

2SK3044

Silicon N-channel power MOSFET

■ Features

- Avalanche energy capability guaranteed: EAS > 130 mJ
- Gate-source surrender voltage V_{GSS} : ± 30 V guaranteed
- High-speed switching
- No secondary breakdown

■ Applications

- Non-contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching mode regulator

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

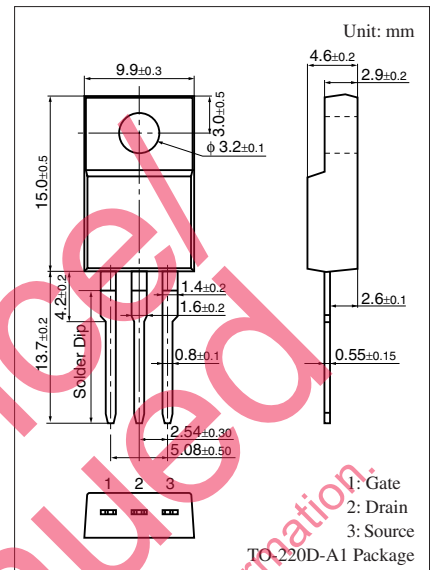
| Parameter | Symbol | Rating | Unit |
|--------------------------------|--------------------------|-------------|------------------|
| Drain-source surrender voltage | V_{DSS} | 450 | V |
| Gate-source surrender voltage | V_{GSS} | ± 30 | V |
| Drain current | I_D | ± 7 | A |
| Peak drain current | I_{DP} | ± 14 | A |
| Avalanche energy capability * | EAS | 130 | mJ |
| Power dissipation | P_D | 40 | W |
| | $T_a = 25^\circ\text{C}$ | 2 | |
| Channel temperature | T_{ch} | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

Note) *: $L = 5.4$ mH, $I_L = 7$ A, 1 pulse

■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

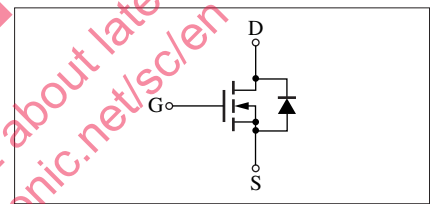
| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--|----------------|--|-----|------|---------|--------------------|
| Drain-source surrender voltage | V_{DSS} | $I_D = 1$ mA, $V_{GS} = 0$ | 450 | | | V |
| Drain-source cutoff current | I_{DSS} | $V_{DS} = 360$ V, $V_{GS} = 0$ | | | 100 | μA |
| Gate-source cutoff current | I_{GSS} | $V_{GS} = \pm 30$ V, $V_{DS} = 0$ | | | ± 1 | μA |
| Gate threshold voltage | V_{th} | $V_{DS} = 25$ V, $I_D = 1$ mA | 2.0 | | 5.0 | V |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 25$ V, $I_D = 4$ A | 3.0 | 5.0 | | S |
| Drain-source ON resistance | $R_{DS(on)}$ | $V_{GS} = 10$ V, $I_D = 4$ A | | 0.56 | 0.75 | Ω |
| Diode forward voltage | V_{DF} | $I_{DR} = 7$ A, $V_{GS} = 0$ | | | -1.7 | V |
| Short-circuit forward transfer capacitance (Common source) | C_{iss} | $V_{DS} = 20$ V, $V_{GS} = 0$, $f = 1$ MHz | | 1300 | | pF |
| Short-circuit output capacitance (Common source) | C_{oss} | | | 160 | | pF |
| Reverse transfer capacitance (Common source) | C_{rss} | | | 70 | | pF |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD} = 150$ V, $I_D = 4$ A, $R_L = 37.5$ Ω | | 25 | | ns |
| Rise time | t_r | $V_{GS} = 10$ V | | 45 | | ns |
| Fall time | t_f | | | 50 | | ns |
| Turn-off delay time | $t_{d(off)}$ | | | 150 | | ns |
| Thermal resistance (ch-c) | $R_{th(ch-c)}$ | | | | 3.1 | $^\circ\text{C/W}$ |
| Thermal resistance (ch-a) | $R_{th(ch-a)}$ | | | | 62.5 | $^\circ\text{C/W}$ |

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

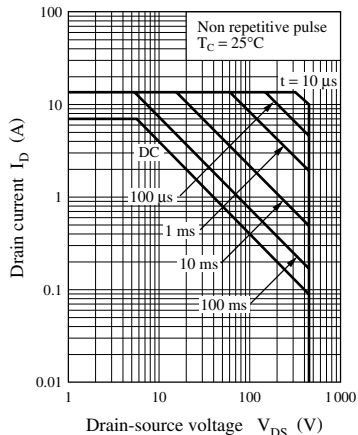


Marking Symbol: K3044

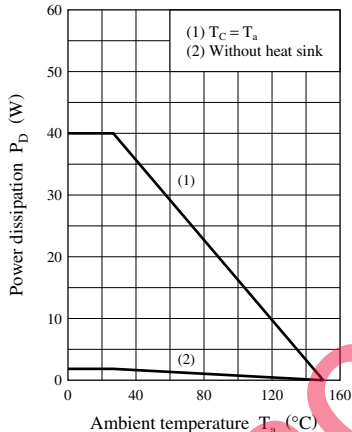
Internal Connection



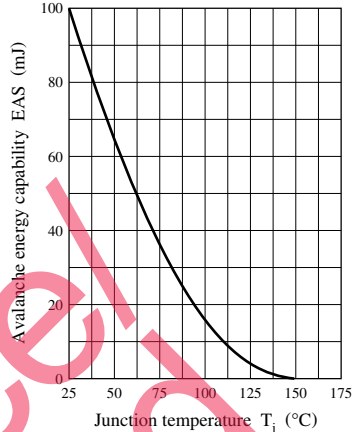
Safe operation area



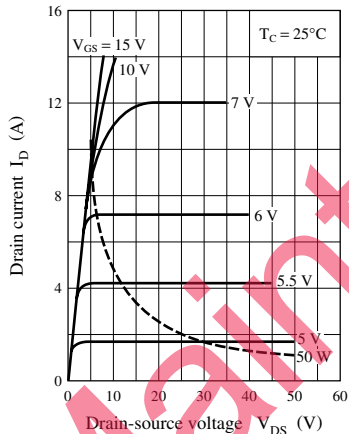
$P_D - T_a$



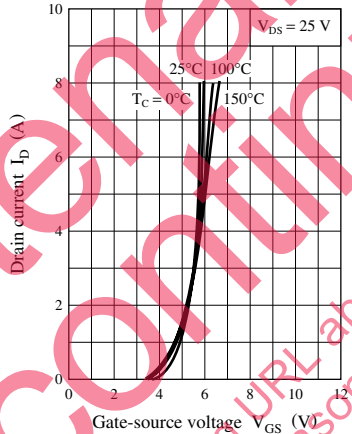
EAS — T_j



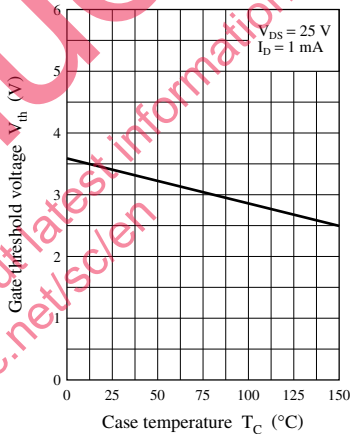
$I_D - V_{DS}$



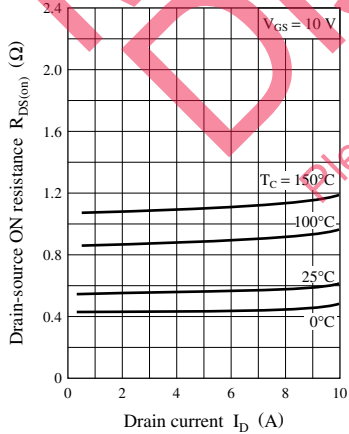
$I_D - V_{GS}$



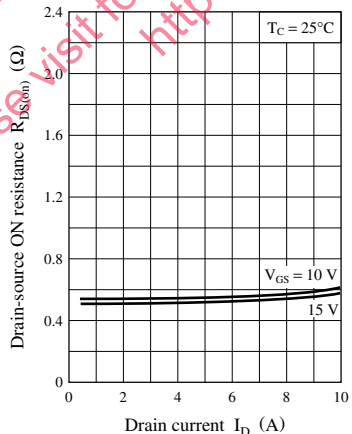
$V_{th} - T_C$



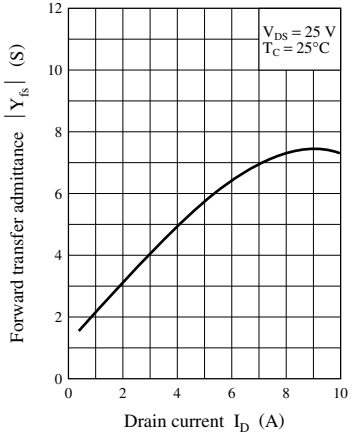
$R_{DS(on)} - I_D$

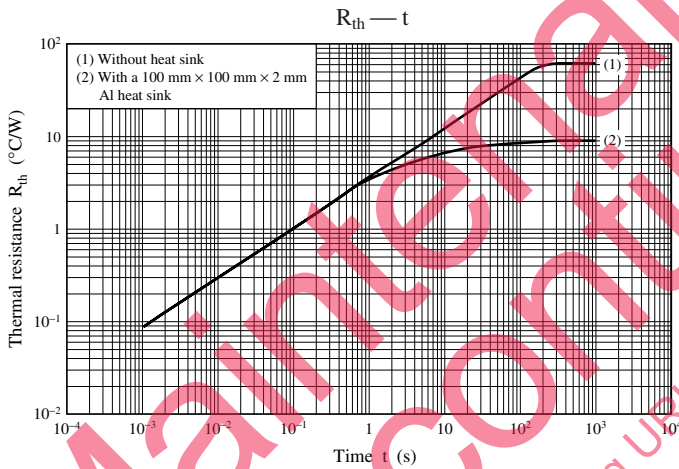
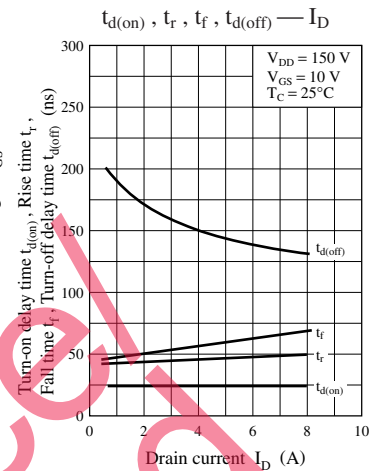
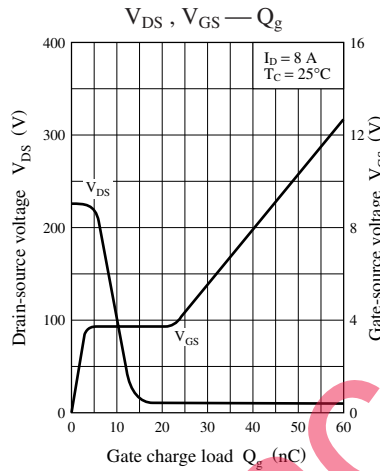
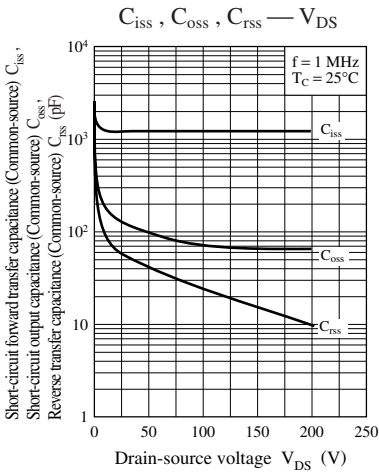


$R_{DS(on)} - I_D$



$|Y_{fs}| - I_D$





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