

# 2SK3025 (Tentative)

## Silicon N-Channel Power F-MOS FET

■ Features

- Avalanche energy capacity guaranteed
- High-speed switching
- Low ON-resistance
- No secondary breakdown
- Low-voltage drive
- High electrostatic breakdown voltage

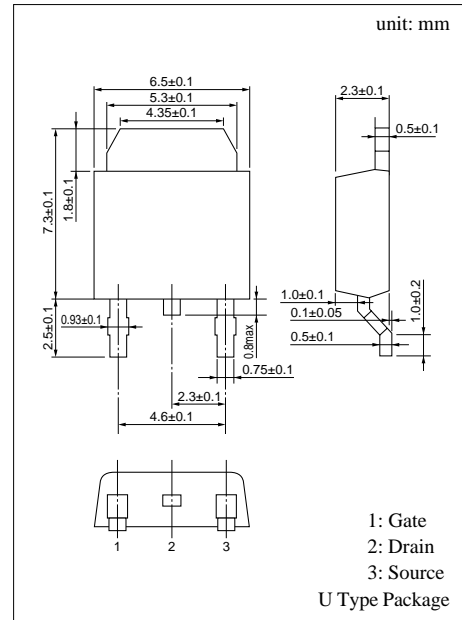
■ Applications

- Contactless relay
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

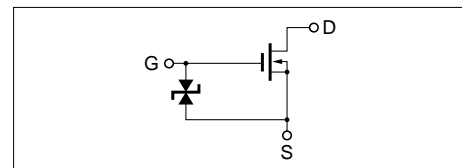
■ Absolute Maximum Ratings (T<sub>C</sub> = 25°C)

| Parameter                         | Symbol                | Ratings         | Unit |   |
|-----------------------------------|-----------------------|-----------------|------|---|
| Drain to Source breakdown voltage | V <sub>DSS</sub>      | 60              | V    |   |
| Gate to Source voltage            | V <sub>GSS</sub>      | ±20             | V    |   |
| Drain current                     | DC                    | I <sub>D</sub>  | ±30  | A |
|                                   | Pulse                 | I <sub>DP</sub> | ±60  | A |
| Avalanche energy capacity         | EAS*                  | 45              | mJ   |   |
| Allowable power dissipation       | T <sub>C</sub> = 25°C | P <sub>D</sub>  | 20   | W |
|                                   | T <sub>a</sub> = 25°C |                 | 1    |   |
| Channel temperature               | T <sub>ch</sub>       | 150             | °C   |   |
| Storage temperature               | T <sub>stg</sub>      | -55 to +150     | °C   |   |

\* L = 0.1mH, I<sub>L</sub> = 30A, 1 pulse



Internal Connection



■ Electrical Characteristics (T<sub>C</sub> = 25°C)

| Parameter   | Symbol                | Conditions   | min | typ  | max  | Unit |
|---|-----------------------|--|-----|------|------|------|
| Drain to Source cut-off current                   | I <sub>DSS</sub>      | V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0           |     |      | 10   | μA   |
| Gate to Source leakage current                    | I <sub>GSS</sub>      | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0          |     |      | ±10  | μA   |
| Drain to Source breakdown voltage                 | V <sub>DSS</sub>      | I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0            | 60  |      |      | V    |
| Gate threshold voltage                            | V <sub>th</sub>       | V <sub>DS</sub> = 10V, I <sub>D</sub> = 1mA          | 1   |      | 2.5  | V    |
| Drain to Source ON-resistance                     | R <sub>DS(on)1</sub>  | V <sub>GS</sub> = 10V, I <sub>D</sub> = 15A          |     | 25   | 40   | mΩ   |
|   | R <sub>DS(on)2</sub>  | V <sub>GS</sub> = 4V, I <sub>D</sub> = 15A           |     | 35   | 55   |      |
| Forward transfer admittance                       | Y <sub>fs</sub>       | V <sub>DS</sub> = 10V, I <sub>D</sub> = 15A          | 9   | 18   |      | S    |
| Diode forward voltage                             | V <sub>DSF</sub>      | I <sub>DR</sub> = 15A, V <sub>GS</sub> = 0           |     |      | -1.5 | V    |
| Input capacitance (Common Source)                 | C <sub>iss</sub>      | V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0, f = 1MHz |     | 1200 |      | pF   |
| Output capacitance (Common Source)                | C <sub>oss</sub>      |  |     | 400  |      | pF   |
| Reverse transfer capacitance (Common Source)      | C <sub>rss</sub>      |  |     | 200  |      | pF   |
| Turn-on time (delay time)                         | t <sub>d(on)</sub>    |  |     |      | 10   |      |
| Rise time   | t <sub>r</sub>        | V <sub>DD</sub> = 30V, I <sub>D</sub> = 15A          |     | 20   |      | ns   |
| Fall time   | t <sub>f</sub>        | V <sub>GS</sub> = 10V, R <sub>L</sub> = 2Ω           |     | 140  |      | ns   |
| Turn-off time (delay time)                        | t <sub>d(off)</sub>   |  |     | 350  |      | ns   |
| Thermal resistance between channel and case       | R <sub>th(ch-c)</sub> |  |     |      | 6.25 | °C/W |
| Thermal resistance between channel and atmosphere | R <sub>th(ch-a)</sub> |  |     |      | 125  | °C/W |