1.5V Drive Pch MOSFET

RZF030P01

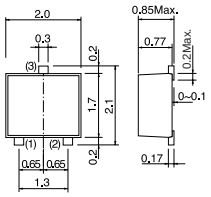
●Structure
Silicon P-channel
MOSFET

●Features
1) Low on-resistance.
2) High power package.
3) Low voltage drive. (1.5V)

●Applications
Switching

●Dimensions (Unit : mm)

TUMT3



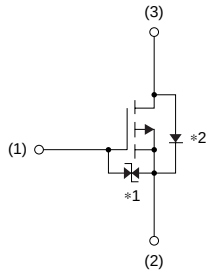
(1) Gate
(2) Source
(3) Drain

Abbreviated symbol : YD

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RZF030P01		○

●Equivalent circuit



*1 ESD PROTECTION DIODE
*2 BODY DIODE

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

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	−12	V
Gate-source voltage		V_{GSS}	±10	V
Drain current	Continuous	I_D	±3	A
	Pulsed	I_{DP} *1	±12	A
Source current (Body diode)	Continuous	I_S *1	−0.65	A
	Pulsed	I_{SP}	−12	A
Total power dissipation		P_D *2	0.8	W
Channel temperature		Tch	150	°C
Range of Storage temperature		Tstg	−55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%
*2 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) *	156	°C / W

* Mounted on a ceramic board.

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●**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	$V_{(BR)\ DSS}$	–12	–	–	V	I_D= –1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	–	–	–1	μA	V_{DS}= –12V, V_{GS}=0V
Gate threshold voltage	$V_{GS\ (th)}$	–0.3	–	–1.0	V	V_{DS}= –6V, I_D= –1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$ *	–	28	39	mΩ	I_D= –3A, V_{GS}= –4.5V
		–	39	54	mΩ	I_D= –1.5A, V_{GS}= –2.5V
		–	51	76	mΩ	I_D= –1.5A, V_{GS}= –1.8V
		–	72	144	mΩ	I_D= –0.6A, V_{GS}= –1.5V
Forward transfer admittance	$\|Y_{fs}\|$ *	5	–	–	S	V_{DS}= –6V, I_D= –3A
Input capacitance	C_{iss}	–	1860	–	pF	V_{DS}= –6V
Output capacitance	C_{oss}	–	210	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	200	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	9	–	ns	I_D= –1.5A V_{DD} ≒ –6V V_{GS}= –4.5V R_L ≒ 4Ω R_G=10Ω
Rise time	t_r *	–	40	–	ns	
Turn-off delay time	$t_{d\ (off)}$ *	–	210	–	ns	
Fall time	t_f *	–	120	–	ns	
Total gate charge	Q_g *	–	18	–	nC	V_{DD} ≒ –6V R_L ≒ 2Ω
Gate-source charge	Q_{gs} *	–	3.0	–	nC	I_D= –3A R_G=10Ω
Gate-drain charge	Q_{gd} *	–	2.5	–	nC	V_{GS}= –4.5V

*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= –3A, V_{GS}=0V

*Pulsed

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●Electrical characteristic curves

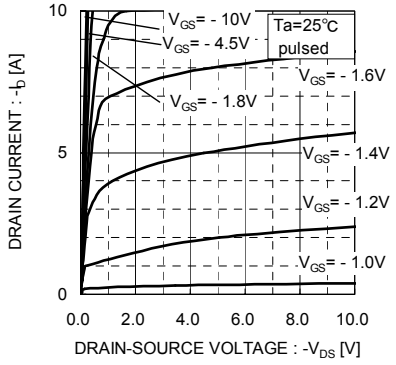


Fig.1 Typical Output Characteristics (Ⅰ)

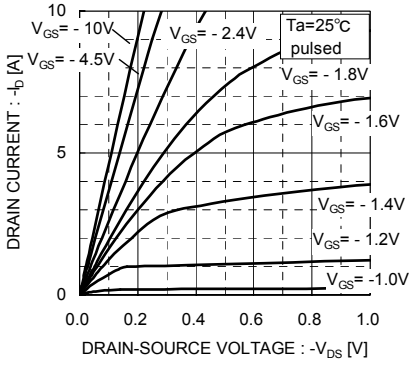


Fig.2 Typical Output Characteristics (Ⅱ)

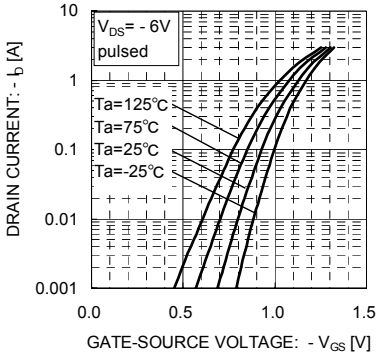


Fig.3 Typical Transfer Characteristics

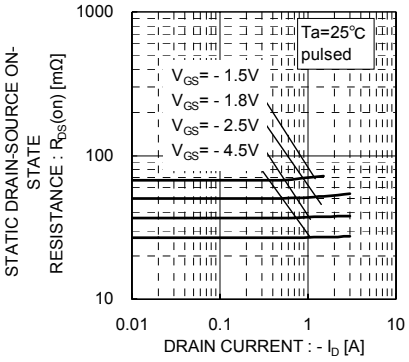


Fig.4 Static Drain-Source On-State Resistance vs.Drain Current

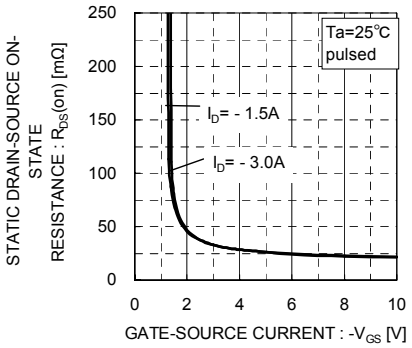


Fig.5 Static Drain-Source On-State Resistance vs.Gate-Source Voltage

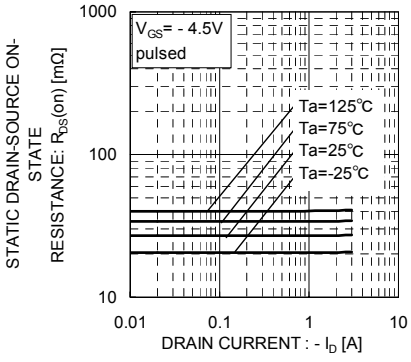


Fig.6 Static Drain-Source On-State Resistance vs.Drain Current

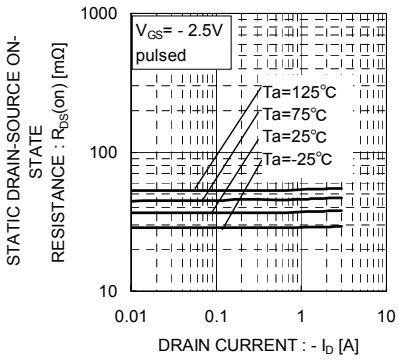


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current

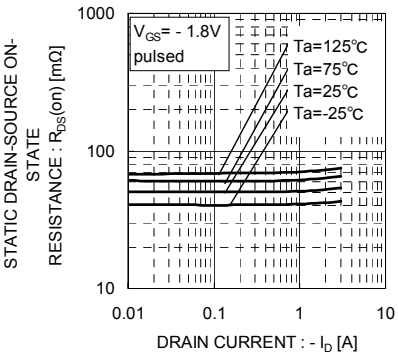


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current

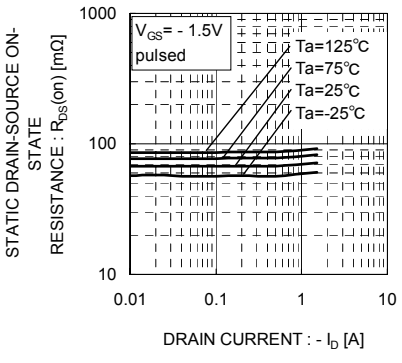


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current

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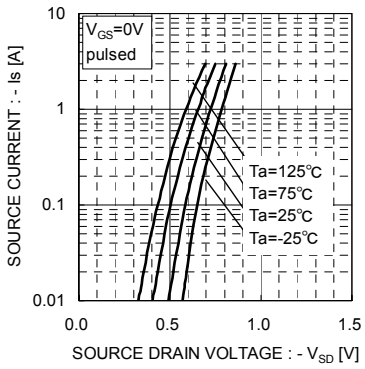


Fig.10 Source Current vs. Source-Drain Voltage

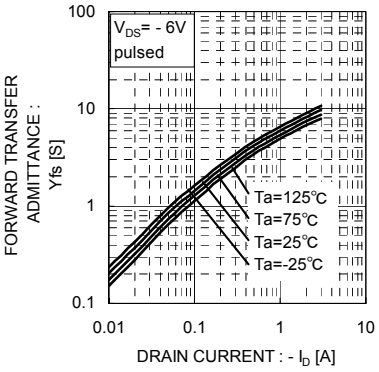


Fig.11 Forward Transfer Admittance vs. Drain Current

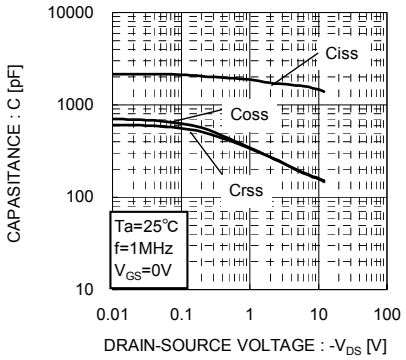


Fig.12 Typical Capacitance vs. Drain-Source Voltage

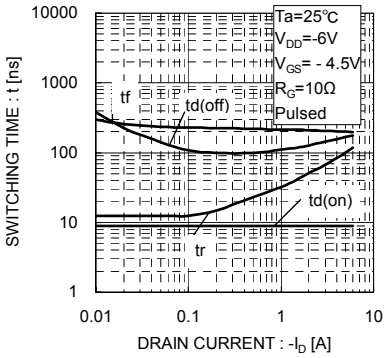


Fig.13 Switching Characteristics

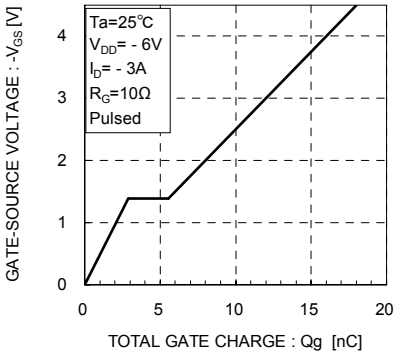


Fig.14 Dynamic Input Characteristics

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●**Measurement circuits**

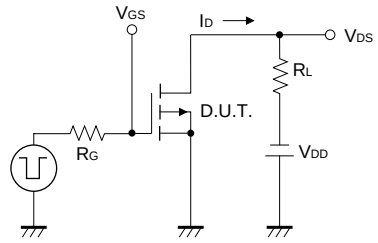


Fig.1-1 Switching Time Measurement Circuit

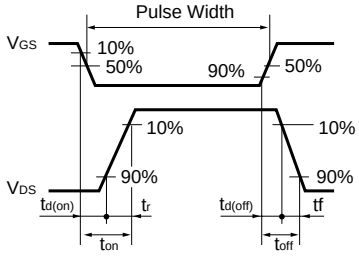


Fig.1-2 Switching Waveforms

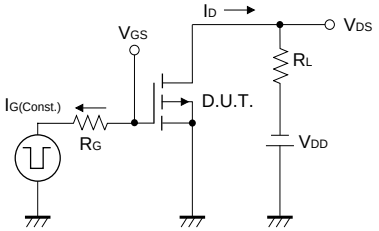


Fig.2-1 Gate Charge Measurement Circuit

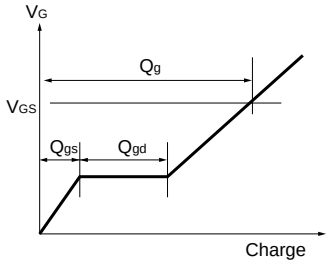


Fig.2-2 Gate Charge Waveforms

●**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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