

# 2.5V Drive Nch MOSFET

## 2SK3019EB

### ● Structure

Silicon N-channel MOSFET

### ● Features

- 1) High-speed switching.
- 2) Low voltage drive(2.5V drive).
- 3) Drive circuits can be simple.
- 4) Parallel use is easy.

### ● Application

Switching

### ● Packaging specifications

Type	Package	Taping
	Code	TCL
	Basic ordering unit (pieces)	3000
2SK3019EB		○

### ● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	$V_{DSS}$	30	V
Gate-source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	Continuous	$I_D$	$\pm 100$ mA
	Pulsed	$I_{DP}^{*1}$	$\pm 400$ mA
Power dissipation	$P_D^{*2}$	150	mW
Channel temperature	$T_{ch}$	150	°C
Range of storage temperature	$T_{stg}$	-55 to +150	°C

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

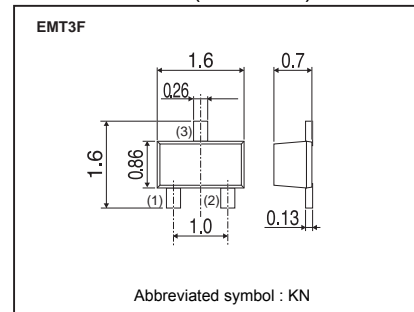
\*2 Each terminal mounted on a reference land.

### ● Thermal resistance

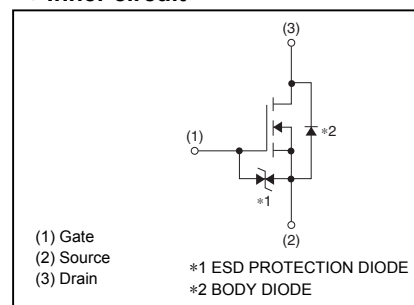
Parameter	Symbol	Limits	Unit
Channel to Ambient	$R_{th(ch-a)^*}$	833	°C / W

\* Each terminal mounted on a reference land.

### ● Dimensions (Unit : mm)



### ● Inner circuit



## ● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	-	-	$\pm 1$	$\mu A$	$V_{GS} = \pm 20V, V_{DS} = 0V$
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	$\mu A$	$V_{DS} = 30V, V_{GS} = 0V$
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	$\Omega$	$I_D = 10mA, V_{GS} = 4V$
		-	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 characteristics curves

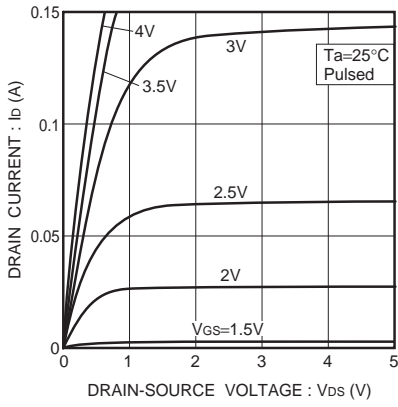


Fig.1 Typical output characteristics

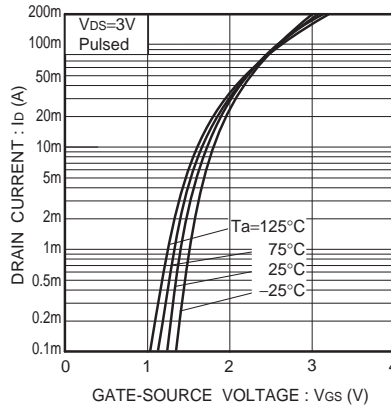


Fig.2 Typical transfer characteristics

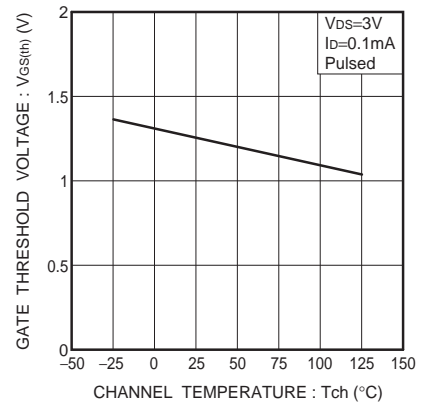


Fig.3 Gate threshold voltage vs. channel temperature

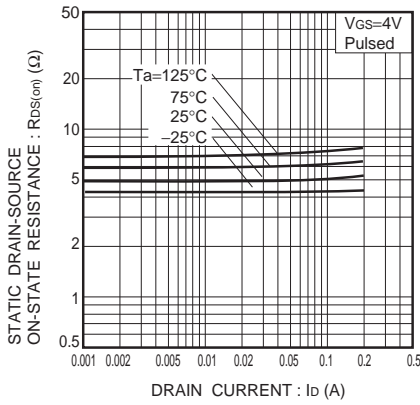


Fig.4 Static drain-source on-state resistance vs. drain current (I)

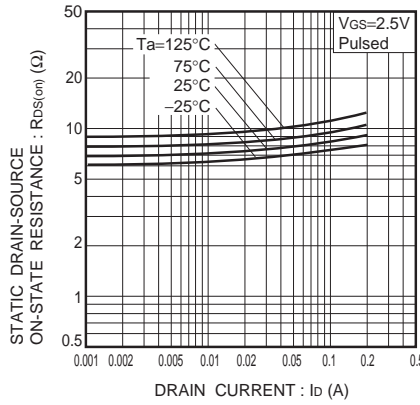


Fig.5 Static drain-source on-state resistance vs. drain current (II)

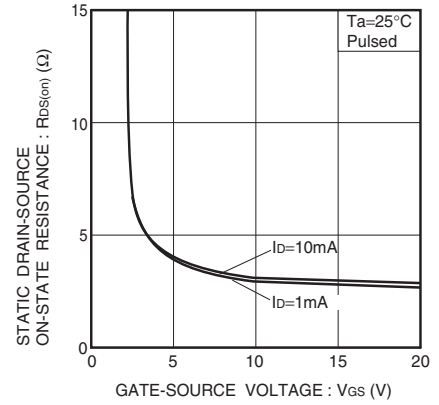


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

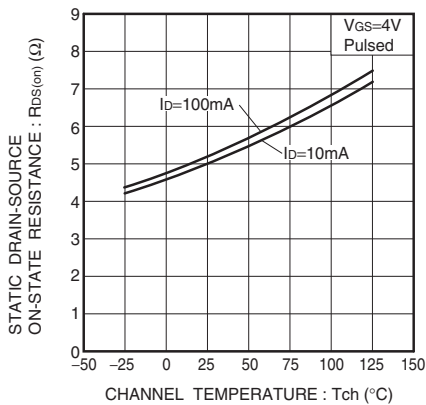


Fig.7 Static drain-source on-state resistance vs. channel temperature

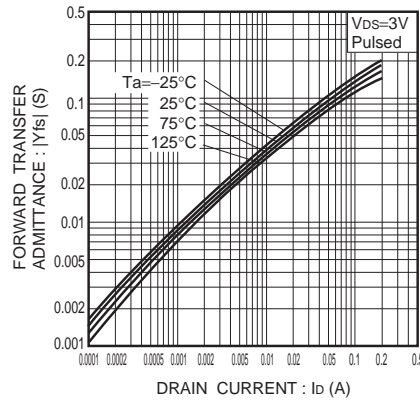


Fig.8 Forward transfer admittance vs. drain current

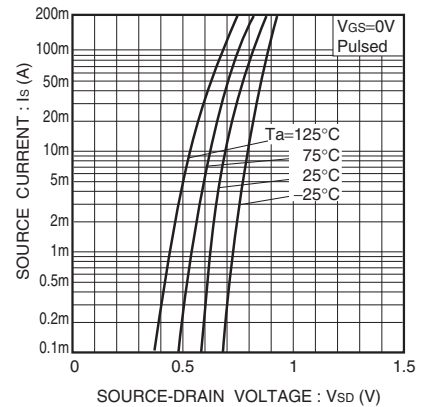


Fig.9 Reverse drain current vs. source-drain voltage (I)

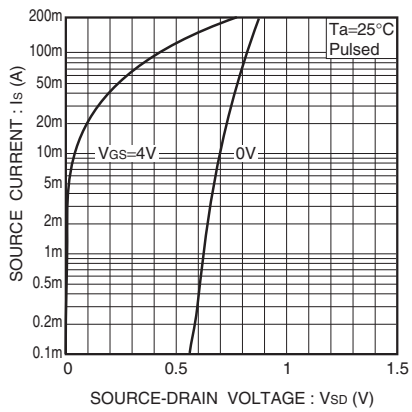


Fig.10 Reverse drain current vs. source-drain voltage (II)

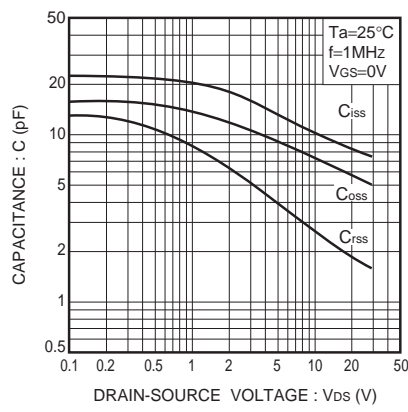


Fig.11 Typical capacitance vs. drain-source voltage

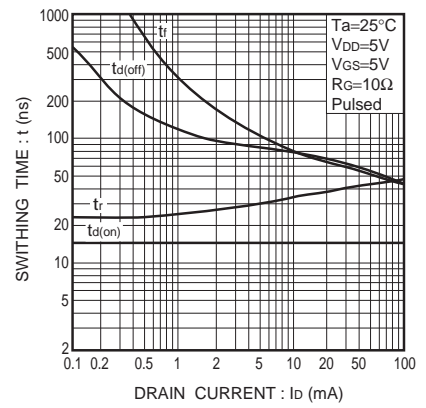


Fig.12 Switching characteristics

● Measurement circuits

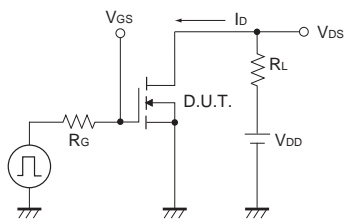


Fig.1-1 Switching Time Measurement Circuit

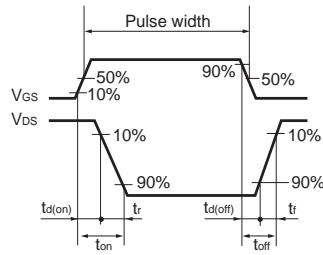


Fig.1-2 Switching Waveforms

● 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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