

Transistor

4V Drive Pch MOS FET

RSQ025P03

●Structure

Silicon P-channel MOS FET

●Features

- 1) Low On-resistance.(120mΩ at 4.5V)
- 2) High Power Package.(P_D=1.25W)
- 3) High speed switching.
- 4) Low voltage drive. (4V)

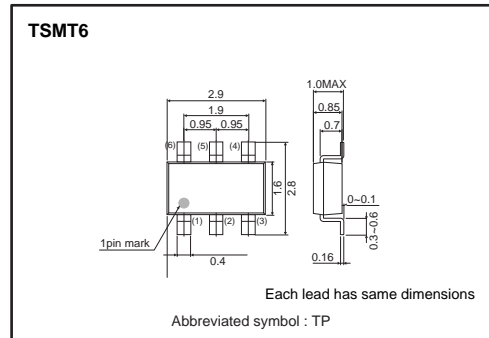
●Applications

DC-DC converter

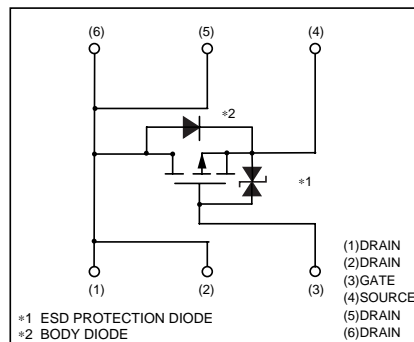
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RSQ025P03		○

●External dimensions (Unit : mm)



●Equivalent circuit

●Absolute maximum ratings (T_a=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	-30	V	
Gate-source voltage	V _{GSS}	±20	V	
Drain current	Continuous	I _D	±2.5	A
	Pulsed	I _{DP} *1	±10	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 P_w≤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} =±20V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DSS}	–30	–	–	V	I _D =–1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	–1	μA	V _{DS} =–30V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	–1.0	–	–2.5	V	V _{DS} =–10V, I _D =–1mA
Static drain-source on-state resistance	R _{DS(on)} [*]	–	80	110	mΩ	I _D =–2.5A, V _{GS} =–10V
		–	120	165	mΩ	I _D =–2.5A, V _{GS} =–4.5V
		–	145	200	mΩ	I _D =–1.25A, V _{GS} =–4.0V
Forward transfer admittance	Y _{fs} [*]	1.2	–	–	S	V _{DS} =–10V, I _D =–1.25A
Input capacitance	C _{iss}	–	320	–	pF	V _{DS} =–10V, V _{GS} =0V f=1MHz
Output capacitance	C _{oss}	–	85	–	pF	
Reverse transfer capacitance	C _{rss}	–	60	–	pF	
Turn-on delay time	t _{d(on)} [*]	–	8	–	ns	I _D =–1.25A V _{DD} =–15V V _{GS} =–10V R _L =12Ω R _G =10Ω
Rise time	t _r [*]	–	11	–	ns	
Turn-off delay time	t _{d(off)} [*]	–	33	–	ns	
Fall time	t _f [*]	–	7	–	ns	
Total gate charge	Q _g	–	4.4	–	nC	V _{DD} =–15V V _{GS} =–5V I _D =–2.5A
Gate-source charge	Q _{gs}	–	1.0	–	nC	
Gate-drain charge	Q _{gd}	–	1.4	–	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 =–0.9A, V _{GS} =0V

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●Electrical characteristic curves

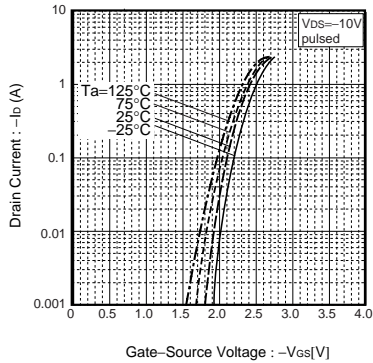


Fig.1 Typical Transfer Characteristics

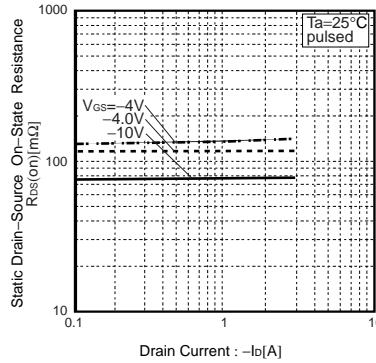


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

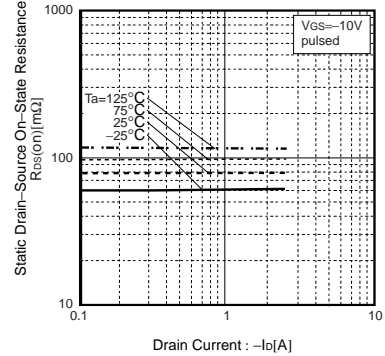


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

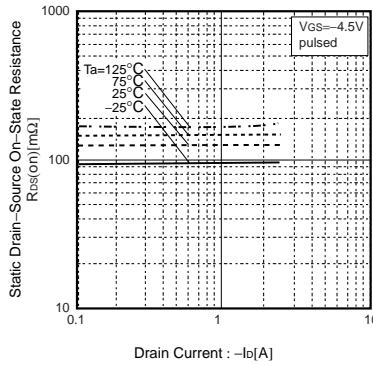


Fig.4 Static Drain-Source On-State Resistance vs. Drain-Current

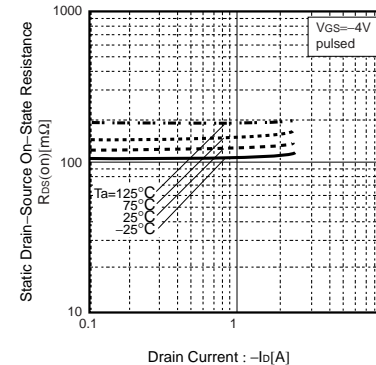


Fig.5 Static Drain-Source On-State Resistance vs. Drain-Current

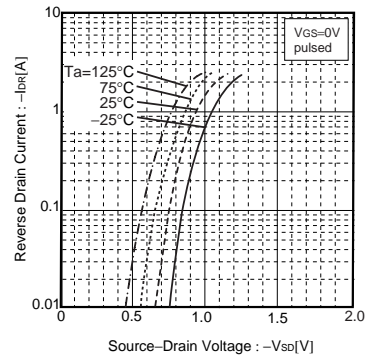


Fig.6 Reverse Drain Current Source-Drain Voltage

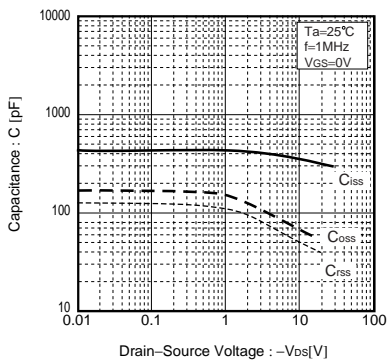


Fig.7 Typical Capacitance vs. Drain-Source Voltage

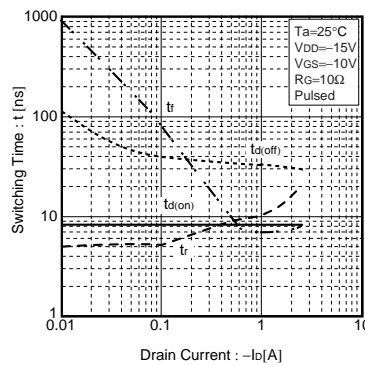


Fig.8 Switching Characteristics

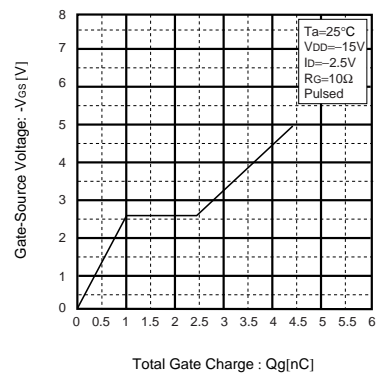


Fig.9 Dynamic Input Characteristics

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● Measurement circuits

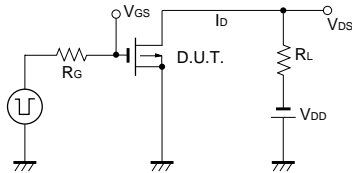


Fig.10 Switching Time Measurement Circuit

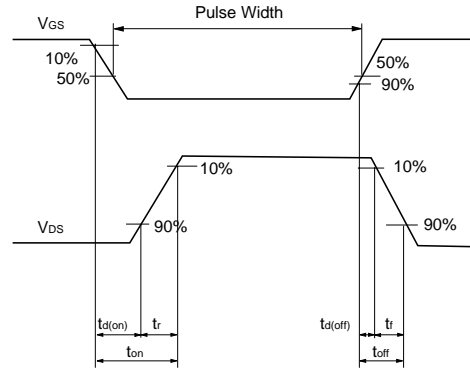


Fig.11 Switching Waveforms

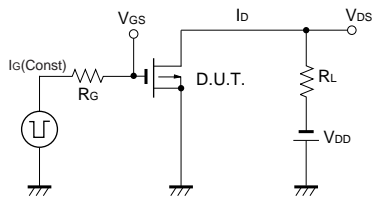


Fig.12 Gate Charge Measurement Circuit

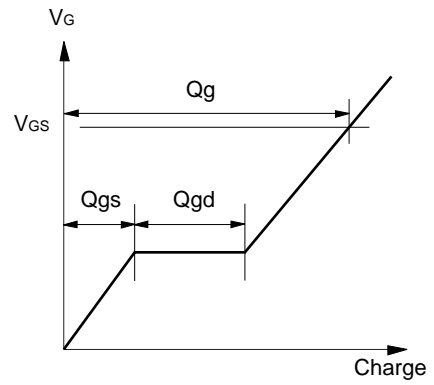


Fig.13 Gate Charge Waveforms

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