

Transistor

2.5V Drive Pch MOS FET

RTQ035P02

●Structure

Silicon P-channel MOSFET

●Features

- 1) Low On-resistance.(80mΩ at 2.5V)
- 2) High Power Package.
- 3) High speed switching.
- 4) Low voltage drive.(2.5V)

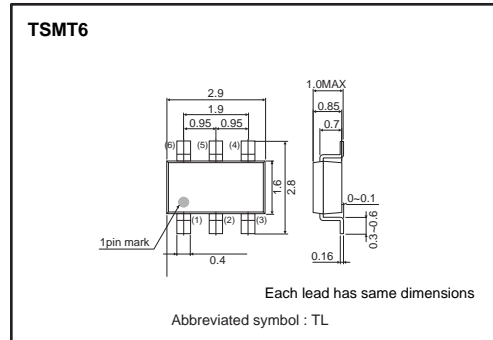
●Applications

DC-DC converter

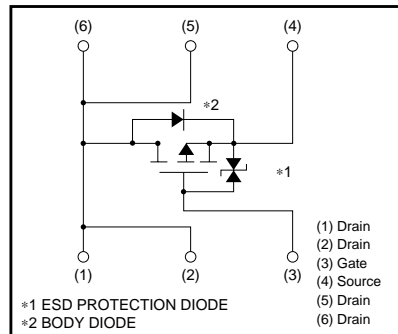
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RTQ035P02		○

●External dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	-20	V	
Gate-source voltage	V _{GSS}	±12	V	
Drain current	Continuous	I _D	±3.5	A
	Pulsed	I _{DP} *1	±17.5	A
Source current (Body diode)	Continuous	I _S	-1	A
	Pulsed	I _{SP} *1	-4	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 Pw≤10μs, Duty cycles≤1%

*2 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	R _{th (ch-a)} *	100	°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	$V_{GS}=\pm 12V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	–20	–	–	V	$I_D=-1mA, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	–	–	–1	μA	$V_{DS}=-20V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	–0.7	–	–2.0	V	$V_{DS}=-10V, I_D=-1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	–	50	65	mΩ	$I_D=-3.5A, V_{GS}=-4.5V$
		–	55	70	mΩ	$I_D=-3.5A, V_{GS}=-4V$
		–	80	100	mΩ	$I_D=-1.75A, V_{GS}=-2.5V$
Forward transfer admittance	$ Y_{fs} ^*$	3.5	–	–	S	$V_{DS}=-10V, I_D=-3.5A$
Input capacitance	C_{iss}	–	1200	–	pF	$V_{DS}=-10V, V_{GS}=0V$ $f=1MHz$
Output capacitance	C_{oss}	–	200	–	pF	
Reverse transfer capacitance	C_{rss}	–	130	–	pF	
Turn-on delay time	$t_{d(on)}^*$	–	16	–	ns	$I_D=-2A$ $V_{DD}=-15V$ $V_{GS}=-4.5V$ $R_L=7.5\Omega$ $R_G=10\Omega$
Rise time	t_r^*	–	40	–	ns	
Turn-off delay time	$t_{d(off)}^*$	–	55	–	ns	
Fall time	t_f^*	–	30	–	ns	
Total gate charge	Q_g	–	10.5	–	nC	$V_{DD}=-15V$ $V_{GS}=-4.5V$ $I_D=-3.5A$
Gate-source charge	Q_{gs}	–	2.0	–	nC	
Gate-drain charge	Q_{gd}	–	3.5	–	nC	

*PULSED

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}	–	–	–1.2	V	$I_S=-1A, V_{GS}=0V$

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●Electrical characteristic curves

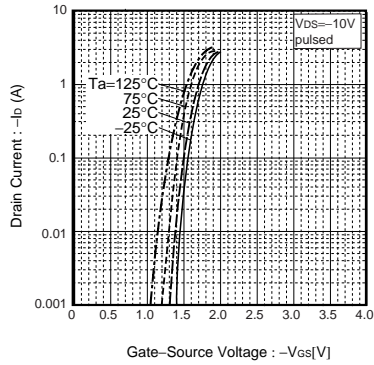


Fig.1 Typical Transfer Characteristics

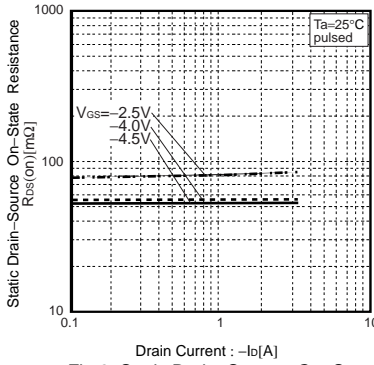


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

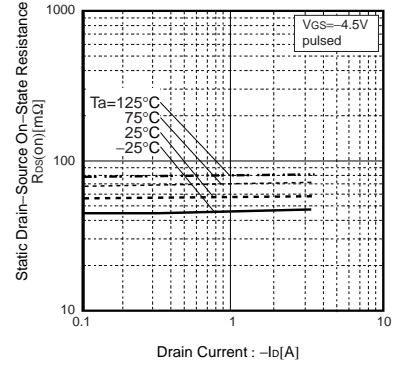


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

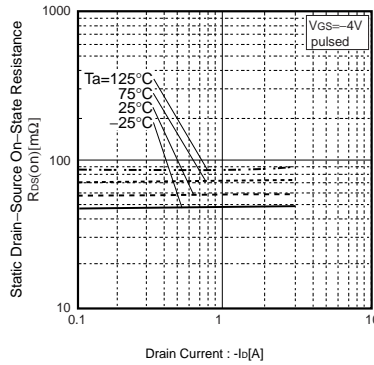


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

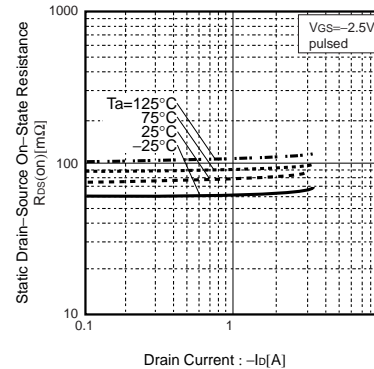


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

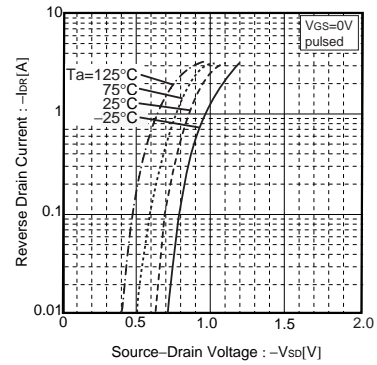


Fig.6 Reverse Drain Current vs. Source-Drain Voltage

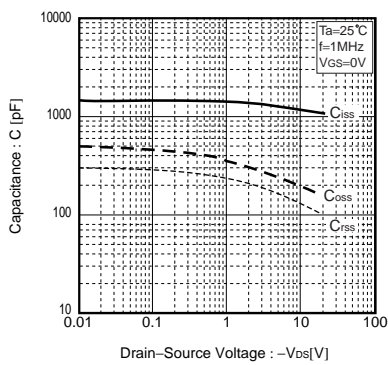


Fig.7 Typical Capacitance vs. Drain-Source Voltage

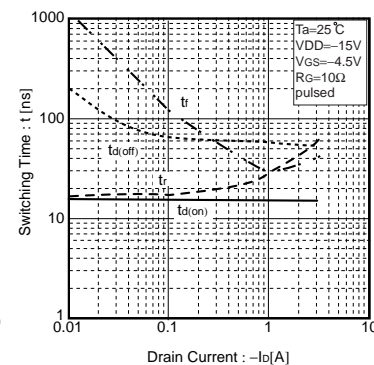


Fig.8 Switching Characteristics

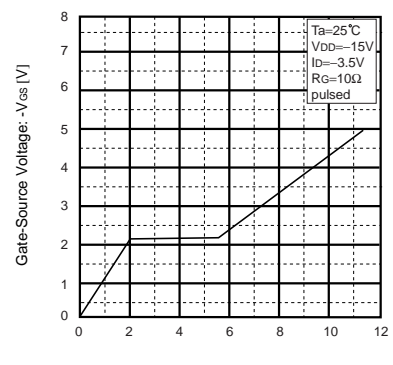


Fig.9 Dynamic Input Characteristics

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● Measurement circuits

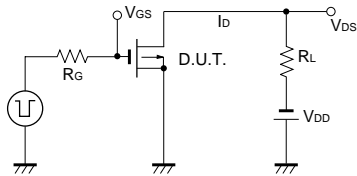


Fig.10 Switching Time Measurement Circuit

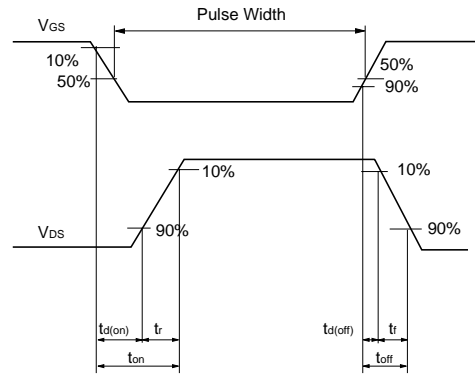


Fig.11 Switching Waveforms

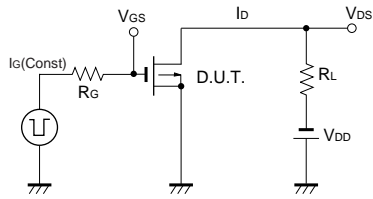


Fig.12 Gate Charge Measurement Circuit

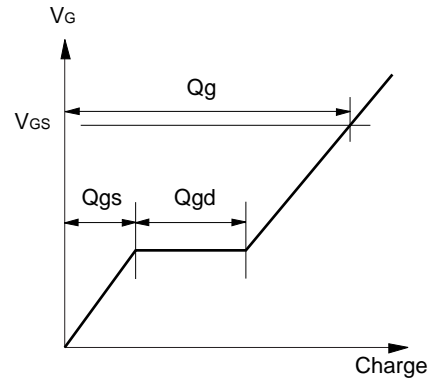


Fig.13 Gate Charge Waveforms

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