

2SK3046

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 $T_C = 25^\circ\text{C}$

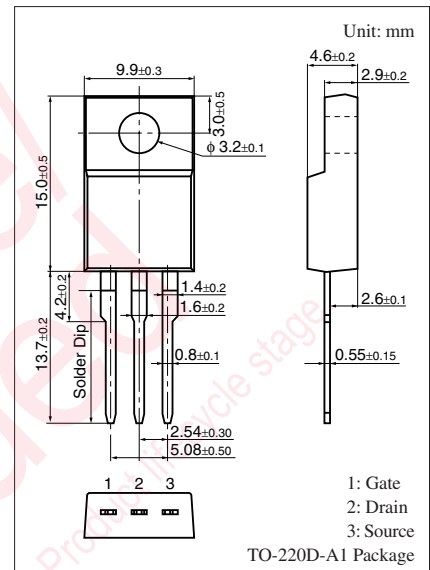
Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V_{DSS}	500	V
Gate-source surrender voltage	V_{GSS}	± 30	V
Drain current	I_D	± 7	A
Peak drain current	I_{DP}	± 14	A
Avalanche energy capability *	EAS	130	mJ
Power dissipation	P_D	40	W
		$T_a = 25^\circ\text{C}$	2
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

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

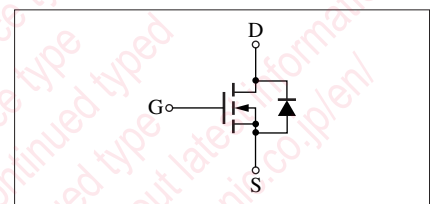
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	V_{DSS}	$I_D = 1$ mA, $V_{GS} = 0$	500			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = 400$ V, $V_{GS} = 0$			100	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 30$ V, $V_{DS} = 0$			± 1	μA
Gate threshold voltage	V_{th}	$V_{DS} = 25$ 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		0.7	1.0	Ω
Diode forward voltage	V_{DF}	$I_{DR} = 7$ A, $V_{GS} = 0$			-1.6	V
Short-circuit forward transfer capacitance (Common source)	C_{iss}	$V_{DS} = 20$ V, $V_{GS} = 0$, $f = 1$ MHz		1200		pF
				160		pF
Short-circuit output capacitance (Common source)	C_{oss}			70		pF
Reverse transfer capacitance (Common source)	C_{rss}					pF
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 150$ V, $I_D = 5$ A, $R_L = 30$ Ω $V_{GS} = 10$ V		30		ns
Rise time	t_r			70		ns
Fall time	t_f			60		ns
Turn-off delay time	$t_{d(off)}$			140		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.

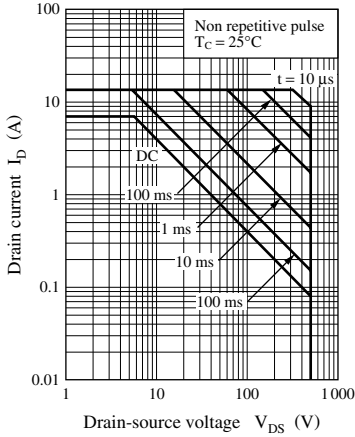


Marking Symbol: K3046

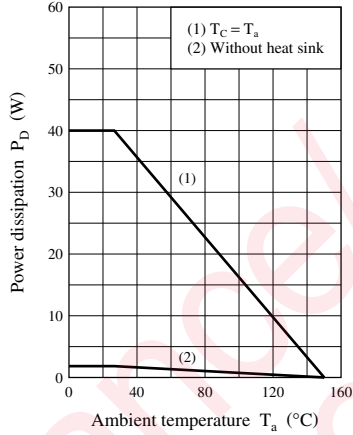
Internal Connection



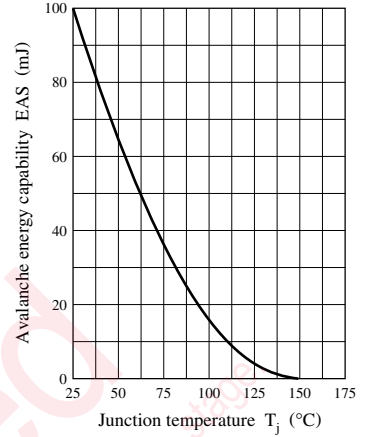
Safe operation area



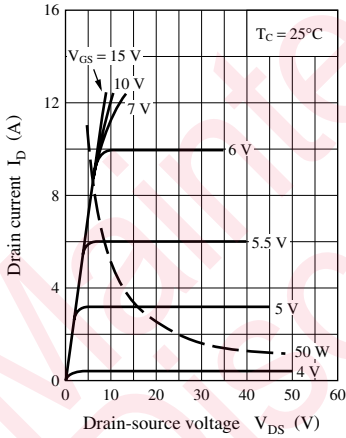
$P_D - T_a$



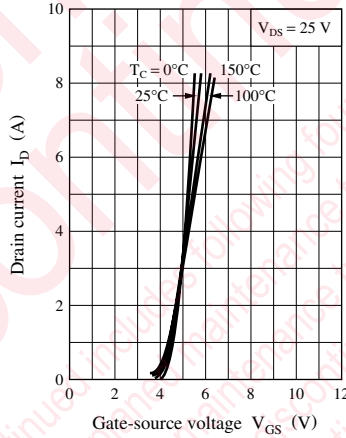
EAS — T_j



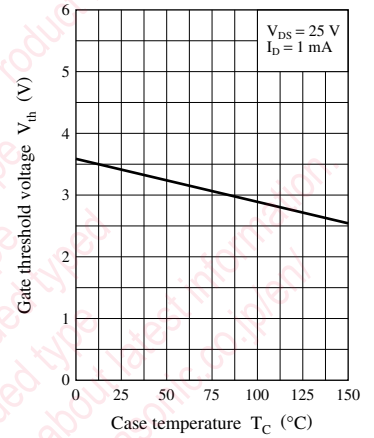
$I_D - V_{DS}$



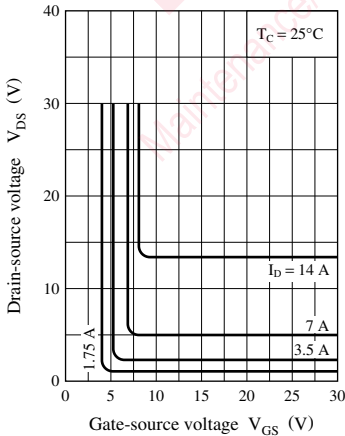
$I_D - V_{GS}$



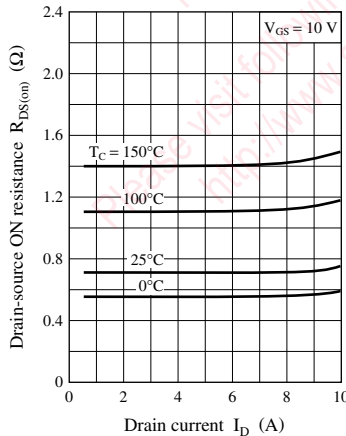
$V_{th} - T_C$



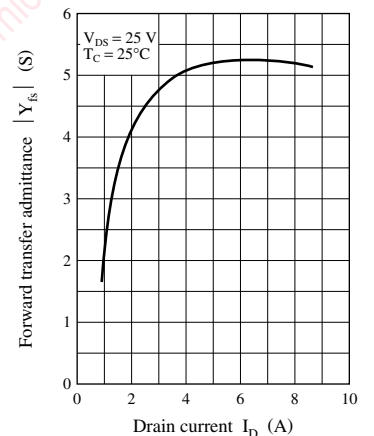
$V_{DS} - V_{GS}$

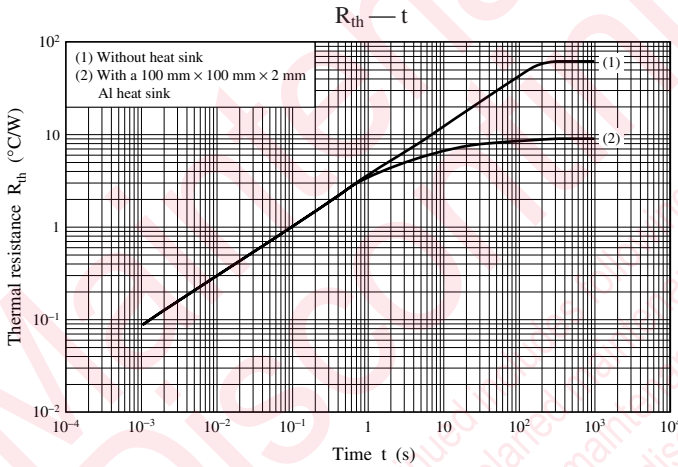
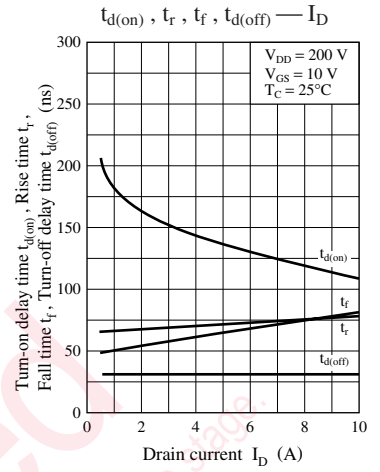
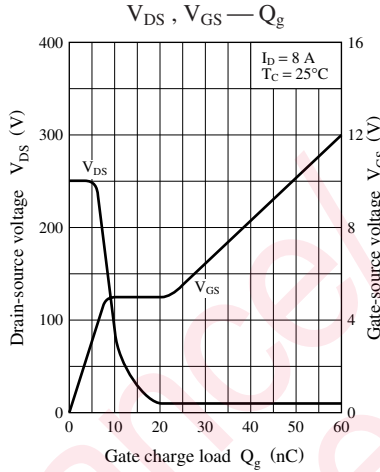
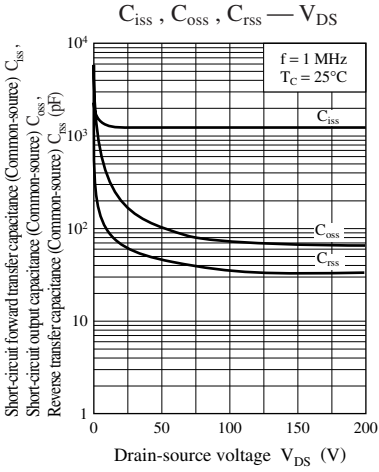


$R_{DS(on)} - I_D$



$|Y_{fs}| - I_D$





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