

2SK3019 N-Channel 30-V(D-S) MOSFET

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

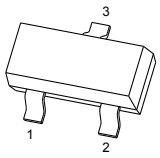
●Features

- 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.
- ⌀ ESD protected 2KV HBM

●Applications

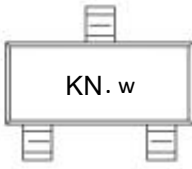
Interfacing, switching (30V, 100mA)

SOT-523

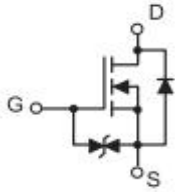


1.GATE
2.SOURCE
3.DRAIN

MARKING



Equivalent Circuit



*w: week code

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 $P_w \leq 10\mu s$, Duty cycle ≤ 1%

*2 With each pin mounted on the recommended lands.

Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}^{*}$	625	°C / W

*With each pin mounted on the recommended lands.

Electrical characteristics (Ta= 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
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	μA	$V_{DS} = 30V, V_{GS} = 0V$
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	$R_{DS(on)}$	—	—	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	$R_L = 500\Omega$
Fall time	t_f	—	80	—	ns	$R_G = 10\Omega$

Electrical characteristic curves

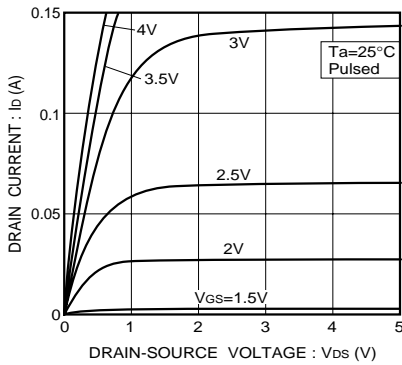


Fig.1 Typical output characteristics

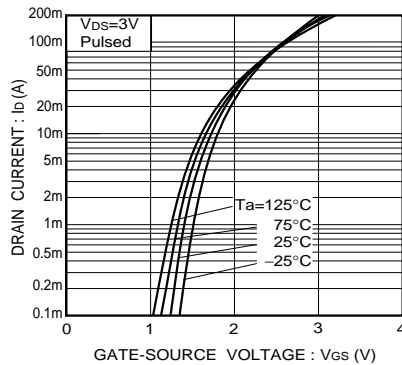


Fig.2 Typical transfer characteristics

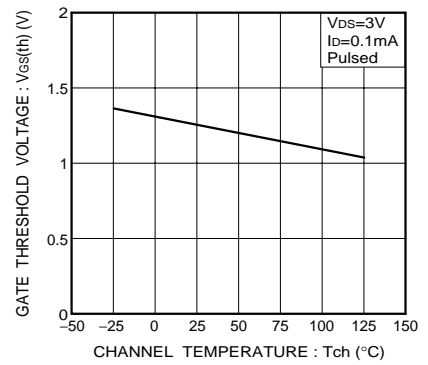


Fig.3 Gate threshold voltage vs. channel temperature

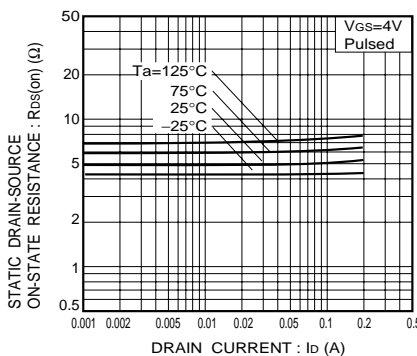


Fig.4 Static drain-source on-state resistance vs. drain current (I)

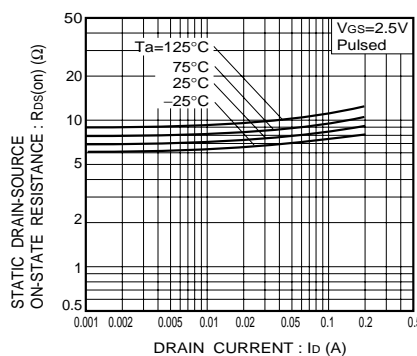


Fig.5 Static drain-source on-state resistance vs. drain current (II)

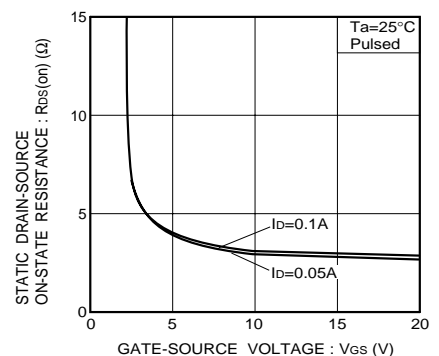


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

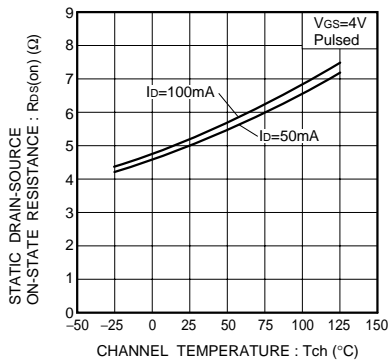


Fig.7 Static drain-source on-state resistance vs. channel temperature

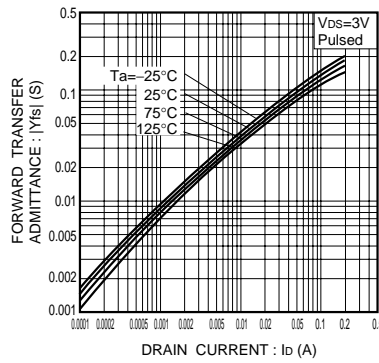


Fig.8 Forward transfer admittance vs. drain current

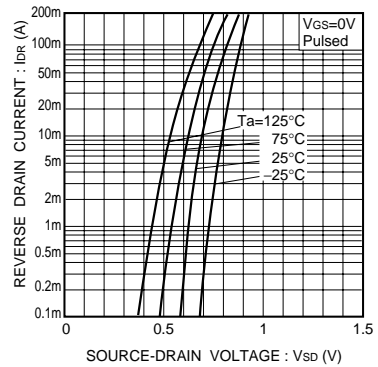


Fig.9 Reverse drain current vs. source-drain voltage (I)

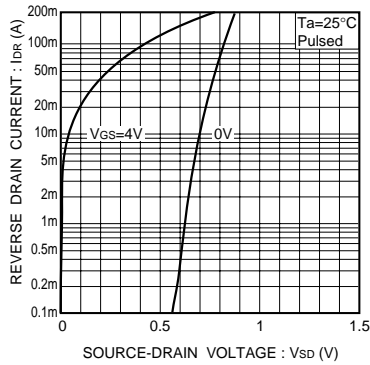


Fig.10 Reverse drain current vs. source-drain voltage (II)

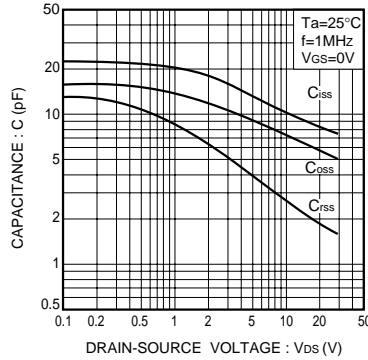


Fig.11 Typical capacitance vs. drain-source voltage

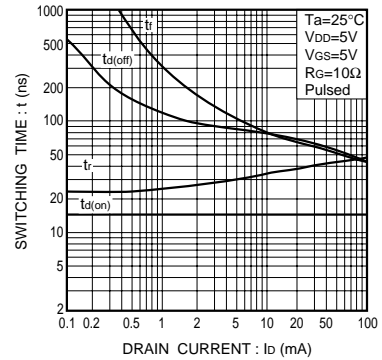


Fig.12 Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

● Switching characteristics measurement circuit

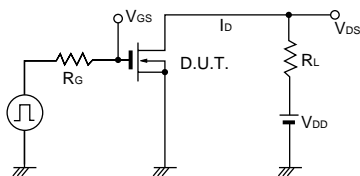


Fig.13 Switching time measurement circuit

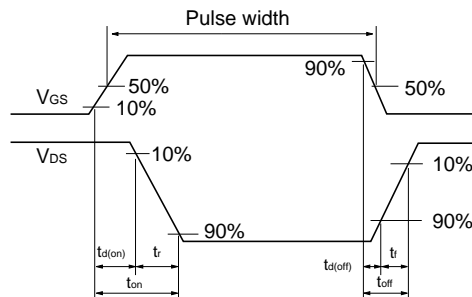
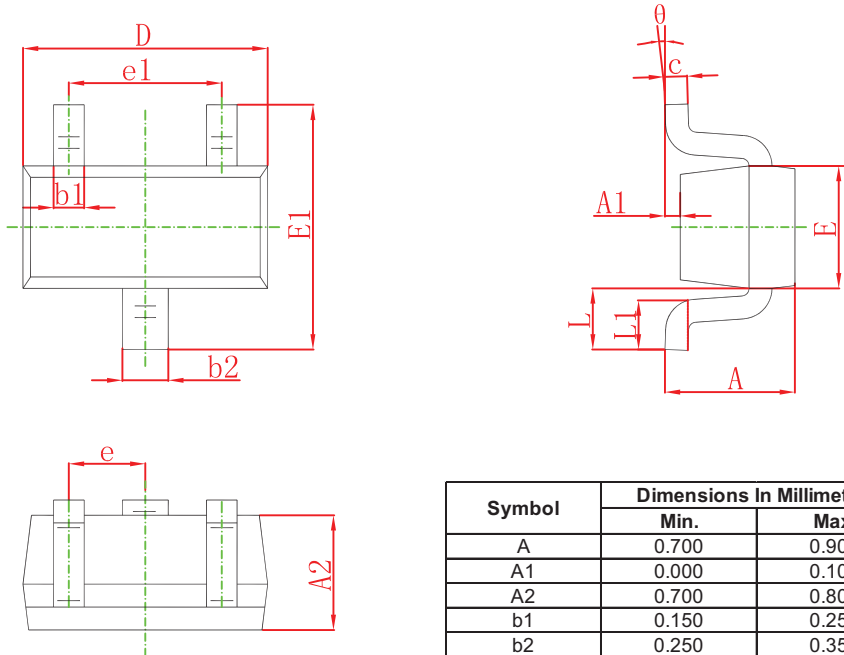


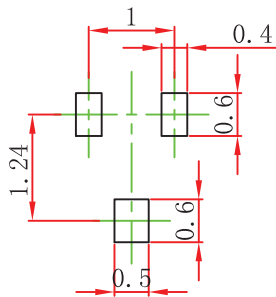
Fig.14 Switching time waveforms

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.