

2.5V Drive Nch MOSFET

2SK3018UB

● Structure

Silicon N-channel MOSFET

● Features

- 1) Low on-resistance.
- 2) Low voltage drive(2.5V drive).

● Application

Switching

● Packaging specifications

Type	Package	Taping
	Code	TCL
	Basic ordering unit (pieces)	3000
2SK3018UB		○

● Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GS}	± 20	V
Drain current	Continuous	I_D	± 100	mA
	Pulsed	I_{DP} *1	± 400	mA
Power dissipation		P_D *2	200	mW
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	-55 to +150	°C

*1 $P_w \leq 10 \mu s$, Duty cycle $\leq 1\%$

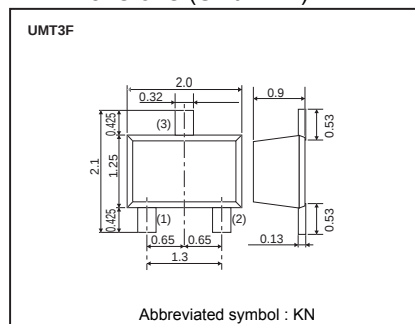
*2 Each terminal mounted on a recommended land.

● Thermal resistance

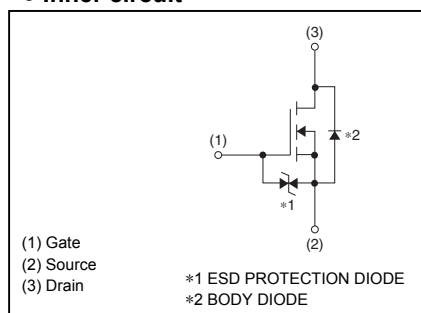
Parameter	Symbol	Limits	Unit
Channel to Ambient	$R_{th}(ch-a)^*$	625	°C / W

* Each terminal mounted on a recommended land.

● Dimensions (Unit : mm)



● Inner circuit



● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	± 1	μA	$V_{GS} = \pm 20V, V_{DS} = 0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	30	-	-	V	$I_D = 10\mu A, V_{GS} = 0V$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS} = 30V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS(th)}$	0.8	-	1.5	V	$V_{DS} = 3V, I_D = 100\mu A$
Static drain-source on-state resistance	$R_{DS(on)}^*$	-	5	8	Ω	$I_D = 10mA, V_{GS} = 4V$
		-	7	13		$I_D = 1mA, V_{GS} = 2.5V$
Forward transfer admittance	$ Y_{fs} ^*$	20	-	-	mS	$V_{DS} = 3V, I_D = 10mA$
Input capacitance	C_{iss}	-	13	-	pF	$V_{DS} = 5V$
Output capacitance	C_{oss}	-	9	-	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	-	4	-	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}^*$	-	15	-	ns	$V_{DD} = 5V, I_D = 10mA$
Rise time	t_r^*	-	35	-	ns	$V_{GS} = 5V$
Turn-off delay time	$t_{d(off)}^*$	-	80	-	ns	$R_L = 500\Omega$
Fall time	t_f^*	-	80	-	ns	$R_G = 10\Omega$

*Pulsed

● Electrical characteristic curves

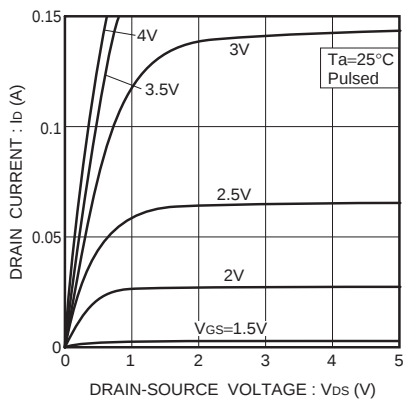


Fig.1 Typical output characteristics

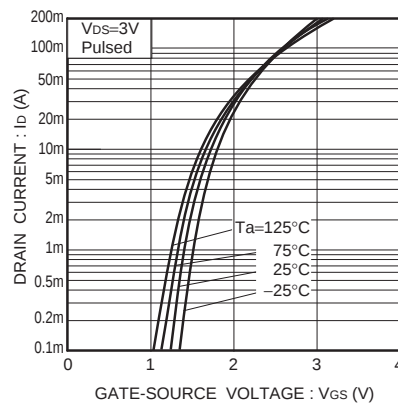


Fig.2 Typical transfer characteristics

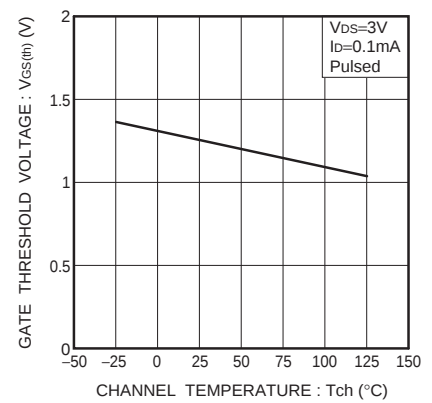


Fig.3 Gate threshold voltage vs. channel temperature

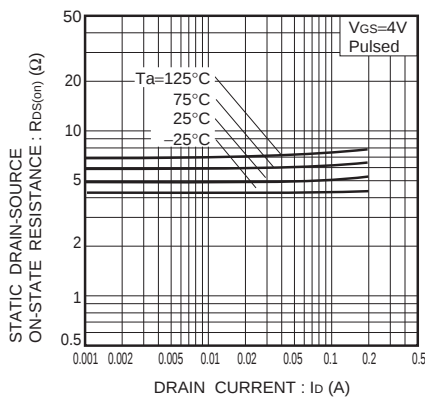


Fig.4 Static drain-source on-state resistance vs. drain current (I)

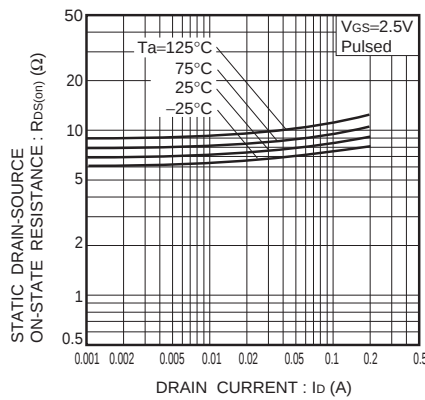


Fig.5 Static drain-source on-state resistance vs. drain current (II)

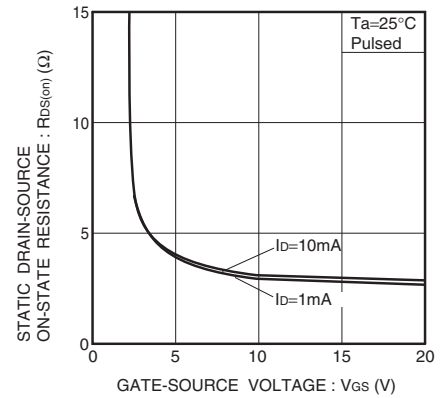


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

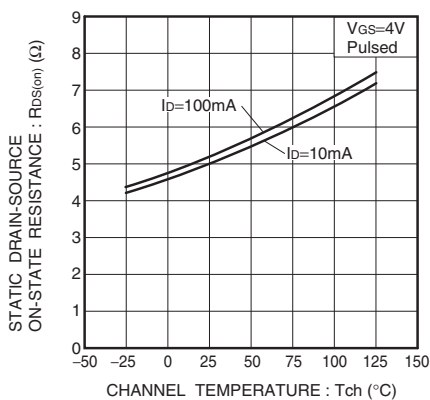


Fig.7 Static drain-source on-state resistance vs. channel temperature

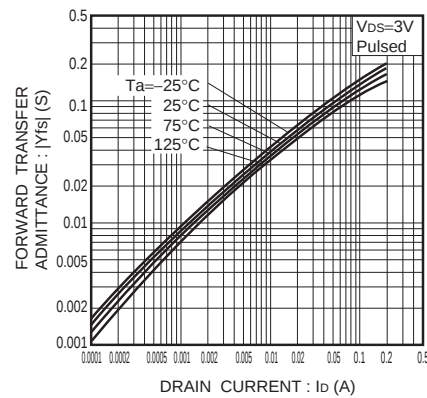


Fig.8 Forward transfer admittance vs. drain current

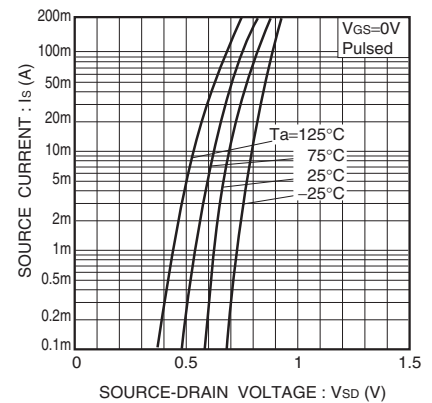


Fig.9 Reverse drain current vs. source-drain voltage (I)

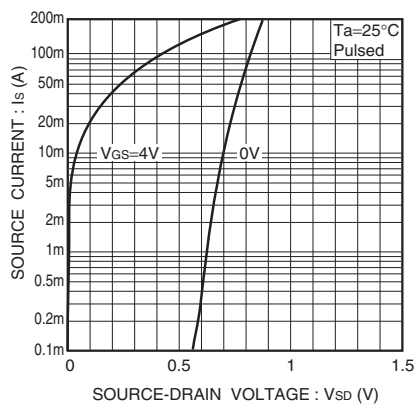


Fig.10 Reverse drain current vs. source-drain voltage (II)

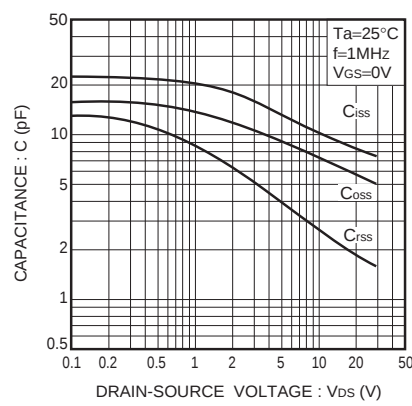


Fig.11 Typical capacitance vs. drain-source voltage

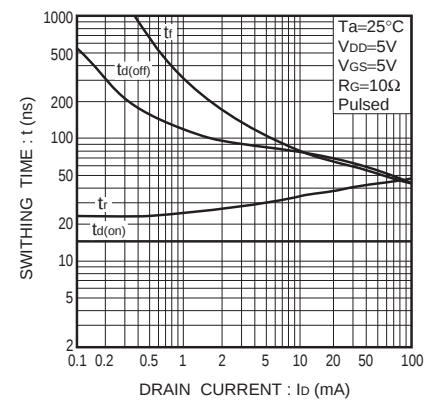


Fig.12 Switching characteristics

● Measurement circuits

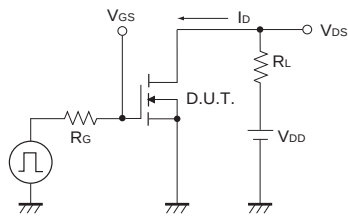


Fig.1-1 Switching Time Measurement Circuit

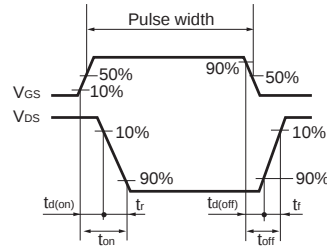


Fig.1-2 Switching Waveforms

● Notice

This product might cause chip aging and breakdown under the large electrified environment.
Please consider to design ESD protection circuit.

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