TECH PUBLIC
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# 2SK3019

## N-Channel 30-V(D-S) MOSFET

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### Features

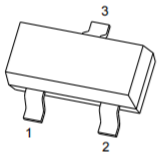
1) Lowon-resistance.
2) Fast switching speed.
3)Lowvoltage drive (2.5V) makes this device idealfor portable equipment.
4) Drive circuits can be simple.
5) Parallel use is easy.
6)ESD protected 2KV HBM

| $V_{(BR)DSS}$ | $R_{DS(on)}$MAX | $I_D$ |
|---|---|---|
| 30V | 2.5Ω@4.5V | 0.1A |
| | 3.0Ω@2.5V | |

### Applications

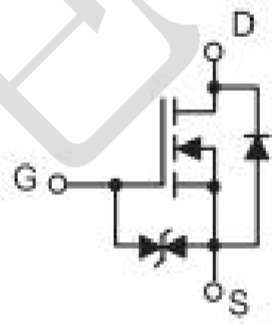
Interfacing, switching (30V, 100mA)

**SOT-523**




1.GATE
2.SOURCE
3.DRAIN

**Equivalent Circuit**




### 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 | 200 | mW |
| Channel temperature | | Tch | 150 | °C |
| Storage temperature | | Tstg | −55 to +150 | °C |

*1 Pw≤10μs, Duty cycle≤1%
*2 With each pin mounted on the recommended lands.

### Thermal resistance

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Channel to ambient | Rth(ch-a) * | 625 | °C / W |

*With each pin mounted on the recommended lands.

# 2SK3019

## N-Channel 30-V(D-S) MOSFET



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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Gate-source leakage | $I_{GSS}$ | – | – | ±100 | nA | $V_{GS}$ = ±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 | $R_{DS(on)}$ | – | | 8 | Ω | $I_D$ = 10mA, $V_{GS}$ = 4V |
| | $R_{DS(on)}$ | – | | 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 | $t_f$ | – | 80 | – | ns | $R_G$ = 10Ω |

### Electrical characteristic curves

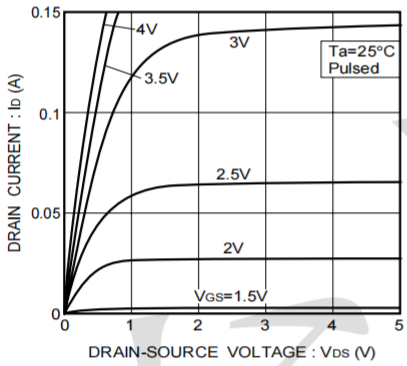



Fig.1 Typical output characteristics

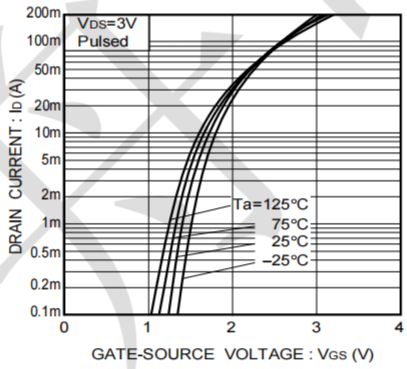



Fig.2 Typical transfer characteristics

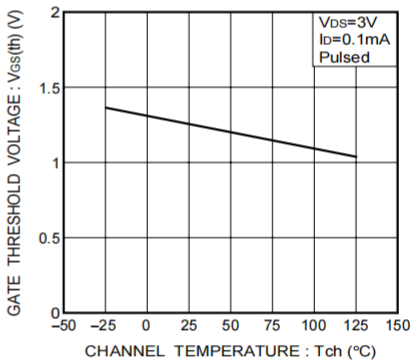



Fig.3 Gate threshold voltage vs. channel temperature

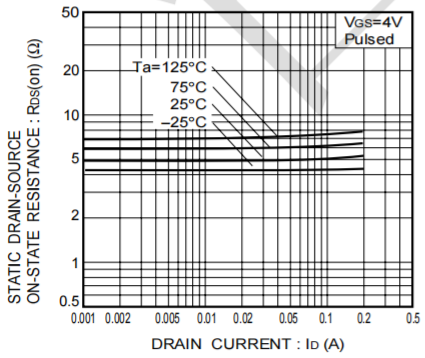



Fig.4 Static drain-source on-state resistance vs. drain current ( I )

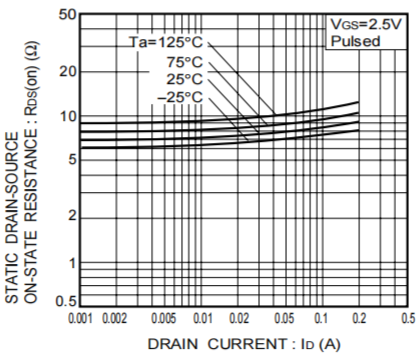



Fig.5 Static drain-source on-state resistance vs. drain current (II)

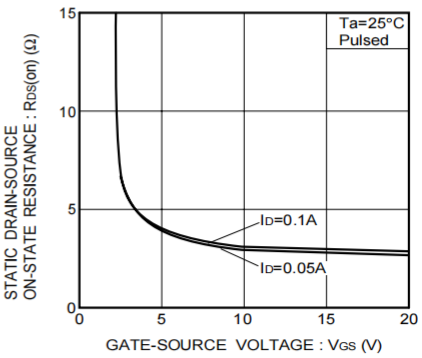



Fig.6 Static drain-source on-state resistance vs. gate-source voltage

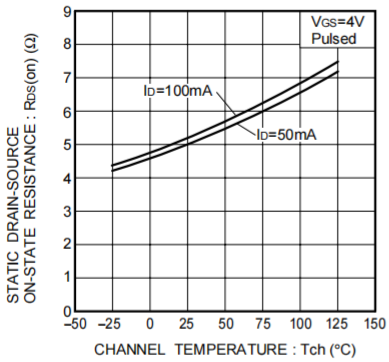



Fig.7 Static drain-source on-state resistance vs. channel temperature

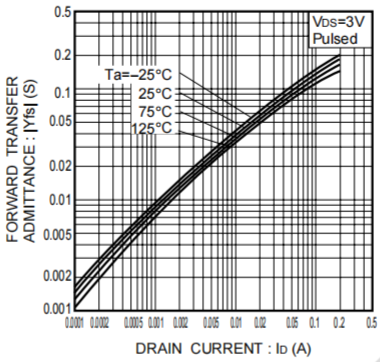



Fig.8 Forward transfer admittance vs. drain current

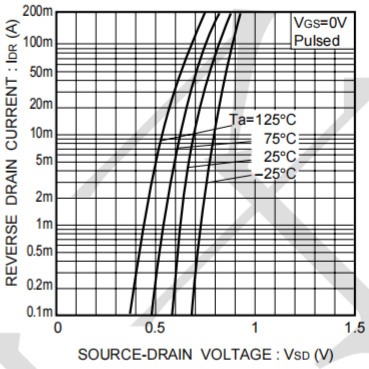



Fig.9 Reverse drain current vs. source-drain voltage ( I )

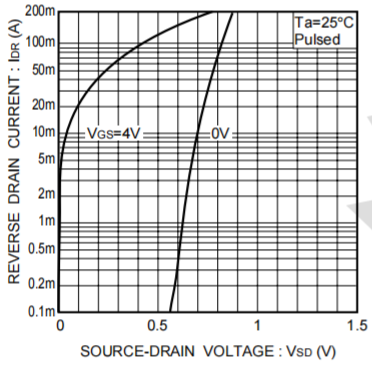



Fig.10 Reverse drain current vs. source-drain voltage ( II )

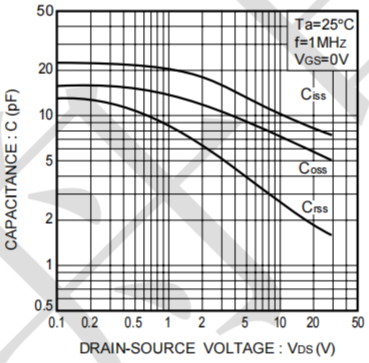



Fig.11 Typical capacitance vs. drain-source voltage

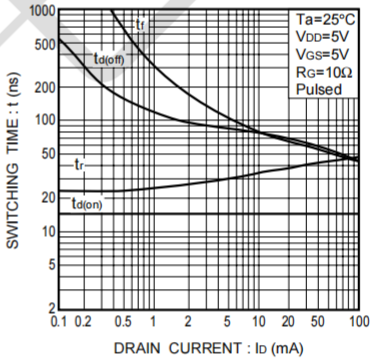



Fig.12 Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

**Switching characteristics measurement circuit**

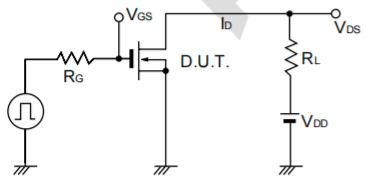



Fig.13 Switching time measurement circuit

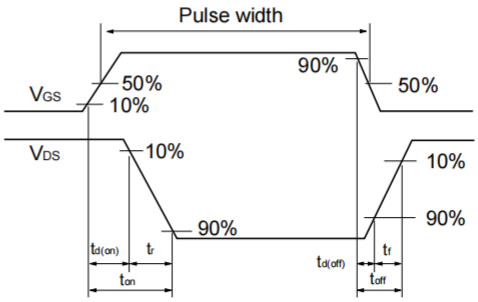
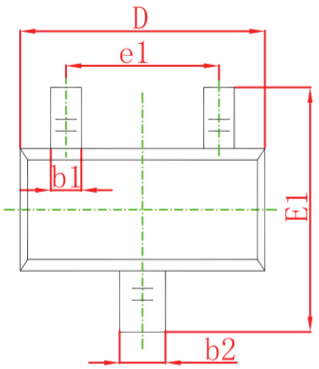
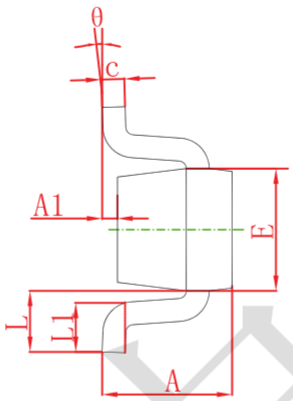
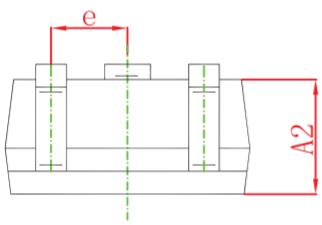



Fig.14 Switching time waveforms

## SOT-523 Package Outline Dimensions

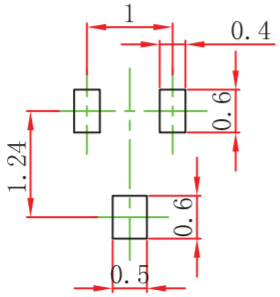



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500 TYP. | | 0.020 TYP. | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400 REF. | | 0.016 REF. | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

## SOT-523 Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.