

# 2SK3047

## Silicon N-channel power MOSFET

### ■ Features

- Avalanche energy capability guaranteed: EAS > 15 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 $T_C = 25^\circ\text{C}$

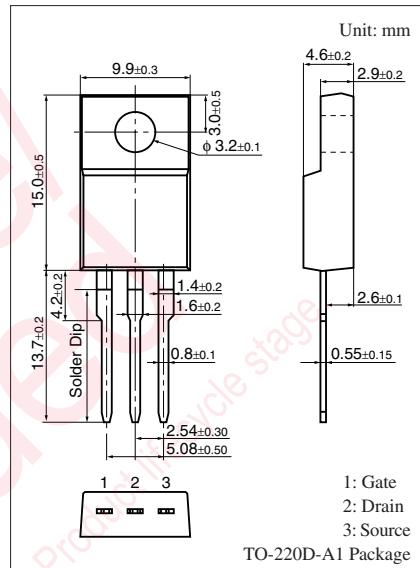
Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	$V_{DSS}$	800	V
Gate-source surrender voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	$\pm 2$	A
Peak drain current	$I_{DP}$	$\pm 4$	A
Avalanche energy capability*	EAS	15	mJ
Power dissipation	$P_D$	30	W
		2	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note) \*:  $L = 7.5$  mH,  $I_L = 2$  A, 1 pulse

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

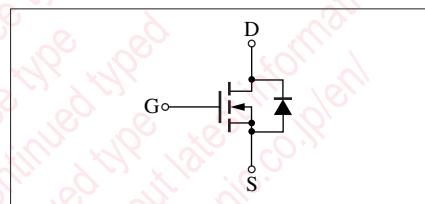
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	$V_{DSS}$	$I_D = 1$ mA, $V_{GS} = 0$	800			V
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = 640$ V, $V_{GS} = 0$			100	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 30$ V, $V_{DS} = 0$			$\pm 1$	$\mu\text{A}$
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, $I_D = 1$ A	0.7	1.1		S
Drain-source ON resistance	$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 1$ A		4.8	7.0	$\Omega$
Diode forward voltage	$V_{DF}$	$I_{DR} = 2$ A, $V_{GS} = 0$			-1.3	V
Short-circuit forward transfer capacitance (Common source)	$C_{iss}$	$V_{DS} = 20$ V, $V_{GS} = 0$ , $f = 1$ MHz		350		pF
Short-circuit output capacitance (Common source)	$C_{oss}$			60		pF
Reverse transfer capacitance (Common source)	$C_{rss}$			25		pF
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 200$ V, $I_D = 1$ A, $R_L = 200$ $\Omega$ $V_{GS} = 10$ V		15		ns
Rise time	$t_r$			20		ns
Fall time	$t_f$			25		ns
Turn-off delay time	$t_{d(off)}$			60		ns
Thermal resistance (ch-c)	$R_{th(ch-c)}$				4.1	$^\circ\text{C}/\text{W}$
Thermal resistance (ch-a)	$R_{th(ch-a)}$				62.5	$^\circ\text{C}/\text{W}$

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

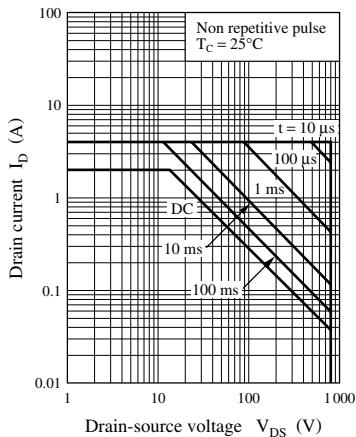


Marking Symbol: K3047

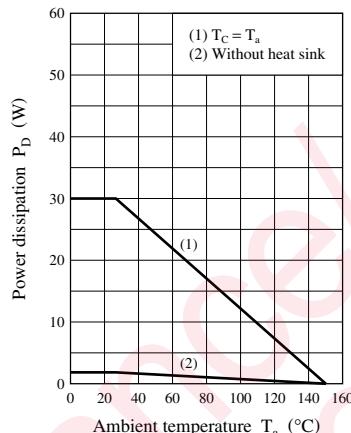
### Internal Connection



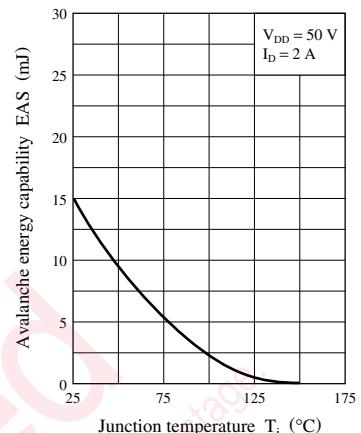
## Safe operation area



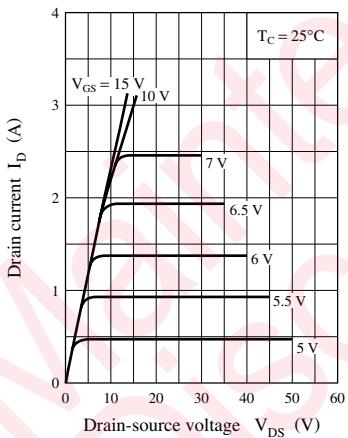
## P\_D — T\_a



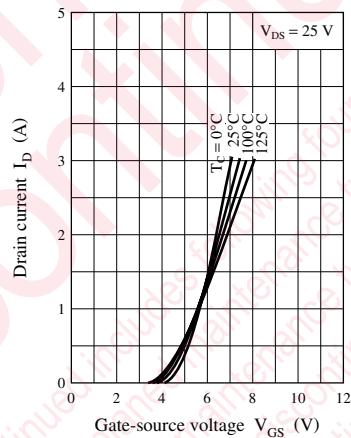
## EAS — T\_j



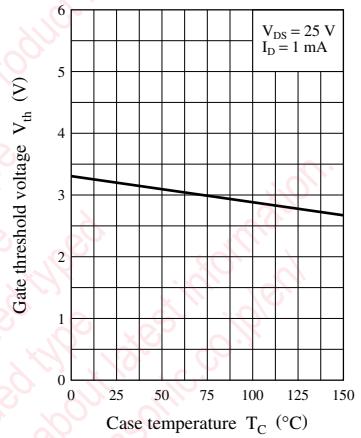
## I\_D — V\_DS



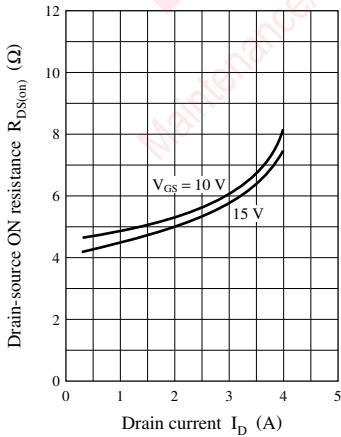
## I\_D — V\_GS



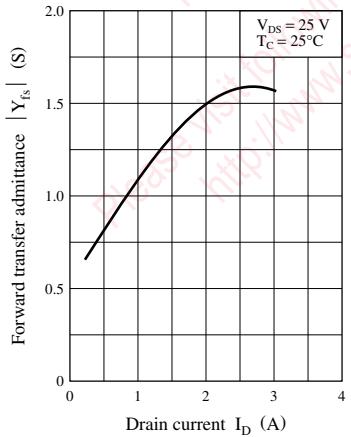
## V\_th — T\_C



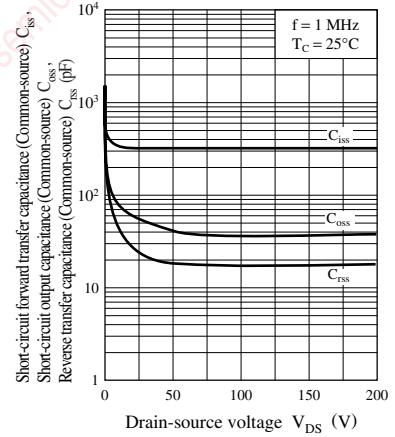
## R\_DS(on) — I\_D

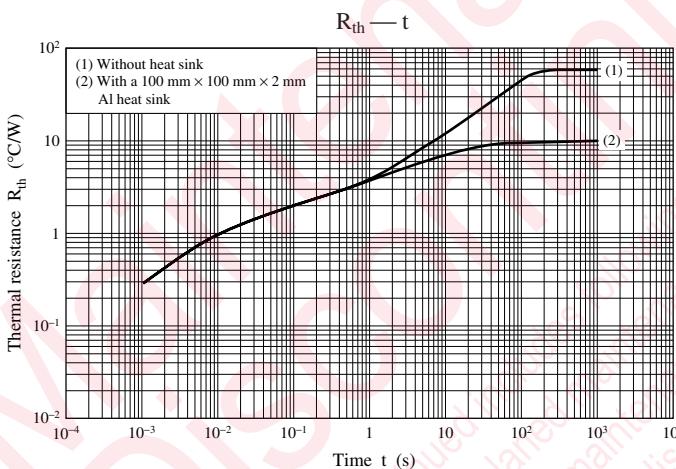
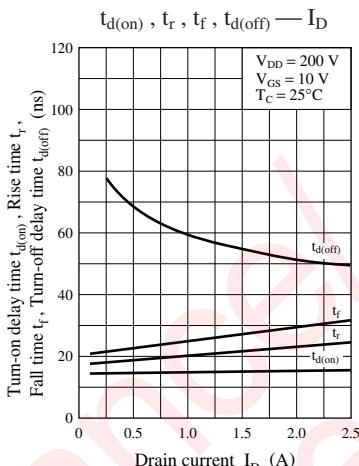
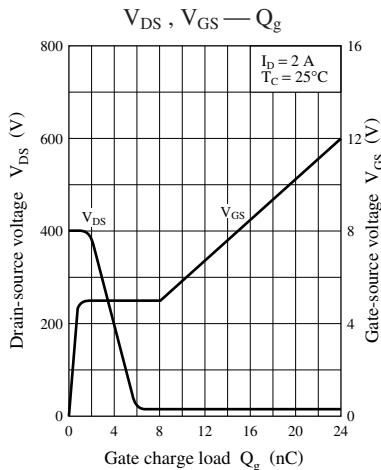


## |Y\_fs| — I\_D



## C\_iss, C\_oss, C\_rss — V\_DS





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