

**MA R 3 0 1 8**

The item can replace 2SK3018

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Approved by:
Checked by:
Issued by:

## **SPECIFICATION**

PRODUCT: N-channel MOSFET

MODEL:      MAR 3 0 1 8      SOT 2 3

**HOPE MICROELECTRONIC CO.,LIMITED**

●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.

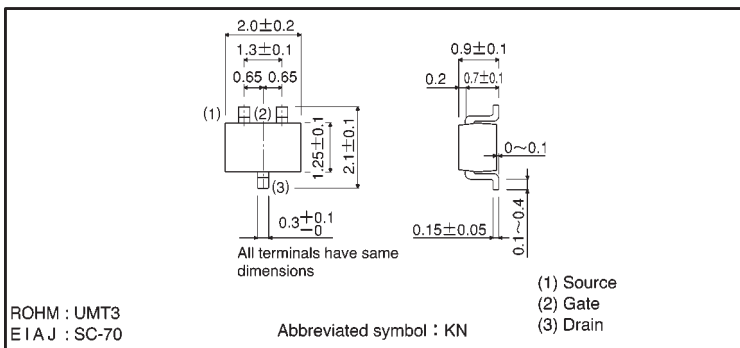
●Applications

Interfacing, switching (30V, 100mA)

●Structure

Silicon N-channel  
MOSFET

●External dimensions (Units: mm)



SOT-23

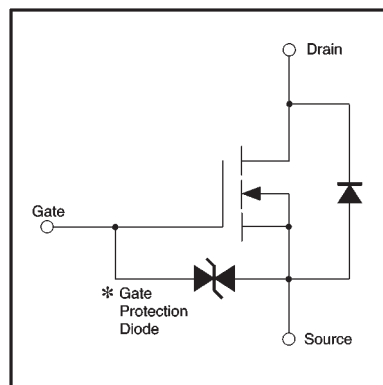
●Absolute maximum ratings (Ta = 25°C)

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	200 mA
Reverse drain current	Continuous	I <sub>DR</sub>	100 mA
	Pulsed	I <sub>DRP</sub> *1	200 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~+150	°C

\*1 Pw ≤ 10 μs, 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	$I_{GSS}$	—	—	$\pm 1$	$\mu A$	$V_{GS} = \pm 20V, V_{DS} = 0V$
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	$\Omega$	$I_D = 10mA, V_{GS} = 4V$
	$R_{DS(on)}$	—	7	13	$\Omega$	$I_D = 1mA, V_{GS} = 2.5V$
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	$R_L = 500 \Omega$
Fall time	$t_f$	—	80	—	ns	$R_{GS} = 10 \Omega$

## ●Electrical characteristic curves

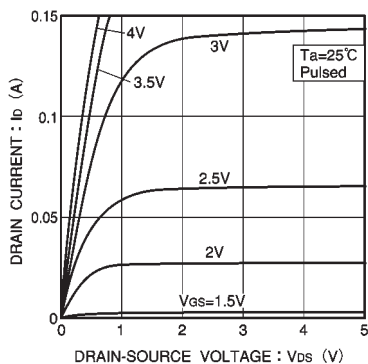


Fig.1 Typical output characteristics

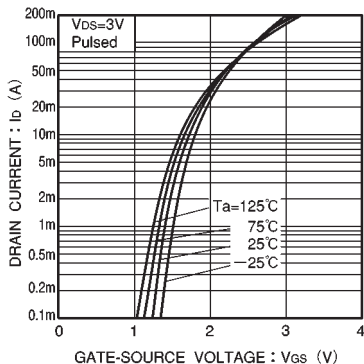


Fig.2 Typical transfer characteristics

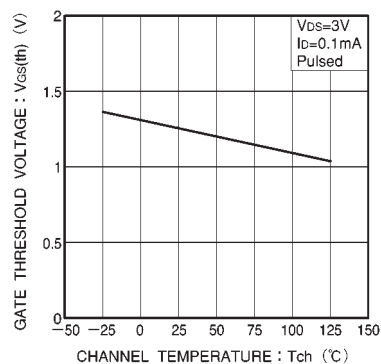


Fig.3 Gate threshold voltage vs. channel temperature

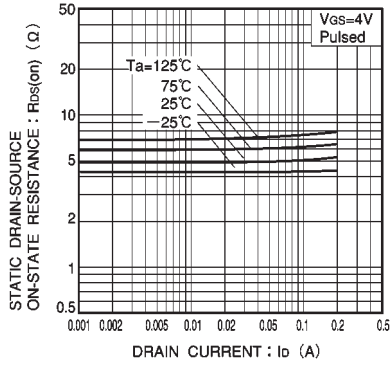


Fig.4 Static drain-source on-state resistance vs. drain current ( I )

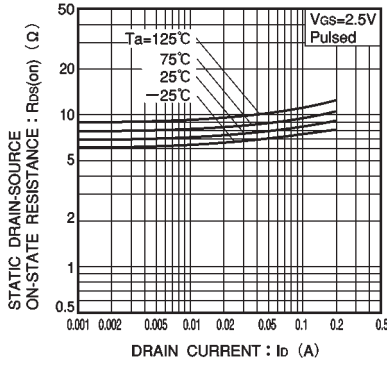


Fig.5 Static drain-source on-state resistance vs. drain current ( II )

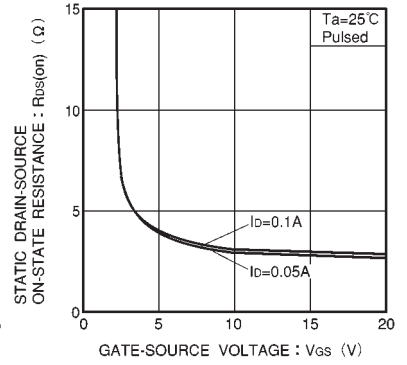


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

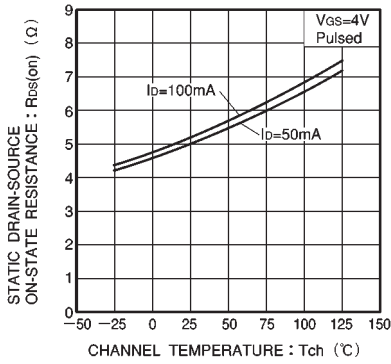


Fig.7 Static drain-source on-state resistance vs. channel temperature

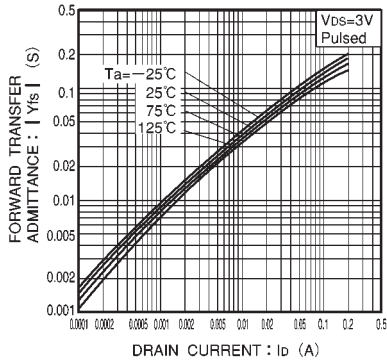


Fig.8 Forward transfer admittance vs. drain current

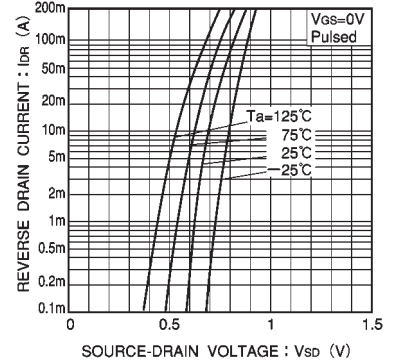


Fig.9 Reverse drain current vs. source-drain voltage ( I )

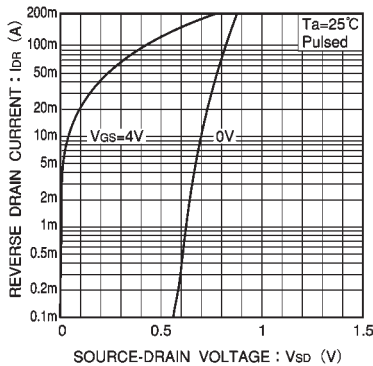


Fig.10 Reverse drain current vs. source-drain voltage ( II )

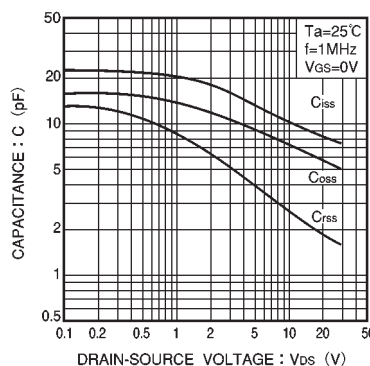


Fig.11 Typical capacitance vs. drain-source voltage

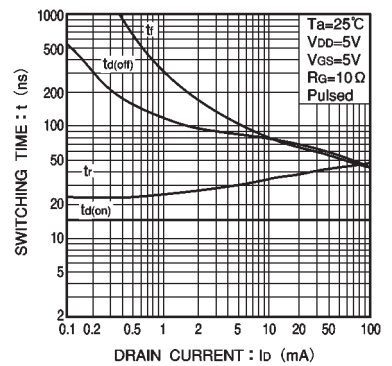


Fig.12 Switching characteristics (See Figures. 13 and 14 for the measurement circuit and resultant waveforms)

● Switching characteristics measurement circuit

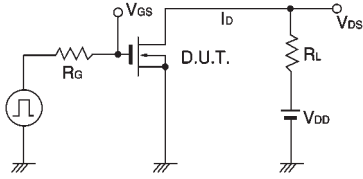


Fig.13 Switching time measurement circuit

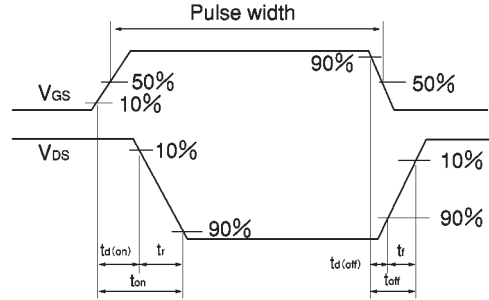


Fig.14 Switching time waveforms