

# 4V Drive Pch MOSFET

## RSR020P03

### ●Structure

Silicon P-channel MOSFET

### ●Features

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

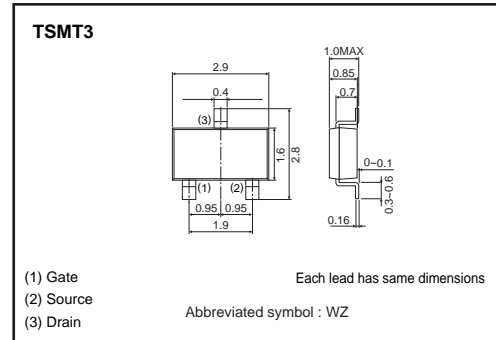
### ●Applications

Switching

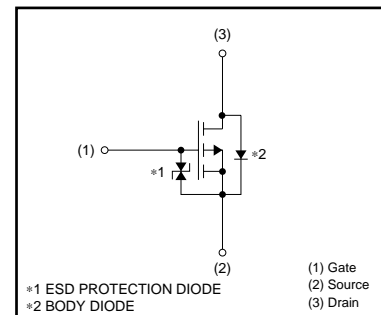
### ●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RSR020P03		○

### ●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	A
	Pulsed	$I_{DP}$ *1	±8	A
Source current (Body diode)	Continuous	$I_S$	-0.8	A
	Pulsed	$I_{SP}$ *1	-8	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	$I_{GSS}$	–	–	$\pm 10$	$\mu A$	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	–30	–	–	V	$I_D = -1mA, V_{GS}=0V$
Zero gate voltage drain current	$I_{DSS}$	–	–	–1	$\mu A$	$V_{DS} = -30V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	–1.0	–	–2.5	V	$V_{DS} = -10V, I_D = -1mA$
Static drain-source on-state resistance	$R_{DS(on)}$ *	–	85	120	m $\Omega$	$I_D = -2A, V_{GS} = -10V$
		–	135	190	m $\Omega$	$I_D = -1A, V_{GS} = -4.5V$
		–	150	210	m $\Omega$	$I_D = -1A, V_{GS} = -4V$
Forward transfer admittance	$ Y_{fs} $ *	1.4	–	–	S	$V_{DS} = -10V, I_D = -1A$
Input capacitance	$C_{iss}$	–	370	–	pF	$V_{DS} = -10V$
Output capacitance	$C_{oss}$	–	80	–	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	–	55	–	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	–	8	–	ns	$V_{DD} = -15V$
Rise time	$t_r$ *	–	10	–	ns	$I_D = -1A$
Turn-off delay time	$t_{d(off)}$ *	–	35	–	ns	$V_{GS} = -10V$
Fall time	$t_f$ *	–	11	–	ns	$R_L=15\Omega$
Total gate charge	$Q_g$ *	–	4.3	–	nC	$V_{DD} = -15V, V_{GS} = -5V$
Gate-source charge	$Q_{gs}$ *	–	1.4	–	nC	$I_D = -2A$
Gate-drain charge	$Q_{gd}$ *	–	1.5	–	nC	$R_L=7.5\Omega, R_G=10\Omega$

\*Pulsed

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

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

\*Pulsed

Transistors

●Electrical characteristics curves

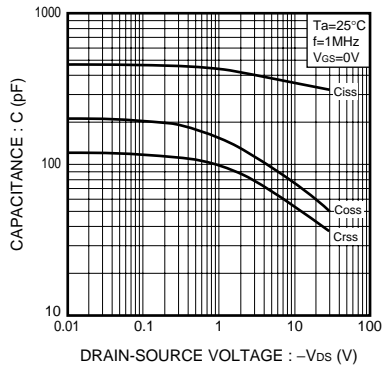


Fig.1 Typical Capacitance vs. Drain-Source Voltage

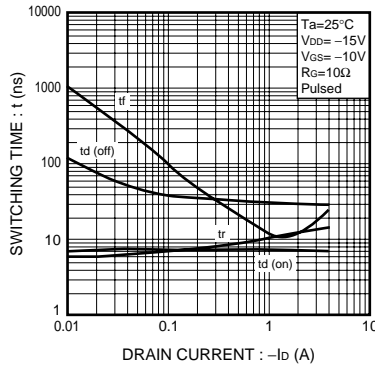


Fig.2 Switching Characteristics

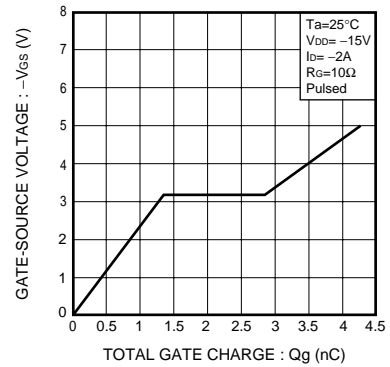


Fig.3 Dynamic Input Characteristics

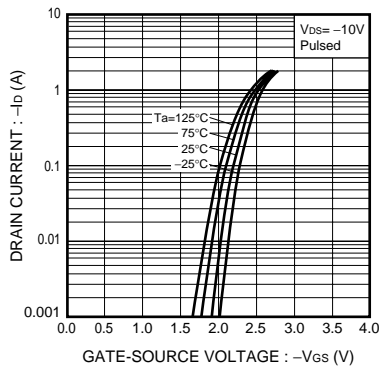


Fig.4 Typical Transfer Characteristics

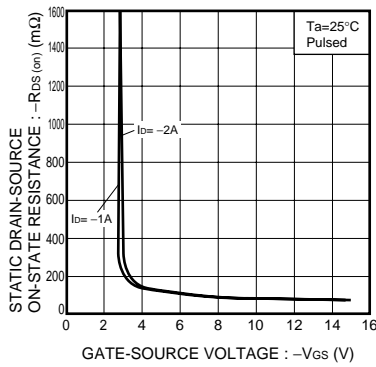


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

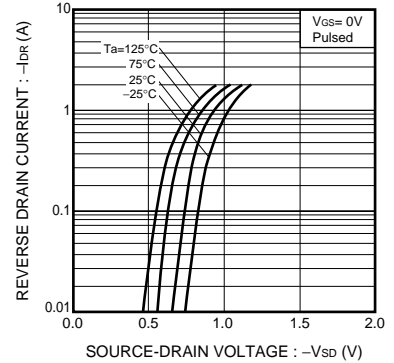


Fig.6 Reverse Drain Current vs. Source-Drain Voltage

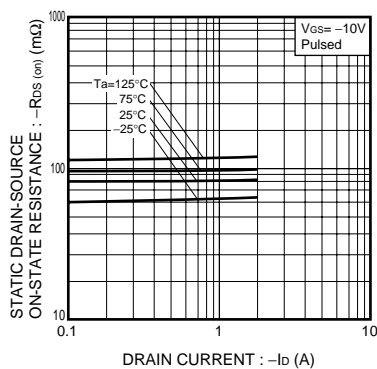


Fig.7 Static Drain-Source On-State Resistance vs. Drain current ( I )

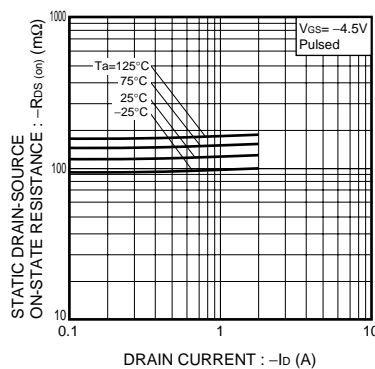


Fig.8 Static Drain-Source On-State Resistance vs. Drain current ( II )

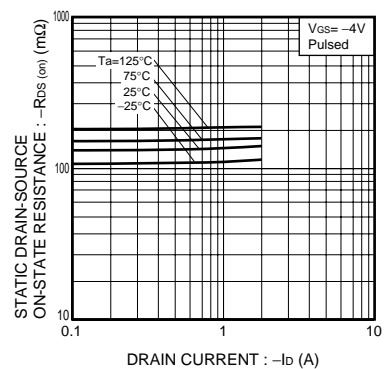


Fig.9 Static Drain-Source On-State Resistance vs. Drain current ( III )

Transistors

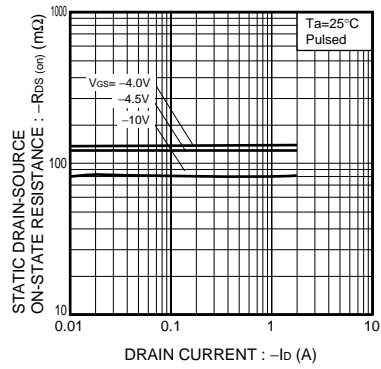


Fig.10 Static Drain-Source On-State Resistance vs. Drain current ( IV )

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