  | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = -250\mu A$   | -0.4 |       | -1        |          |
| Gate-source leakage                            | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 8V$   |      |       | $\pm 100$ | nA       |
| Zero gate voltage drain current                | $I_{DSS}$     | $V_{DS} = -20V, V_{GS} = 0V$   |      |       | -1        | $\mu A$  |
| Drain-source on-state resistance <sup>a</sup>  | $R_{DS(on)}$  | $V_{GS} = -4.5V, I_D = -2.8A$  |      | 0.080 | 0.90      | $\Omega$ |
|  |               | $V_{GS} = -2.5V, I_D = -2.0A$  |      | 0.90  | 0.110     |          |
| Forward transconductance <sup>a</sup>          | $g_{fs}$      | $V_{DS} = -5V, I_D = -2.8A$  |      | 6.5   |           | S        |
| <b>Dynamic<sup>b</sup></b>                     |               |  |      |       |           |          |
| Input capacitance                              | $C_{iss}$     | $V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$   |      | 405   |           | pF       |
| Output capacitance                             | $C_{oss}$     |  |      | 75    |           |          |
| Reverse transfer capacitance                   | $C_{rss}$     |  |      | 55    |           |          |
| Total gate charge                              | $Q_g$         | $V_{DS} = -10V, V_{GS} = -4.5V, I_D = -3A$   |      | 5.5   | 10        | nC       |
|  |               |  |      | 3.3   | 6         |          |
| Gate-source charge                             | $Q_{gs}$      | $V_{DS} = -10V, V_{GS} = -2.5V, I_D = -3A$   |      | 0.7   |           |          |
| Gate-drain charge                              | $Q_{gd}$      |  |      | 1.3   |           |          |
| Gate resistance                                | $R_g$         | $f = 1MHz$   |      | 6.0   |           | $\Omega$ |
| Turn-on delay time                             | $t_{d(on)}$   | $V_{DD} = -10V,$<br>$R_L = 10\Omega, I_D = -1A,$<br>$V_{GEN} = -4.5V, R_g = 1\Omega$ |      | 11    | 20        | ns       |
| Rise time                                      | $t_r$         |  |      | 35    | 60        |          |
| Turn-off delay time                            | $t_{d(off)}$  |  |      | 30    | 50        |          |
| Fall time                                      | $t_f$         |  |      | 10    | 20        |          |
| <b>Drain-source body diode characteristics</b> |               |  |      |       |           |          |
| Continuous source-drain diode current          | $I_S$         | $T_C = 25^\circ C$   |      |       | -1.3      | A        |
| Pulse diode forward current <sup>a</sup>       | $I_{SM}$      |  |      |       | -10       |          |
| Body diode voltage                             | $V_{SD}$      | $I_S = -0.7A$  |      | -0.8  | -1.2      | V        |

**Notes :**

- a. Pulse Test : Pulse Width < 300 $\mu s$ , Duty Cycle  $\leq 2\%$ .
- b. Guaranteed by design, not subject to production testing.