

1.5V Drive Pch MOSFET

RZR040P01

●Structure

Silicon P-channel MOSFET

● Features

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

Applications

Switching

Packaging specifications

	Package	Taping
Type	Code	TL
	Basic ordering unit (pieces)	3000
RZR040P01	0	

● Absolute maximum ratings (Ta=25°C)

Parameter		Symbol		Limits	Unit	
Drain-source voltage		V _{DSS}		-12	V	
Gate-source voltage		V _{GSS}		±10	V	
Drain current	Continuous	ΙD		±4	А	
	Pulsed	I _{DP}	*1	±16	А	
Source current (Body diode)	Continuous	Is		-0.8	Α	
	Pulsed	I _{SP}	*1	-16	Α	
Total power dissipation		Po	*2	1.0	W	
Channel temperature		Tch		150	°C	
Range of Storage temperature		Tstg		-55 to +150	°C	
4.B. (40. B.) 1.40/						

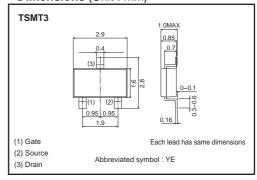
^{*1} Pw≤10μs, Duty cycle≤1%

●Thermal resistance

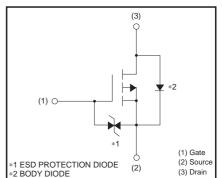
Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) *	125	°C / W

^{*} When mounted on a ceramic board.

●Dimensions (Unit:mm)



•Inner circuit



^{*2} When mounted on a ceramic board

RZR040P01 Data Sheet

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions	
Gate-source leakage	Igss	-	_	±10	μΑ	Vgs=±10V, Vps=0V	
Drain-source breakdown voltage	V _{(BR) DSS}	-12	_	-	V	I _D = -1mA, V _{GS} =0V	
Zero gate voltage drain current	I _{DSS}	-	_	-1	μΑ	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		-	22	30	mΩ	I _D = -4A, V _G S= -4.5V	
	B*	_	30	42	mΩ	I _D = -2A, V _G S= -2.5V	
	R _{DS} (on)	-	40	60	mΩ	I _D = -2A, V _{GS} = -1.8V	
		-	55	110	mΩ	I _D = -0.8A, V _G S= -1.5V	
Forward transfer admittance	Y _{fs} *	6.5	_	-	S	V _{DS} = -6V, I _D = -4A	
Input capacitance	Ciss	_	2350	-	pF	Vps= -6V	
Output capacitance	Coss	-	310	-	pF	V _{GS} =0V	
Reverse transfer capacitance	Crss	-	280	-	рF	f=1MHz	
Turn-on delay time	t _{d (on)} *	-	11	-	ns	Vpp≒-6V	
Rise time	tr *	_	70	-	ns	ID= -2A	
Turn-off delay time	t _{d (off)} *	_	380	_	ns	Vgs= -4.5V Ri≒ 3Ω	
Fall time	t _f *	_	210	_	ns	R _G =10Ω	
Total gate charge	Qg *	_	30	_	nC	V _{DD} ≒−6V R _L ≒1.5Ω	
Gate-source charge	Qgs *	_	4.0	_	nC	I _D = -4A R _G =10Ω	
Gate-drain charge	Q _{gd} *	_	3.5	-	nC	V _{GS} =-4.5V	

^{*}Pulsed

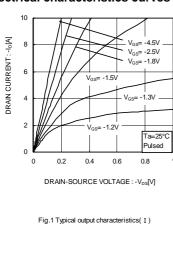
●Body diode characteristics (Source-drain) (Ta=25°C)

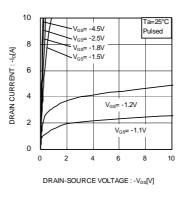
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward voltage	Vsp *	_	_	-1.2	V	Is= -4A, Vgs=0V

^{*}Pulsed

RZR040P01 Data Sheet

•Electrical characteristics curves





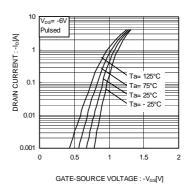
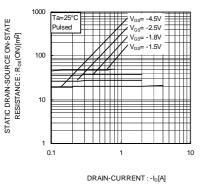
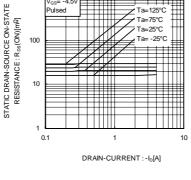


Fig.2 Typical output characteristics(I)

Fig.2 Typical output characteristics(${\rm I\hspace{-.1em}I}$)

Fig.3 Typical Transfer Characteristics





V_{GS}= -4.5\

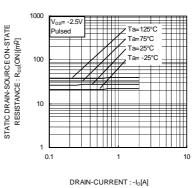
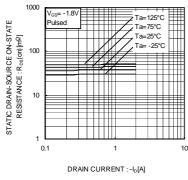


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

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

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





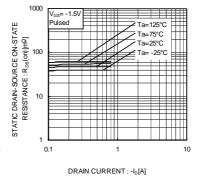
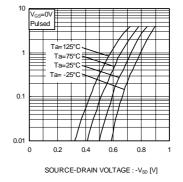
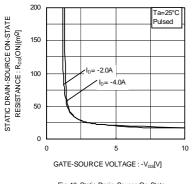


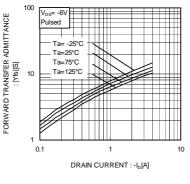
Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(V)



REVERSE DRAIN CURRENT :- Is [A]

Fig.9 Reverse Drain Current vs. Sourse-Drain Voltage





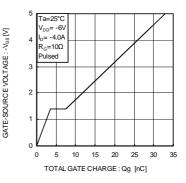
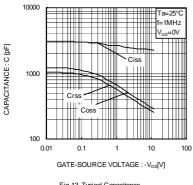


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

Fig.11 Forward Transfer Admittance vs. Drain Current

Fig.12 Dynamic Input Characteristics



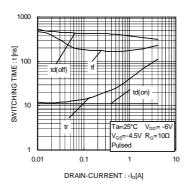
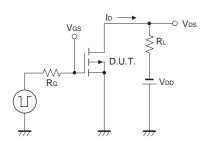


Fig.13 Typical Capacitance vs. Drain-Source Voltage

Fig.14 Switching Characteristics

●Measurement circuits



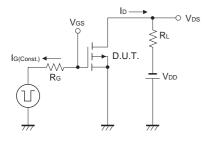
Pulse Width
Vos 10% 90% 50%

VDS td(on) tr td(off) tdff

Vds td(off) tdff

Fig.1-1 Switching Time Measurement Circuit

Fig.1-2 Switching Waveforms



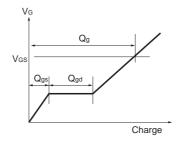


Fig.2-1 Gate Charge Measurement Circuit

Fig.2-2 Gate Charge Waveform

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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