

2SK3024

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

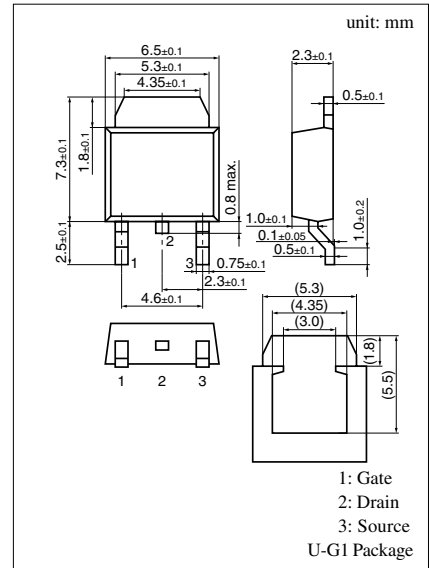
■ Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$)

| Parameter | Symbol | Ratings | Unit |
|-----------------------------------|--------------------------|-------------|------------------|
| Drain to Source breakdown voltage | V_{DS} | 60 | V |
| Gate to Source voltage | V_{GS} | ± 20 | V |
| Drain current | DC | I_D | ± 20 A |
| | Pulse | I_{DP} | ± 40 A |
| Avalanche energy capacity | EAS* | 20 | mJ |
| Allowable power dissipation | $T_C = 25^\circ\text{C}$ | P_D | 20 W |
| | $T_a = 25^\circ\text{C}$ | | 1 W |
| Channel temperature | T_{ch} | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

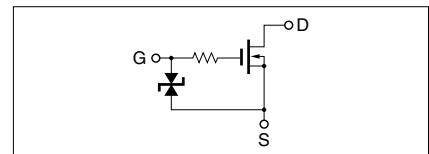
* $L = 0.1\text{mH}$, $I_L = 20\text{A}$, 1 pulse

■ Electrical Characteristics ($T_C = 25^\circ\text{C}$)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|----------------|---|-----|------|----------|---------------------------|
| Drain to Source cut-off current | I_{DSS} | $V_{DS} = 50\text{V}$, $V_{GS} = 0$ | | | 10 | μA |
| Gate to Source leakage current | I_{GSS} | $V_{GS} = \pm 20\text{V}$, $V_{DS} = 0$ | | | ± 10 | μA |
| Drain to Source breakdown voltage | V_{DSS} | $I_D = 1\text{mA}$, $V_{GS} = 0$ | 60 | | | V |
| Gate threshold voltage | V_{th} | $V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$ | 1 | | 2.5 | V |
| Drain to Source ON-resistance | $R_{DS(on)1}$ | $V_{GS} = 10\text{V}$, $I_D = 10\text{A}$ | | 33 | 50 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $V_{GS} = 4\text{V}$, $I_D = 10\text{A}$ | | 44 | 70 | $\text{m}\Omega$ |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 10\text{V}$, $I_D = 10\text{A}$ | 8 | 12 | | S |
| Diode forward voltage | V_{DSF} | $I_{DR} = 20\text{A}$, $V_{GS} = 0$ | | | -1.5 | V |
| Input capacitance (Common Source) | C_{iss} | $V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$ | | 330 | | pF |
| Output capacitance (Common Source) | C_{oss} | | | 290 | | pF |
| Reverse transfer capacitance (Common Source) | C_{rss} | | | 70 | | pF |
| Turn-on time (delay time) | $t_{d(on)}$ | $V_{DD} = 30\text{V}$, $I_D = 10\text{A}$ $V_{GS} = 10\text{V}$, $R_L = 3\Omega$ | | 20 | | ns |
| Rise time | t_r | | | 125 | | ns |
| Fall time | t_f | | | 520 | | ns |
| Turn-off time (delay time) | $t_{d(off)}$ | | | 1480 | | ns |
| Thermal resistance between channel and case | $R_{th(ch-c)}$ | | | | 6.25 | $^\circ\text{C}/\text{W}$ |
| Thermal resistance between channel and atmosphere | $R_{th(ch-a)}$ | | | | 125 | $^\circ\text{C}/\text{W}$ |



Internal Connection



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