1.5V Drive Pch MOSFET

RZQ050P01

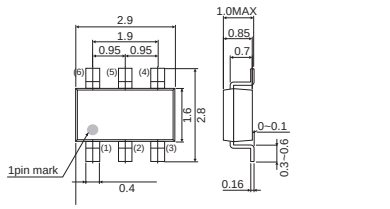
●Structure
Silicon P-channel MOSFET

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

●Applications
Switching

●Dimensions (Unit : mm)

TSMT6



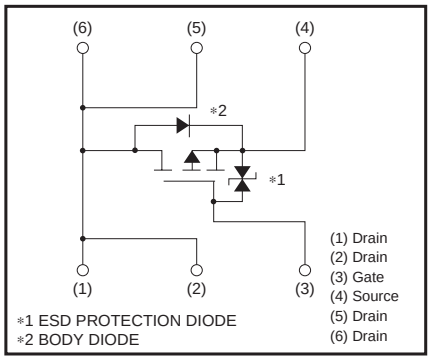
Each lead has same dimensions

Abbreviated symbol : YF

●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RZQ050P01		○

●Equivalent circuit



∗1 ESD PROTECTION DIODE
∗2 BODY DIODE

●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	±5	A
	Pulsed	I_{DP} ∗1	±20	A
Source current (Body diode)	Continuous	I_S	−1	A
	Pulsed	I_{SP} ∗1	−20	A
Total power dissipation		P_D ∗2	1.25	W
Channel temperature		Tch	150	°C
Range of Storage temperature		Tstg	−55 to +150	°C

∗1 Pw≤10μs, Duty cycle≤1%
∗2 When mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) ∗	100	°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	$R_{DS\ (on)}$ *	–	19	26	mΩ	I_D= −5A, V_{GS}= −4.5V
		–	26	36	mΩ	I_D= −2.5A, V_{GS}= −2.5V
		–	33	49	mΩ	I_D= −2.5A, V_{GS}= −1.8V
		–	44	88	mΩ	I_D= −1A, V_{GS}= −1.5V
Forward transfer admittance	$\|Y_{fs}\|$ *	8	–	–	S	V_{DS}= −6V, I_D= −5A
Input capacitance	C_{iss}	–	2850	–	pF	V_{DS}= −6V
Output capacitance	C_{oss}	–	350	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	320	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	12	–	ns	I_D= −2.5A V_{DD}≒ −6V V_{GS}= −4.5V R_L≒2.4Ω R_G=10Ω
Rise time	t_r *	–	100	–	ns	
Turn-off delay time	$t_{d\ (off)}$ *	–	420	–	ns	
Fall time	t_f *	–	225	–	ns	
Total gate charge	Q_g *	–	35	–	nC	V_{DD}≒ −6V R_L≒1.2Ω
Gate-source charge	Q_{gs} *	–	6.5	–	nC	V_{GS}= −4.5V R_G=10Ω
Gate-drain charge	Q_{gd} *	–	5.5	–	nC	I_D= −5A

*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= −5A, V_{GS}=0V

*Pulsed

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●Electrical characteristic curves

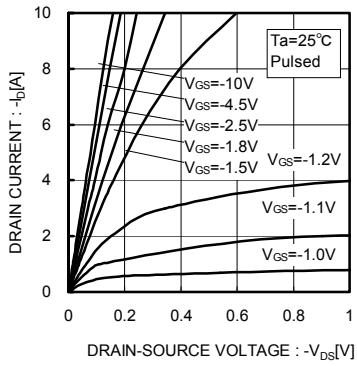


Fig.1 Typical Output Characteristics(Ⅰ)

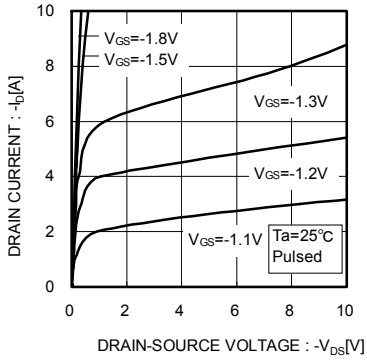


Fig.2 Typical Output Characteristics(Ⅱ)

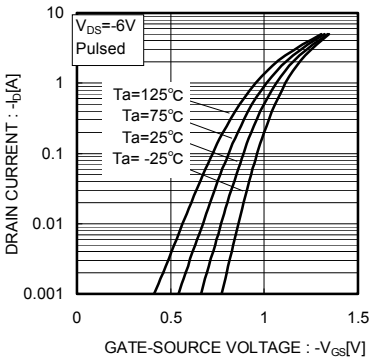


Fig.3 Typical Transfer Characteristics

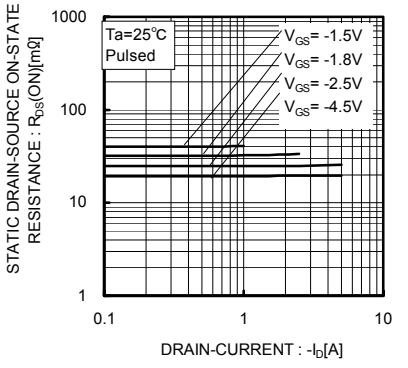


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(Ⅰ)

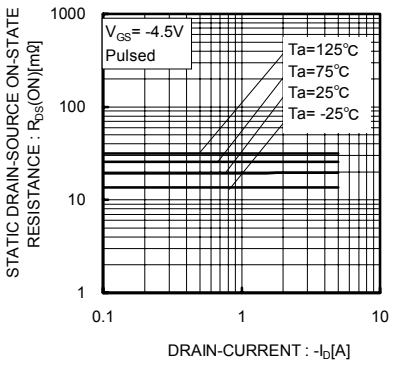


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(Ⅱ)

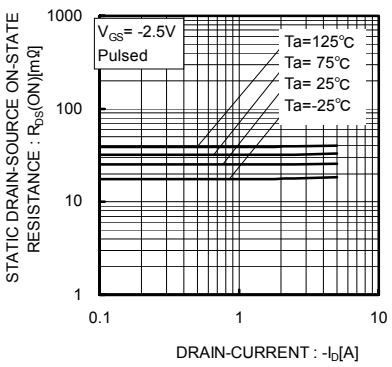


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(Ⅲ)

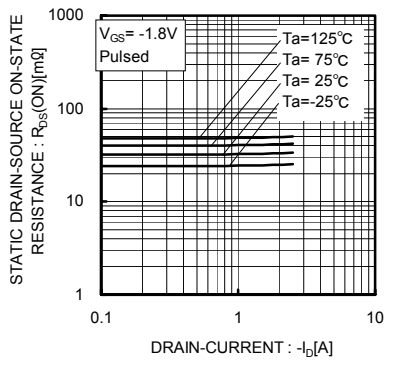


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(Ⅳ)

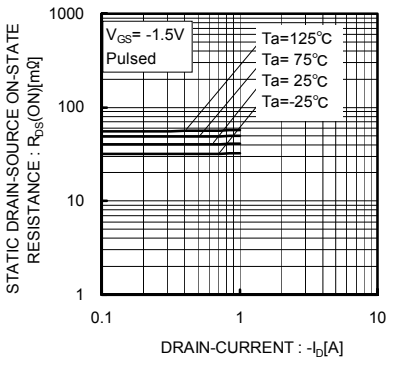


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(Ⅴ)

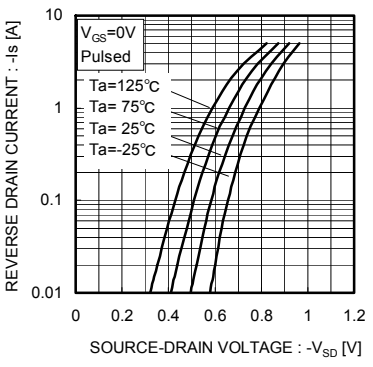


Fig.9 Reverse Drain Current vs. Sourse-Drain Voltage

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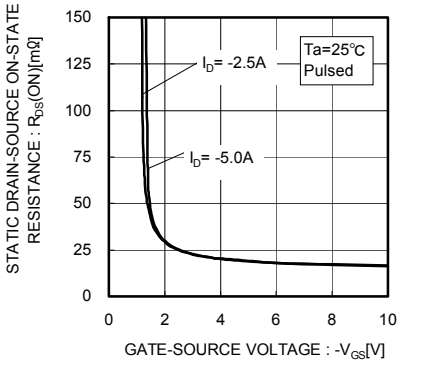


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

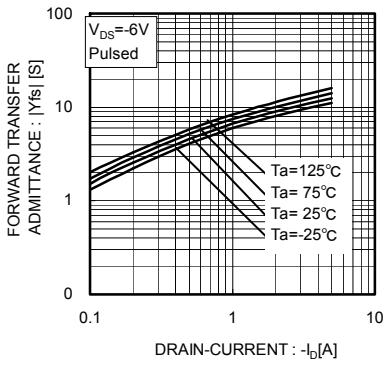


Fig.11 Forward Transfer Admittance vs. Drain Current

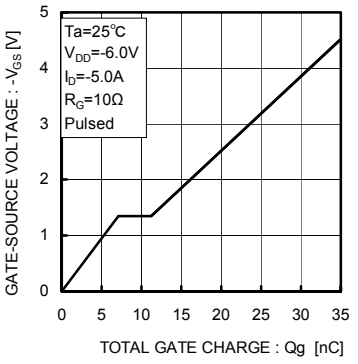


Fig.12 Dynamic Input Characteristics

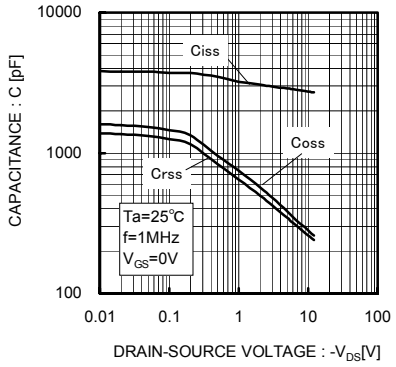


Fig.13 Typical Capacitance vs. Drain-Source Voltage

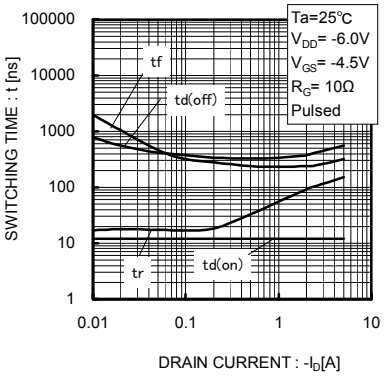


Fig.14 Switching Characteristics

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●**Measurement circuits**

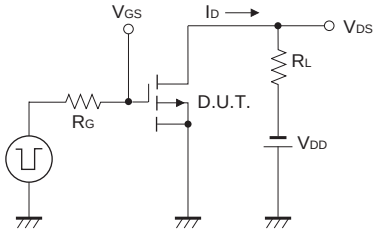


Fig.15 Switching Time Measurement Circuit

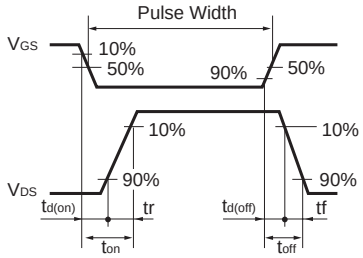


Fig.16 Switching Waveforms

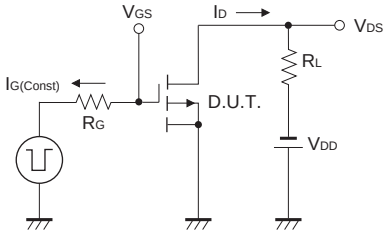


Fig.17 Gate Charge Measurement Circuit

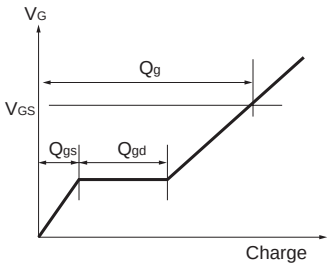


Fig.18 Gate Charge Waveform

●**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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