

# 4V Drive Pch MOSFET

## RSR025P03

### ●Structure

Silicon P-channel MOSFET

### ●Features

- 1) Low On-resistance
- 2) Space saving—small surface mount package (TSMT3)
- 3) 4V drive

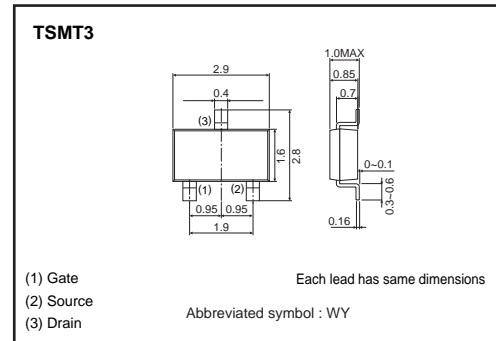
### ●Applications

Switching

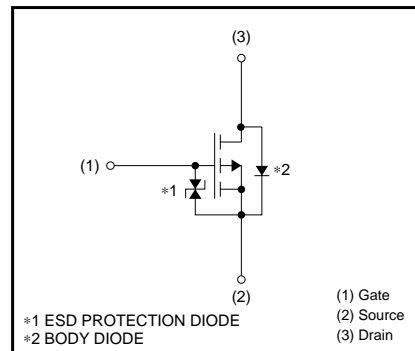
### ●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RSR025P03		○

### ●Dimensions (Unit : mm)



### ●Inner circuit



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

Parameter	Symbol	Limits	Unit	
Drain-source voltage	$V_{DS}$	-30	V	
Gate-source voltage	$V_{GS}$	±20	V	
Drain current	Continuous	$I_D$	±2.5	A
	Pulsed	$I_{DP}$ *1	±10	A
Source current (Body diode)	Continuous	$I_S$	-0.8	A
	Pulsed	$I_{SP}$ *1	-10	A
Total power dissipation	$P_D$ *2	1	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 cycle  $\leq 1\%$

\*2 Mounted on a ceramic board

### ●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	125	°C/W

\* Mounted on a ceramic board

## Transistors

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I <sub>GSS</sub>	–	–	±10	μA	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	–30	–	–	V	I <sub>D</sub> = –1mA, V <sub>GS</sub> =0V
Zero gate voltage drain current	I <sub>DSS</sub>	–	–	–1	μA	V <sub>DS</sub> = –30V, V <sub>GS</sub> =0V
Gate threshold voltage	V <sub>GS(th)</sub>	–1.0	–	–2.5	V	V <sub>DS</sub> = –10V, I <sub>D</sub> = –1mA
Static drain-source on-state resistance	R <sub>DS(on)</sub> *	–	70	98	mΩ	I <sub>D</sub> = –2.5A, V <sub>GS</sub> = –10V
		–	100	140	mΩ	I <sub>D</sub> = –1.2A, V <sub>GS</sub> = –4.5V
		–	115	160	mΩ	I <sub>D</sub> = –1.2A, V <sub>GS</sub> = –4V
Forward transfer admittance	Y <sub>fs</sub>  *	1.6	–	–	S	V <sub>DS</sub> = –10V, I <sub>D</sub> = –1.2A
Input capacitance	C <sub>iss</sub>	–	460	–	pF	V <sub>DS</sub> = –10V
Output capacitance	C <sub>oss</sub>	–	105	–	pF	V <sub>GS</sub> =0V
Reverse transfer capacitance	C <sub>rss</sub>	–	65	–	pF	f=1MHz
Turn-on delay time	t <sub>d(on)</sub> *	–	10	–	ns	V <sub>DD</sub> ≐ –15V I <sub>D</sub> = –1.2A
Rise time	t <sub>r</sub> *	–	10	–	ns	V <sub>GS</sub> = –10V
Turn-off delay time	t <sub>d(off)</sub> *	–	42	–	ns	R <sub>L</sub> =12.5Ω
Fall time	t <sub>f</sub> *	–	10	–	ns	R <sub>GS</sub> =10Ω
Total gate charge	Q <sub>g</sub> *	–	5.4	–	nC	V <sub>DD</sub> ≐ –15V V <sub>GS</sub> = –5V
Gate-source charge	Q <sub>gs</sub> *	–	1.4	–	nC	I <sub>D</sub> = –2.5A
Gate-drain charge	Q <sub>gd</sub> *	–	1.6	–	nC	R <sub>L</sub> =6Ω R <sub>G</sub> =10Ω

\*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V <sub>SD</sub>	–	–	–1.2	V	I <sub>S</sub> = –0.8A, V <sub>GS</sub> =0V

Transistors

●Electrical characteristic circuits

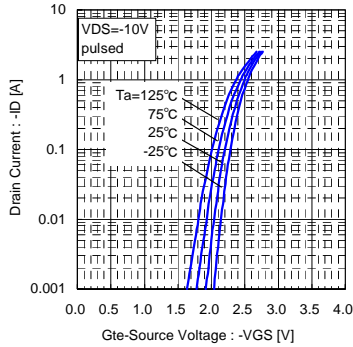


Fig.1 Typical Transfer Characteristics

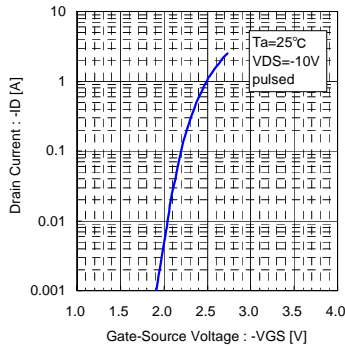


Fig.2 Typical Transfer Characteristics

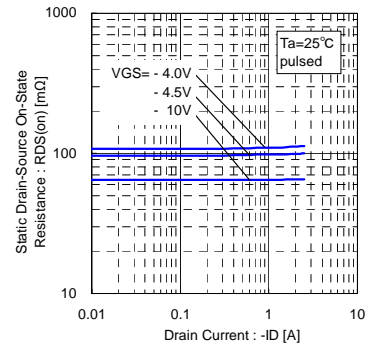


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

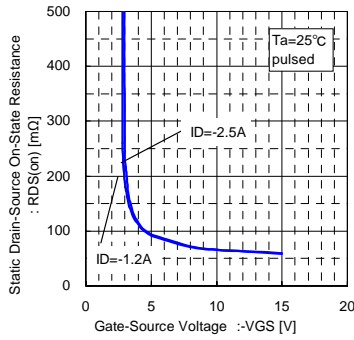


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

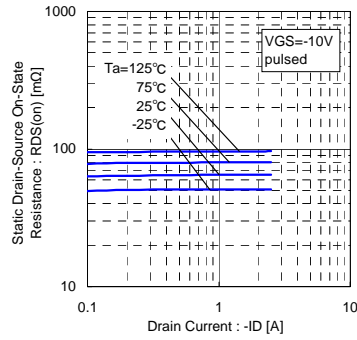


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

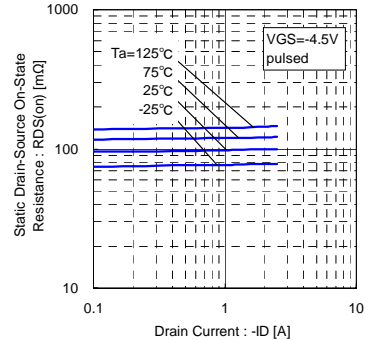


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current

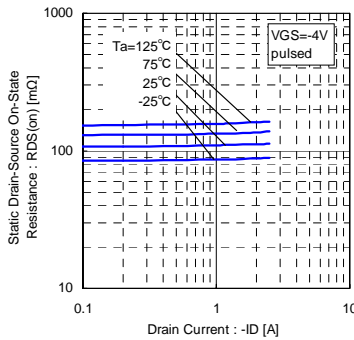


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current

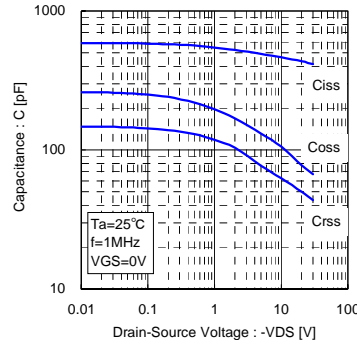


Fig.8 Typical Capacitance vs. Drain-Source Voltage

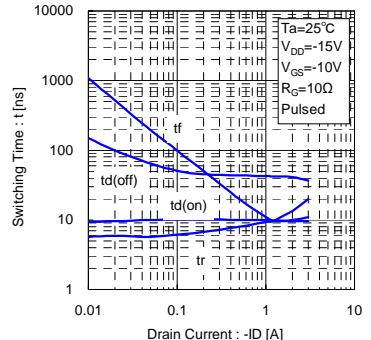


Fig.9 Switching Characteristics

Transistors

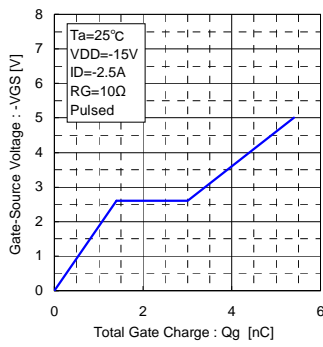


Fig.10 Dynamic Input Characteristics

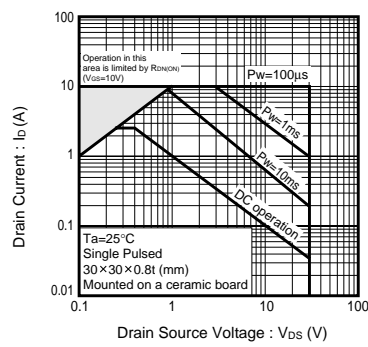


Fig.11 Safe operating area

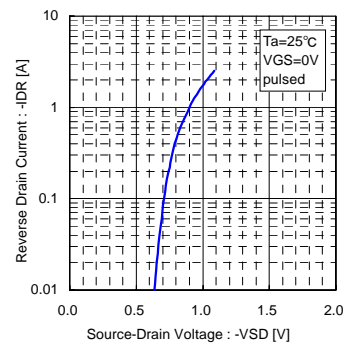


Fig.12 Reverse Drain Current vs. Source-Drain Voltage

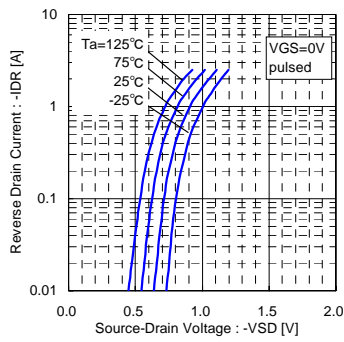


Fig.13 Reverse Drain Current vs. Source-Drain Voltage

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