Small switching (30V, 0.1A)

2SK3018

●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.

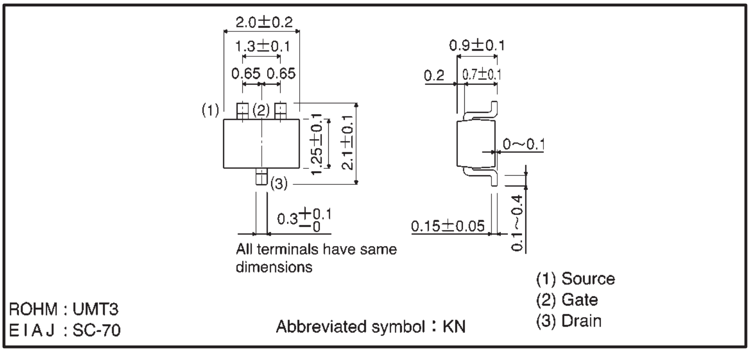
●Applications

Interfacing, switching (30V, 100mA)

●Structure

Silicon N-channel
MOSFET

●External dimensions (Units: mm)



ROHM : UMT3
EIAJ : SC-70

Abbreviated symbol : KN

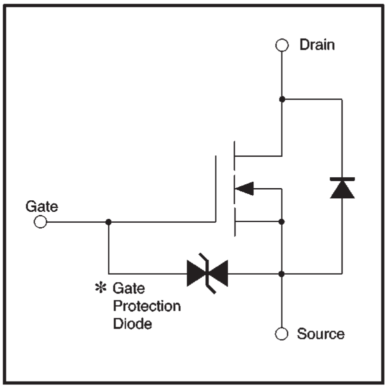
(1) Source
(2) Gate
(3) Drain

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	30	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	100	mA
	Pulsed	I_{DP}*1	200	mA
Reverse drain current	Continuous	I_{DR}	100	mA
	Pulsed	I_{DRP}*1	200	mA
Total power dissipation (Tc=25℃)		P_D*2	200	mW
Channel temperature		Tch	150	℃
Storage temperature		Tstg	−55~+150	℃

∗1 Pw≦10μs, Duty cycle≦50%
∗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.

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage	I_{GSS}	—	—	±1	μA	V_{GS}=±20V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	I_D=10μA, 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=100μA
Static drain-source on-state resistance	$R_{DS(on)}$	—	5	8	Ω	I_D=10mA, V_{GS}=4V
	$R_{DS(on)}$	—	7	13	Ω	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	I_D=10mA, V_{DD}≒5V
Rise time	t_r	—	35	—	ns	V_{GS}=5V
Turn-off delay time	$t_{d(off)}$	—	80	—	ns	R_L=500Ω
Fall time	t_r	—	80	—	ns	R_{GS}=10Ω

●Packaging specifications

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

●Electrical characteristic curves

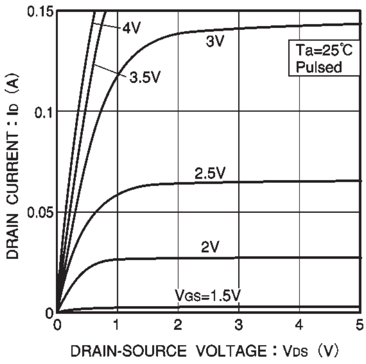


Fig.1 Typical output characteristics

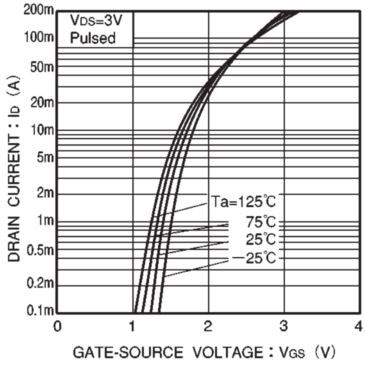


Fig.2 Typical transfer characteristics

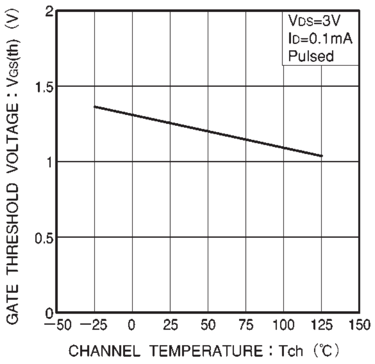


Fig.3 Gate threshold voltage vs. channel temperature

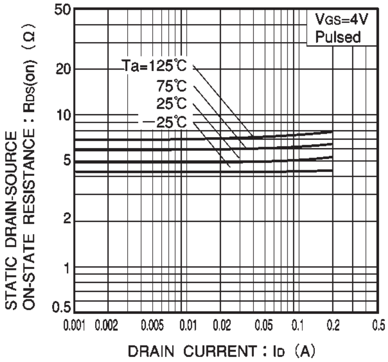


Fig.4 **Static drain-source on-state resistance vs. drain current (Ⅰ)**

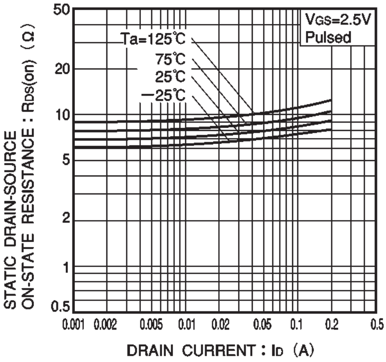


Fig.5 **Static drain-source on-state resistance vs. drain current (Ⅱ)**

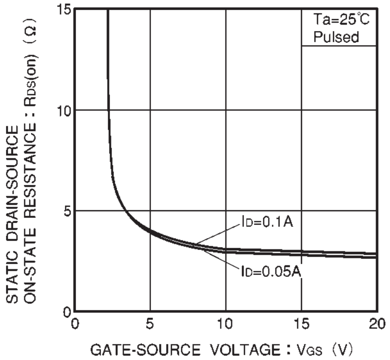


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

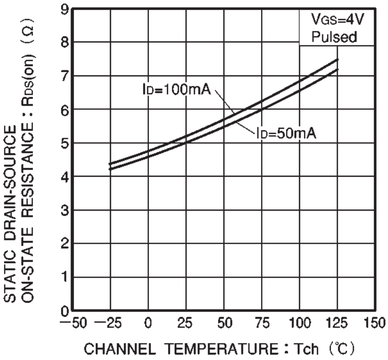


Fig.7 Static drain-source on-state resistance vs. channel temperature

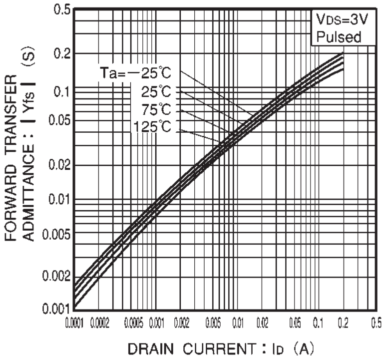


Fig.8 Forward transfer admittance vs. drain current

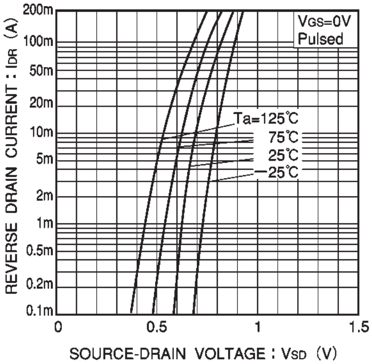


Fig.9 **Reverse drain current vs. source-drain voltage (Ⅰ)**

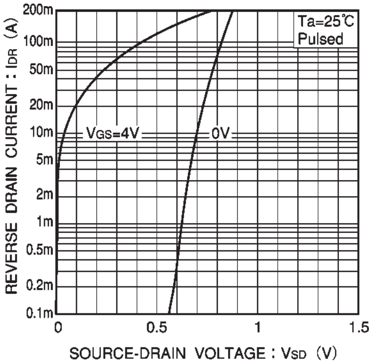


Fig.10 **Reverse drain current vs. source-drain voltage (Ⅱ)**

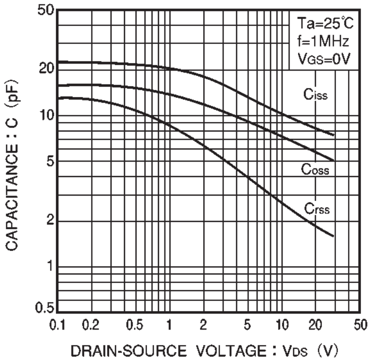


Fig.11 Typical capacitance vs. drain-source voltage

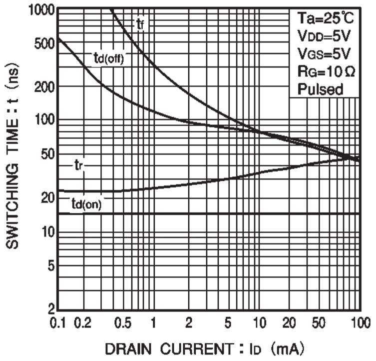


Fig.12 Switching characteristics (See Figures. 13 and 14 for the measurement circuit and resultant waveforms)

●Switching characteristics measurement circuit

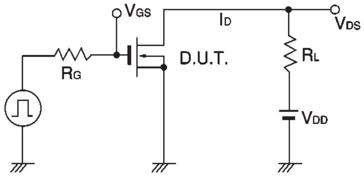


Fig.13 Switching time measurement circuit

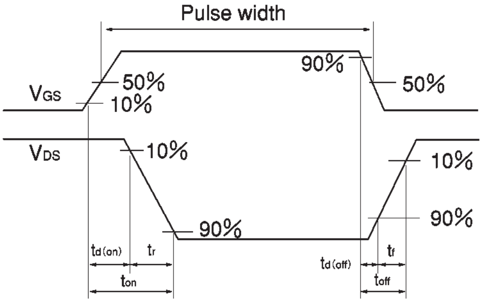


Fig.14 Switching time waveforms