

## 2SK974 (L), 2SK974 (S)

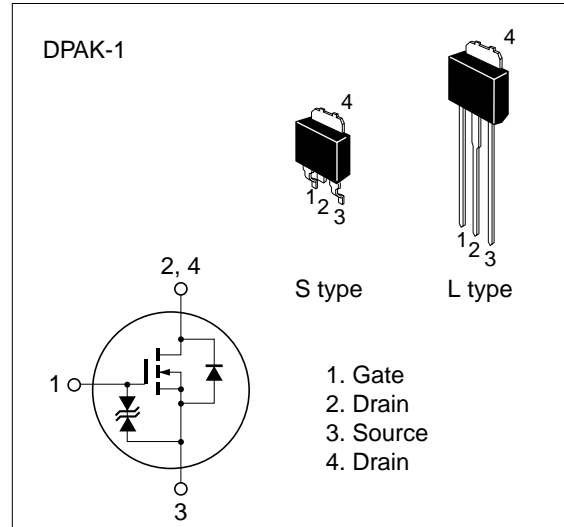
### Silicon N-Channel MOS FET

#### Application

High speed power switching

#### Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device
  - Can be driven from 5 V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive



**Table 1 Absolute Maximum Ratings** (Ta = 25°C)

| Item                                      | Symbol                 | Ratings     | Unit |
|---|------------------------|-------------|------|
| Drain to source voltage                   | V <sub>DSS</sub>       | 60          | V    |
| Gate to source voltage                    | V <sub>GSS</sub>       | ±20         | V    |
| Drain current                             | I <sub>D</sub>         | 3           | A    |
| Drain peak current                        | I <sub>D(peak)</sub> * | 12          | A    |
| Body to drain diode reverse drain current | I <sub>DR</sub>        | 3           | A    |
| Channel dissipation                       | P <sub>ch</sub> **     | 20          | W    |
| Channel temperature                       | T <sub>ch</sub>        | 150         | °C   |
| Storage temperature                       | T <sub>stg</sub>       | -55 to +150 | °C   |

\* PW ≤ 10 μs, duty cycle ≤ 1 %

\*\* Value at T<sub>C</sub> = 25 °C

**Table 2 Electrical Characteristics** (Ta = 25°C)

| Item                                       | Symbol        | Min | Typ  | Max  | Unit | Test conditions  |
|--|---------------|-----|------|------|------|--|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 60  | —    | —    | V    | $I_D = 10 \text{ mA}, V_{GS} = 0$  |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | ±20 | —    | —    | V    | $I_G = \pm 100 \text{ } \mu\text{A}, V_{DS} = 0$                         |
| Gate to source leak current                | $I_{GSS}$     | —   | —    | ±10  | μA   | $V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$                                  |
| Zero gate voltage drain current            | $I_{DSS}$     | —   | —    | 100  | μA   | $V_{DS} = 50 \text{ V}, V_{GS} = 0$                                      |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | 1.0 | —    | 2.0  | V    | $I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$                              |
| Static drain to source on state resistance | $R_{DS(on)}$  | —   | 0.15 | 0.18 | Ω    | $I_D = 2 \text{ A}, V_{GS} = 10 \text{ V}^*$                             |
|  |               |     | 0.20 | 0.25 |      | $I_D = 2 \text{ A}, V_{GS} = 4 \text{ V}^*$                              |
| Forward transfer admittance                | $ y_{fs} $    | 2.4 | 4.0  | —    | S    | $I_D = 2 \text{ A}, V_{DS} = 10 \text{ V}^*$                             |
| Input capacitance                          | $C_{iss}$     | —   | 400  | —    | pF   | $V_{DS} = 10 \text{ V}, V_{GS} = 0,$                                     |
| Output capacitance                         | $C_{oss}$     | —   | 230  | —    | pF   | $f = 1 \text{ MHz}$  |
| Reverse transfer capacitance               | $C_{rss}$     | —   | 60   | —    | pF   |  |
| Turn-on delay time                         | $t_{d(on)}$   | —   | 5    | —    | ns   | $I_D = 2 \text{ A}, V_{GS} = 10 \text{ V},$                              |
| Rise time                                  | $t_r$         | —   | 25   | —    | ns   | $R_L = 15 \text{ } \Omega$   |
| Turn-off delay time                        | $t_{d(off)}$  | —   | 180  | —    | ns   |  |
| Fall time                                  | $t_f$         | —   | 75   | —    | ns   |  |
| Body to drain diode forward voltage        | $V_{DF}$      | —   | 0.9  | —    | V    | $I_F = 3 \text{ A}, V_{GS} = 0$  |
| Body to drain diode reverse recovery time  | $t_{rr}$      | —   | 85   | —    | ns   | $I_F = 3 \text{ A}, V_{GS} = 0,$<br>$di_F/dt = 50 \text{ A}/\mu\text{s}$ |

\* Pulse Test

