

# Small switching (30V, 0.1A)

## 2SK3018

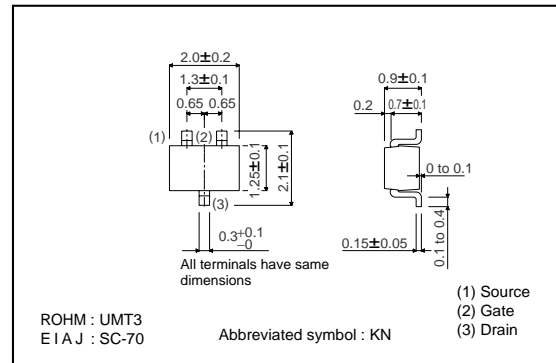
### ●Applications

Interfacing, switching (30V, 100mA)

### ●Features

- 1) Low on-resistance.
- 2) Fast switching speed.
- 3) Low voltage drive (2.5V) makes this device ideal for portable equipment.
- 4) Easily designed drive circuits.
- 5) Easy to parallel.

### ●External dimensions (Unit : mm)



### ●Structure

Silicon N-channel  
MOSFET

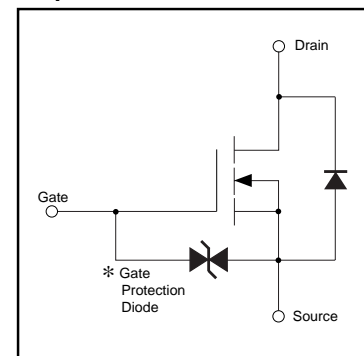
### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V <sub>DSS</sub>	30	V	
Gate-source voltage	V <sub>GSS</sub>	±20	V	
Drain current	Continuous	I <sub>D</sub>	±100	mA
	Pulsed	I <sub>DP</sub> *1	±400	mA
Total power dissipation (Tc=25°C)	P <sub>D</sub> *2	200	mW	
Channel temperature	T <sub>ch</sub>	150	°C	
Storage temperature	T <sub>stg</sub>	-55 to +150	°C	

\*1 P<sub>w</sub>≤10μs, Duty cycle≤1%

\*2 With each pin mounted on the recommended lands.

### ●Equivalent circuit



\*A protection diode is included between the gate and the source terminals to protect the diode against static electricity when the product is in use. Use a protection circuit when the fixed voltages are exceeded.

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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I <sub>GSS</sub>	-	-	±1	μA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	30	-	-	V	I <sub>D</sub> = 10μA, V <sub>GS</sub> = 0V
Zero gate voltage drain current	I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate threshold voltage	V <sub>GS(th)</sub>	0.8	-	1.5	V	V <sub>DS</sub> = 3V, I <sub>D</sub> = 100μA
Static drain-source on-state resistance	R <sub>DS(on)</sub>	-	5	8	Ω	I <sub>D</sub> = 10mA, V <sub>GS</sub> = 4V
	R <sub>DS(on)</sub>	-	7	13	Ω	I <sub>D</sub> = 1mA, V <sub>GS</sub> = 2.5V
Forward transfer admittance	Y <sub>fs</sub>	20	-	-	mS	V <sub>DS</sub> = 3V, I <sub>D</sub> = 10mA
Input capacitance	C <sub>iss</sub>	-	13	-	pF	V <sub>DS</sub> = 5V
Output capacitance	C <sub>oss</sub>	-	9	-	pF	V <sub>GS</sub> = 0V
Reverse transfer capacitance	C <sub>rss</sub>	-	4	-	pF	f = 1MHz
Turn-on delay time	t <sub>d(on)</sub>	-	15	-	ns	I <sub>D</sub> = 10mA, V <sub>DD</sub> ≐ 5V
Rise time	t <sub>r</sub>	-	35	-	ns	V <sub>GS</sub> = 5V
Turn-off delay time	t <sub>d(off)</sub>	-	80	-	ns	R <sub>L</sub> = 500Ω
Fall time	t <sub>f</sub>	-	80	-	ns	R <sub>G</sub> = 10Ω

●Packaging specifications

Type	Package	Taping
	Code	T106
	Basic ordering unit (pieces)	3000
2SK3018		○

●Electrical characteristic curves

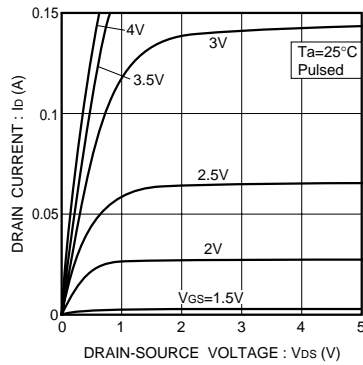


Fig.1 Typical output characteristics

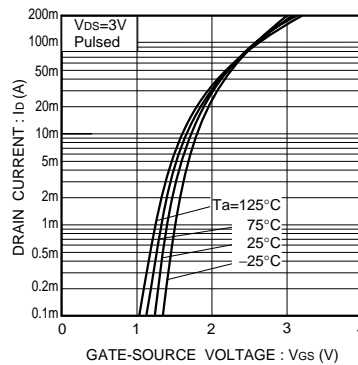


Fig.2 Typical transfer characteristics

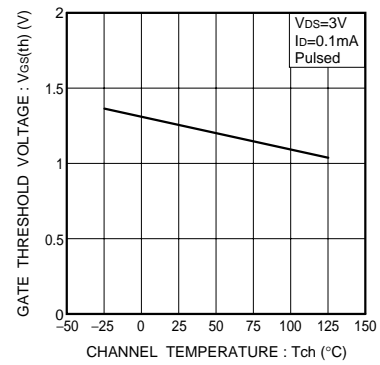


Fig.3 Gate threshold voltage vs. channel temperature

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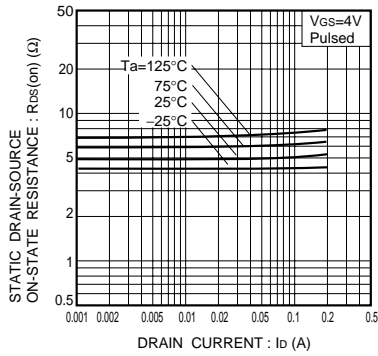


Fig.4 Static drain-source on-state resistance vs. drain current ( I )

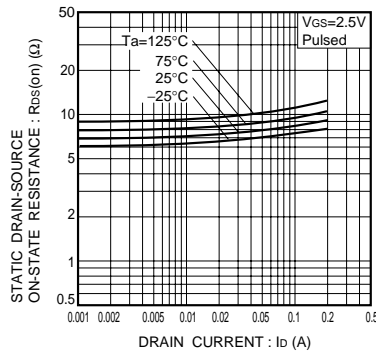


Fig.5 Static drain-source on-state resistance vs. drain current (II)

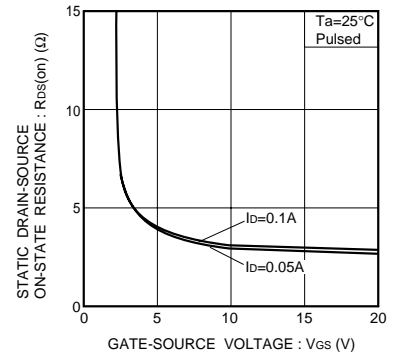


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

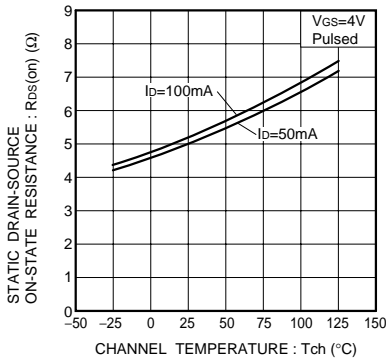


Fig.7 Static drain-source on-state resistance vs. channel temperature

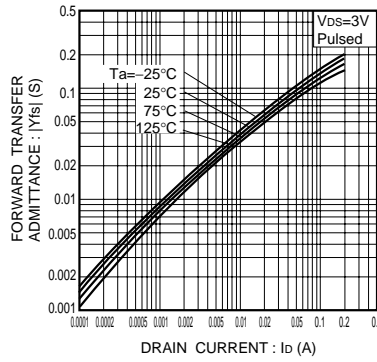


Fig.8 Forward transfer admittance vs. drain current

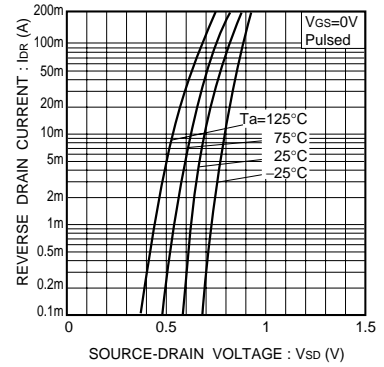


Fig.9 Reverse drain current vs. source-drain voltage ( I )

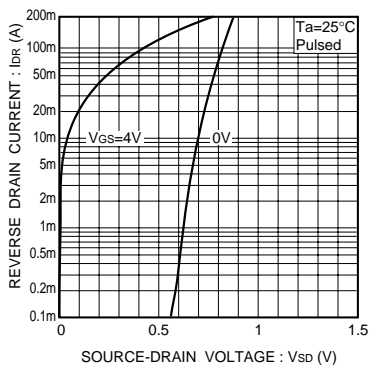


Fig.10 Reverse drain current vs. source-drain voltage ( II )

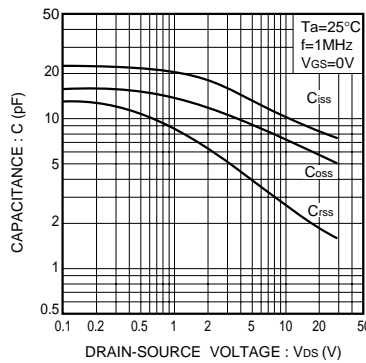


Fig.11 Typical capacitance vs. drain-source voltage

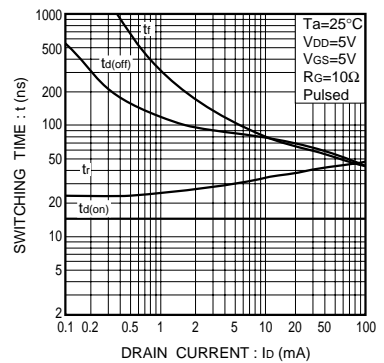


Fig.12 Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

## Transistor

## ● Switching characteristics measurement circuit

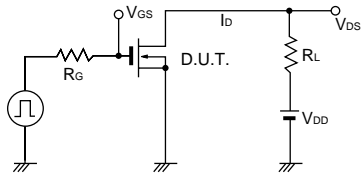


Fig.13 Switching time measurement circuit

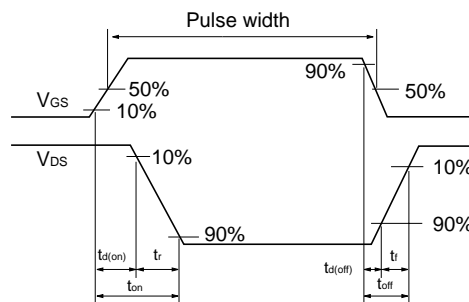


Fig.14 Switching time waveforms

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