

Transistors

# 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

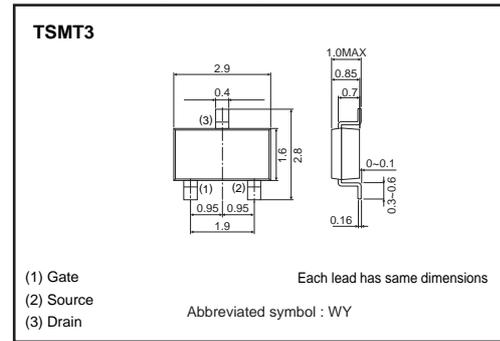
●Applications

Switching

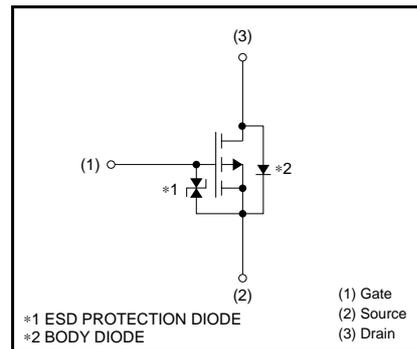
●Packaging specifications

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	$V_{DSS}$	-30	V	
Gate-source voltage	$V_{GSS}$	±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

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	–	–	±10	μA	$V_{GS}=\pm 20V, V_{DS}=0V$
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	$R_{DS(on)}$ *	–	70	98	mΩ	$I_D = -2.5A, V_{GS} = -10V$
		–	100	140	mΩ	$I_D = -1.2A, V_{GS} = -4.5V$
		–	115	160	mΩ	$I_D = -1.2A, V_{GS} = -4V$
Forward transfer admittance	$ Y_{fs} $ *	1.6	–	–	S	$V_{DS} = -10V, I_D = -1.2A$
Input capacitance	$C_{iss}$	–	460	–	pF	$V_{DS} = -10V$
Output capacitance	$C_{oss}$	–	105	–	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	–	65	–	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	–	10	–	ns	$V_{DD} = -15V$
Rise time	$t_r$ *	–	10	–	ns	$I_D = -1.2A$
Turn-off delay time	$t_{d(off)}$ *	–	42	–	ns	$V_{GS} = -10V$
Fall time	$t_f$ *	–	10	–	ns	$R_L=12.5\Omega$
Total gate charge	$Q_g$ *	–	5.4	–	nC	$V_{DD} = -15V, V_{GS} = -5V$
Gate-source charge	$Q_{gs}$ *	–	1.4	–	nC	$I_D = -2.5A$
Gate-drain charge	$Q_{gd}$ *	–	1.6	–	nC	$R_L=6\Omega, R_G=10\Omega$

\*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	$V_{SD}$	–	–	–1.2	V	$I_S = -0.8A, V_{GS}=0V$

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●Electrical characteristic circuits

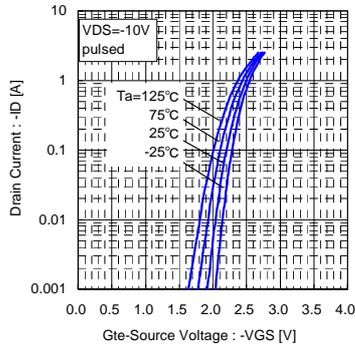


Fig.1 Typical Transfer Characteristics

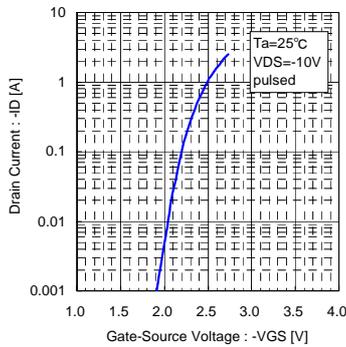


Fig.2 Typical Transfer Characteristics

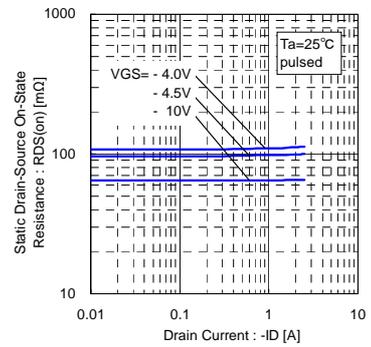


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

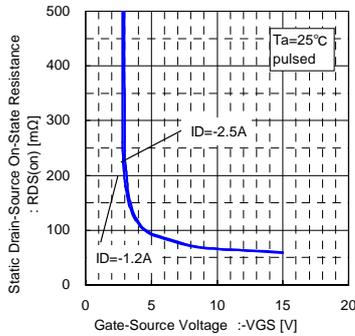


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

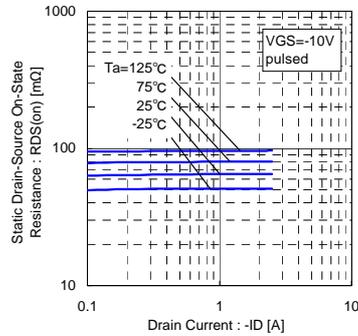


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

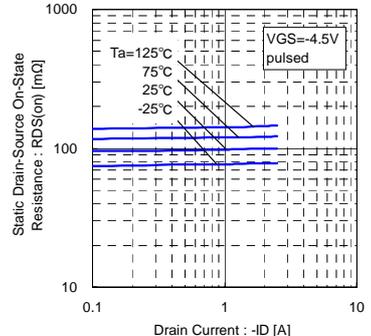


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current

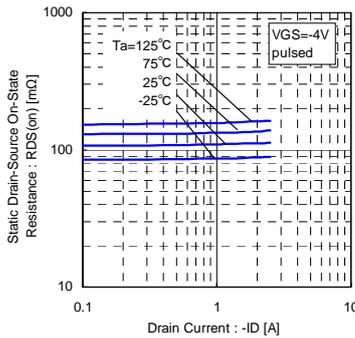


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current

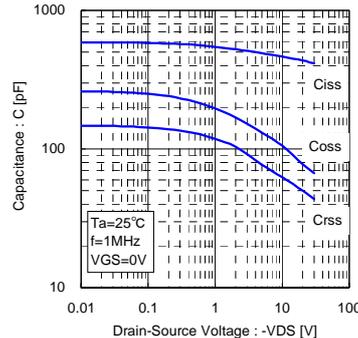


Fig.8 Typical Capacitance vs. Drain-Source Voltage

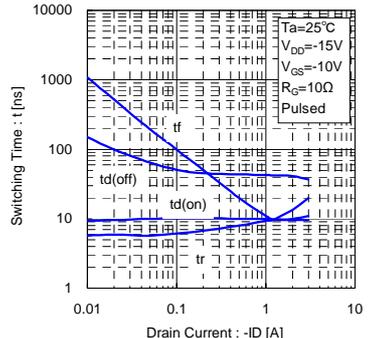


Fig.9 Switching Characteristics

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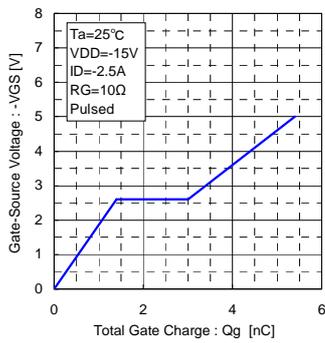


Fig.10 Dynamic Input Characteristics

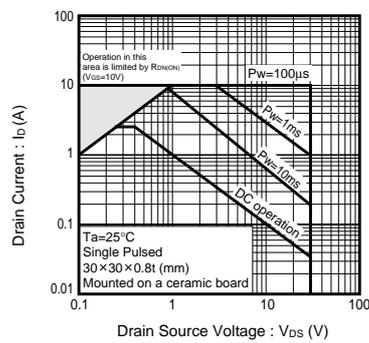


Fig.11 Safe operating area

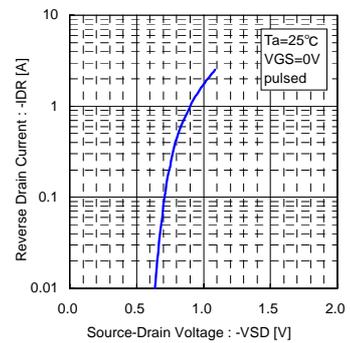


Fig.12 Reverse Drain Current vs. Source-Drain Voltage

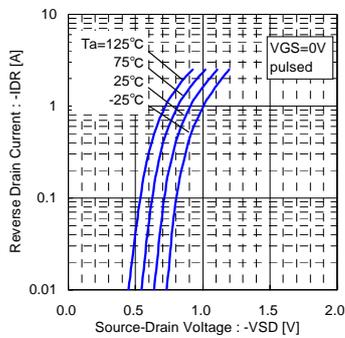


Fig.13 Reverse Drain Current vs. Source-Drain Voltage

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