1.2V Drive Pch MOSFET

RU1C002ZP

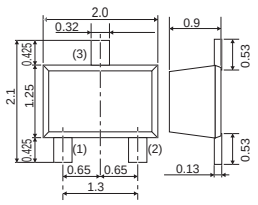
● Structure
Silicon P-channel MOSFET

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

● Application
Switching

● Dimensions (Unit : mm)

UMT3F
SOT-323FL

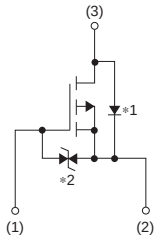


Abbreviated symbol : YK

● Packaging specifications

Type	Package	Taping
	Code	TCL
	Basic ordering unit (pieces)	3000
RU1C002ZP		O

● Inner circuit



(1) Gate
(2) Source
(3) Drain

*1 BODY DIODE
*2 ESD PROTECTION DIODE

● 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		Tch	150	°C
Range of storage temperature		Tstg	−55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%

*2 Each terminal mounted on a reference land.

● Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Ambient	Rth (ch-a)*	833	°C / W

* Each terminal mounted on a reference land.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±10	μA	V_{GS}=±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=−100μA
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=100Ω
Fall time	t_f *	-	17	-	ns	R_G=10Ω
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)

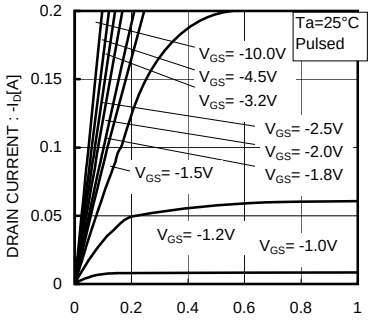


Fig.1 Typical output characteristics(Ⅰ)

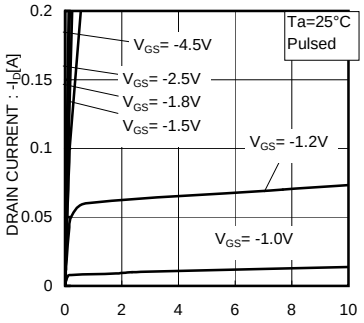


Fig.2 Typical output characteristics(Ⅱ)

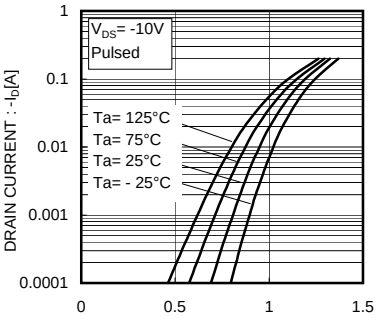


Fig.3 Typical Transfer Characteristics

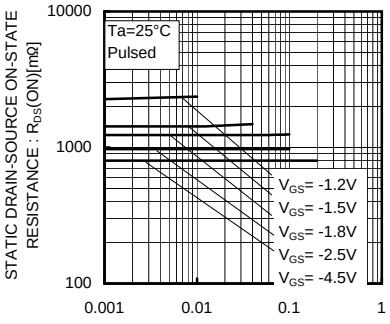


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(Ⅰ)

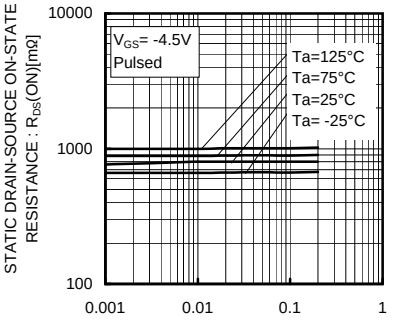


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(Ⅱ)

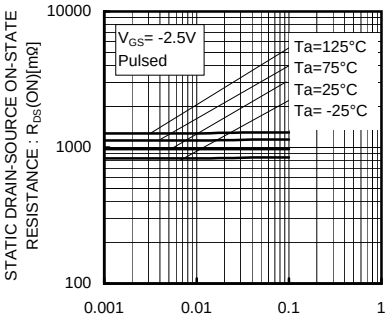


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(Ⅲ)

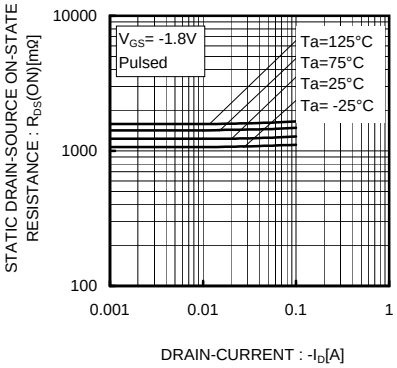


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(Ⅳ)

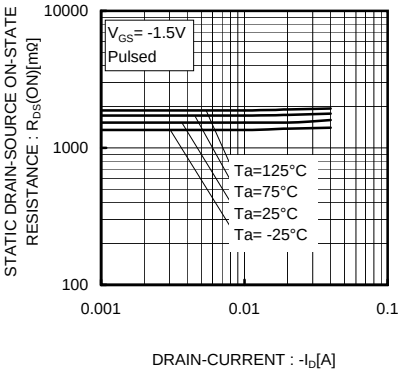


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(Ⅴ)

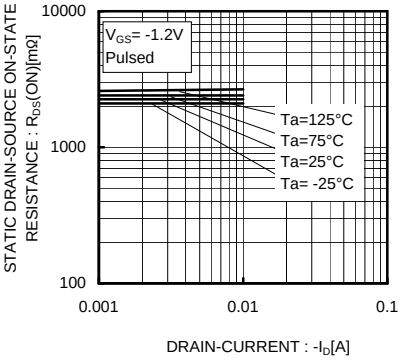


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current(Ⅵ)

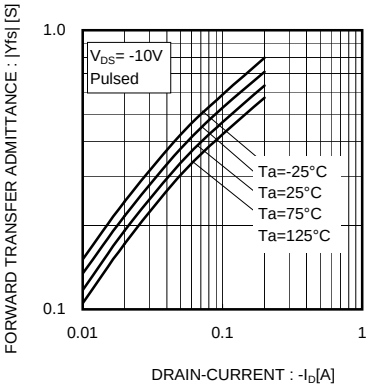


Fig.10 Forward Transfer Admittance vs. Drain Current

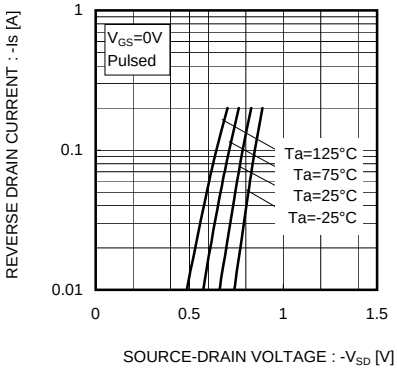


Fig.11 Reverse Drain Current vs. Sourse-Drain Voltage

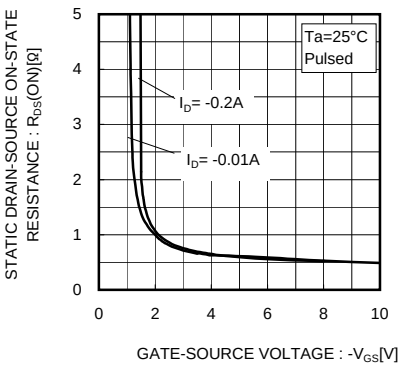


Fig.12 Static Drain-Source On-State Resistance vs. Gate Source Voltage

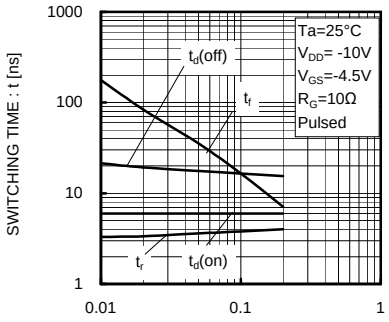


Fig.13 Switching Characteristics

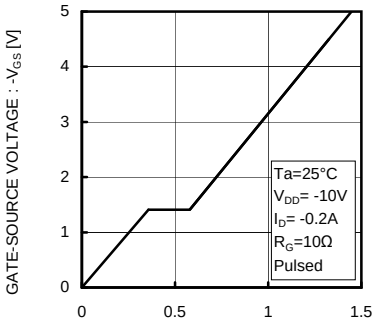


Fig.14 Dynamic Input Characteristics

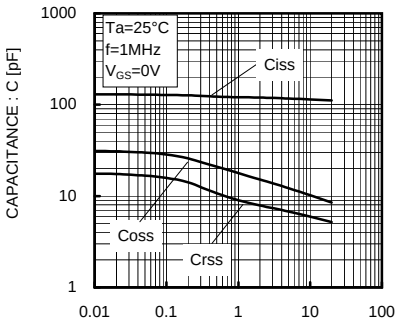


Fig.15 Typical Capacitance vs. Drain-Source Voltage

● **Measurement circuits**

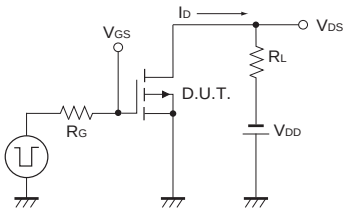


Fig.1-1 Switching Time Measurement Circuit

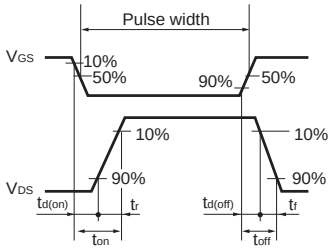


Fig.1-2 Switching Waveforms

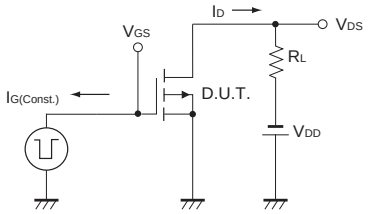


Fig.2-1 Gate Charge Measurement Circuit

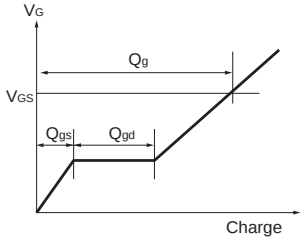


Fig.2-2 Gate Charge Waveform

● **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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