

4V Drive Pch MOS FET

RSQ030P03

●Structure

Silicon P-channel MOS FET

●Features

- 1) Low On-resistance.(90mΩ at 4.5V)
- 2) High Power Package. ($P_D=1.25W$)
- 3) High speed switching.
- 4) Low voltage drive. (4V)

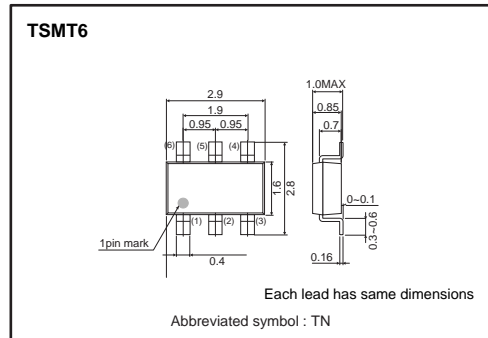
●Applications

DC-DC converter

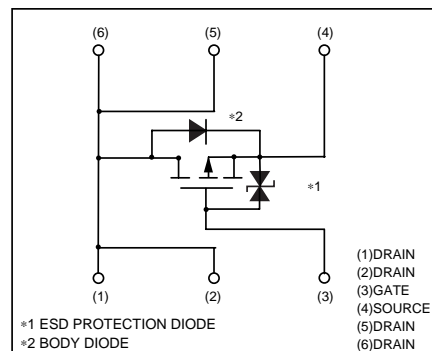
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RSQ030P03		○

●External dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V_{DS}	-30	V	
Gate-source voltage	V_{GS}	± 20	V	
Drain current	Continuous	I_D	± 3	A
	Pulsed	I_{DP} *1	± 12	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	$^\circ\text{C}$	
Range of Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

*1 $P_w \leq 10\mu\text{s}$, Duty cycle $\leq 1\%$

*2 Mounted on a ceramic board

●Thermal resistance

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

* 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} =±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)} *	–	60	80	mΩ	I _D =–3A, V _{GS} =–10V
		–	90	125	mΩ	I _D =–3A, V _{GS} =–4.5V
		–	100	140	mΩ	I _D =–1.5A, V _{GS} =–4.0V
Forward transfer admittance	Y _{fs} *	1.5	–	–	S	V _{DS} =–10V, I _D =–1.5A
Input capacitance	C _{iss}	–	440	–	pF	V _{DS} =–10V, V _{GS} =0V f=1MHz
Output capacitance	C _{oss}	–	110	–	pF	
Reverse transfer capacitance	C _{rss}	–	80	–	pF	
Turn-on delay time	t _{d(on)} *	–	10	–	ns	I _D =–1.5A V _{DD} =–15V V _{GS} =–10V R _L =10Ω R _G =10Ω
Rise time	t _r *	–	13	–	ns	
Turn-off delay time	t _{d(off)} *	–	40	–	ns	
Fall time	t _f *	–	12	–	ns	
Total gate charge	Q _g	–	6.0	–	nC	V _{DD} =–15V V _{GS} =–5V I _D =–3A
Gate-source charge	Q _{gs}	–	1.6	–	nC	
Gate-drain charge	Q _{gd}	–	2.0	–	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

Transistor

●Electrical characteristic curves

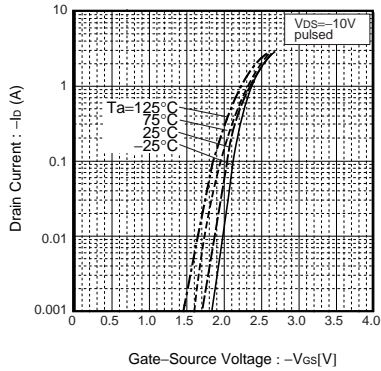


Fig.1 Typical Transfer Characteristics

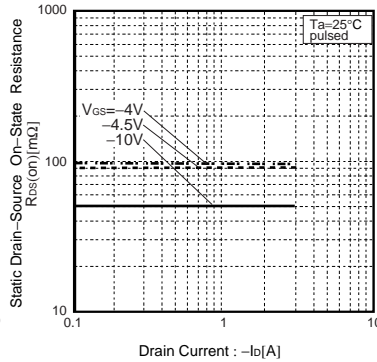


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

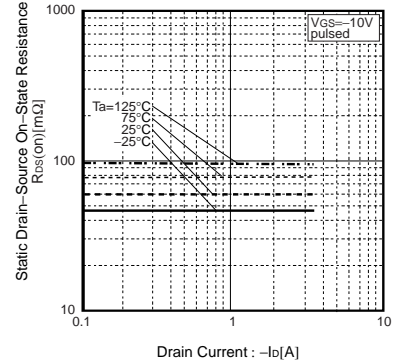


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

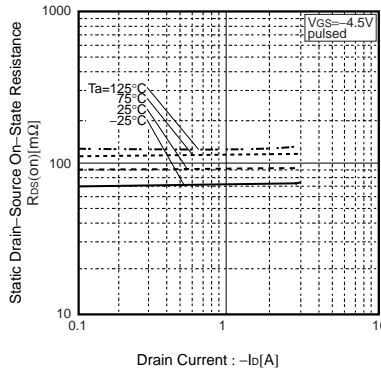


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

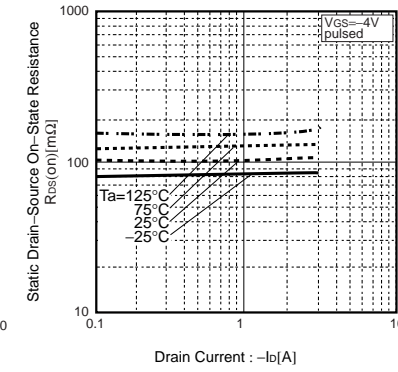


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

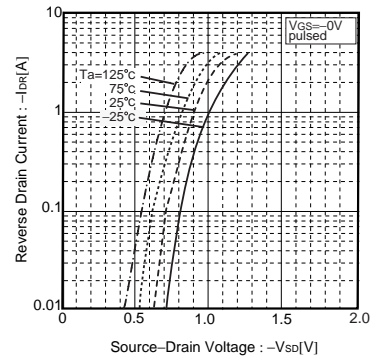


Fig.6 Reverse Drain Current Source-Drain Current

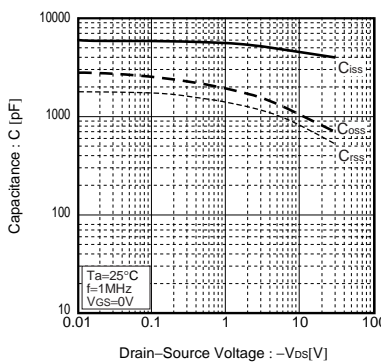


Fig.7 Typical Capacitance vs. Drain-Source Voltage

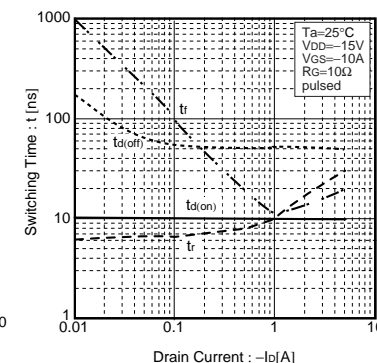


Fig.8 Switching Characteristics

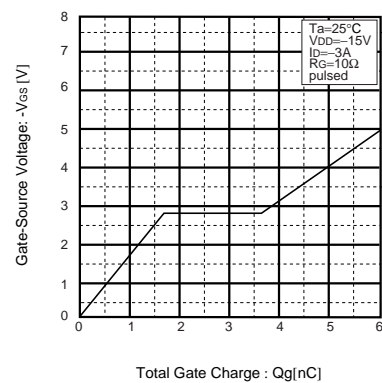


Fig.9 Dynamic Input Characteristics

Transistor

● Measurement circuits

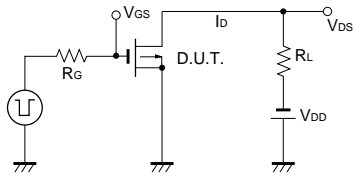


Fig.10 Switching Time Measurement Circuit

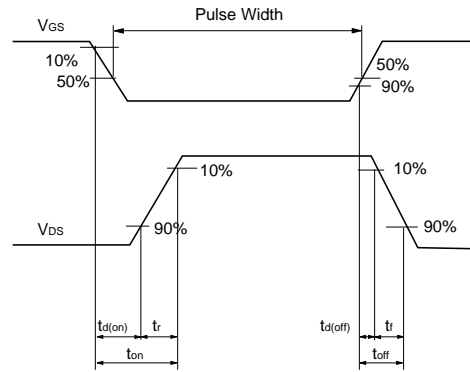


Fig.11 Switching Waveforms

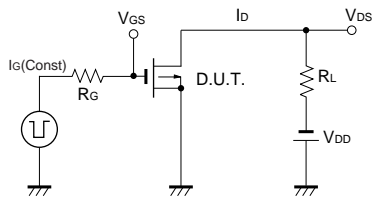


Fig.12 Gate Charge Measurement Circuit

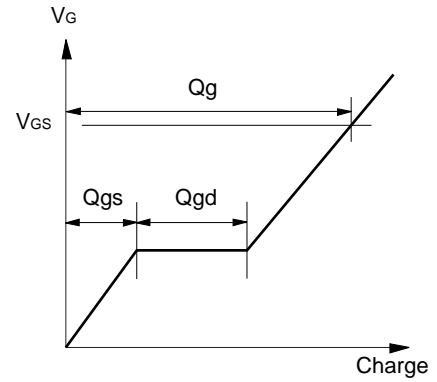


Fig.13 Gate Charge Waveforms

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