4V Drive Pch MOSFET

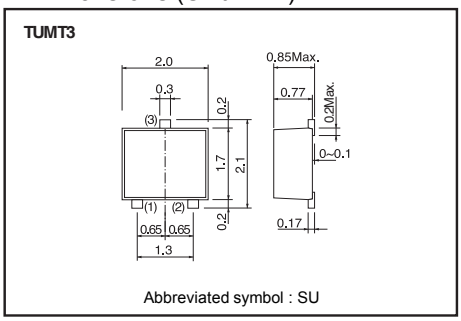
RSF010P05

●Structure
Silicon P-channel MOSFET

●Features
1) Low On-resistance.
2) Small high power package.
3) Low voltage drive.(4V)

●Application
Switching

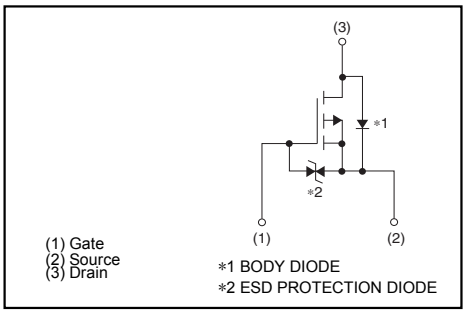
●Dimensions (Unit : mm)



●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RSF010P05		O

●Inner circuit



●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	−45	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	±1	A
	Pulsed	I_{DP} *1	±4	A
Source current (Body Diode)	Continuous	I_S	−0.6	A
	Pulsed	I_{SP} *1	−4	A
Power dissipation		P_D *2	0.8	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)*	156	°C / W

*Mounted on a ceramic board.

●**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	$V_{(BR)DSS}$	−45	-	-	V	I_D=−1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	-	-	−1	μA	V_{DS}=−45V, 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	$R_{DS\ (on)}$*	-	330	460	mΩ	I_D=−1A, V_{GS}=−10V
		-	450	630		I_D=−0.5A, V_{GS}=−4.5V
		-	490	690		I_D=−0.5A, V_{GS}=−4V
Forward transfer admittance	$\|Y_{fs}\|$*	1	-	-	S	I_D=−1A, V_{DS}=−10V
Input capacitance	C_{iss}	-	160	-	pF	V_{DS}=−10V
Output capacitance	C_{oss}	-	40	-	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	-	17	-	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$*	-	6	-	ns	I_D=−0.5A, V_{DD}≒−25V
Rise time	t_r *	-	4	-	ns	V_{GS}=−10V
Turn-off delay time	$t_{d(off)}$*	-	18	-	ns	R_L=50Ω
Fall time	t_f *	-	6	-	ns	R_G=10Ω
Total gate charge	Q_g *	-	2.3	-	nC	I_D=−1A
Gate-source charge	Q_{gs} *	-	0.9	-	nC	V_{DD}≒−25V
Gate-drain charge	Q_{gd} *	-	0.6	-	nC	V_{GS}=−5V

*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

*Pulsed

●Electrical characteristic curves (Ta=25°C)

Fig.1 Typical Output Characteristics (Ⅰ)

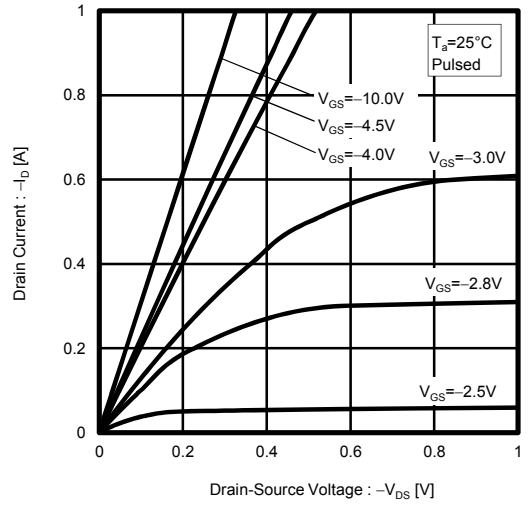


Fig.2 Typical Output Characteristics (Ⅱ)

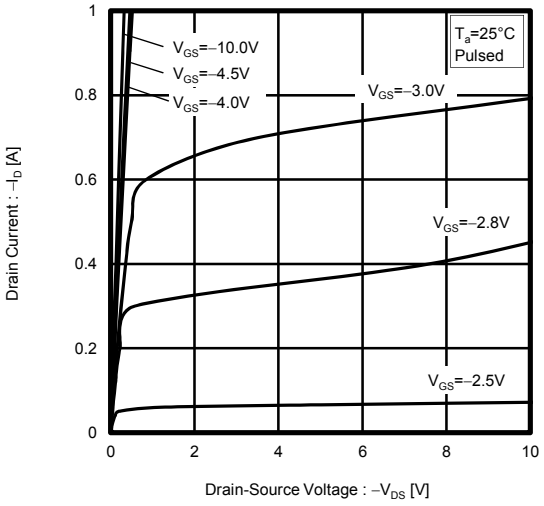


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

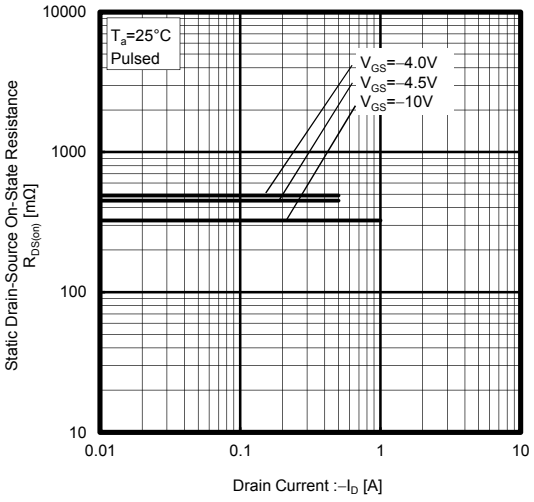


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

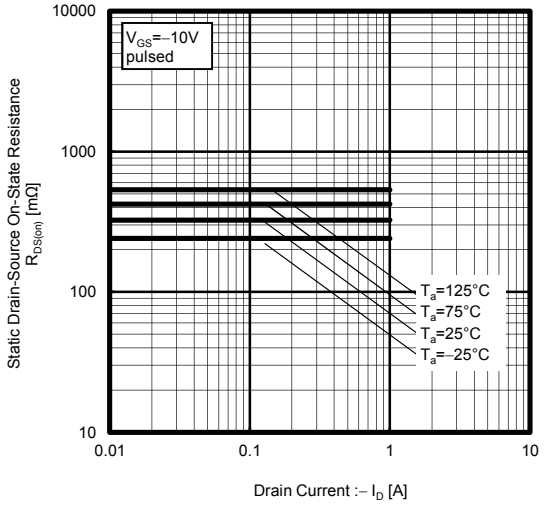


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

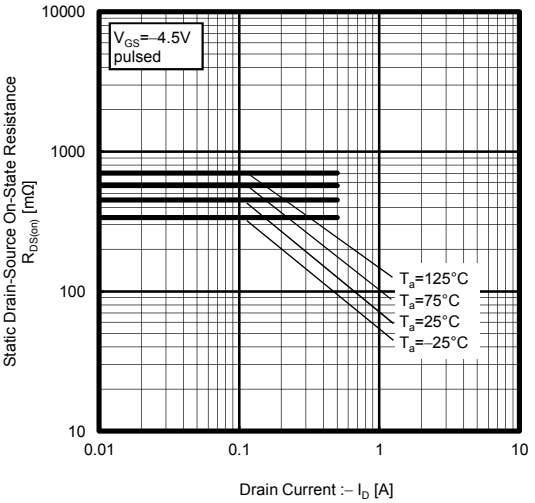


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current

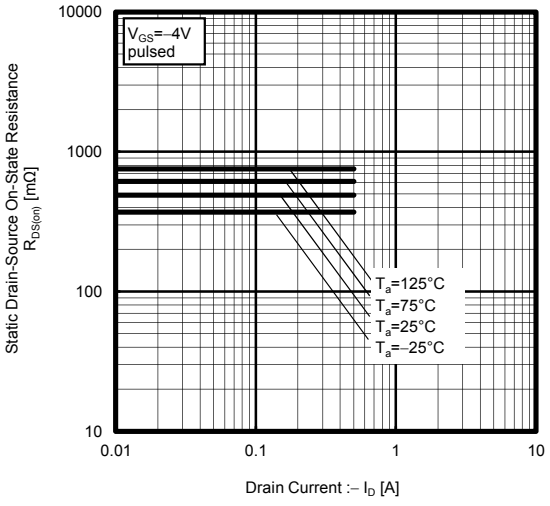


Fig.7 Forward Transfer Admittance vs. Drain Current

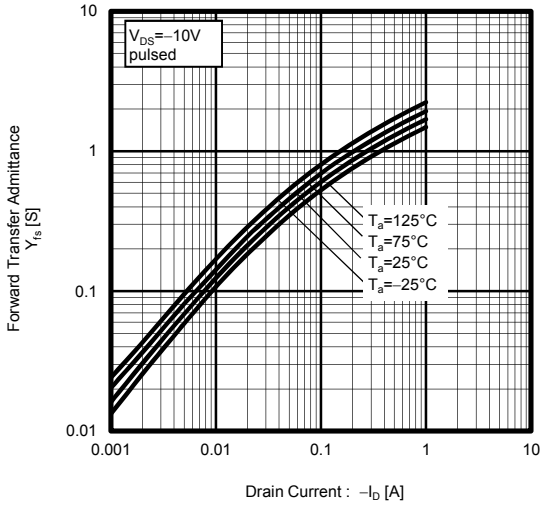


Fig.8 Typical Transfer Characteristics

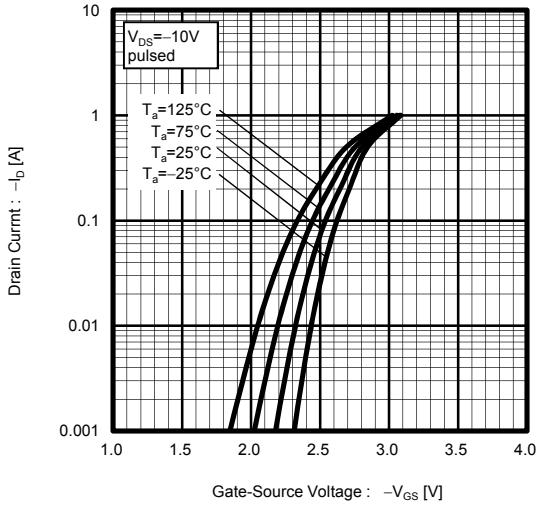


Fig.9 Source Current vs. Source-Drain Voltage

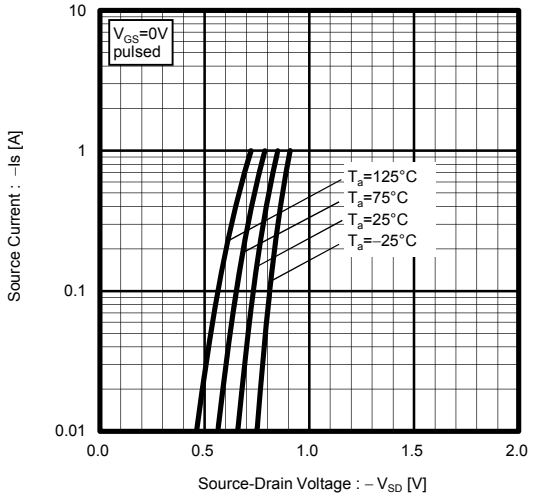


Fig.10 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

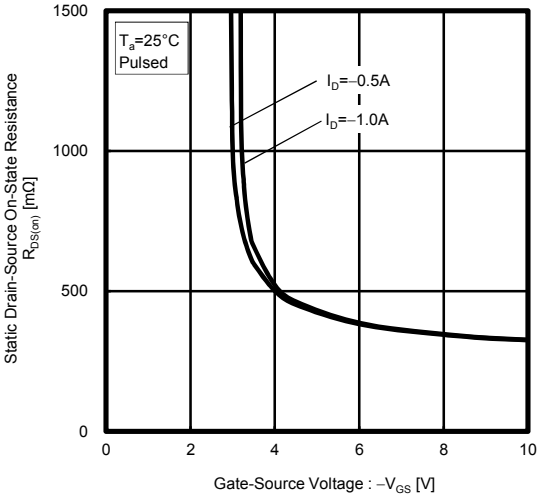


Fig.11 Switching Characteristics

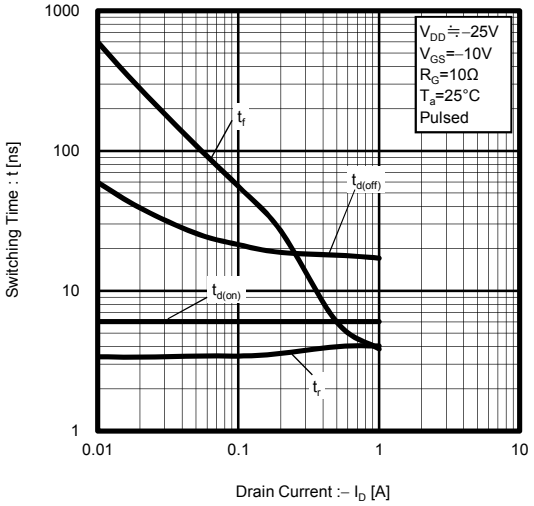


Fig.12 Dynamic Input Characteristics

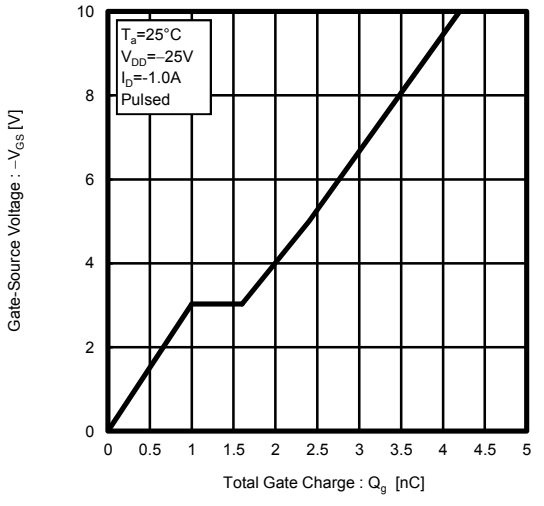


Fig.13 Typical Capacitance vs. Drain-Source Voltage

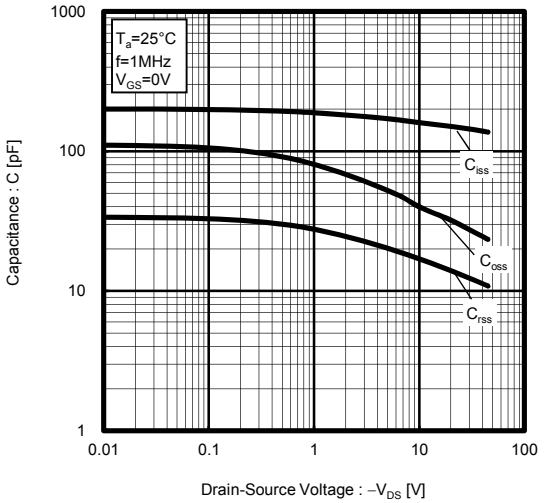


Fig.14 Maximum Safe Operating Area

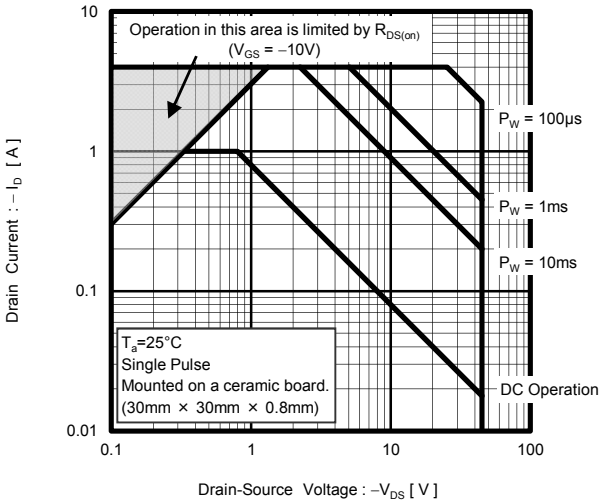
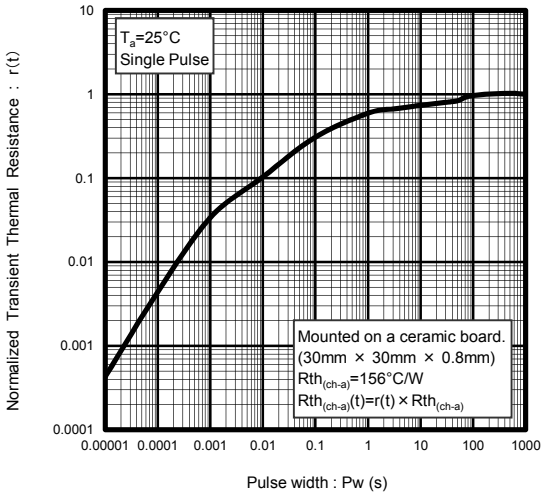


Fig.15 Normalized Transient Thermal Resistance v.s. Pulse Width



●**Measurement circuits**

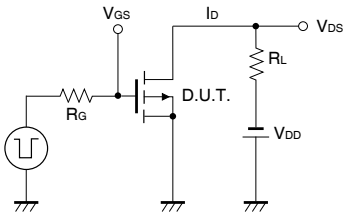


Fig.1-1 Switching Time Measurement Circuit

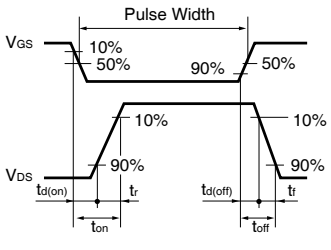


Fig.1-2 Switching Waveforms

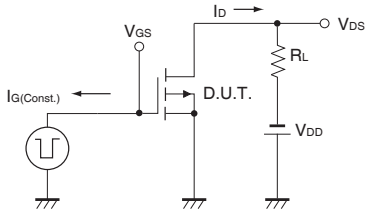


Fig.2-1 Gate Charge Measurement Circuit

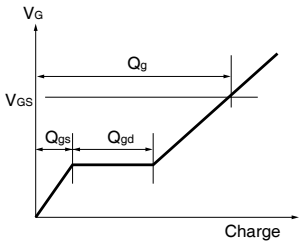


Fig.2-2 Gate Charge Waveform

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