

# 1.5V Drive Pch MOSFET

## RZF030P01

### ●Structure

Silicon P-channel  
MOSFET

### ●Features

- 1) Low on-resistance.
- 2) High power package.
- 3) Low voltage drive. (1.5V)

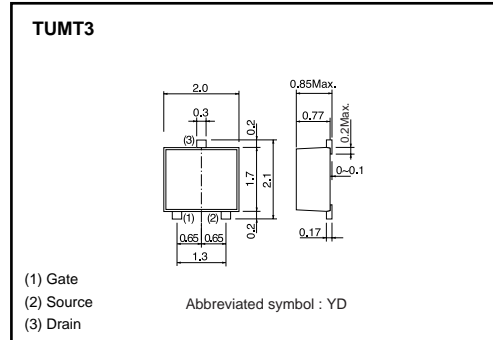
### ●Applications

Switching

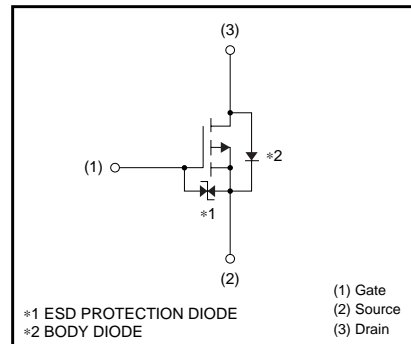
### ●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RZF030P01		○

### ●Dimensions (Unit : mm)



### ●Equivalent circuit



### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	$V_{DS}$	-12	V	
Gate-source voltage	$V_{GS}$	±10	V	
Drain current	Continuous	$I_D$	±3	A
	Pulsed	$I_{DP}$ *1	±12	A
Source current (Body diode)	Continuous	$I_S$ *1	-0.65	A
	Pulsed	$I_{SP}$	-12	A
Total power dissipation	$P_D$ *2	0.8	W	
Channel temperature	$T_{ch}$	150	°C	
Range of Storage temperature	$T_{stg}$	-55 to +150	°C	

\*1  $P_w \leq 10 \mu s$ , Duty cycles  $\leq 1\%$

\*2 Mounted on a ceramic board

### ●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	156	°C / W

\* Mounted on a ceramic board.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	-	-	$\pm 10$	$\mu A$	$V_{GS}=\pm 10V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	-12	-	-	V	$I_D=-1mA, V_{GS}=0V$
Zero gate voltage drain current	$I_{DSS}$	-	-	-1	$\mu A$	$V_{DS}=-12V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	-0.3	-	-1.0	V	$V_{DS}=-6V, I_D=-1mA$
Static drain-source on-state resistance	$R_{DS(on)}$ *	-	28	39	$m\Omega$	$I_D=-3A, V_{GS}=-4.5V$
		-	39	54	$m\Omega$	$I_D=-1.5A, V_{GS}=-2.5V$
		-	51	76	$m\Omega$	$I_D=-1.5A, V_{GS}=-1.8V$
		-	72	144	$m\Omega$	$I_D=-0.6A, V_{GS}=-1.5V$
Forward transfer admittance	$ Y_{fs} $ *	5	-	-	S	$V_{DS}=-6V, I_D=-3A$
Input capacitance	$C_{iss}$	-	1860	-	pF	$V_{DS}=-6V$
Output capacitance	$C_{oss}$	-	210	-	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	-	200	-	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	-	9	-	ns	$I_D=-1.5A$
Rise time	$t_r$ *	-	40	-	ns	$V_{DD}\doteq -6V$
Turn-off delay time	$t_{d(off)}$ *	-	210	-	ns	$V_{GS}=-4.5V$
Fall time	$t_f$ *	-	120	-	ns	$R_L\doteq 4\Omega$
Total gate charge	$Q_g$ *	-	18	-	nC	$V_{DD}\doteq -6V \quad R_L\doteq 2\Omega$
Gate-source charge	$Q_{gs}$ *	-	3.0	-	nC	$I_D=-3A \quad R_G=10\Omega$
Gate-drain charge	$Q_{gd}$ *	-	2.5	-	nC	$V_{GS}=-4.5V$

\*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	$V_{SD}$ *	-	-	-1.2	V	$I_S=-3A, V_{GS}=0V$

\*Pulsed

●Electrical characteristic curves

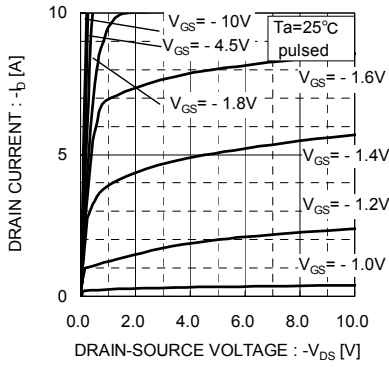


Fig.1 Typical Output Characteristics (I)

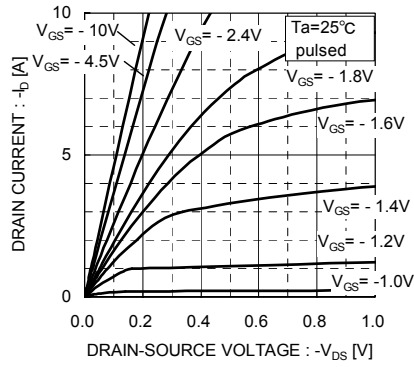


Fig.2 Typical Output Characteristics (II)

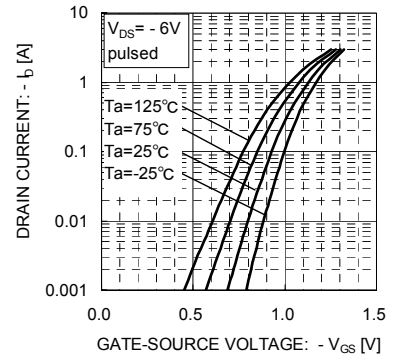


Fig.3 Typical Transfer Characteristics

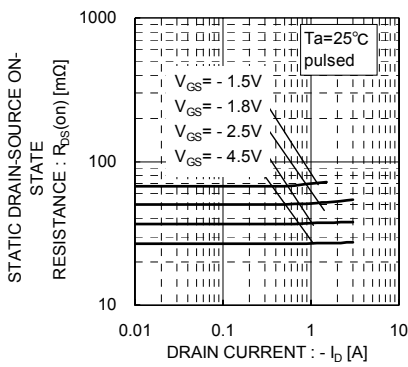


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

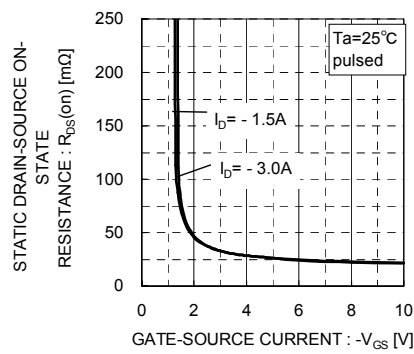


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

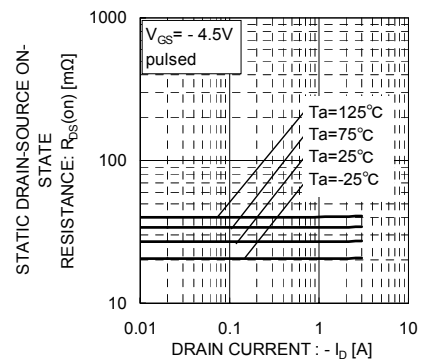


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current

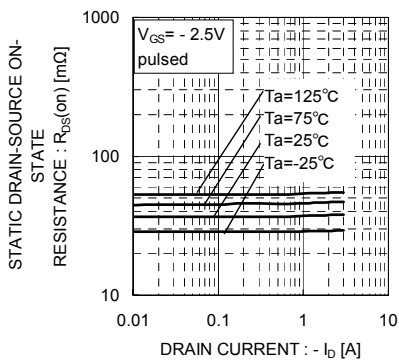


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current

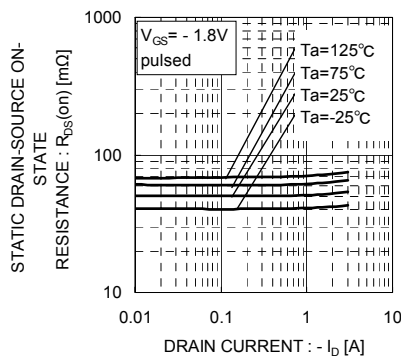


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current

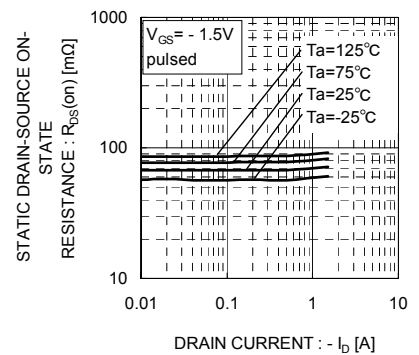


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current

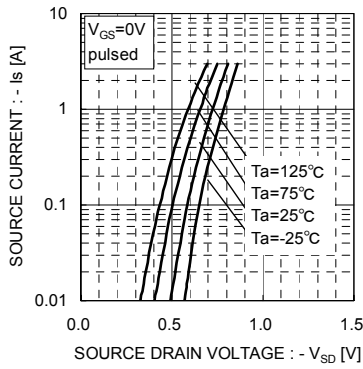


Fig.10 Source Current vs. Source-Drain Voltage

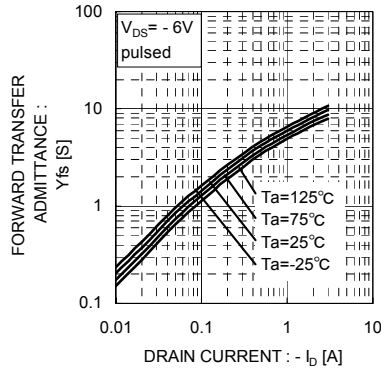


Fig.11 Forward Transfer Admittance vs. Drain Current

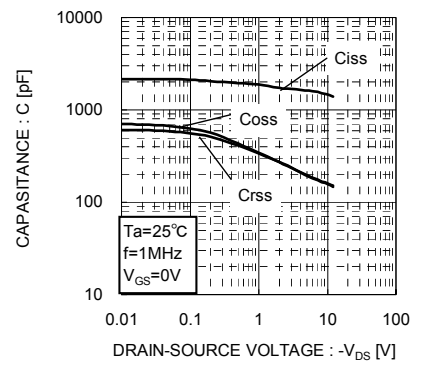


Fig.12 Typical Capacitance vs. Drain-Source Voltage

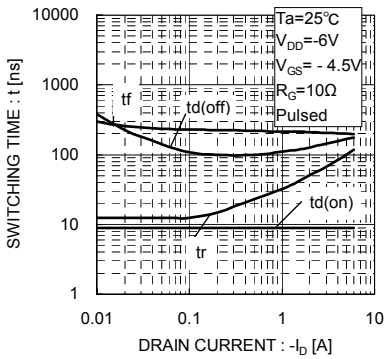


Fig.13 Switching Characteristics

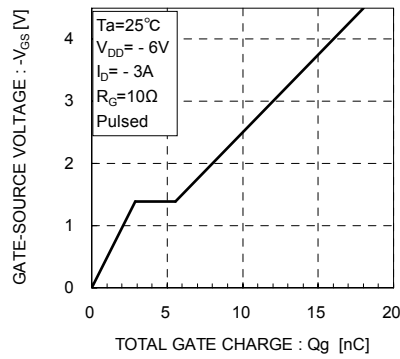


Fig.14 Dynamic Input Characteristics

●Measurement circuits

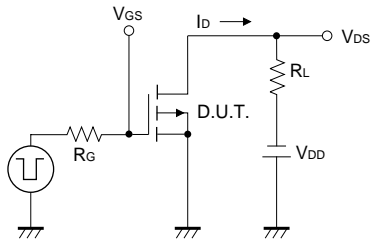


Fig.1-1 Switching Time Measurement Circuit

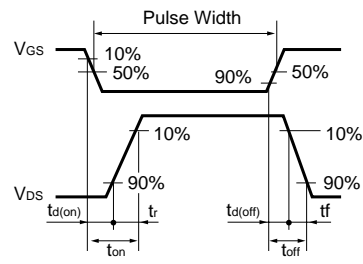


Fig.1-2 Switching Waveforms

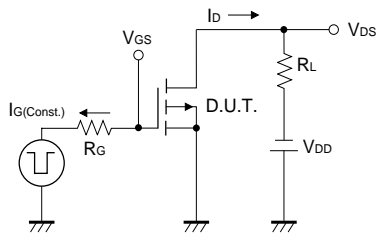


Fig.2-1 Gate Charge Measurement Circuit

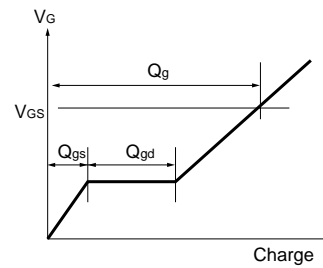


Fig.2-2 Gate Charge Waveforms

●Notice

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

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