Interface and switching (60V, 115mA)

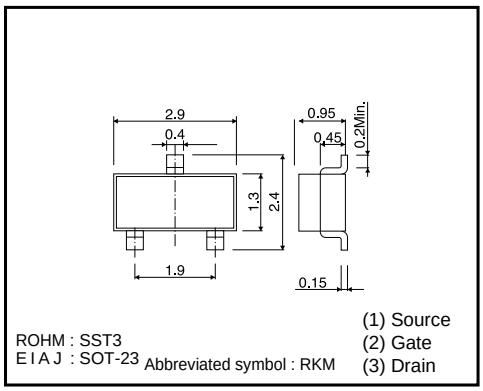
RK7002

●**Structure**
Silicon N-channel
MOSFET

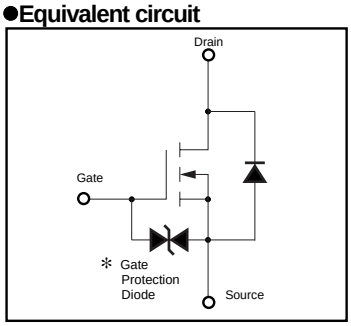
●**Features**
1) Low on-resistance.
2) High-speed switching.
3) Low-voltage drive(5V).

●**Application**
Switching

●**Dimensions** (Unit : mm)



●**Equivalent circuit**



✻ A protection diode has been built in between the gate and the source to protect against static electricity when the product is in use.
Use the protection circuit when fixed voltages are exceeded.

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

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	60	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	115	mA
	Pulsed	I_{DP}*1	800	mA
Reverse drain current	Continuous	I_{DR}	115	mA
	Pulsed	I_{DRP}*1	800	mA
Total power dissipation		P_D*2	225	mW
Channel temperature		Tch	150	°C
Storage temperature		Tstg	–55 to +150	°C

✻1 Pw≤10μs, Duty cycle≤1%
✻2 When mounted on a 1x0.75x0.062 inch glass epoxy board.

●**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	$V_{(BR)DSS}$	60	–	–	V	I_D=10μA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	–	–	1.0	μA	V_{DS}= 60V, V_{GS}= 0V
Gate threshold voltage	$V_{GS\,(th)}$	1.0	1.85	2.5	V	V_{DS}= 10V, I_D= 1mA
Static drain-source on-state resistance	$R_{DS(on)}$ *	–	–	7.5	Ω	I_D= 0.5A, V_{GS}=10V
		–	–	7.5		I_D= 0.05A, V_{GS}= 5V
Forward transfer admittance	$\|Y_{fs}\|$*	80	–	–	mS	I_D= 0.2A, V_{DS}= 10V
Input capacitance	C_{iss}	–	25	50	pF	V_{DS}= 25V
Output capacitance	C_{oss}	–	10	25	pF	V_{GS}= 0V
Reverse transfer capacitance	C_{rss}	–	3.0	5.0	pF	f= 1MHz
Turn-on delay time	$t_{d(on)}$*	–	12	20	ns	I_D= 0.2A, V_{DD} ≒ 30V, V_{GS}=10V,
Turn-off delay time	$t_{d(off)}$*	–	20	30	ns	R_L=150Ω, R_G=10Ω

* Pw≤300μs, Duty cycle≤1%

●**Electrical characteristic curves**

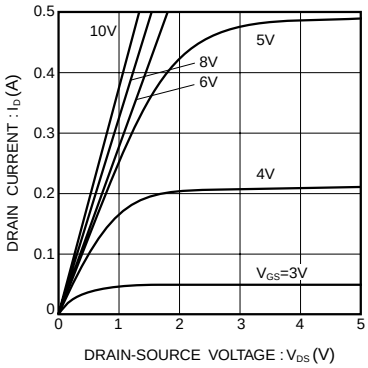


Fig.1 Typical Output Characteristics

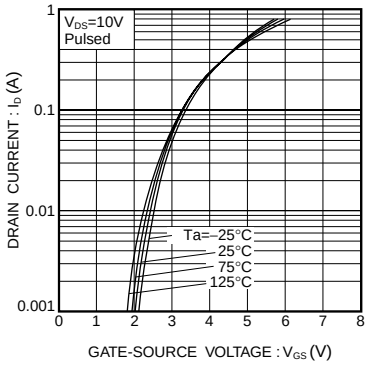


Fig.2 Typical Transfer Characteristics

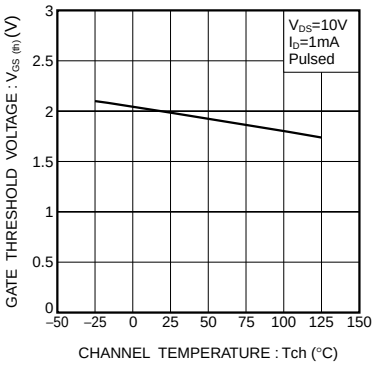


Fig.3 Gate Threshold Voltage vs. Channel Temperature

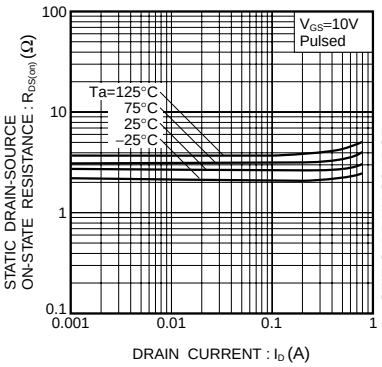


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

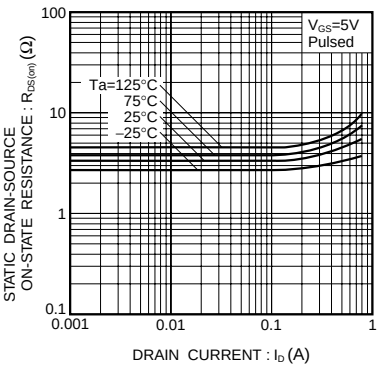


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (II)

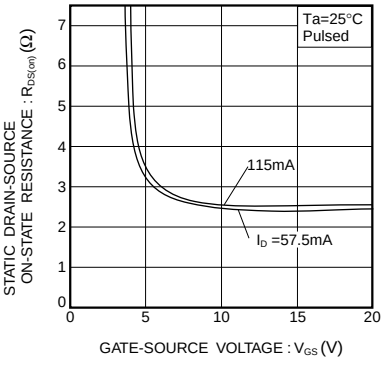


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

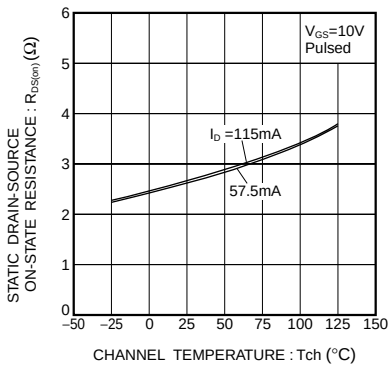


Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

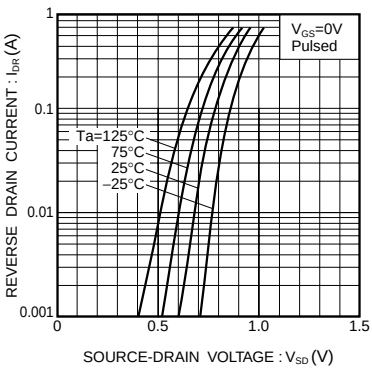


Fig.8 Reverse Drain Current vs. Source-Drain Voltage (I)

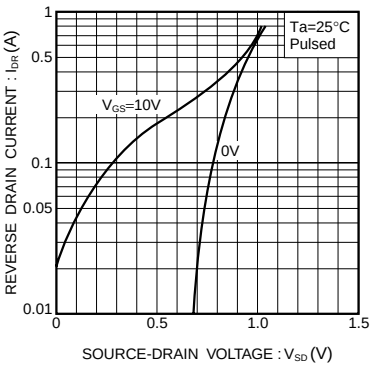


Fig.9 Reverse Drain Current vs. Source-Drain Voltage (II)

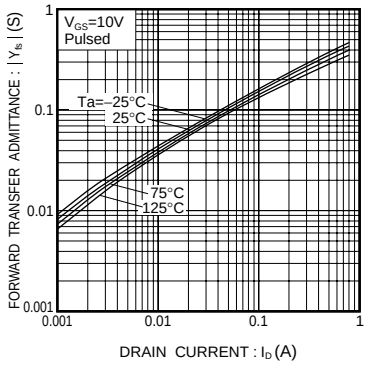


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (II)

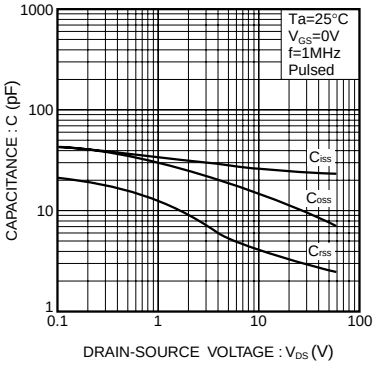


Fig.11 Typical Capacitance vs. Drain-Source Voltage

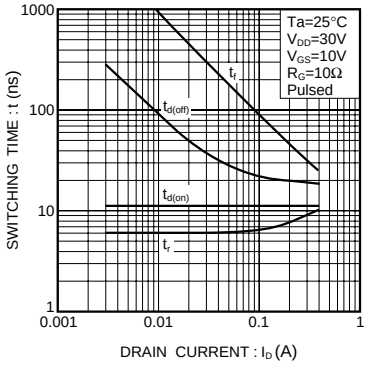


Fig.12 Switching Characteristics (See Figure. 13 and 14 for measurement circuits)

●Measurement circuit

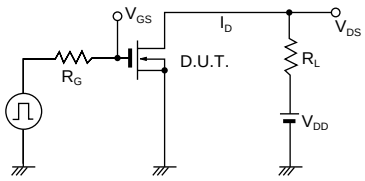


Fig.13 Switching Time Test Circuit

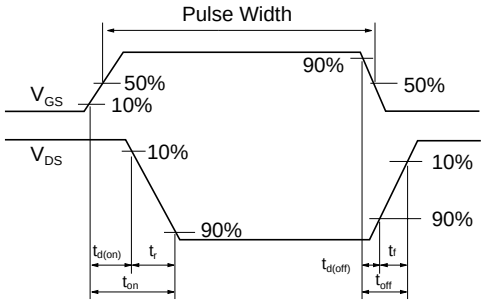


Fig.14 Switching Time Waveforms

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