

2SK3027 (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

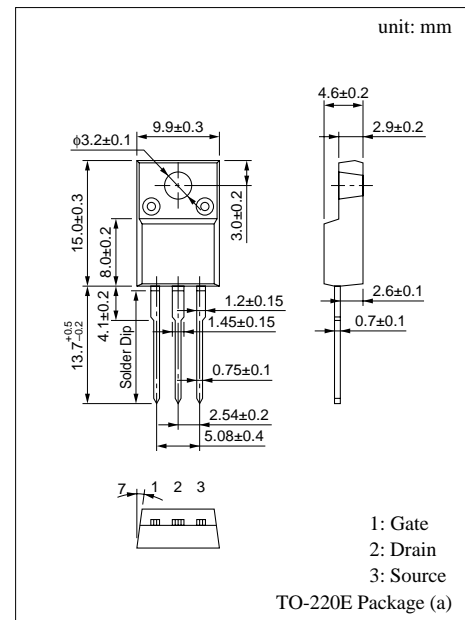
■ Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$)

| Parameter | Symbol | Ratings | Unit | |
|-----------------------------------|--------------------------|-------------|------------------|---|
| Drain to Source breakdown voltage | V_{DSS} | 60 | V | |
| Gate to Source voltage | V_{GSS} | ± 20 | V | |
| Drain current | DC | I_D | ± 50 | A |
| | Pulse | I_{DP} | ± 100 | A |
| Avalanche energy capacity | EAS* | 125 | mJ | |
| Allowable power dissipation | $T_C = 25^\circ\text{C}$ | P_D | 60 | W |
| | $T_a = 25^\circ\text{C}$ | | 2 | |
| Channel temperature | T_{ch} | 150 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ | |

* $L = 0.1\text{mH}$, $I_L = 50\text{A}$, 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 | $R_{DS(on)1}$ | $V_{GS} = 10\text{V}$, $I_D = 25\text{A}$ | | 8 | 12 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $V_{GS} = 4\text{V}$, $I_D = 25\text{A}$ | | 11 | 17 | $\text{m}\Omega$ |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 10\text{V}$, $I_D = 25\text{A}$ | 25 | 49 | | S |
| Diode forward voltage | V_{DSF} | $I_{DR} = 25\text{A}$, $V_{GS} = 0$ | | | -1.2 | V |
| Input capacitance (Common Source) | C_{iss} | $V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$ | | 3600 | | pF |
| Output capacitance (Common Source) | C_{oss} | | | 1250 | | pF |
| Reverse transfer capacitance (Common Source) | C_{rss} | | | 680 | | pF |
| Turn-on time (delay time) | $t_{d(on)}$ | | | | 20 | |
| Rise time | t_r | $V_{DD} = 30\text{V}$, $I_D = 25\text{A}$ | | 65 | | ns |
| Fall time | t_f | $V_{GS} = 10\text{V}$, $R_L = 1.2\Omega$ | | 250 | | ns |
| Turn-off time (delay time) | $t_{d(off)}$ | | | 960 | | ns |
| Thermal resistance between channel and case | $R_{th(ch-c)}$ | | | | 2.08 | $^\circ\text{C/W}$ |
| Thermal resistance between channel and atmosphere | $R_{th(ch-a)}$ | | | | 62.5 | $^\circ\text{C/W}$ |



Internal Connection

