

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)

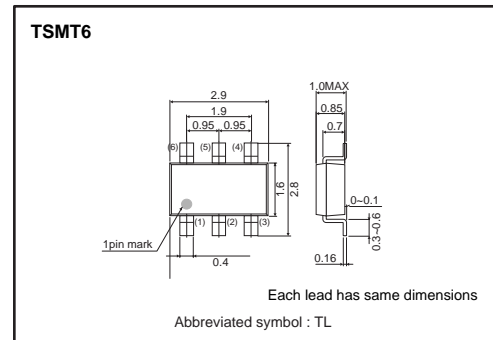
## ●Applications

DC-DC converter

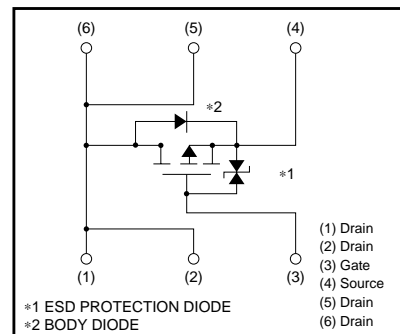
## ●Packaging specifications

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 <sub>DSS</sub>	-20	V	
Gate-source voltage	V <sub>GSS</sub>	±12	V	
Drain current	Continuous	I <sub>D</sub>	±3.5	A
	Pulsed	I <sub>DP</sub> *1	±17.5	A
Source current (Body diode)	Continuous	I <sub>S</sub>	-1	A
	Pulsed	I <sub>SP</sub> *1	-4	A
Total power dissipation	P <sub>D</sub> *2	1.25	W	
Channel temperature	T <sub>ch</sub>	150	°C	
Range of Storage temperature	T <sub>stg</sub>	-55 to +150	°C	

\*1 P<sub>W</sub>≤10μs, Duty cycles≤1%

\*2 Mounted on a ceramic board

## ●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	R <sub>th</sub> (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 <sub>GSS</sub>	–	–	±10	μA	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	–20	–	–	V	I <sub>D</sub> =–1mA, V <sub>GS</sub> =0V
Zero gate voltage drain current	I <sub>DSS</sub>	–	–	–1	μA	V <sub>DS</sub> =–20V, V <sub>GS</sub> =0V
Gate threshold voltage	V <sub>GS(th)</sub>	–0.7	–	–2.0	V	V <sub>DS</sub> =–10V, I <sub>D</sub> =–1mA
Static drain-source on-state resistance	R <sub>DS(on)</sub> <sup>*</sup>	–	50	65	mΩ	I <sub>D</sub> =–3.5A, V <sub>GS</sub> =–4.5V
		–	55	70	mΩ	I <sub>D</sub> =–3.5A, V <sub>GS</sub> =–4V
		–	80	100	mΩ	I <sub>D</sub> =–1.75A, V <sub>GS</sub> =–2.5V
Forward transfer admittance	Y <sub>fs</sub>   <sup>*</sup>	3.5	–	–	S	V <sub>DS</sub> =–10V, I <sub>D</sub> =–3.5A
Input capacitance	C <sub>iss</sub>	–	1200	–	pF	V <sub>DS</sub> =–10V, V <sub>GS</sub> =0V f=1MHz
Output capacitance	C <sub>oss</sub>	–	200	–	pF	
Reverse transfer capacitance	C <sub>rss</sub>	–	130	–	pF	
Turn-on delay time	t <sub>d(on)</sub> <sup>*</sup>	–	16	–	ns	I <sub>D</sub> =–2A V <sub>DD</sub> =–15V V <sub>GS</sub> =–4.5V R <sub>L</sub> =7.5Ω R <sub>G</sub> =10Ω
Rise time	t <sub>r</sub> <sup>*</sup>	–	40	–	ns	
Turn-off delay time	t <sub>d(off)</sub> <sup>*</sup>	–	55	–	ns	
Fall time	t <sub>f</sub> <sup>*</sup>	–	30	–	ns	
Total gate charge	Q <sub>g</sub>	–	10.5	–	nC	V <sub>DD</sub> =–15V V <sub>GS</sub> =–4.5V I <sub>D</sub> =–3.5A
Gate-source charge	Q <sub>gs</sub>	–	2.0	–	nC	
Gate-drain charge	Q <sub>gd</sub>	–	3.5	–	nC	

\*PULSED

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V <sub>SD</sub>	–	–	–1.2	V	I <sub>S</sub> =–1A, V <sub>GS</sub> =0V

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●Electrical characteristic curves

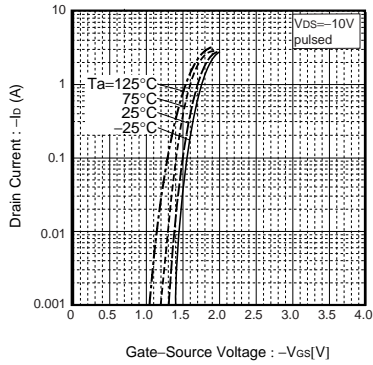


Fig.1 Typical Transfer Characteristics

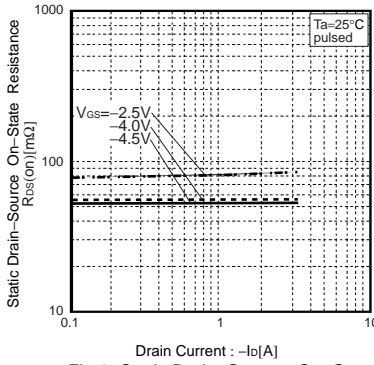


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

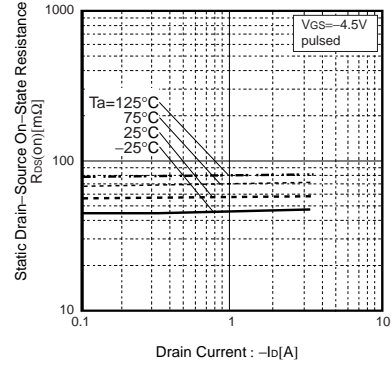


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

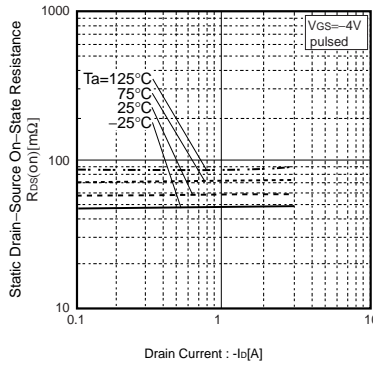


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

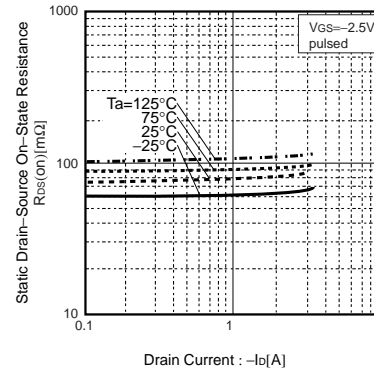


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

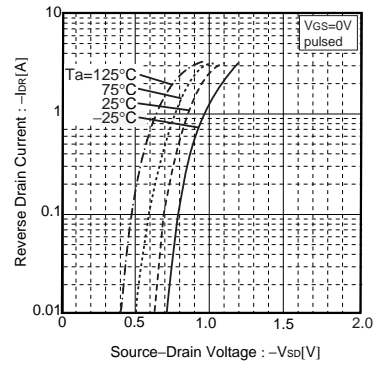


Fig.6 Reverse Drain Current vs. Source-Drain Voltage

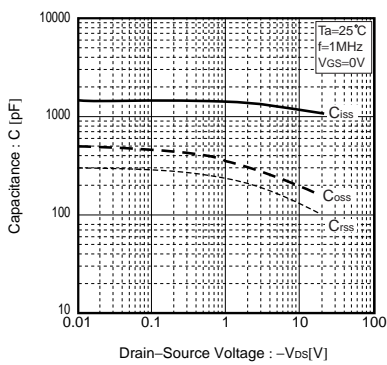


Fig.7 Typical Capacitance vs. Drain-Source Voltage

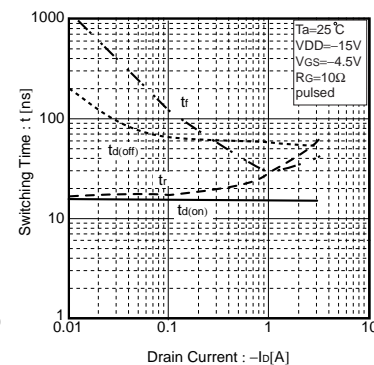


Fig.8 Switching Characteristics

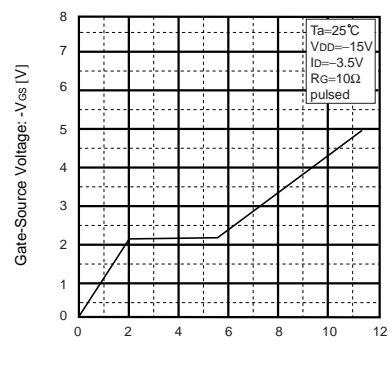


Fig.9 Dynamic Input Characteristics

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● Measurement circuits

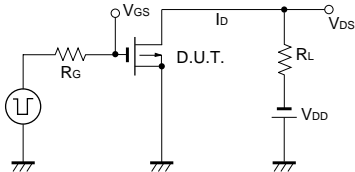


Fig.10 Switching Time Measurement Circuit

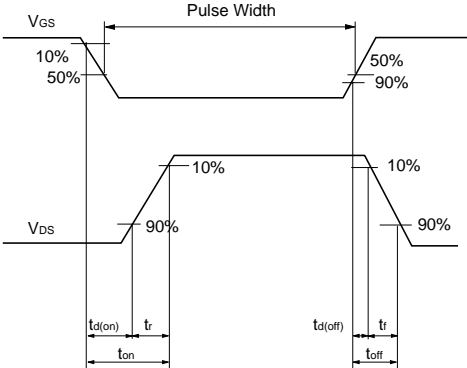


Fig.11 Switching Waveforms

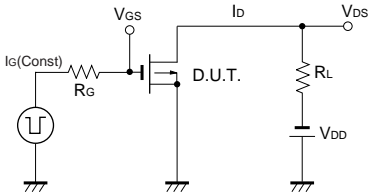


Fig.12 Gate Charge Measurement Circuit

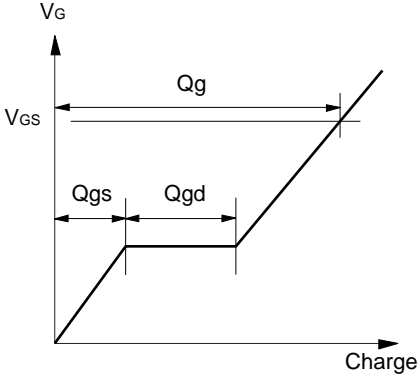


Fig.13 Gate Charge Waveforms

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