2.5V Drive Nch MOSFET

RK7002B

● **Structure**

Silicon N-channel MOSFET

●**Features**

1) High speed switing.

2) Small package(SST3).

3) Low voltage drive(2.5V drive).

● **Application**

Switching

● **Dimensions** (Unit : mm)

Abbreviated symbol : RKT

● **Packaging specifications**

Type	Package		Taping
	Code		T116
	Basic ordering unit (pieces)		3000
RK7002B			O

● **Inner circuit**

∗1 ESD PROTECTION DIODE
∗2 BODY DIODE

(1) SOURCE
(2) GATE
(3) DRAIN

● **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	±250	mA
	Pulsed	I_{DP} [*1]	±1	A
Source current (Body Diode)	Continuous	I_S	150	mA
	Pulsed	I_{SP} [*1]	1	A
Total power dissipation		P_D [*2]	0.2	W
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	−55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%

*2 Each terminal mounted on a recommended land.

● **Thermal resistance**

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth (ch-a)[*]	625	°C / W

* Each terminal mounted on a recommended land.
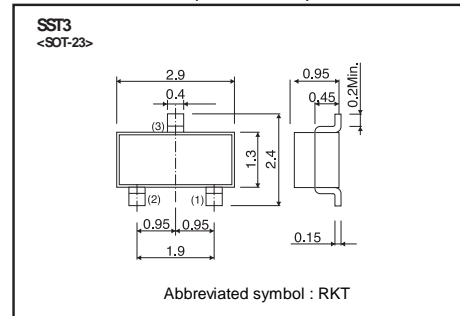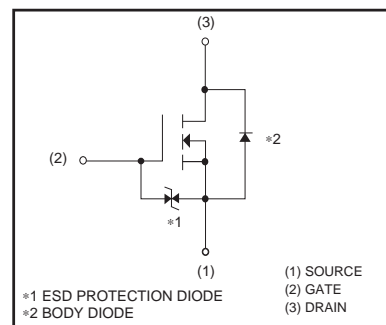
● **Electrical characteristics** (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±10	μA	$V_{GS}=±20V$, $V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	60	-	-	V	$I_D=1mA$, $V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS}=60V$, $V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	1.0	-	2.3	V	$V_{DS}=10V$, $I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}$*	-	1.7	2.4	Ω	$I_D=250mA$, $V_{GS}=10V$
		-	2.1	3.0		$I_D=250mA$, $V_{GS}=4.5V$
		-	2.3	3.2		$I_D=250mA$, $V_{GS}=4.0V$
		-	3.0	12.0		$I_D=10mA$, $V_{GS}=2.5V$
Forward transfer admittance	$\mid Y_{fs} \mid$*	0.25	-	-	S	$I_D=250mA$, $V_{DS}=10V$
Input capacitance	C_{iss}	-	15	-	pF	$V_{DS}=25V$
Output capacitance	C_{oss}	-	4.5	-	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}		2	-	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$*	-	3.5	-	ns	$I_D=100mA$, $V_{DD}≒30V$
Rise time	t_r*	-	5	-	ns	$V_{GS}=10V$
Turn-off delay time	$t_{d(off)}$*	-	18	-	ns	$R_L≒300Ω$
Fall time	t_f*	-	28	-	ns	$R_G=10Ω$

*Pulsed

● **Body diode characteristics** (Source-Drain) (Ta = 25°C)

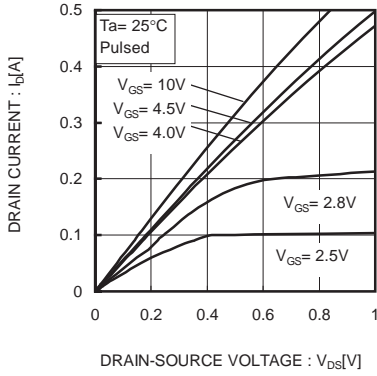| Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}*	-	-	1.2	V	$I_s=250mA$, $V_{GS}=0V$

*Pulsed

●**Electrical characteristics curves**

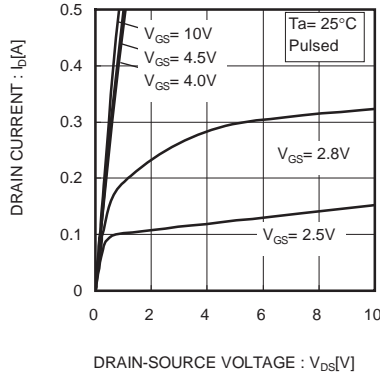Fig.1 Typical Output Characteristics(I)

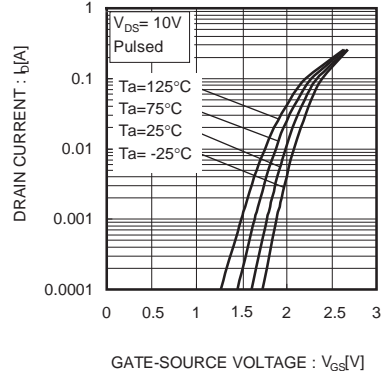

Fig.2 Typical Output Characteristics(II)

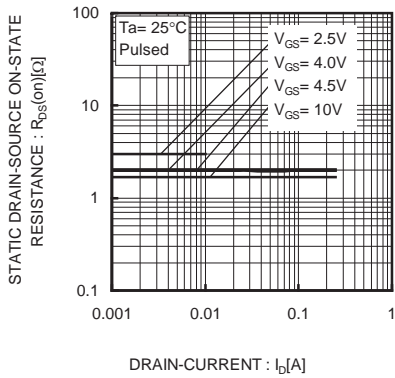Fig.3 Typical Transfer Characteristics

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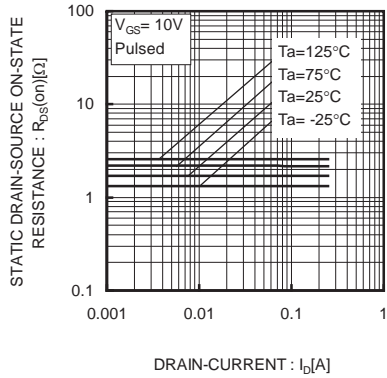Resistance vs. Drain Current(I)

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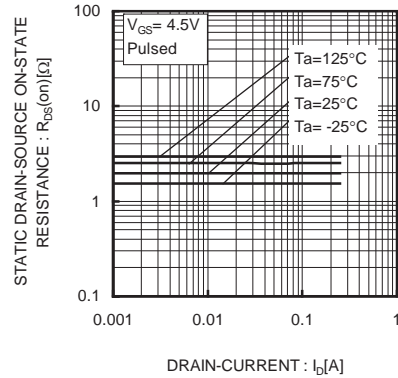Resistance vs. Drain Current(II)

Fig.6 Static Drain-Source On-State
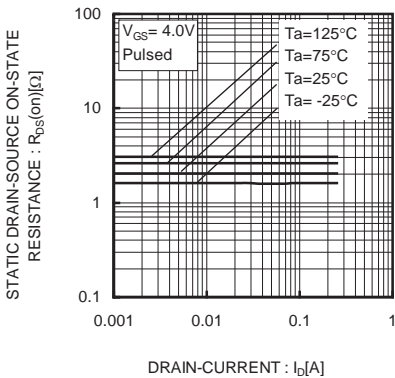Resistance vs. Drain Current(III)

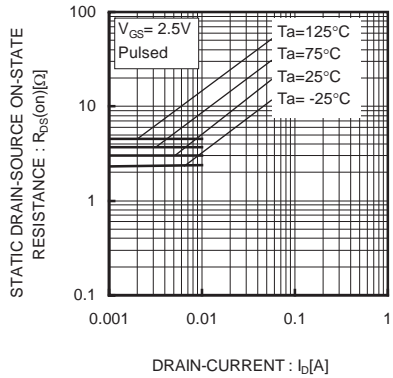Fig.7 Static Drain-Source On-State
Resistance vs. Drain Current(IV)

Fig.8 Static Drain-Source On-State
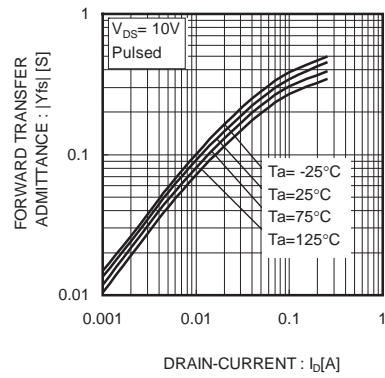Resistance vs. Drain Current(IV)

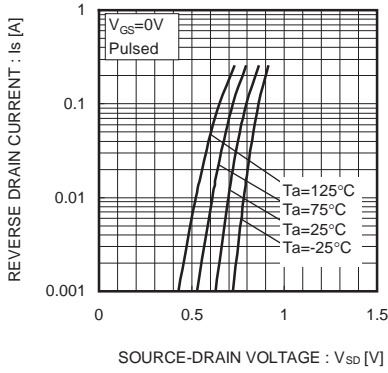Fig.9 Forward Transfer Admittance
vs. Drain Current

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Fig.10 Reverse Drain Current
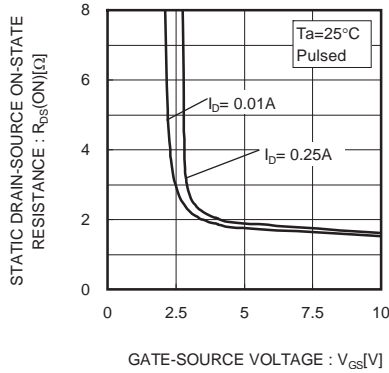vs. Sourse-Drain Voltage

Fig.11 Static Drain-Source On-State
Resistance vs. Gate Source Voltage
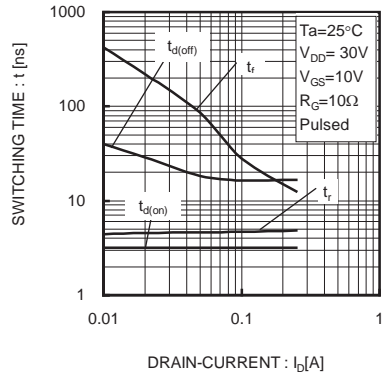
Fig.12 Switching Characteristics
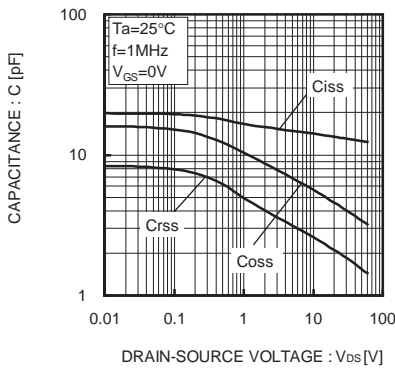
Fig.13 Typical Capacitance
vs. Drain-Source Voltage

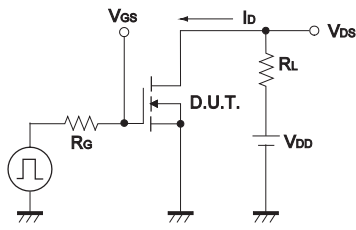**2010.06 - Rev.B**

●**Measurement circuits**

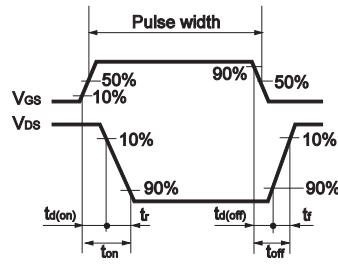Fig.1-1 Switching time measurement circuit

Fig.1-2 Switching waveforms

●**Notice**
 This product might cause chip aging and breakdown under the large electrified environment.
 Please consider to design ESD protection circuit.

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