

2SK1609

Silicon N-Channel Power F-MOS FET

■ Features

- High avalanche energy capacity
- V_{GS} : 30V guaranteed
- Low $R_{DS(on)}$, high-speed switching characteristic

■ Applications

- High-speed switching (switching power supply)
- For high-frequency power amplification

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

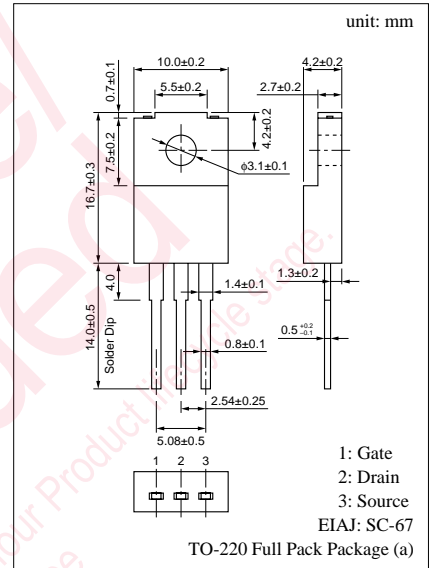
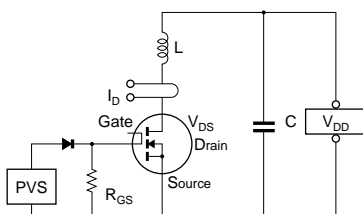
| Parameter | Symbol | Rated | Unit |
|-----------------------------------|--------------------------|-------------|------------------|
| Drain to Source breakdown voltage | V_{DSS} | 500 | V |
| Gate to Source voltage | V_{GSS} | ± 30 | V |
| Drain current | DC | I_D | ± 8 A |
| | Pulse | I_{DP} | ± 16 A |
| Avalanche energy capacity | EAS* | 130 | mJ |
| Allowable power dissipation | $T_C = 25^\circ\text{C}$ | P_D | 50 W |
| | $T_a = 25^\circ\text{C}$ | | 2 |
| Channel temperature | T_{ch} | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

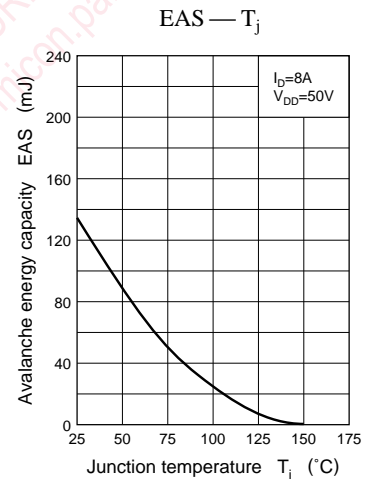
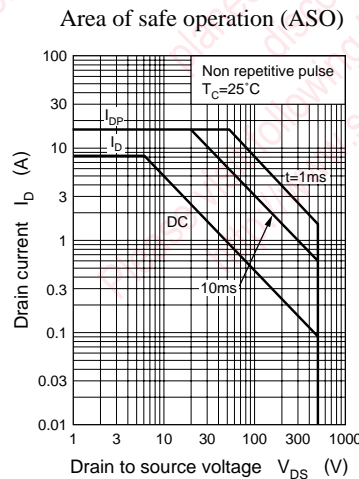
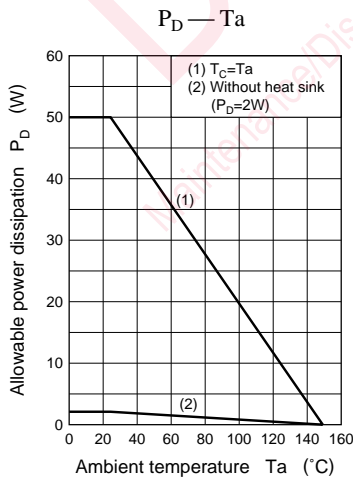
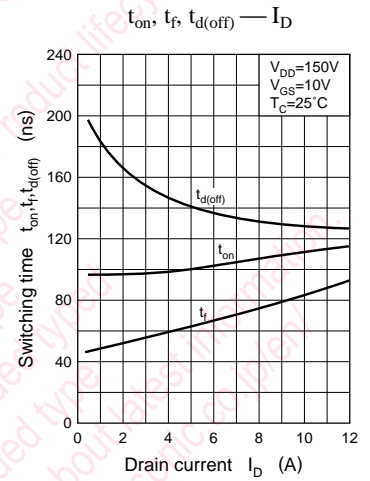
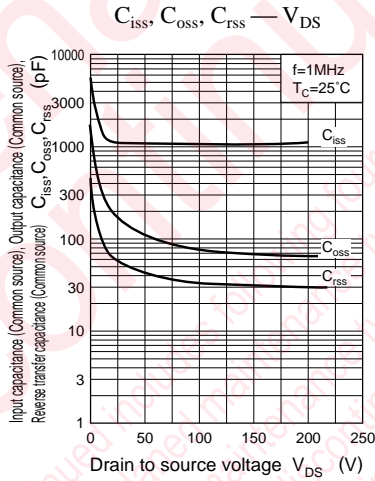
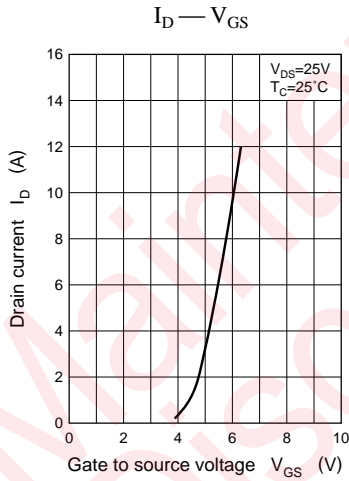
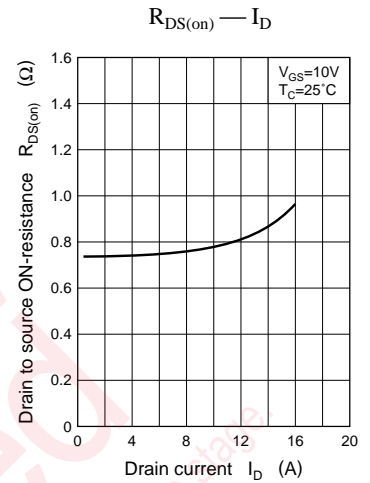
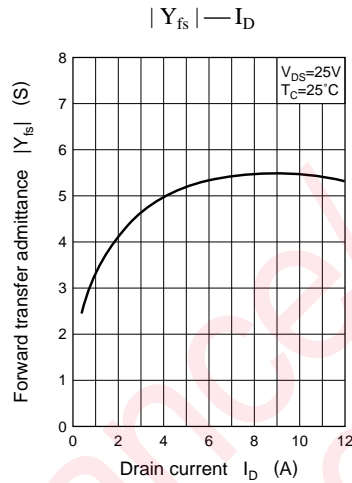
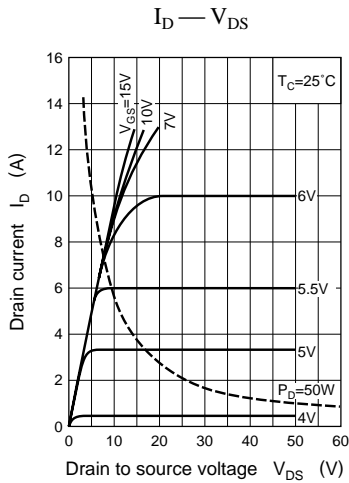
* Single pulse

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

| Parameter | Symbol | Conditions | min | typ | max | Unit | |
|--|--------------|--|--|------|---------|---------------|----|
| Drain to Source cut-off current | I_{DSS} | $V_{DS} = 400\text{V}, V_{GS} = 0$ | | | 0.1 | mA | |
| Gate to Source leakage current | I_{GSS} | $V_{GS} = \pm 30\text{V}, V_{DS} = 0$ | | | ± 1 | μA | |
| Drain to Source breakdown voltage | V_{DSS} | $I_D = 1\text{mA}, V_{GS} = 0$ | 500 | | | V | |
| Avalanche energy capacity | EAS* | $L = 4.1\text{mH}, I_D = 8\text{A}, V_{DD} = 50\text{V}$ | 130 | | | mJ | |
| Gate threshold voltage | V_{th} | $V_{DS} = 25\text{V}, I_D = 1\text{mA}$ | 1 | | 5 | V | |
| Drain to Source ON-resistance | $R_{DS(on)}$ | $V_{GS} = 10\text{V}, I_D = 4\text{A}$ | | 0.7 | 1 | Ω | |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 25\text{V}, I_D = 4\text{A}$ | 3 | 5 | | S | |
| Input capacitance (Common Source) | C_{iss} | $V_{DS} = 20\text{V}, V_{GS} = 0, f = 1\text{MHz}$ | | 1200 | | pF | |
| Output capacitance (Common Source) | C_{oss} | | | | 160 | | pF |
| Reverse transfer capacitance (Common Source) | C_{rss} | | | | 70 | | pF |
| Turn-on time | t_{on} | | $V_{GS} = 10\text{V}, I_D = 5\text{A}$ | | 100 | | ns |
| Fall time | t_f | $V_{DD} = 150\text{V}, R_L = 30\Omega$ | | 60 | | ns | |
| Turn-off time (delay time) | $t_{d(off)}$ | | | | 140 | | ns |

* Avalanche energy capacity test circuit





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