

2SK3048

Silicon N-channel power MOSFET

■ Features

- Avalanche energy capability guaranteed
- High-speed switching
- Low on-resistance
- No secondary breakdown

■ Applications

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

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

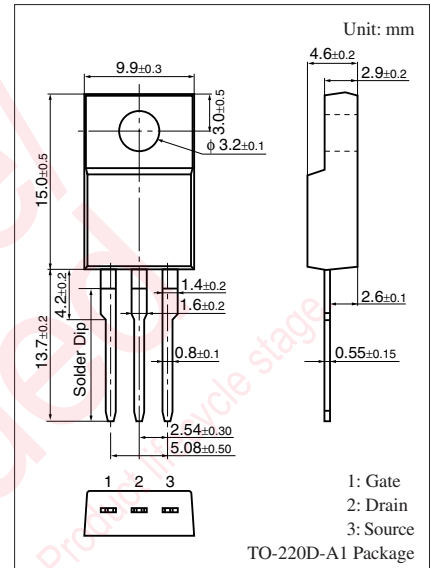
Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V_{DSS}	600	V
Gate-source surrender voltage	V_{GSS}	± 30	V
Drain current	I_D	± 3	A
Peak drain current	I_{DP}	± 6	A
Avalanche energy capability *	EAS	22.5	mJ
Power dissipation	P_D	35	W
		$T_a = 25^\circ\text{C}$	2
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note) *: $L = 5\text{ mH}$, $I_L = 3\text{ A}$, 1 pulse

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

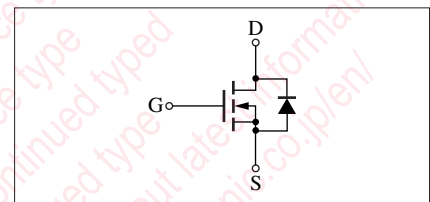
Parameter	Symbol	Conditions	Min	Typ	Max	Unit	
Drain-source surrender voltage	V_{DSS}	$I_D = 1\text{ mA}$, $V_{GS} = 0$	600			V	
Drain-source cutoff current	I_{DSS}	$V_{DS} = 480\text{ V}$, $V_{GS} = 0$			100	μA	
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 30\text{ V}$, $V_{DS} = 0$			± 1	μA	
Gate threshold voltage	V_{th}	$V_{DS} = 25\text{ V}$, $I_D = 1\text{ mA}$	2.0		5.0	V	
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 25\text{ V}$, $I_D = 2\text{ A}$	1.5	2.5		S	
Drain-source ON resistance	$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 2\text{ A}$		1.7	2.5	Ω	
Diode forward voltage	V_{DF}	$I_{DR} = 3\text{ A}$, $V_{GS} = 0$			-1.5	V	
Short-circuit forward transfer capacitance (Common source)	C_{iss}	$V_{DS} = 20\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$		750		pF	
					80		pF
					25		pF
Reverse transfer capacitance (Common source)	C_{rss}					pF	
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 200\text{ V}$, $I_D = 2\text{ A}$, $R_L = 100\ \Omega$ $V_{GS} = 10\text{ V}$		15		ns	
Rise time	t_r			25		ns	
Fall time	t_f			40		ns	
Turn-off delay time	$t_{d(off)}$			90		ns	
Thermal resistance (ch-c)	$R_{th(ch-c)}$				3.5	$^\circ\text{C/W}$	
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.

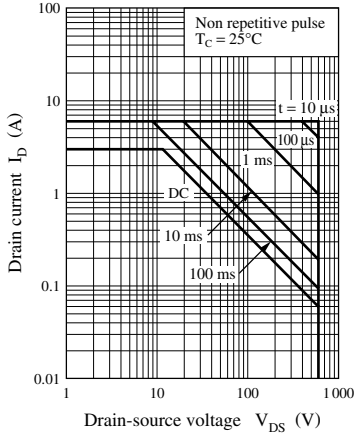


Marking Symbol: K3048

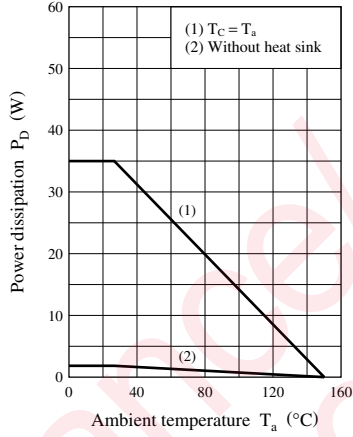
Internal Connection



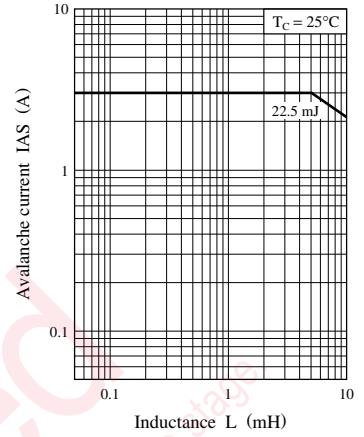
Safe operation area



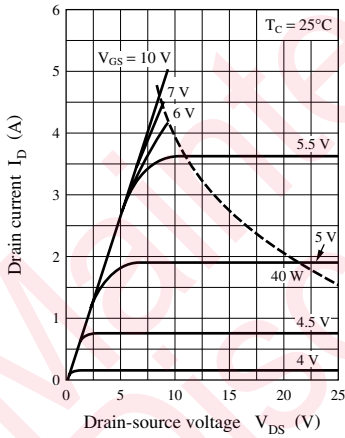
$P_D - T_a$



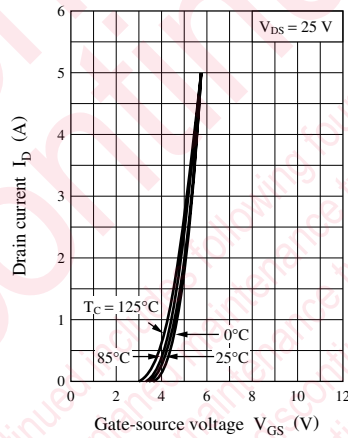
IAS — L



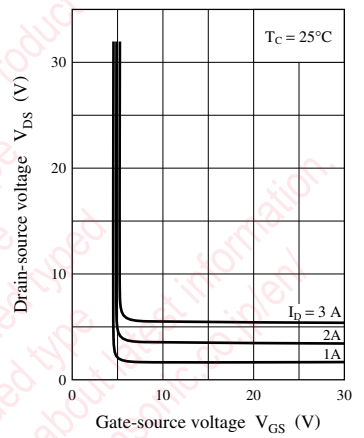
$I_D - V_{DS}$



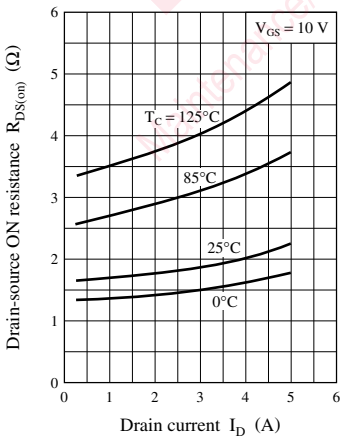
$I_D - V_{GS}$



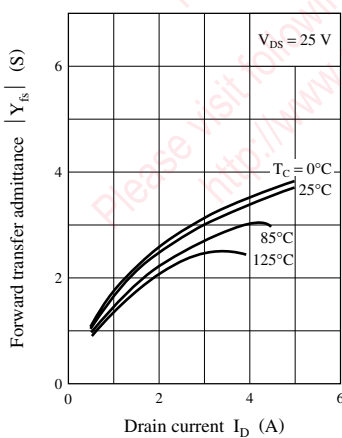
$V_{DS} - V_{GS}$



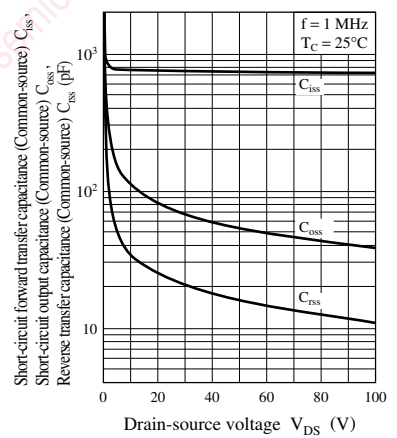
$R_{DS(on)} - I_D$

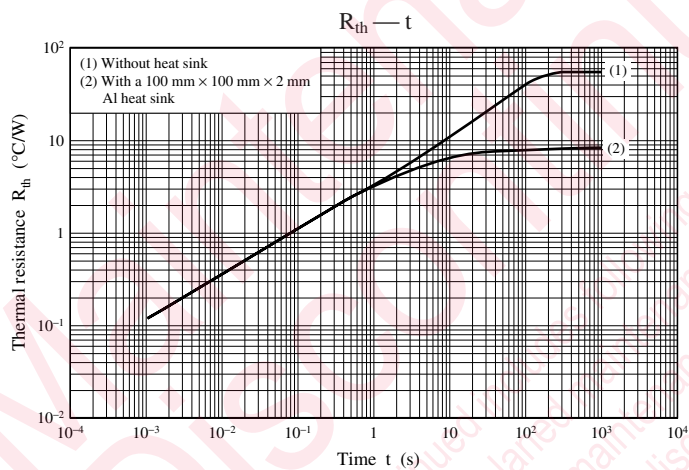
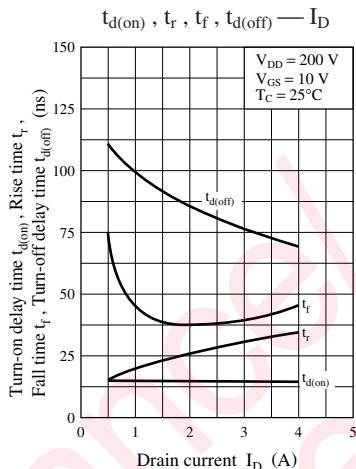
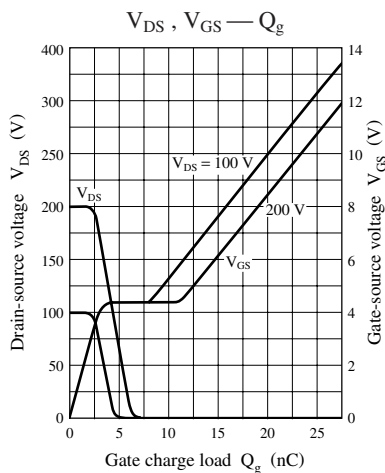


$|Y_{fs}| - I_D$



$C_{iss}, C_{oss}, C_{rss} - V_{DS}$





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