

1.2V Drive Nch MOSFET

RU1C002UN

● Structure

Silicon N-channel MOSFET

● Features

- 1) Low on-resistance.
- 2) Low voltage drive(1.2V drive).

● Application

Switching

● Packaging specifications

Type	Package	Taping
	Code	TCL
	Basic ordering unit (pieces)	3000
RU1C002UN		○

● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V_{DSS}	20	V	
Gate-source voltage	V_{GSS}	± 8	V	
Drain current	Continuous	I_D	± 200	mA
	Pulsed	I_{DP} *1	± 400	mA
Power dissipation	P_D *2	150	mW	
Channel temperature	Tch	150	°C	
Range of storage temperature	Tstg	-55 to +150	°C	

*1 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$

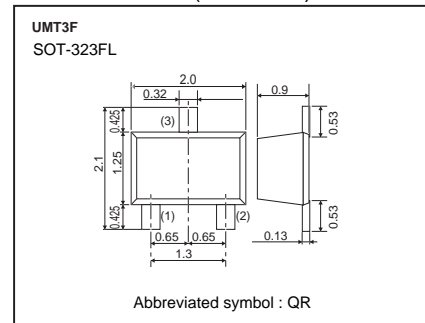
*2 Each terminal mounted on a reference land.

● Thermal resistance

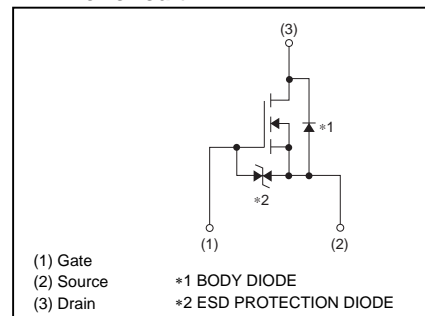
Parameter	Symbol	Limits	Unit
Channel to Ambient	$R_{th}(ch-a)^*$	833	°C / W

* Each terminal mounted on a reference land.

● Dimensions (Unit : mm)



● Inner circuit



● **Electrical characteristics** (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±10	μA	$V_{GS}=\pm 8V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	20	-	-	V	$I_D=1mA, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS}=20V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	0.3	-	1.0	V	$V_{DS}=10V, I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	-	0.8	1.2	Ω	$I_D=200mA, V_{GS}=2.5V$
		-	1.0	1.4		$I_D=200mA, V_{GS}=1.8V$
		-	1.2	2.4		$I_D=40mA, V_{GS}=1.5V$
		-	1.6	4.8		$I_D=20mA, V_{GS}=1.2V$
Forward transfer admittance	$ Y_{fs} ^*$	400	-	-	mS	$V_{DS}=10V, I_D=200mA$
Input capacitance	C_{iss}	-	25	-	pF	$V_{DS}=10V$
Output capacitance	C_{oss}	-	10	-	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	-	10	-	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	-	5	-	ns	$V_{DD}\approx 10V, I_D=150mA$
Rise time	t_r^*	-	10	-	ns	$V_{GS}=4.0V$
Turn-off delay time	$t_{d(off)}^*$	-	15	-	ns	$R_L=68\Omega$
Fall time	t_f^*	-	10	-	ns	$R_G=10\Omega$

*Pulsed

● **Body diode characteristics** (Source-Drain)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V_{SD}^*	-	-	1.2	V	$I_s=100mA, V_{GS}=0V$

*Pulsed

●Electrical characteristics

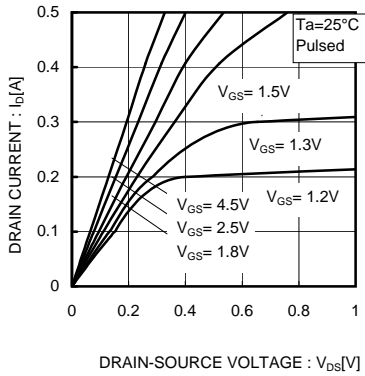


Fig.1 Typical Output Characteristics(I)

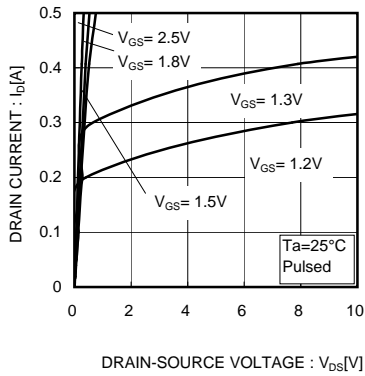


Fig.2 Typical Output Characteristics(II)

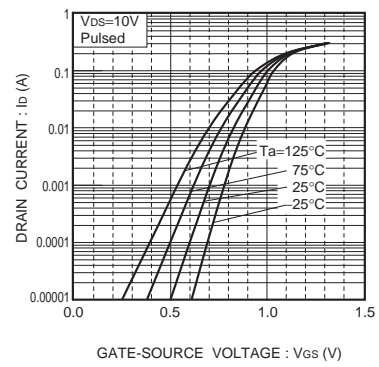


Fig.3 Typical transfer characteristics

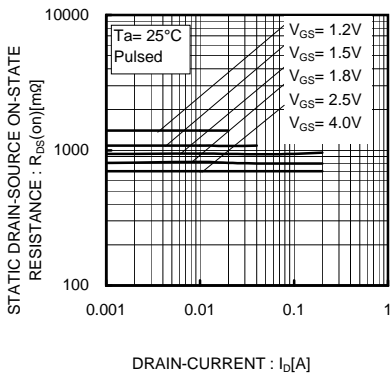


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

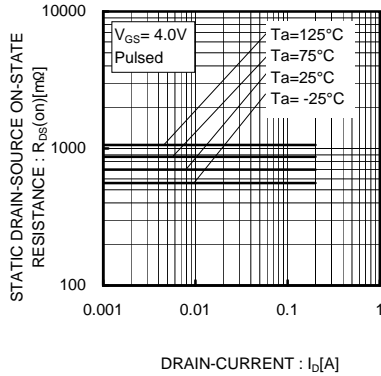


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(II)

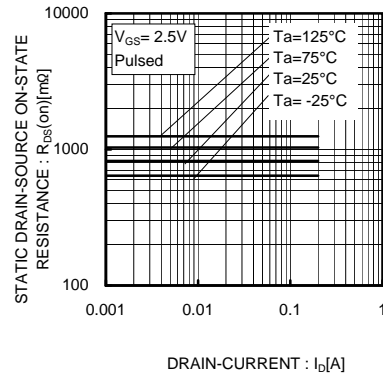


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(II)

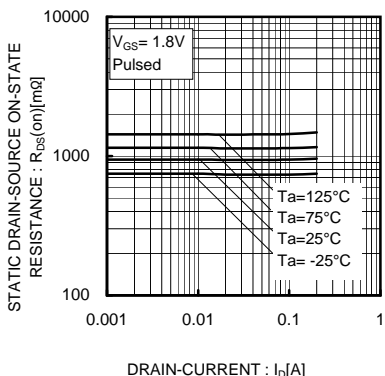


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(III)

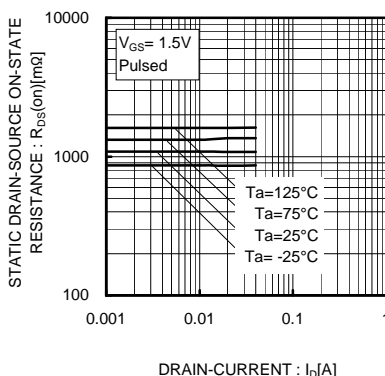


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(IV)

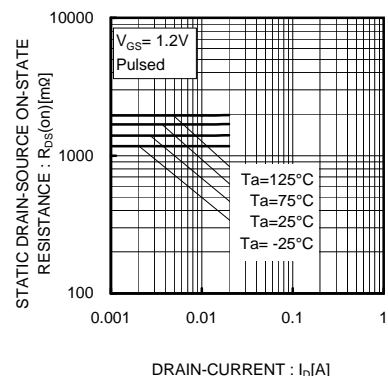


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current(V)

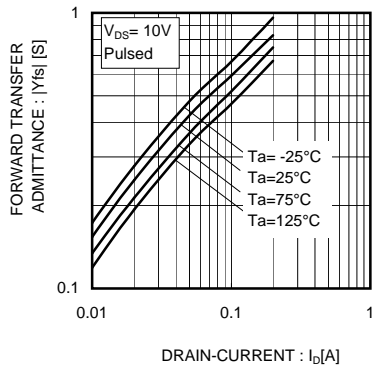


Fig.10 Forward Transfer Admittance vs. Drain Current

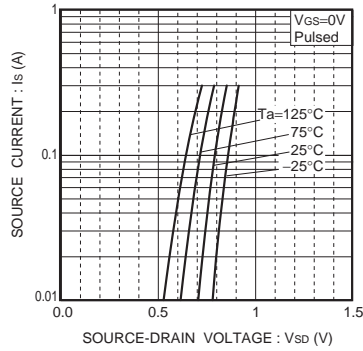


Fig.11 Source current vs. source-drain voltage

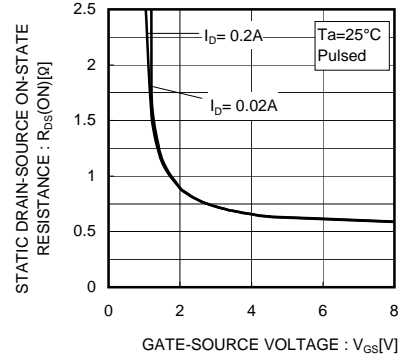


Fig.12 Static Drain-Source On-State Resistance vs. Gate Source Voltage

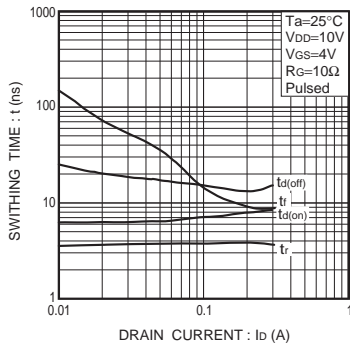


Fig.13 Switching characteristics

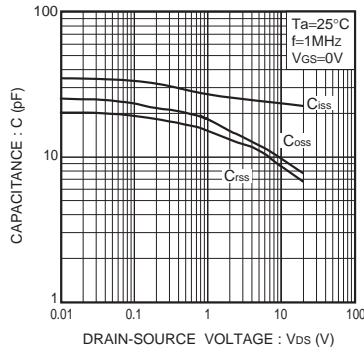


Fig.14 Typical capacitance vs. drain-source voltage

● Measurement circuits

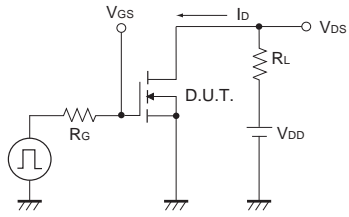


Fig.1-1 Switching Time Measurement Circuit

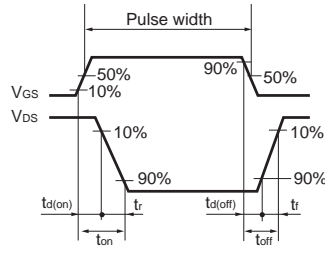


Fig.1-2 Switching Waveforms

● 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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