Data Sheet

1.2V Drive Nch MOSFET

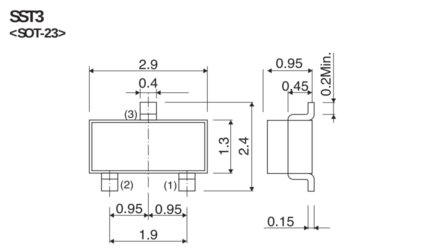
RUC002N05

● Structure
Silicon N-channel MOSFET

●Features
1) High speed switing.
2) Small package(SST3).
3)Ultra low voltage drive(1.2V drive).

● Application
Switching

● Dimensions (Unit : mm)

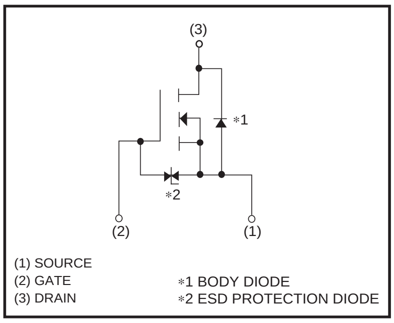


Abbreviated symbol : RH

● Packaging specifications

Type	Package	Taping
	Code	T116
	Basic ordering unit (pieces)	3000
RUC002N05		○

● Inner circuit



● Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	50	V
Gate-source voltage		V_{GSS}	±8	V
Drain current	Continuous	I_D	±200	mA
	Pulsed	I_{DP} *1	±800	mA
Source current (Body Diode)	Continuous	I_S	150	mA
	Pulsed	I_{SP} *1	800	mA
Power dissipation		P_D *2	200	mW
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}=±8V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	50	-	-	V	I_D=1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	V_{DS}=50V, V_{GS}=0V
Gate threshold voltage	$V_{GS\ (th)}$	0.3	-	1.0	V	V_{DS}=10V, I_D=1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	-	1.6	2.2	Ω	I_D=200mA, V_{GS}=4.5V
		-	1.7	2.4		I_D= 200mA, V_{GS}=2.5V
		-	1.9	2.7		I_D= 100mA, V_{GS}=1.8V
		-	2.0	4.0		I_D=40mA, V_{GS}=1.5V
		-	2.4	7.2		I_D=20mA, V_{GS}=1.2V
Forward transfer admittance	$\mid Y_{fs} \mid$*	0.4	-	-	S	I_D=200mA, V_{DS}=10V
Input capacitance	C_{iss}	-	25	-	pF	V_{DS}=10V
Output capacitance	C_{oss}	-	6	-	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	-	3	-	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$*	-	4	-	ns	I_D=100mA, V_{DD}≒ 30V
Rise time	t_r *	-	6	-	ns	V_{GS}=4.5V
Turn-off delay time	$t_{d(off)}$*	-	15	-	ns	R_L=300Ω
Fall time	t_f *	-	55	-	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=200mA, V_{GS}=0V

*Pulsed

●Electrical characteristic curves

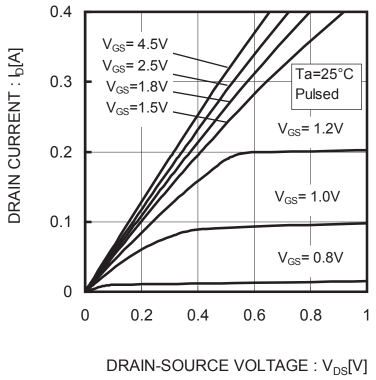


Fig.1 Typical Output Characteristics(I)

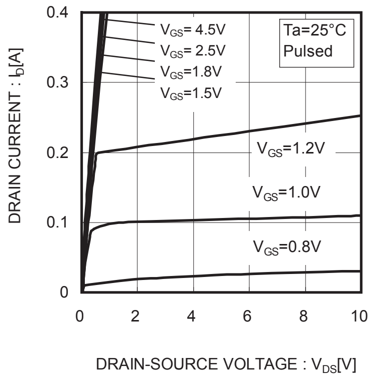


Fig.2 Typical Output Characteristics(II)

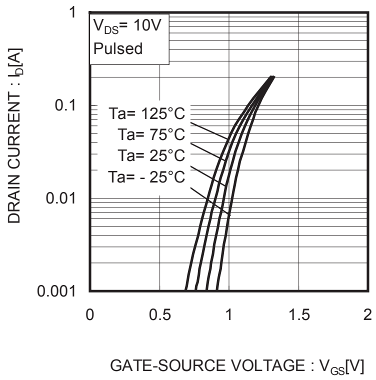


Fig.3 Typical Transfer Characteristics

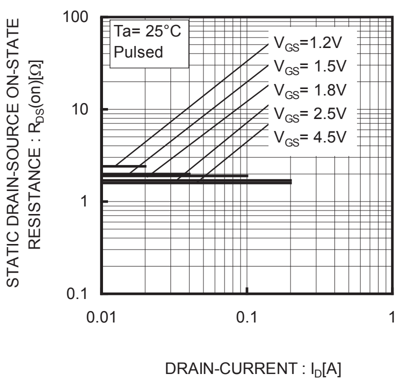


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

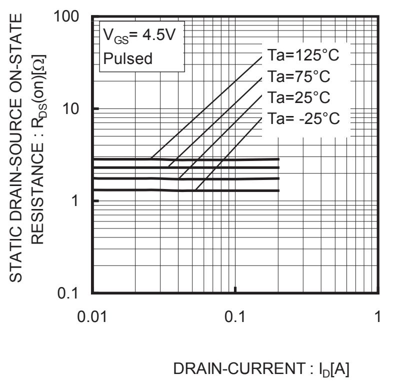


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(II)

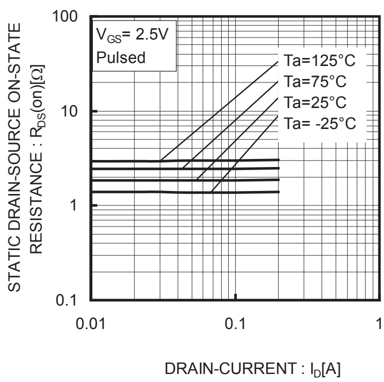


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(III)

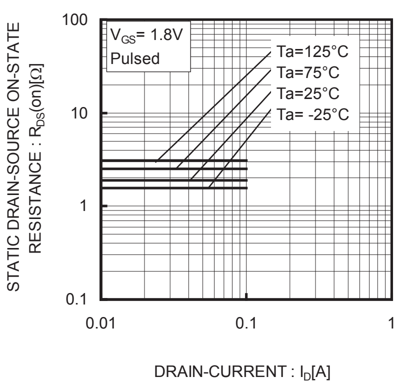


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(IV)

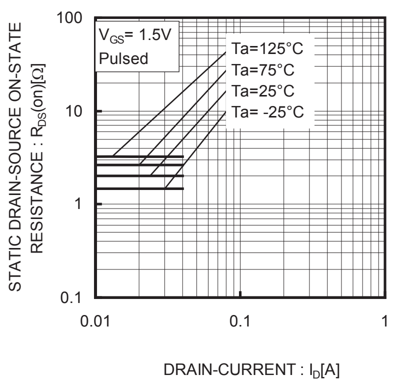


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(V)

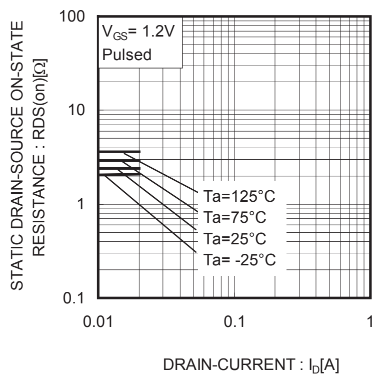


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current(VI)

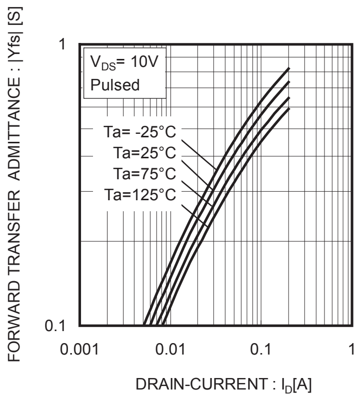


Fig.10 Forward Transfer Admittance vs. Drain Current

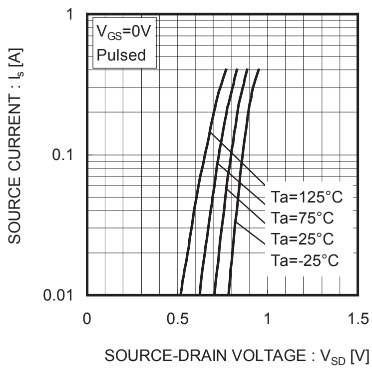


Fig.11 Reverse Drain Current vs. Sourse-Drain Voltage

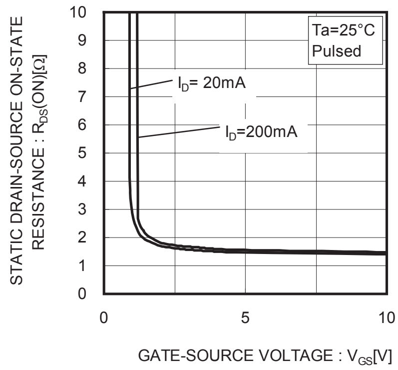


Fig.12 Static Drain-Source On-State Resistance vs. Gate Source Voltage

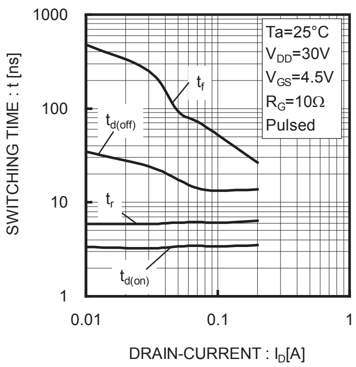


Fig.13 Switching Characteristics

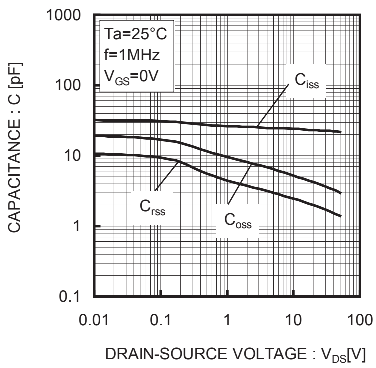


Fig.14 Typical Capacitance vs. Drain-Source Voltage

●**Measurement circuits**

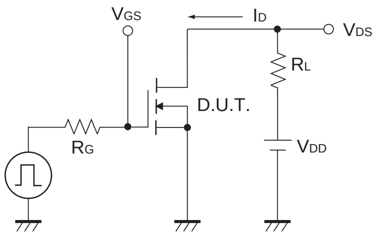


Fig.1-1 Switching time measurement circuit

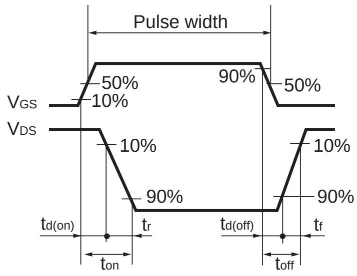


Fig.1-2 Switching waveforms

●**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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