# 2.5V Drive Nch MOS FET

# 2SK3541

#### 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

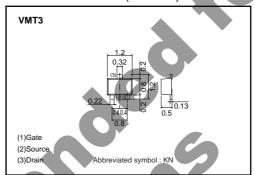
Туре	Package	Taping
	Code	T2L
	Basic ordering unit (pieces)	8000
2SK354	1	0

### ● Absolute maximum ratings (Ta=25°C)

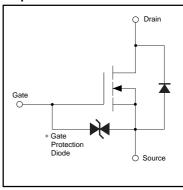
Paramete	Symbol	Limits	Unit			
Drain-source voltage	VDSS	30	V			
Gate-source voltage		Vgss	±20	V		
Drain current	Continuous	lo	±100	mA		
Drain current	Pulsed	IDP*1	±400	mA		
Total power dissipation		Po*2	150	mW		
Channel temperature		Tch	150	°C		
Storage temperature	Tstg	-55 to +150	°C			

<sup>\*1</sup> Pw≤10μs, Duty cycle≤1%

#### ●External 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.

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 $<sup>\</sup>ast 2$  With each pin mounted on the recommended lands.

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	Igss	-	-	±1	μΑ	Vgs=±20V, Vps=0V
Drain-source breakdown voltage	V(BR)DSS	30	_	_	V	In=10μA, Vgs=0V
Zero gate voltage drain current	IDSS	_	_	1.0	μΑ	Vps=30V, Vgs=0V
Gate threshold voltage	VGS(th)	0.8	_	1.5	V	V <sub>D</sub> S=3V, I <sub>D</sub> =100μA
Static drain-source on-state	RDS(on)	_	5	8	Ω	In=10mA, Vgs=4V
resistance	RDS(on)	-	7	13	Ω	In=1mA, Vgs=2.5V
Forward transfer admittance	Yfs	20	-	_	mS	In=10mA, Vns=3V
Input capacitance	Ciss	-	13	_	pF	V <sub>DS</sub> =5V
Output capacitance	Coss	-	9	_	pF	Vgs=0V
Reverse transfer capacitance	Crss	_	4	_	pF	f=1MHz
Turn-on delay time	td(on)	-	15	-	ns	ID=10mA, VDD ≒5V
Rise time	tr	-	35	_	ns	V <sub>G</sub> s=5V
Turn-off delay time	td(off)	-	80	_	ns	RL=500Ω
Fall time	tf	-	80	-	ns	R <sub>G</sub> =10Ω

#### •Electrical characteristic curves

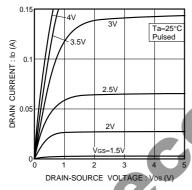


Fig.1 Typical output characteristics

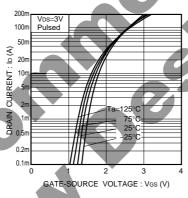


Fig.2 Typical transfer characteristics

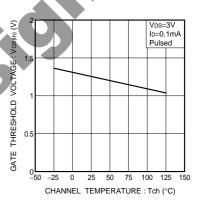


Fig.3 Gate threshold voltage vs. channel temperature

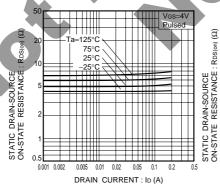


Fig.4 Static drain-source on-state resistance vs. drain current (I)

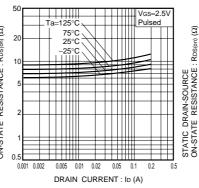


Fig.5 Static drain-source on-state resistance vs. drain current (II)

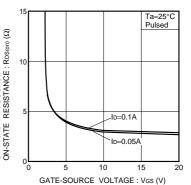


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

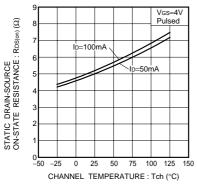


Fig.7 Static drain-source on-state resistance vs. channel temperature

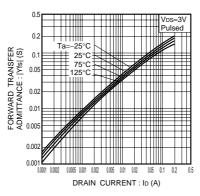


Fig.8 Forward transfer admittance vs. drain current

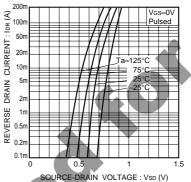


Fig.9 Reverse drain current vs. source-drain voltage (I)

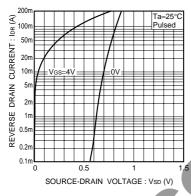


Fig.10 Reverse drain current vs. source-drain voltage (II)

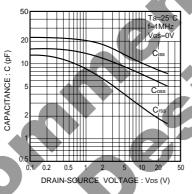


Fig.11 Typical capacitance vs. drain-source voltage

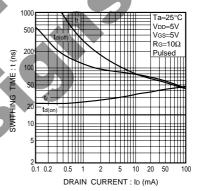


Fig.12 Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

### Switching characteristics measurement circuit

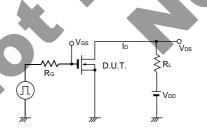


Fig.13 Switching time measurement circuit

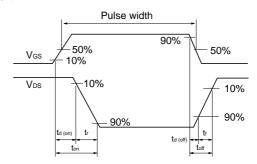


Fig.14 Switching time waveforms

Rev.B

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