

1.5V Drive Pch MOSFET

RZL025P01

●Structure

Silicon P-channel MOSFET

●Features

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

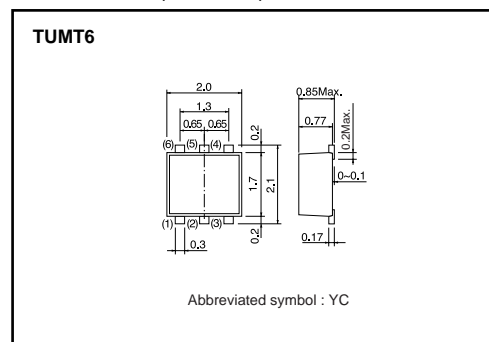
●Application

Switching

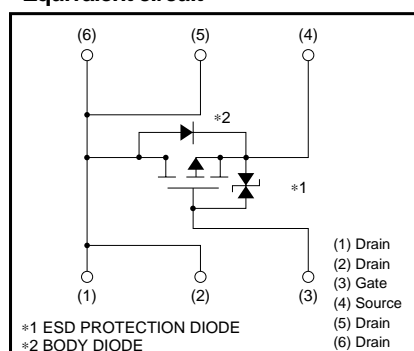
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RZL025P01		○

●Dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	-12	V
Gate-source voltage	V_{GS}	± 10	V
Drain current	Continuous	I_D	± 2.5 A
	Pulsed	I_{DP} *1	± 10 A
Source current (Body diode)	Continuous	I_S	-0.8 A
	Pulsed	I_{SP} *1	-10 A
Total power dissipation	P_D *2	1.0	W
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 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	125	°C / W

* When 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	$V_{GS}=\pm 10V$, $V_{DS}=0V$
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	$R_{DS(on)}^*$	—	44	61	m Ω	$I_D = -2.5A$, $V_{GS} = -4.5V$
		—	60	84	m Ω	$I_D = -1.2A$, $V_{GS} = -2.5V$
		—	81	121	m Ω	$I_D = -1.2A$, $V_{GS} = -1.8V$
		—	110	220	m Ω	$I_D = -0.5A$, $V_{GS} = -1.5V$
Forward transfer admittance	$ Y_{fs} ^*$	3.5	—	—	S	$V_{DS} = -6V$, $I_D = -2.5A$
Input capacitance	C_{iss}	—	1350	—	pF	$V_{DS} = -6V$
Output capacitance	C_{oss}	—	130	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	—	125	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	—	9	—	ns	$I_D = -1.2A$
Rise time	t_r^*	—	35	—	ns	$V_{DD} \doteq -6V$
Turn-off delay time	$t_{d(off)}^*$	—	130	—	ns	$V_{GS} = -4.5V$
Fall time	t_f^*	—	85	—	ns	$R_L \doteq 5\Omega$
Total gate charge	Q_g^*	—	13	—	nC	$V_{DD} \doteq -6V$, $I_D = -2.5A$
Gate-source charge	Q_{gs}^*	—	2.5	—	nC	$V_{GS} = -4.5V$
Gate-drain charge	Q_{gd}^*	—	2.0	—	nC	$R_L \doteq 2.4\Omega$, $R_G=10\Omega$

* Pulsed

●Body diode characteristics(Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}^*	—	—	-1.2	V	$I_S = -2.5A$, $V_{GS}=0V$

* Pulsed

Transistors

●Electrical characteristic curves

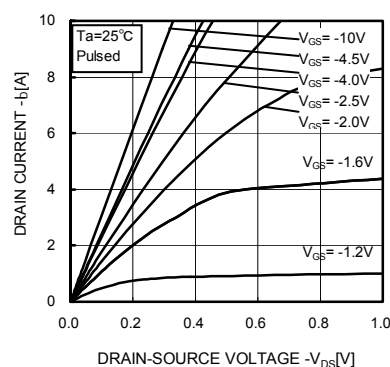


Fig.1 Typical Output Characteristics(I)

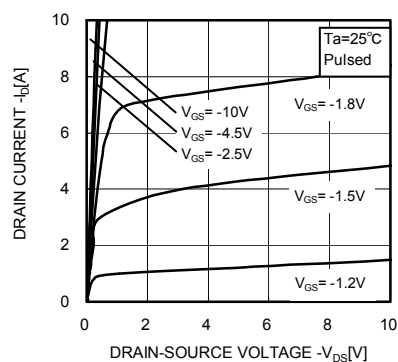


Fig.2 Typical Output Characteristics(II)

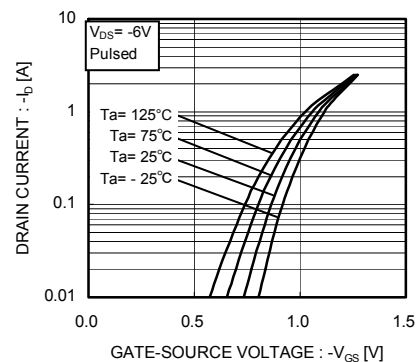


Fig.3 Typical Transfer Characteristics

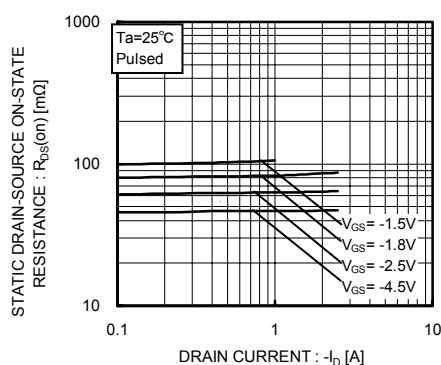


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

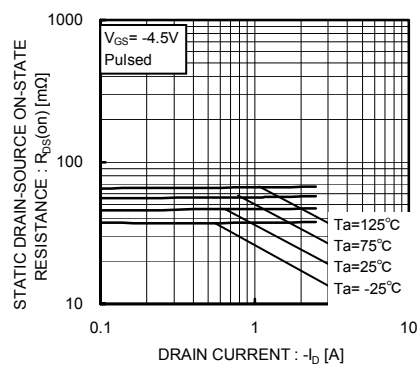


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(II)

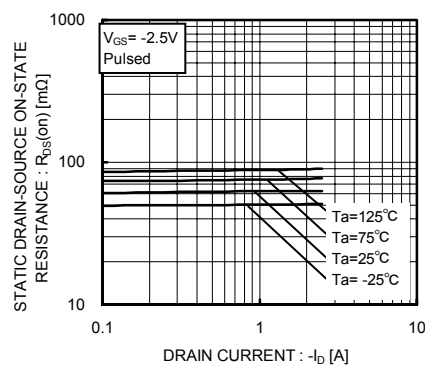


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(III)

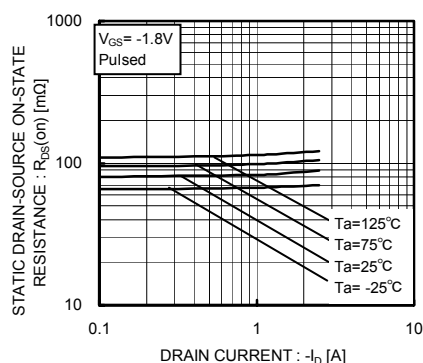


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(IV)

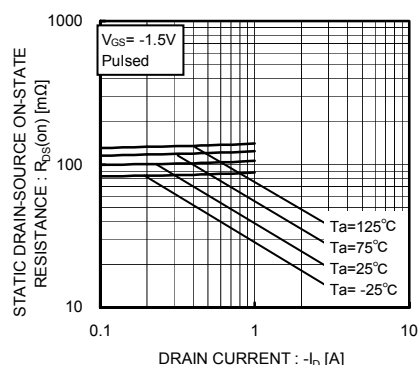


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(IV)

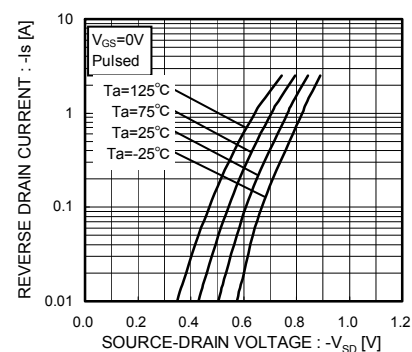


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

Transistors

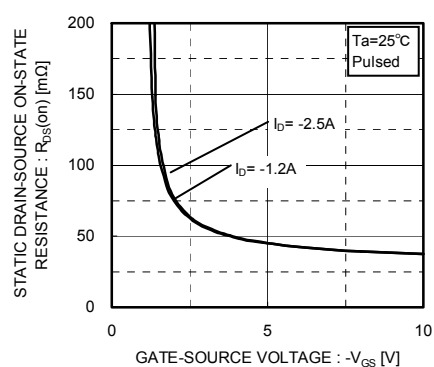


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

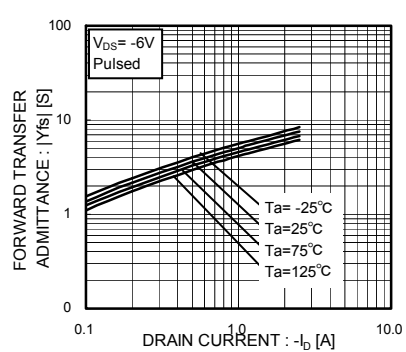


Fig.11 Forward Transfer Admittance vs. Drain Current

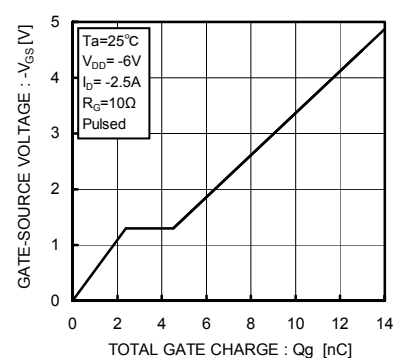


Fig.12 Dynamic Input Characteristics

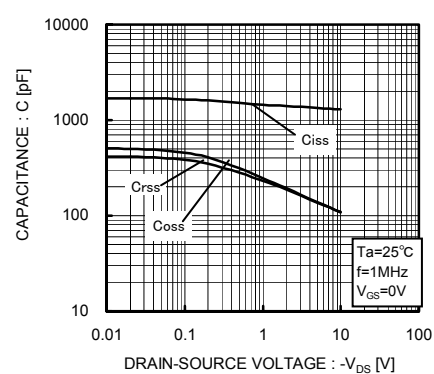


Fig.13 Typical Capacitance vs. Drain-Source Voltage

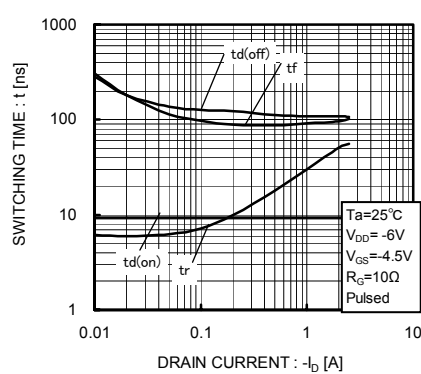


Fig.14 Switching Characteristics

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●Measurement circuits

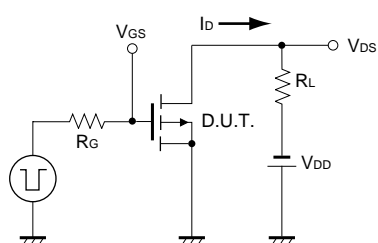


Fig.15 Switching Time Test Circuit

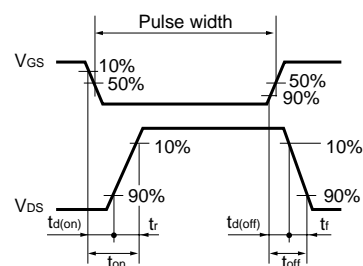


Fig.16 Switching Time Waveforms

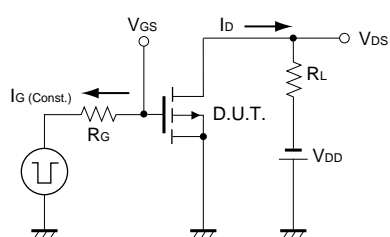


Fig.17 Gate Charge Test Circuit

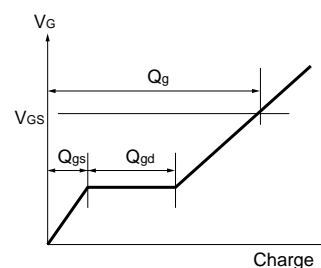


Fig.18 Gate Charge Waveform

●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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