

2.5V Drive Nch MOS FET

2SK3019

●Structure

Silicon N-channel
MOSFET


●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) Drive circuits can be simple.
- 5) Parallel use is easy.

●Packaging specifications

| Type | Package | Taping |
|---------|---|--------|
| | Code | TL |
| | Basic ordering unit (pieces) | 3000 |
| 2SK3019 |  | |

●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 | ±400 | mA |
| Total power dissipation | P _D *2 | 150 | mW | |
| Channel temperature | T _{ch} | 150 | °C | |
| Storage temperature | T _{stg} | -55 to +150 | °C | |

*1 P_w≤10μs, Duty cycle≤1%

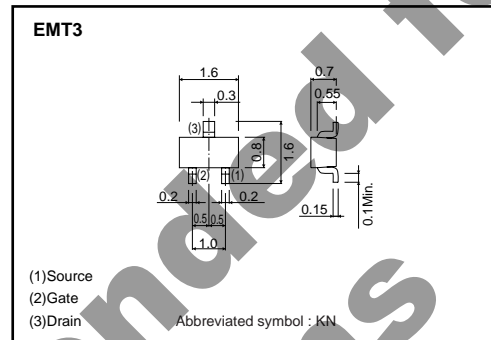
*2 With each pin mounted on the recommended lands.

●Thermal resistance

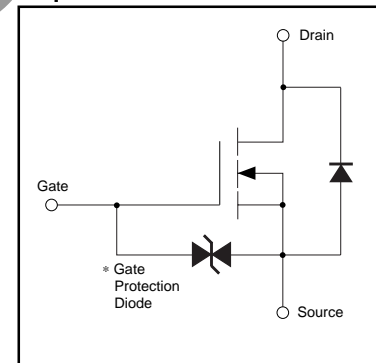
| Parameter | Symbol | Limits | Unit |
|--------------------|-------------------------|--------|--------|
| Channel to ambient | R _{th(ch-a)} * | 833 | °C / W |

* With each pin mounted on the recommended lands.

●Dimensions (Unit : mm)



●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.

Transistor

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | 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} | - | - | 1.0 | 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 | I _D =10mA, V _{DS} =3V |
| 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 _f | - | 80 | - | ns | R _G =10Ω |

●Electrical characteristic curves

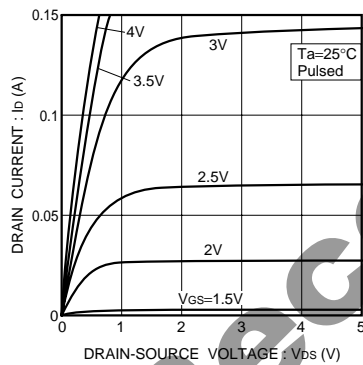


Fig.1 Typical output characteristics

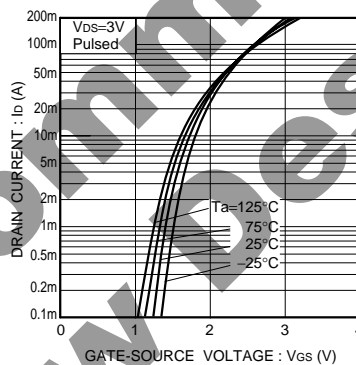


Fig.2 Typical transfer characteristics

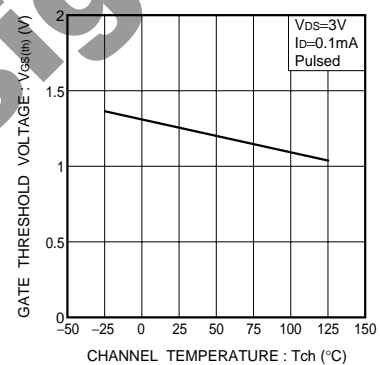


Fig.3 Gate threshold voltage vs. channel temperature

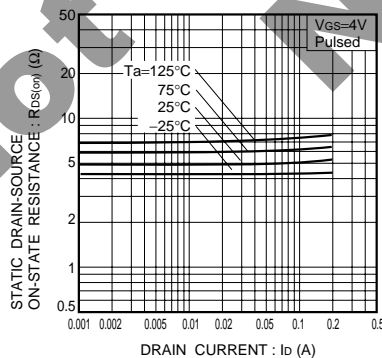


Fig.4 Static drain-source on-state resistance vs. drain current (I)

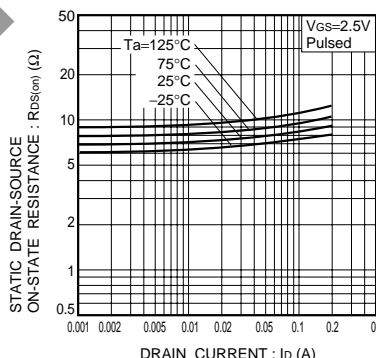


Fig.5 Static drain-source on-state resistance vs. drain current (II)

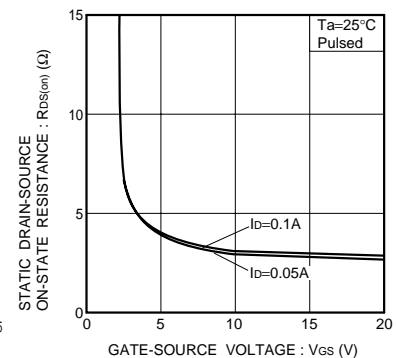


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

Transistor

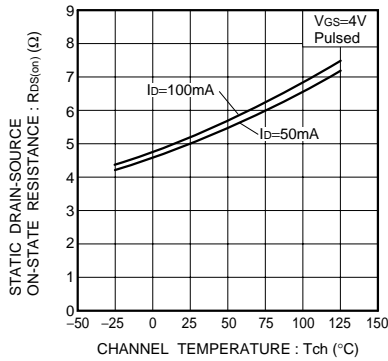


Fig.7 Static drain-source on-state resistance vs. channel temperature

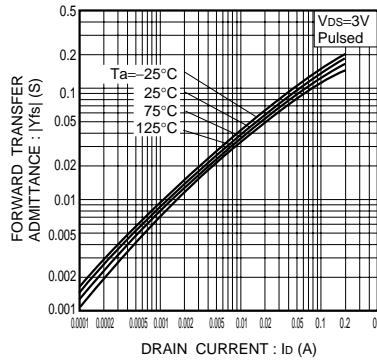


Fig.8 Forward transfer admittance vs. drain current

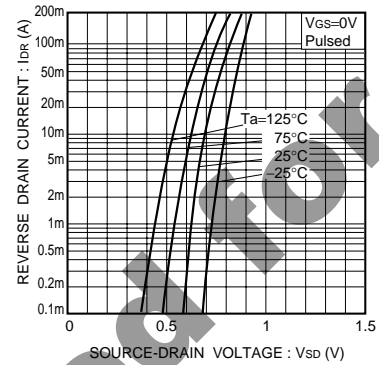


Fig.9 Reverse drain current vs. source-drain voltage (I)

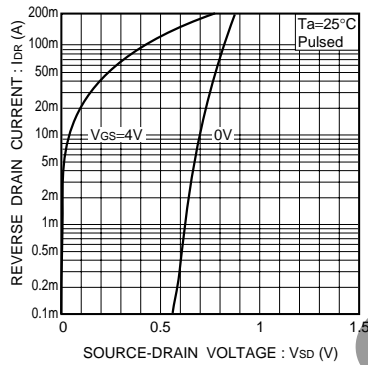


Fig.10 Reverse drain current vs. source-drain voltage (II)

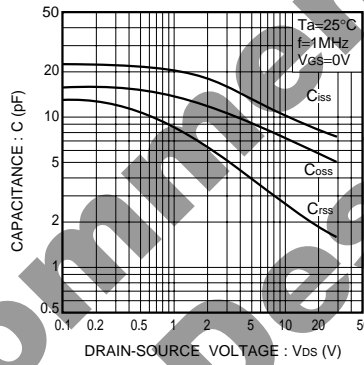


Fig.11 Typical capacitance vs. drain-source voltage

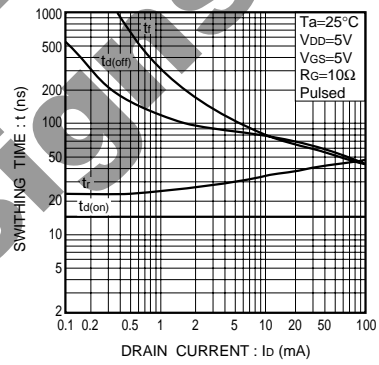


Fig.12 Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

● Switching characteristics measurement circuit

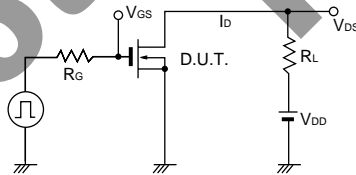


Fig.13 Switching time measurement circuit

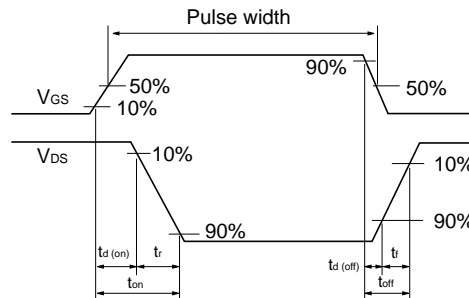


Fig.14 Switching time waveforms

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Телефон: 8 (812) 309-75-97 (многоканальный)

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Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А