

1.2V Drive Pch MOSFET

RU1C002ZP

● Structure

Silicon P-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
RU1C002ZP		○

● Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	-20	V
Gate-source voltage		V_{GSS}	±10	V
Drain current	Continuous	I_D	±200	mA
	Pulsed	I_{DP} *1	±800	mA
Source current (Body Diode)	Continuous	I_S	-100	mA
	Pulsed	I_{SP} *1	-800	mA
Power dissipation		P_D *2	150	mW
Channel temperature		T_{ch}	150	°C
Range of storage temperature		T_{stg}	-55 to +150	°C

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

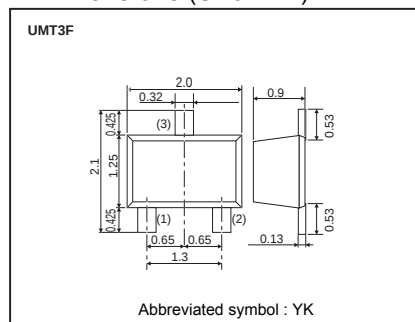
*2 Each terminal mounted on a reference land.

● Thermal resistance

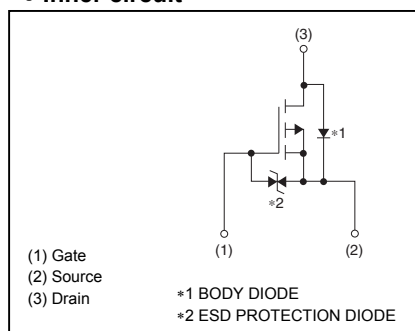
Parameter	Symbol	Limits	Unit
Channel to Ambient	$R_{th}(ch-a)^*$	833	°C / W

* 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	$V_{GS} = \pm 10V, V_{DS} = 0V$
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	$V_{DS} = -10V, I_D = -100\mu A$
Static drain-source on-state resistance	$R_{DS(on)}^*$	-	0.8	1.2	Ω	$I_D = -200mA, V_{GS} = -4.5V$
		-	1.0	1.5		$I_D = -100mA, V_{GS} = -2.5V$
		-	1.3	2.2		$I_D = -100mA, V_{GS} = -1.8V$
		-	1.6	3.5		$I_D = -40mA, V_{GS} = -1.5V$
		-	2.4	9.6		$I_D = -10mA, V_{GS} = -1.2V$
Forward transfer admittance	$ Y_{fs} ^*$	0.2	-	-	S	$V_{DS} = -10V, I_D = -200mA$
Input capacitance	C_{iss}	-	115	-	pF	$V_{DS} = -10V$
Output capacitance	C_{oss}	-	10	-	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	-	6	-	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}^*$	-	6	-	ns	$V_{DD} = -10V, I_D = -100mA$
Rise time	t_r^*	-	4	-	ns	$V_{GS} = -4.5V$
Turn-off delay time	$t_{d(off)}^*$	-	17	-	ns	$R_L = 100\Omega$
Fall time	t_f^*	-	17	-	ns	$R_G = 10\Omega$
Total gate charge	Q_g	-	1.4	-	nC	$V_{DD} = -10V, I_D = -200mA$
Gate-source charge	Q_{gs}	-	0.3	-	nC	$V_{GS} = -4.5V$
Gate-drain charge	Q_{gd}	-	0.3	-	nC	

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V_{SD}^*	-	-	-1.2	V	$I_S = -200mA, V_{GS} = 0V$

*Pulsed

●Electrical characteristic curves (Ta = 25°C)

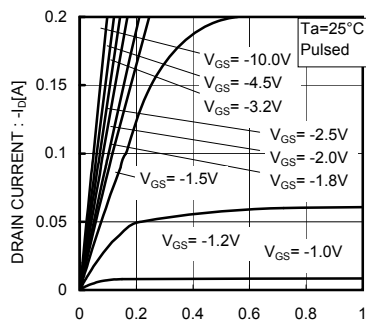


Fig.1 Typical output characteristics(I)

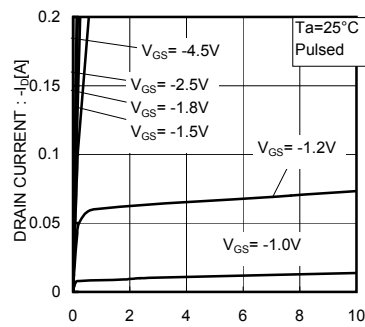


Fig.2 Typical output characteristics(II)

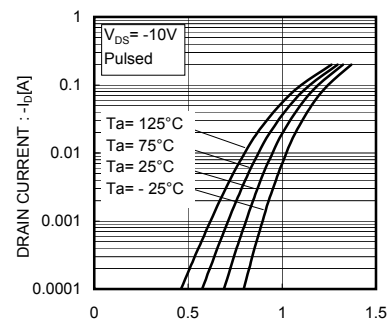


Fig.3 Typical Transfer Characteristics

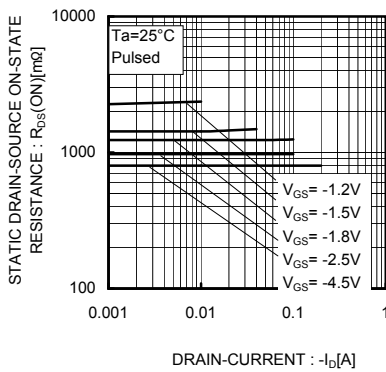


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

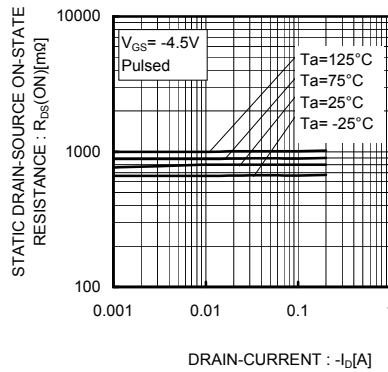


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(II)

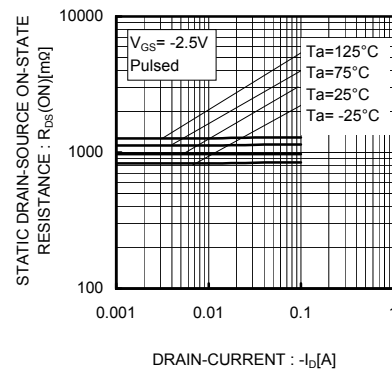


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(III)

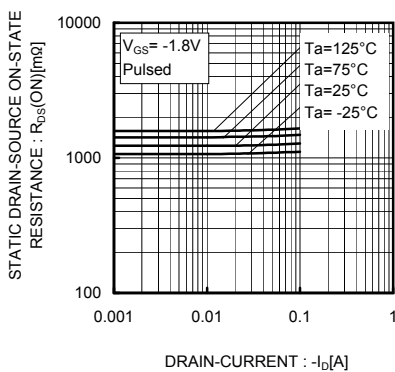


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(IV)

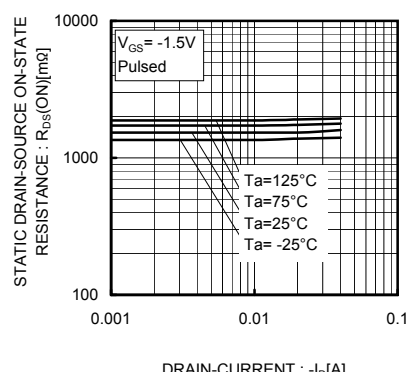


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(V)

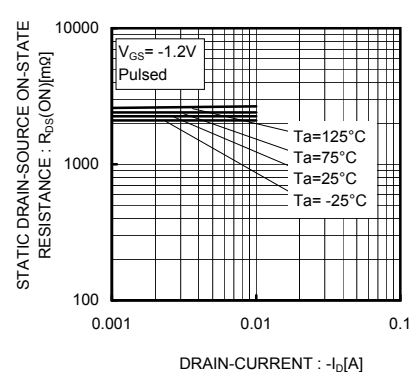


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current(VI)

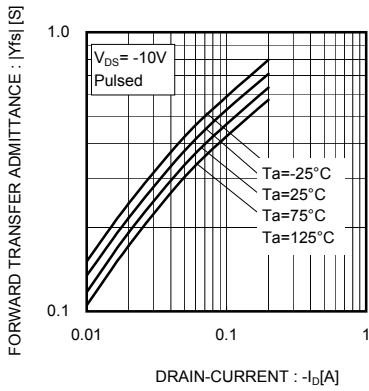


Fig.10 Forward Transfer Admittance vs. Drain Current

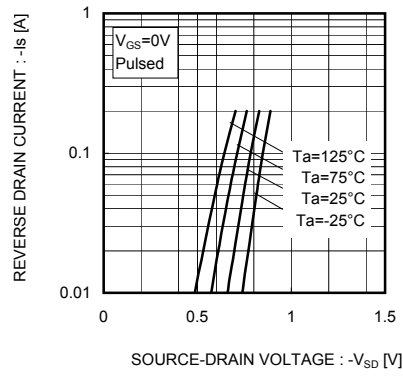


Fig.11 Reverse Drain Current vs. Source-Drain Voltage

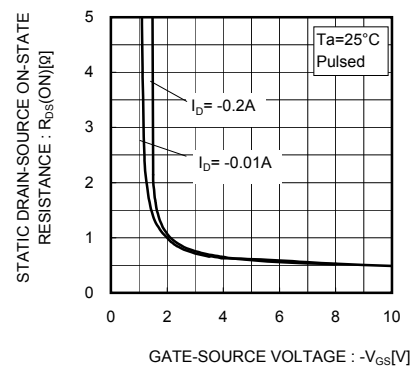


Fig.12 Static Drain-Source On-State Resistance vs. Gate Source Voltage

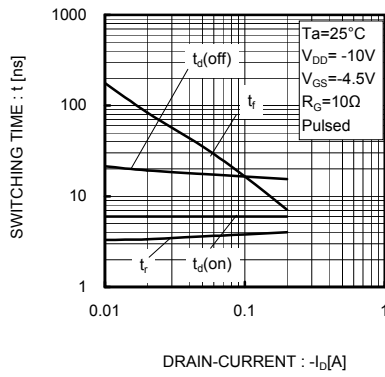


Fig.13 Switching Characteristics

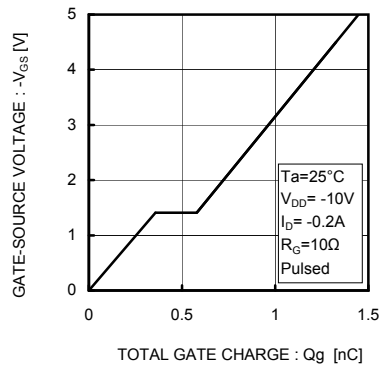


Fig.14 Dynamic Input Characteristics

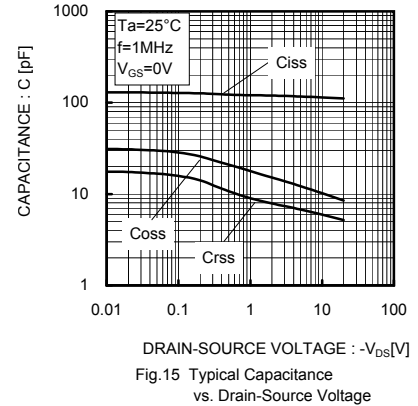


Fig.15 Typical Capacitance vs. Drain-Source Voltage

● Measurement circuits

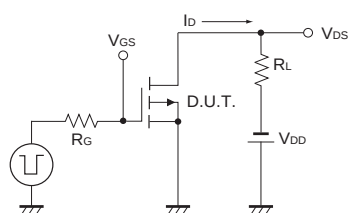


Fig.1-1 Switching Time Measurement Circuit

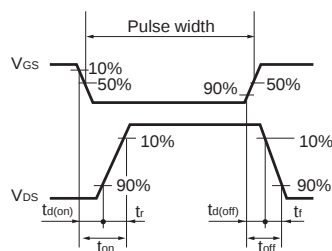


Fig.1-2 Switching Waveforms

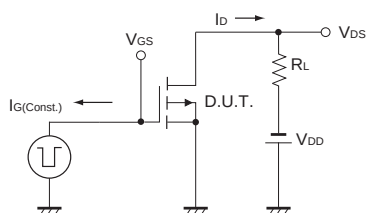


Fig.2-1 Gate Charge Measurement Circuit

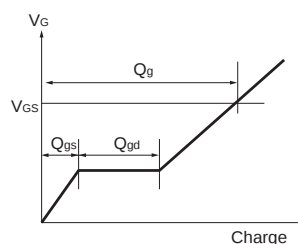


Fig.2-2 Gate Charge Waveform

● 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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