

# 2SK3044

## Silicon N-channel power MOSFET

### ■ Features

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

### ■ Applications

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

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

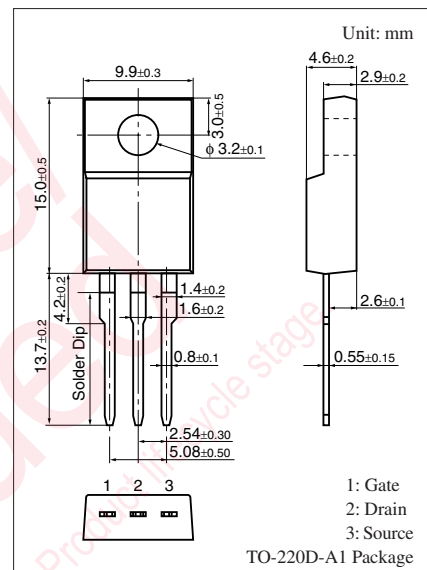
Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V <sub>DSS</sub>	450	V
Gate-source surrender voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	±7	A
Peak drain current	I <sub>DP</sub>	±14	A
Avalanche energy capability *	EAS	130	mJ
Power dissipation	P <sub>D</sub>	40	W
		2	
	T <sub>a</sub> = 25°C		
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

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

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

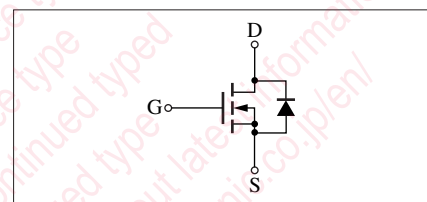
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	$V_{DSS}$	$I_D = 1$ mA, $V_{GS} = 0$	450			V
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = 360$ V, $V_{GS} = 0$			100	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 30$ V, $V_{DS} = 0$			$\pm 1$	$\mu\text{A}$
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	$\Omega$
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, $R_L = 37.5$ $\Omega$ $V_{GS} = 10$ V		25		ns
Rise time	$t_r$			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.

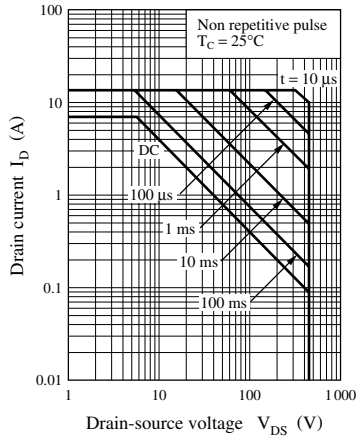
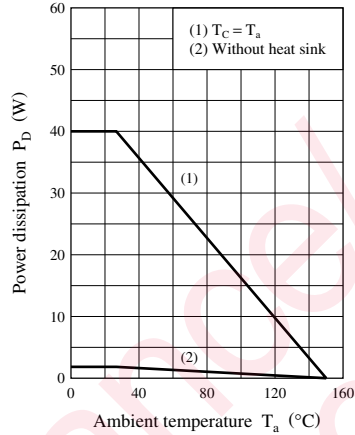
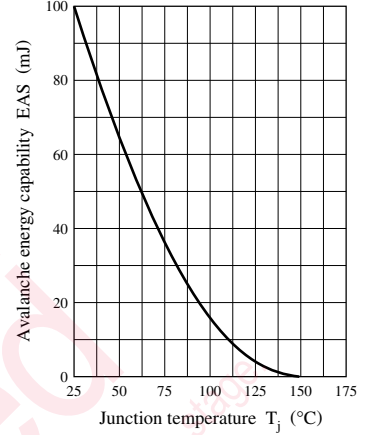
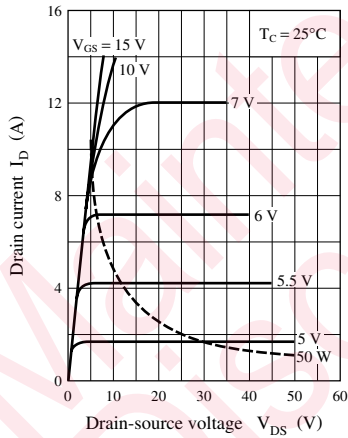
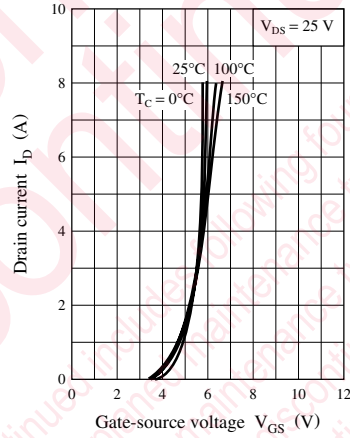
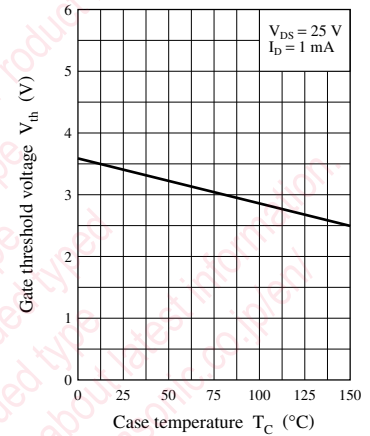
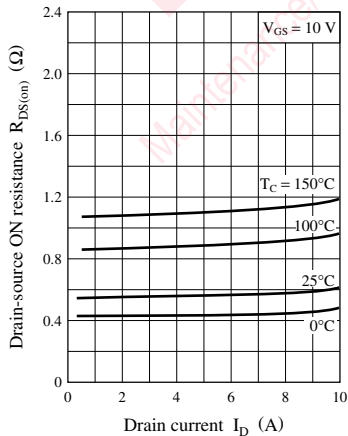
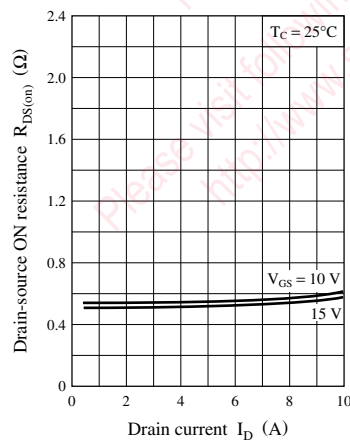
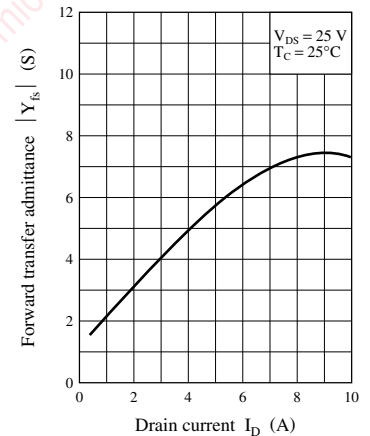


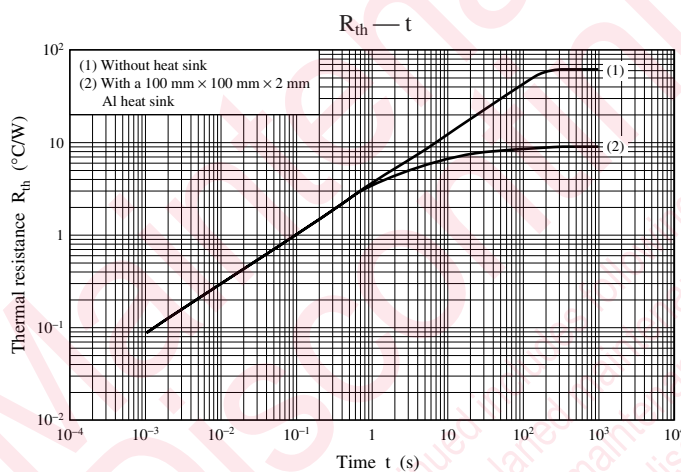
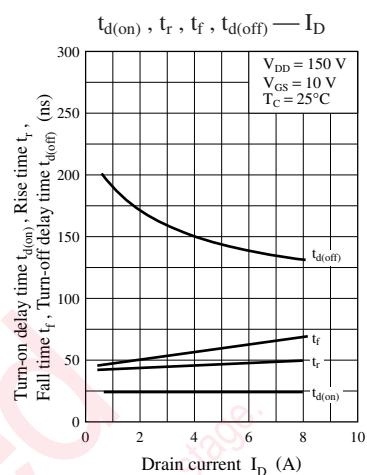
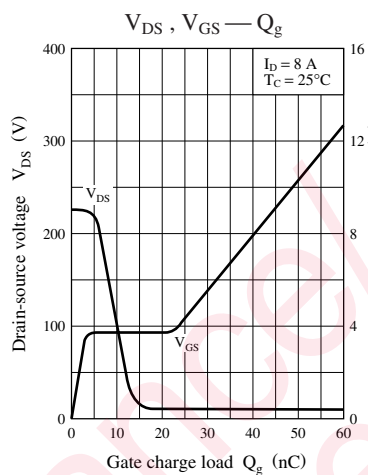
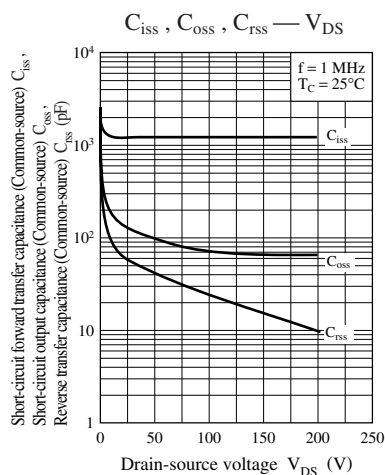
Marking Symbol: K3044

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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