Interface and switching (30V, 200mA)

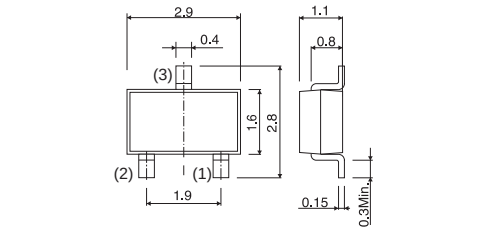
2SK2731

●Structure
Silicon N-channel
MOSFET

●Features
1) Low on-resistance.
2) High-speed switching.
3) Low-voltage drive(4V).

●Application
Switching

●Dimensions (Unit : mm)



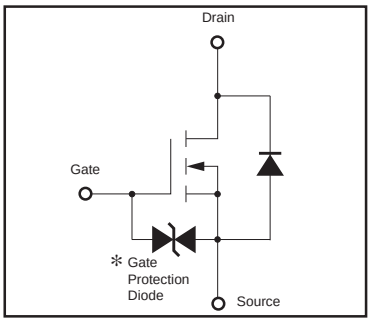
ROHM : SMT3
E I A J : SC-59
Abbreviated symbol : KL

(1) Source
(2) Gate
(3) Drain

●Packaging specifications

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

●Inner 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.

●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
Total power dissipation		P_D	200	mW
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55 to +150	°C

* Pw≤10μs, Duty cycle≤1%

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	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 ≤ 300ms, Duty cycle ≤ 1%

●Electrical characteristic curves

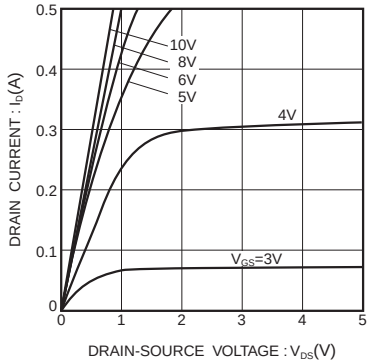


Fig.1 Typical Output Characteristics

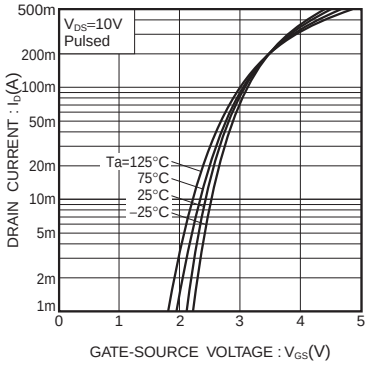


Fig.2 Typical Transfer Characteristics

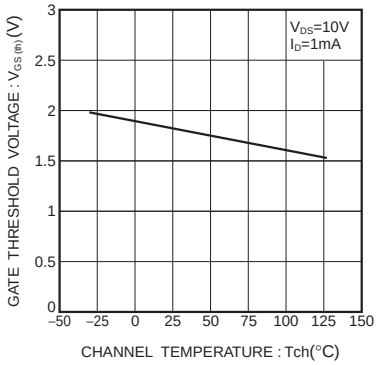


Fig.3 Gate Threshold Voltage vs. Channel Temperature

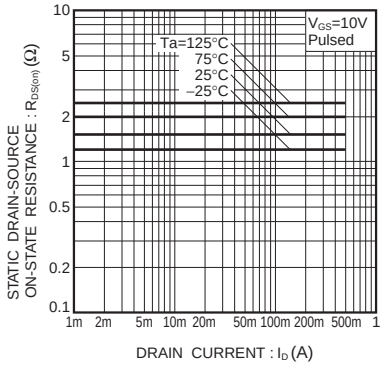


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (Ⅰ)

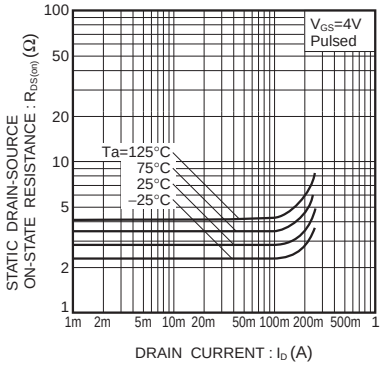


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (Ⅱ)

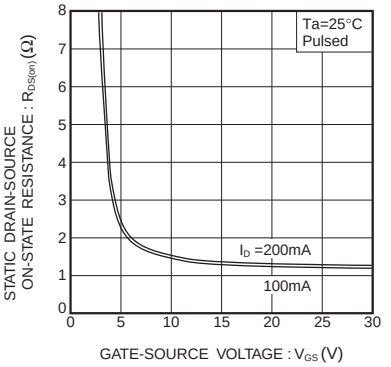


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

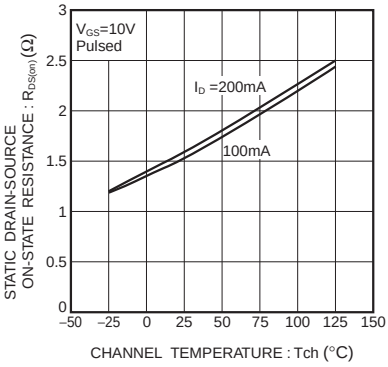


Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

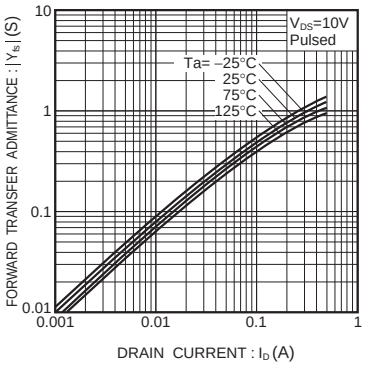


Fig.8 Forward Transfer Admittance vs. Drain Current

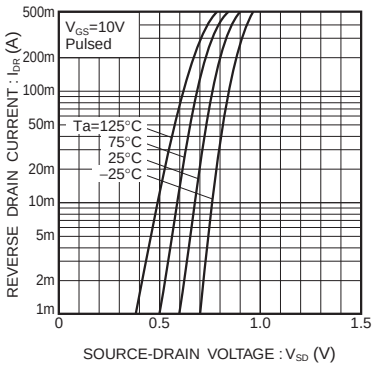


Fig.9 Reverse Drain Current vs. Source-Drain Voltage (I)

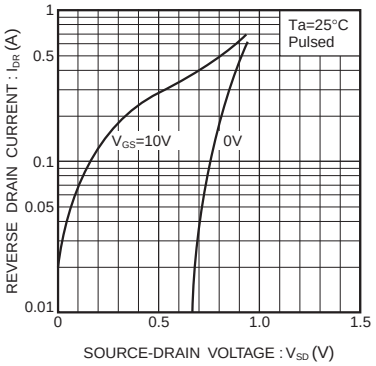


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (II)

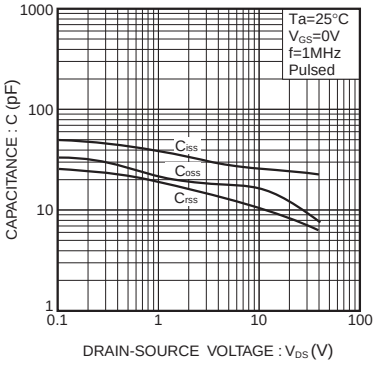


Fig.11 Typical Capacitance vs. Drain-Source Voltage

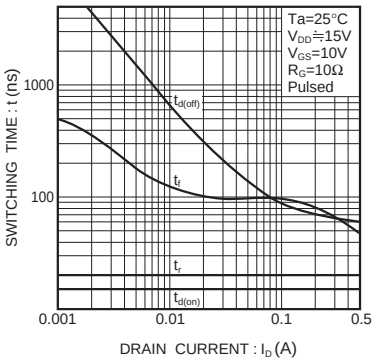


Fig.12 Switching Characteristics (See Figure. 13 and 14 for measurement circuit)

●Measurement circuit

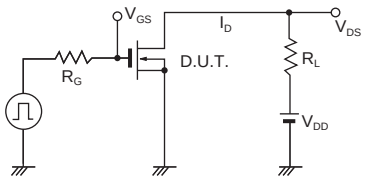


Fig.13 Switching Time Test Circuit

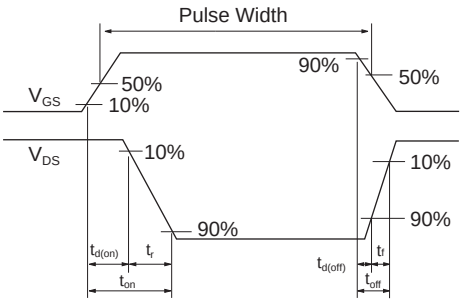


Fig.14 Switching Time Waveforms

Notes

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