

2SK2125

Silicon N-Channel Power F-MOS FET

■ Features

- Avalanche energy capacity guaranteed: EAS > 15.6mJ
- $V_{GS} = \pm 30V$ guaranteed
- High-speed switching: $t_f = 35ns$
- No secondary breakdown

■ Applications

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

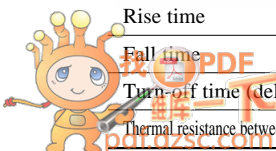
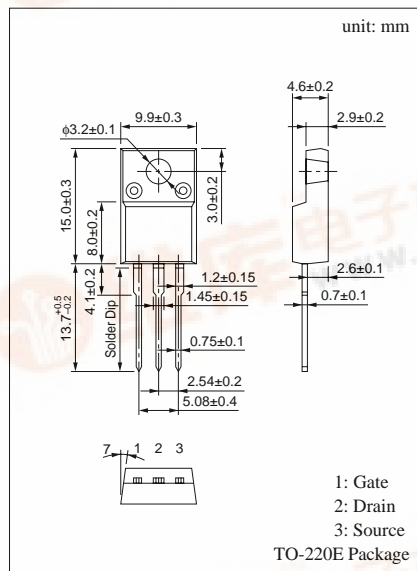
■ Absolute Maximum Ratings ($T_C = 25^\circ C$)

| Parameter | Symbol | Rated | Unit |
|-----------------------------------|--------------------|-------------|-------------|
| Drain to Source breakdown voltage | V_{DSS} | 500 | V |
| Gate to Source voltage | V_{GS} | ± 30 | V |
| Drain current | DC | I_D | ± 2.5 A |
| | Pulse | I_{DP} | ± 10 A |
| Avalanche energy capacity | EAS* | 15.6 | mJ |
| Allowable power dissipation | $T_C = 25^\circ C$ | P_D | 40 W |
| | $T_a = 25^\circ C$ | | 2 W |
| Channel temperature | T_{ch} | 150 | $^\circ C$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ C$ |

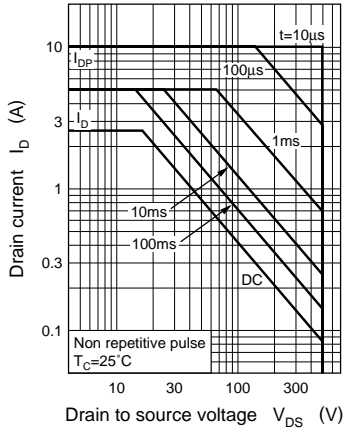
* $L = 5mH, I_L = 2.5A, V_{DD} = 50V, 1$ pulse

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

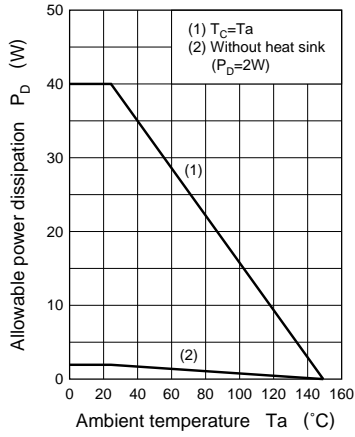
| Parameter | Symbol | Conditions | min | typ | max | Unit | |
|--|----------------|--------------------------------------|----------------------------------|-----|---------|--------------|----|
| Drain to Source cut-off current | I_{DSS} | $V_{DS} = 400V, V_{GS} = 0$ | | | 0.1 | mA | |
| Gate to Source leakage current | I_{GSS} | $V_{GS} = \pm 30V, V_{DS} = 0$ | | | ± 1 | μA | |
| Drain to Source breakdown voltage | V_{DSS} | $I_D = 1mA, V_{GS} = 0$ | 500 | | | V | |
| Gate threshold voltage | V_{th} | $V_{DS} = 25V, I_D = 1mA$ | 2 | | 5 | V | |
| Drain to Source ON-resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 1.5A$ | | 3.2 | 4 | Ω | |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 25V, I_D = 1.5A$ | 1 | 1.5 | | S | |
| Diode forward voltage | V_{DSF} | $I_{DR} = 2.5A, V_{GS} = 0$ | | | -1.5 | V | |
| Input capacitance (Common Source) | C_{iss} | $V_{DS} = 20V, V_{GS} = 0, f = 1MHz$ | | 330 | | pF | |
| Output capacitance (Common Source) | C_{oss} | | | | 55 | | pF |
| Reverse transfer capacitance (Common Source) | C_{rss} | | | | 20 | | pF |
| Turn-on time (delay time) | $t_{d(on)}$ | $V_{GS} = 10V, I_D = 1.5A$ | | 15 | | ns | |
| Rise time | t_r | | | | 25 | | ns |
| Fall time | t_f | | $V_{DD} = 150V, R_L = 100\Omega$ | | 30 | | ns |
| Turn-off time (delay time) | $t_{d(off)}$ | | | 55 | | ns | |
| Thermal resistance between channel and case | $R_{th(ch-c)}$ | | | | 3.125 | $^\circ C/W$ | |



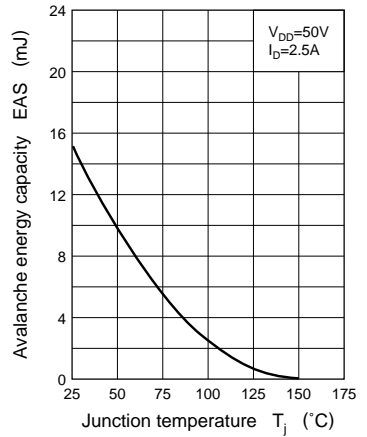
Area of safe operation (ASO)



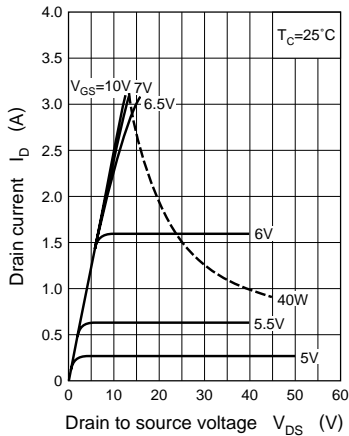
$P_D - T_a$



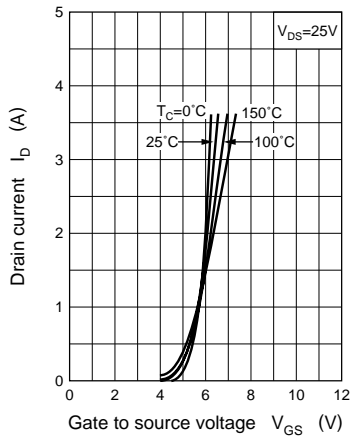
EAS — T_j



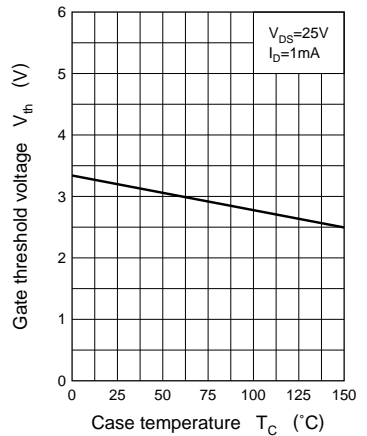
$I_D - V_{DS}$



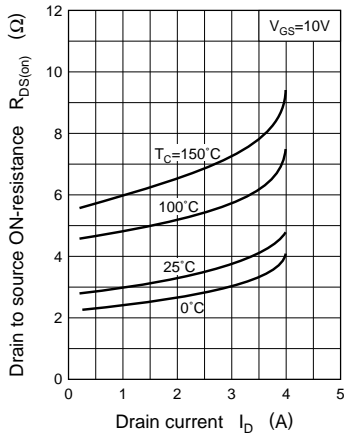
$I_D - V_{GS}$



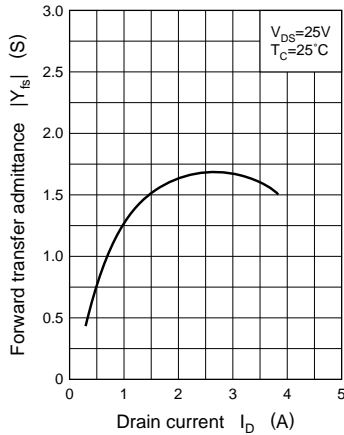
$V_{th} - T_C$



$R_{DS(on)} - I_D$



$|Y_{fs}| - I_D$



$I_{DR} - V_{DSF}$

