

1.5V Drive Pch MOSFET

RZR025P01

●Features

- 1) Low On-resistance.
- 2) Built-in G-S Protection Diode.
- 3) Small and Surface Mount Package (TSMT3).
- 4) Low voltage drive (1.5V).

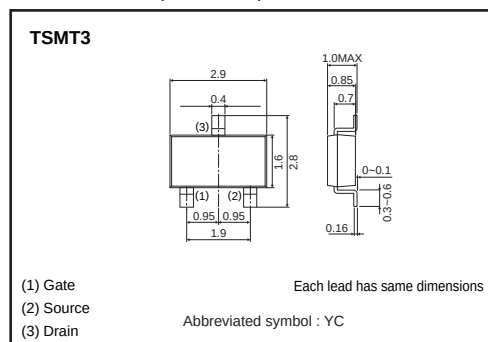
●Application

Switching

●Structure

Silicon P-channel MOSFET

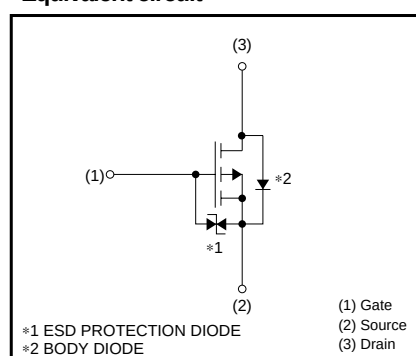
●Dimensions (Unit : mm)



●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RZR025P01		○

●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	A
	Pulsed	I_{DP} *1	A
Source current (Body diode)	Continuous	I_S	A
	Pulsed	I_{SP} *1	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	$V_{GS}=±10V$, $V_{DS}=0V$
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	mΩ	$I_D = -2.5A$, $V_{GS} = -4.5V$
		—	60	84	mΩ	$I_D = -1.2A$, $V_{GS} = -2.5V$
		—	81	121	mΩ	$I_D = -1.2A$, $V_{GS} = -1.8V$
		—	110	220	mΩ	$I_D = -0.5A$, $V_{GS} = -1.5V$
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	$V_{DD} \rightleftharpoons -6V$
Turn-off delay time	$t_{d(off)}$ *	—	130	—	ns	$V_{GS} = -4.5V$
Fall time	t_f *	—	85	—	ns	$R_L=5\Omega$
Total gate charge	Q_g *	—	13	—	nC	$V_{DD} \rightleftharpoons -6V$, $I_D = -2.5A$
Gate-source charge	Q_{gs} *	—	2.5	—	nC	$V_{GS} = -4.5V$
Gate-drain charge	Q_{gd} *	—	2.0	—	nC	$R_L \rightleftharpoons 2.4\Omega$, $R_G=10\Omega$

* 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

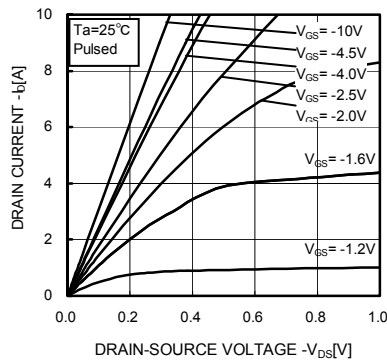


Fig.1 Typical Output Characteristics (I)

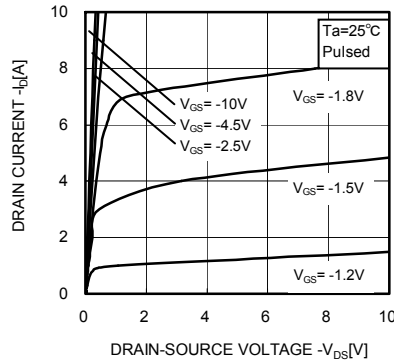


Fig.2 Typical Output Characteristics (II)

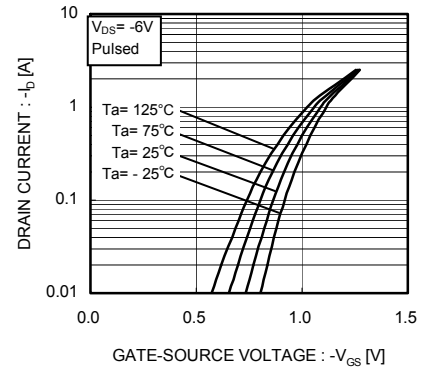


Fig.3 Typical Transfer Characteristics

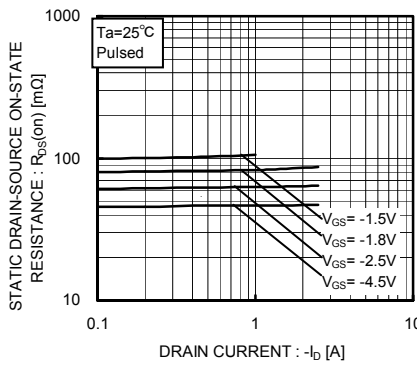


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (I)

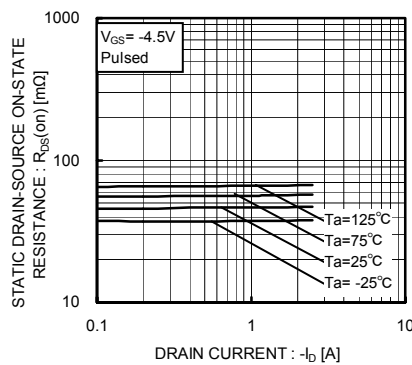


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (II)

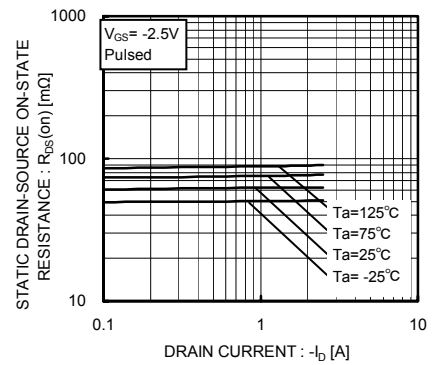


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (III)

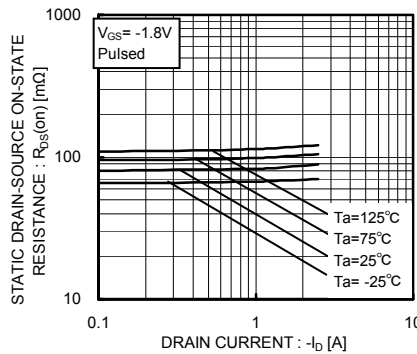


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (IV)

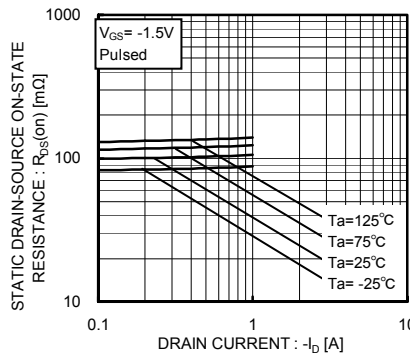


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (IV)

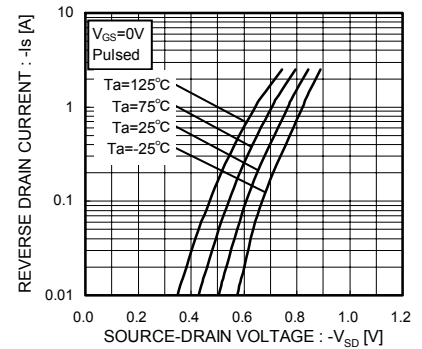


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

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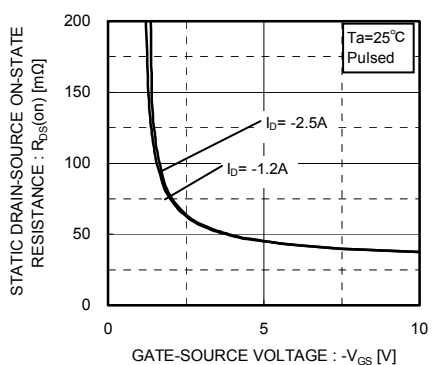


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

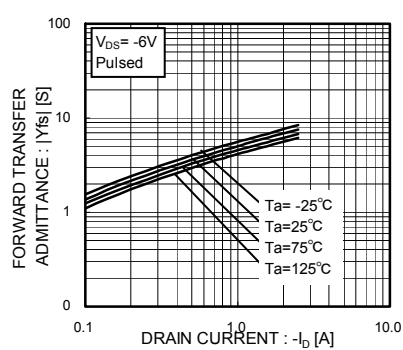


Fig.11 Forward Transfer Admittance vs. Drain Current

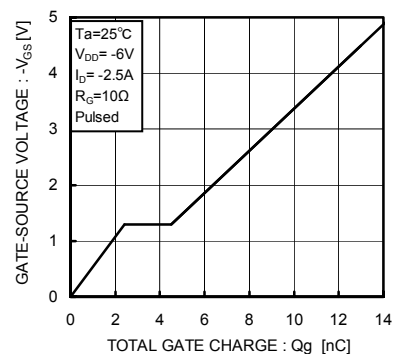


Fig.12 Dynamic Input Characteristics

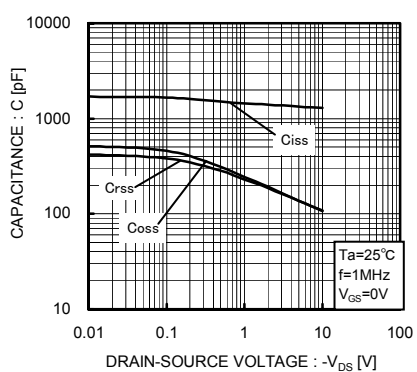


Fig.13 Typical Capacitance vs. Drain-Source Voltage

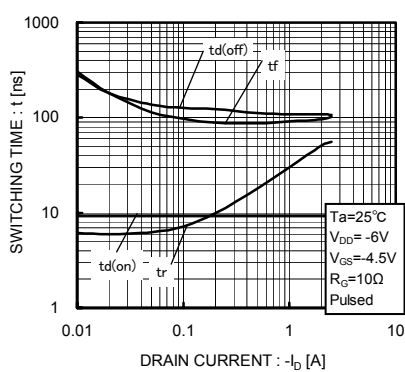


Fig.14 Switching Characteristics

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●Measurement circuits

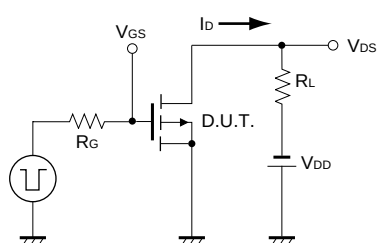


Fig.15 Switching Time Test Circuit

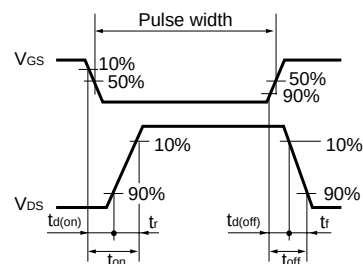


Fig.16 Switching Time Waveforms

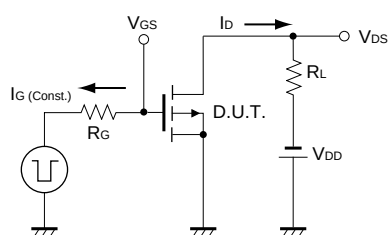


Fig.17 Gate Charge Test Circuit

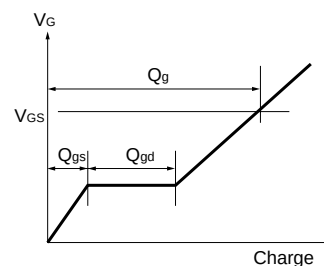


Fig.18 Gate Charge Waveform

●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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