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.
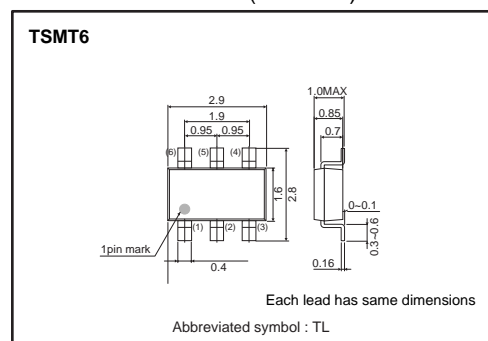3) High speed switching.
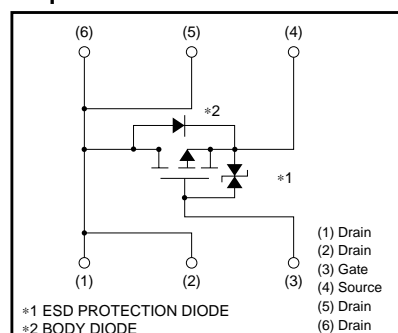4) Low voltage drive.(2.5V)

●**Applications**
DC-DC converter

●**External dimensions** (Unit : mm)

TSMT6

Each lead has same dimensions

Abbreviated symbol : TL

●**Packaging specifications**

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

●**Equivalent circuit**

(1) Drain
(2) Drain
(3) Gate
(4) Source
(5) Drain
(6) Drain

∗1 ESD PROTECTION DIODE
∗2 BODY DIODE

●**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		Tch	150	°C
Range of Storage temperature		Tstg	−55 to +150	°C

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

●**Thermal resistance**

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth (ch-a) ∗	100	°C / W

∗ Mounted on a ceramic board.

Transistor

●**Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I$_{GSS}$	–	–	±10	μA	V$_{GS}$=±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
Foward 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$_L$=7.5Ω R$_G$=10Ω
Rise time	t$_r$*	–	40	–	ns	
Turn-off delay time	t$_{d(off)}$*	–	55	–	ns	
Fall time	t$_f$*	–	30	–	ns	
Total gate charge	Qg	–	10.5	–	nC	V$_{DD}$≒–15V V$_{GS}$=–4.5V I$_D$=–3.5A
Gate-source charge	Qgs	–	2.0	–	nC	
Gate-drain charge	Qgd	–	3.5	–	nC	

∗PULSED

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

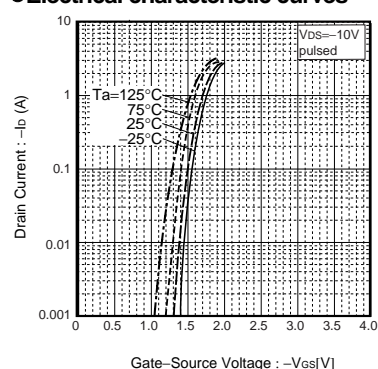| Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V$_{SD}$	–	–	–1.2	V	I$_S$=–1A, V$_{GS}$=0V

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●**Electrical characteristic curves**
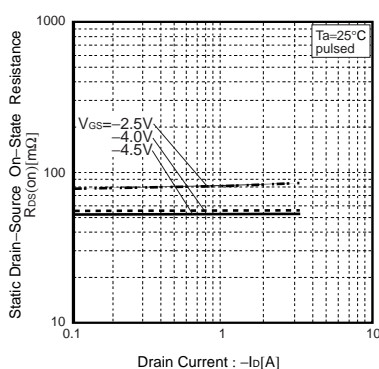

Fig.1 Typical Transfer Characteristics

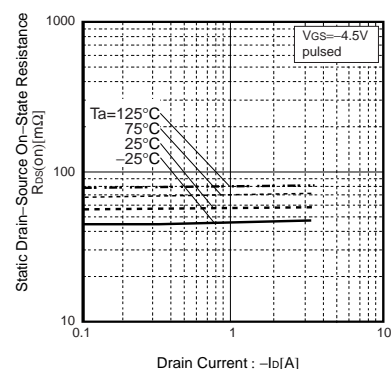Fig.2 Static Drain–Source On–State Resistance vs.Drain Current

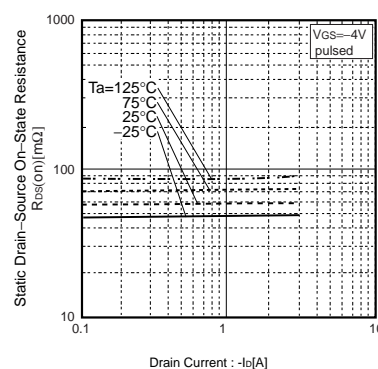Fig.3 Static Drain–Source On–State Resistance vs.Drain Current

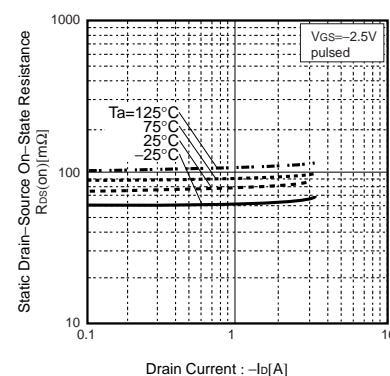Fig.4 Static Drain–Source On–State Resistance vs.Drain–Current

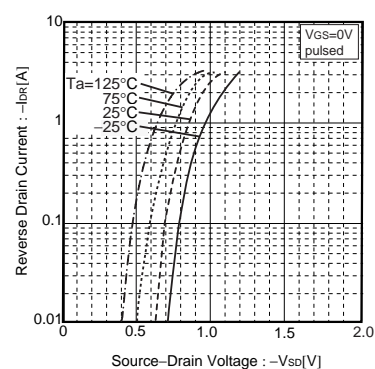Fig.5 Static Drain–Source On–State Resistance vs.Drain–Current
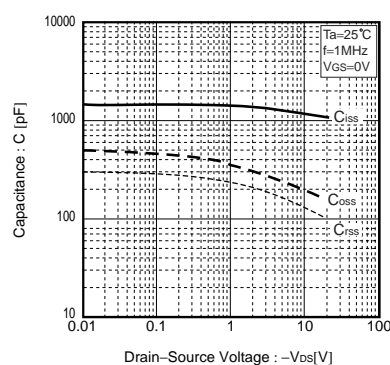

Fig.6 Reverse Drain Current vs. Source-Drain Voltage
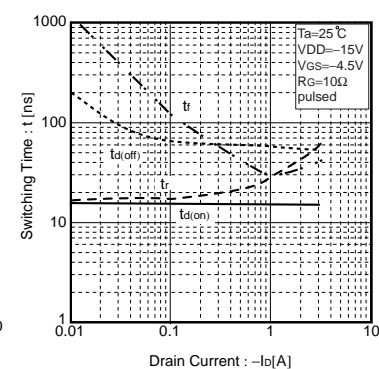

Fig.7 Typical Capacitance vs.Drain–Source Voltage

Fig.8 Switching Characteristics

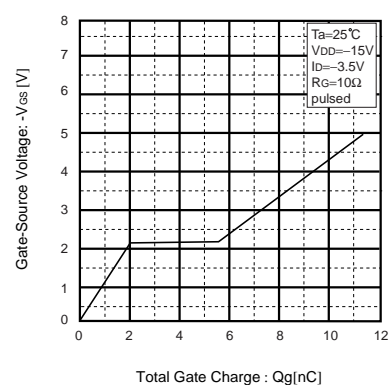Fig.9 Dynamic Input Characteristics
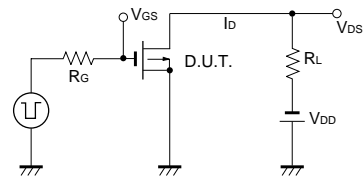
● **Measurement circuits**

Fig.10 Switching Time Measurement Circuit
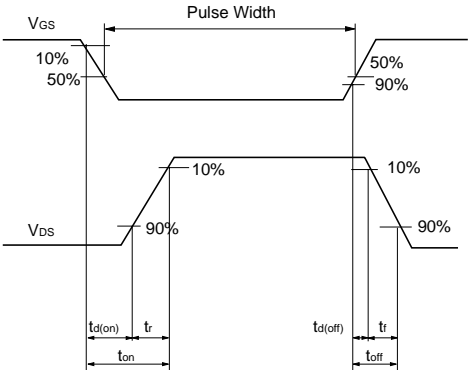

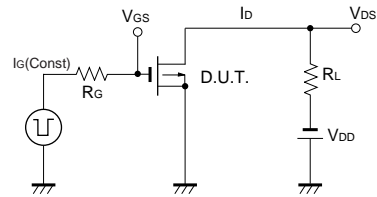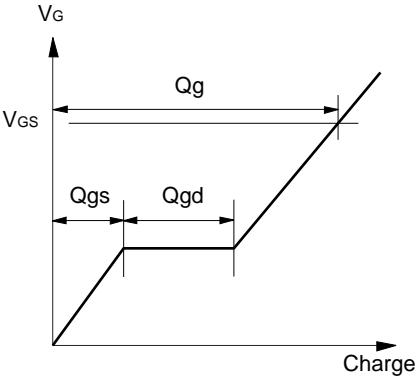Fig.11 Switching Waveforms

Fig.12 Gate Charge Measurement Circuit

Fig.13 Gate Charge Waveforms

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