

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)

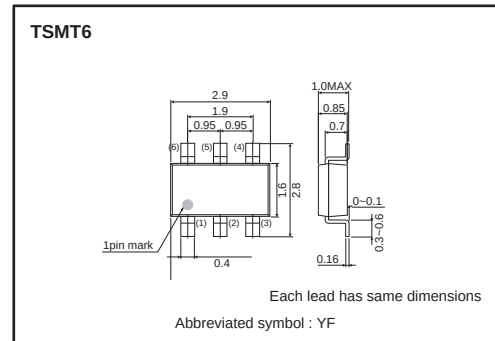
●Applications

Switching

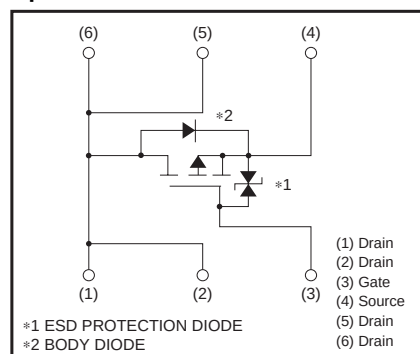
●Packaging specifications

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

●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	±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		T_{ch}	150	°C
Range of Storage temperature		T_{stg}	-55 to +150	°C

*1 $P_w \leq 10\mu s$, Duty cycles ≤ 1%

*2 When mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	100	°C / W

* When mounted on a ceramic board.

●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
Rise time	t _r *	—	100	—	ns	V _{DD} ≐ −6V
Turn-off delay time	t _{d (off)} *	—	420	—	ns	V _{GS} = −4.5V
Fall time	t _f *	—	225	—	ns	R _L ≐ 2.4Ω
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

●Electrical characteristic curves

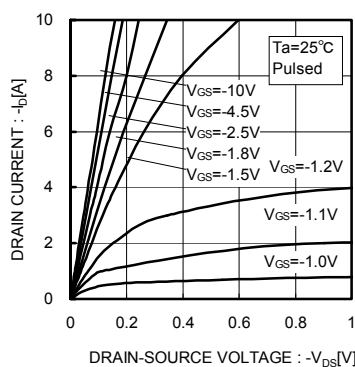


Fig.1 Typical Output Characteristics (I)

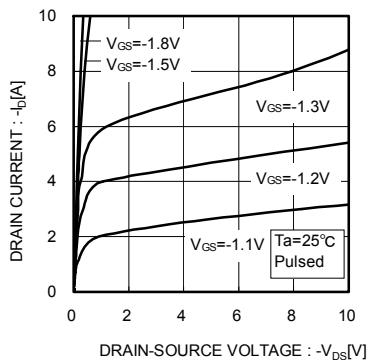


Fig.2 Typical Output Characteristics (II)

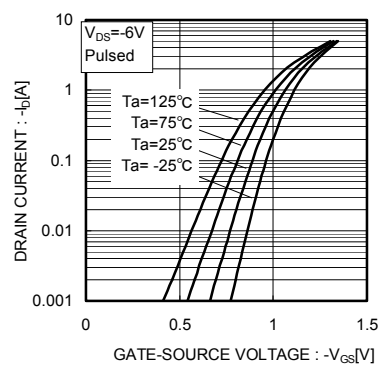


Fig.3 Typical Transfer Characteristics

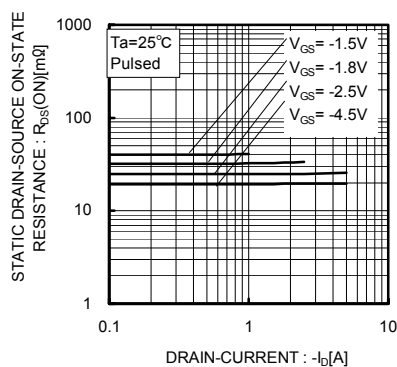


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

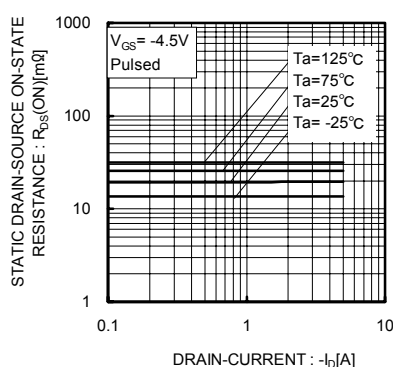


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(II)

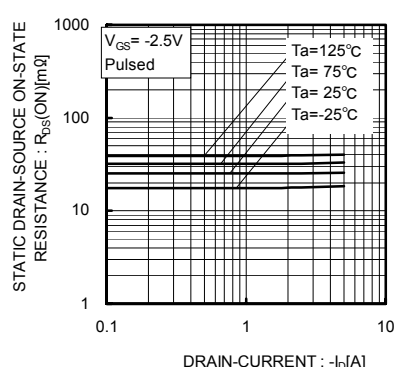


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(III)

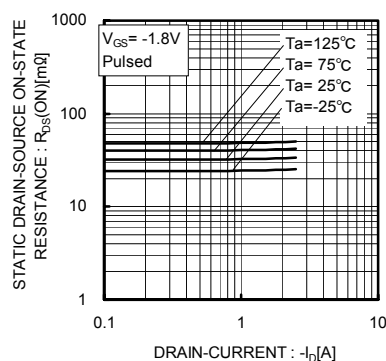


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(IV)

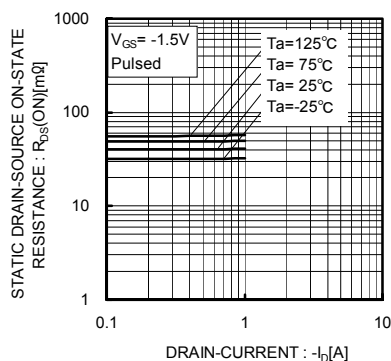


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(V)

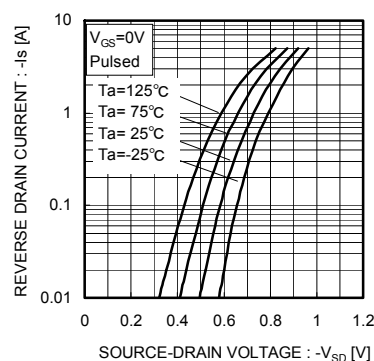


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

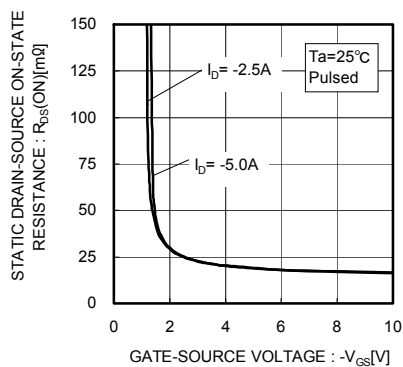


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

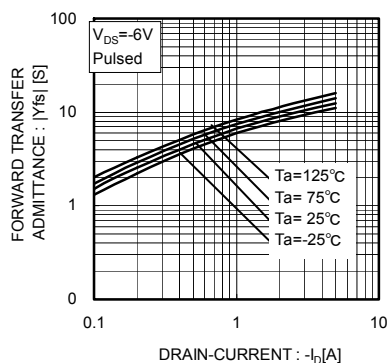


Fig.11 Forward Transfer Admittance vs. Drain Current

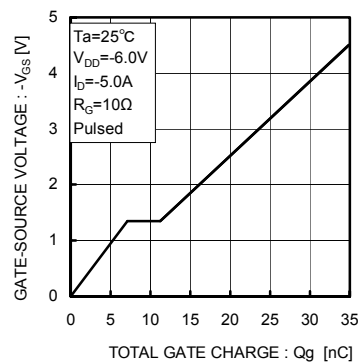


Fig.12 Dynamic Input Characteristics

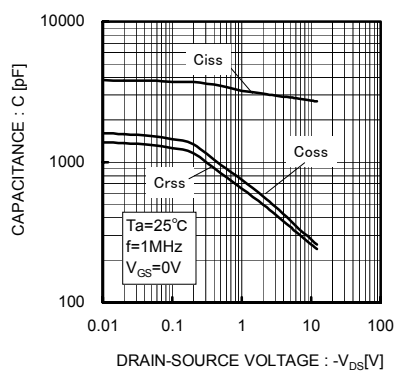


Fig.13 Typical Capacitance vs. Drain-Source Voltage

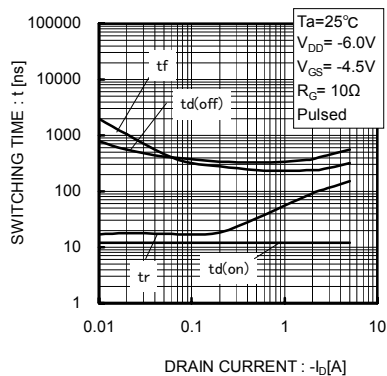


Fig.14 Switching Characteristics

●Measurement circuits

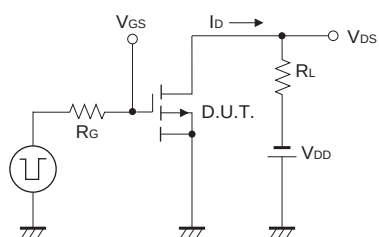


Fig.15 Switching Time Measurement Circuit

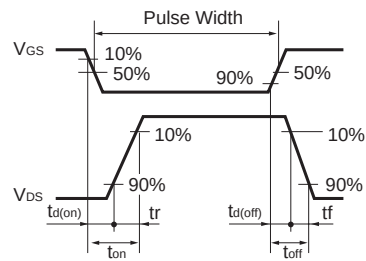


Fig.16 Switching Waveforms

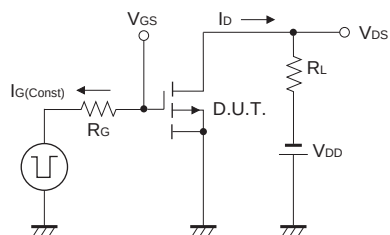


Fig.17 Gate Charge Measurement Circuit

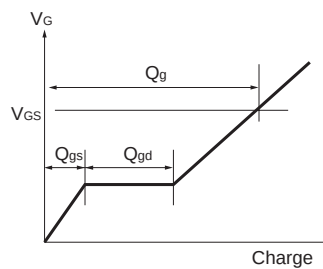


Fig.18 Gate Charge Waveform

●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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