Interface and switching (30V, 200mA)

2SK2731

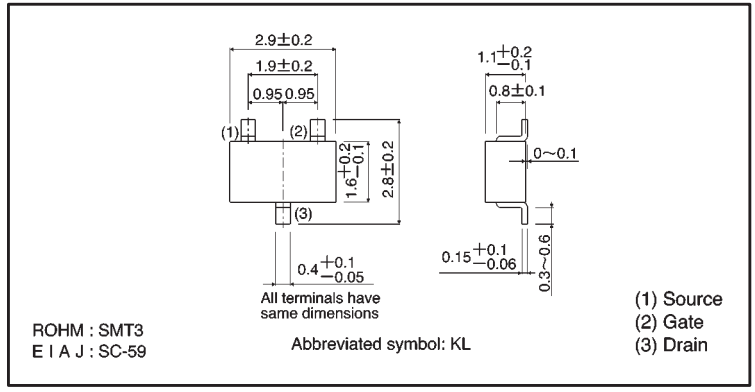
●Features

1) Low on-resistance.
2) Fast switching speed.
3) Low-voltage drive (4V).
4) Easily designed drive circuits.
5) Easy to parallel.

●Structure

Silicon N-channel
MOSFET

●External dimensions (Units: mm)

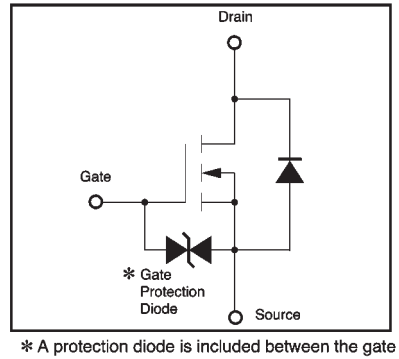


●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	30	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	200	mA
	Pulsed	I_{DP}*	800	mA
Reverse drain current	Continuous	I_{DR}	200	mA
	Pulsed	I_{DRP}*	800	mA
Total power dissipation		P_D	200	mW
Channel temperature		Tch	150	℃
Storage temperature		Tstg	−55~+150	℃

* Pw≦10 μs, Duty cycle≦1%

●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 voltage are exceeded.

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage	I_{GSS}	—	—	±10	μA	V_{GS}=±20V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	30	—	—	V	I_D=1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	V_{DS}=30V, V_{GS}=0V
Gate threshold voltage	$V_{GS\,(th)}$	1.0	—	2.5	V	V_{DS}=10V, I_D=1mA
Static drain-source on-state resistance	$R_{DS\,(on)}$	—	1.5	2.8	Ω	I_D=0.1A, V_{GS}=10V
		—	2.8	4.5		I_D=0.1A, V_{GS}=4V
Forward transfer admittance	$\|Y_{fs}\|$*	100	—	—	mS	I_D=0.1A, V_{DS}=10V
Input capacitance	C_{iss}	—	25	—	pF	V_{DS}=10V
Output capacitance	C_{oss}	—	15	—	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	—	10	—	pF	f=1MHz
Turn-on delay time	$t_{d\,(on)}$	—	15	—	ns	I_D=0.1A, V_{DD}≒15V
Rise time	t_r	—	20	—	ns	V_{GS}=10V
Turn-off delay time	$t_{d\,(off)}$	—	90	—	ns	R_L=150Ω
Fall time	t_f	—	100	—	ns	R_G=10Ω

* Pw≦300 μs, Duty cycle≦1%

●Packaging specifications

Type	Package	Taping
	Code	T146
	Basic ordering unit (pieces)	3000
2SK2731		○

●Electrical characteristic curves

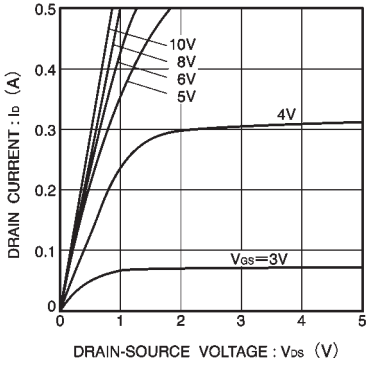


Fig.1 Typical output characteristics

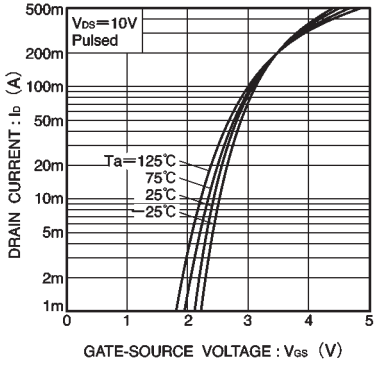


Fig.2 Typical transfer characteristics

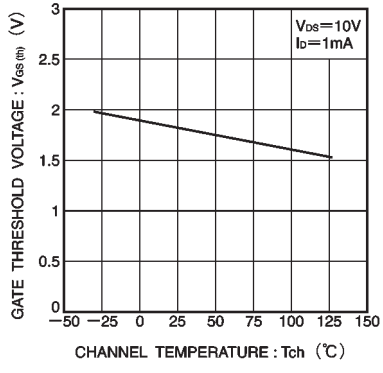


Fig.3 Gate threshold voltage vs. channel temperature

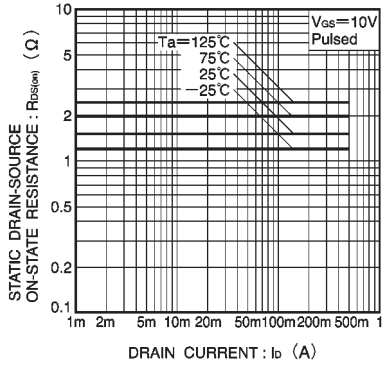


Fig.4 Static drain-source on-state resistance vs. drain current (Ⅰ)

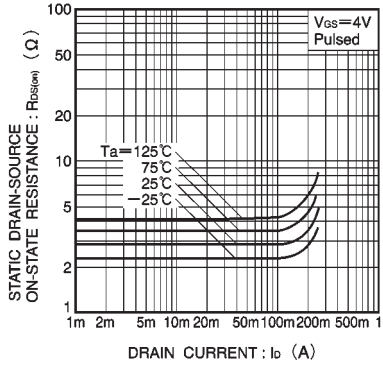


Fig.5 Static drain-source on-state resistance vs. drain current (Ⅱ)

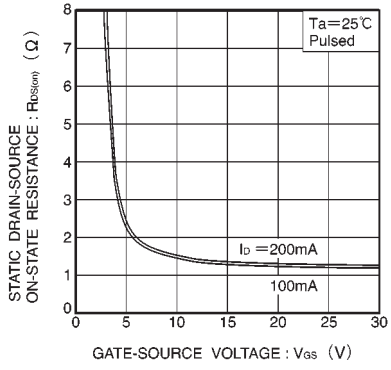


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

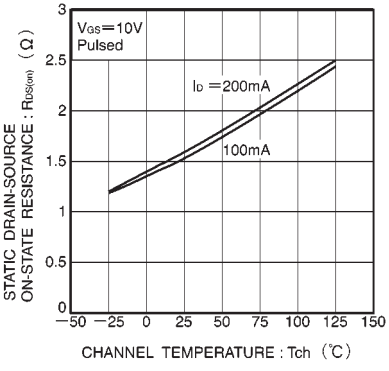


Fig.7 Static drain-source on-state resistance vs. channel temperature

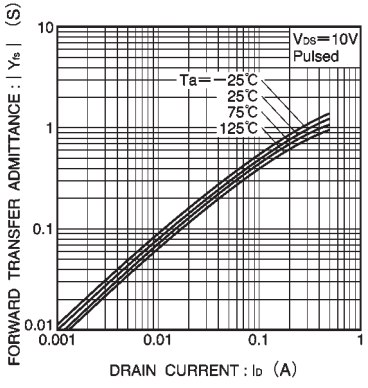


Fig.8 Forward transfer admittance vs. drain current

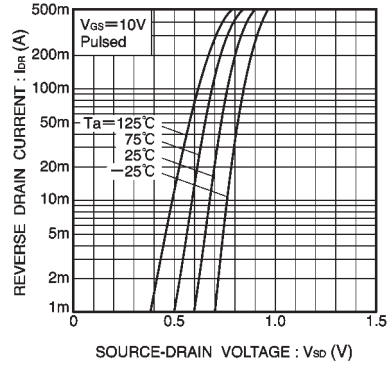


Fig.9 Reverse drain current vs. source-drain voltage (Ⅰ)

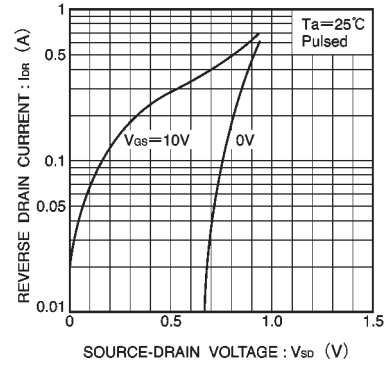


Fig.10 Reverse drain current vs. source-drain voltage (Ⅱ)

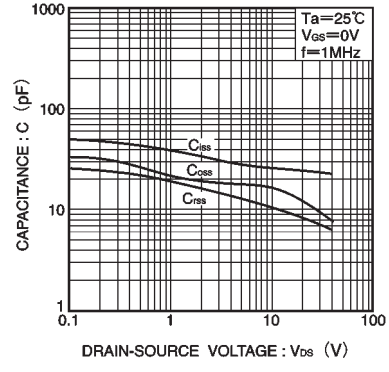


Fig.11 Typical capacitance vs. drain-source voltage

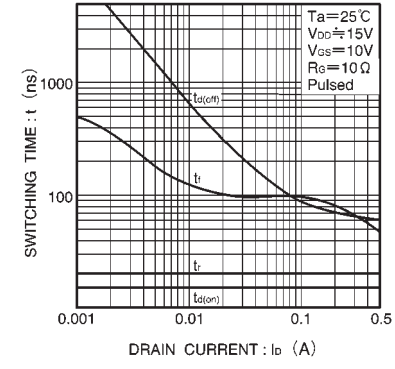


Fig.12 Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

●Switching characteristics measurement circuit

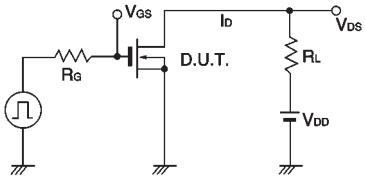


Fig.13 Switching time measurement circuit

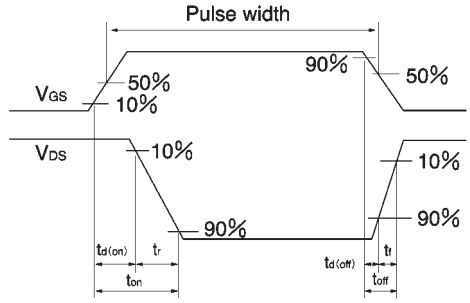


Fig.14 Switching time waveforms

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