

Transistors

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

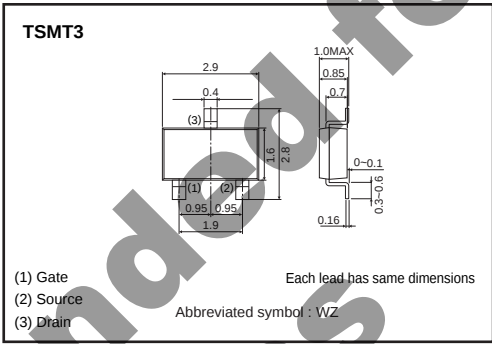
●Applications

Switching

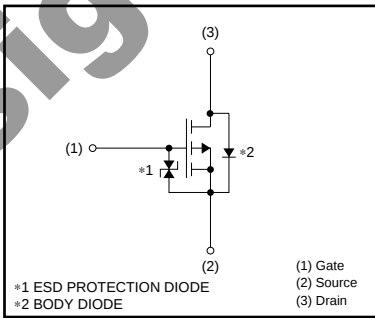
●Packaging specifications

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}	—	—	±10	μA	$V_{GS}=±20V$, $V_{DS}=0V$
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	$R_{DS(on)}^*$	—	85	120	mΩ	$I_D=−2A$, $V_{GS}=−10V$
		—	135	190	mΩ	$I_D=−1A$, $V_{GS}=−4.5V$
		—	150	210	mΩ	$I_D=−1A$, $V_{GS}=−4V$
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	$R_L=15Ω$
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	$R_L=7.5Ω$, $R_G=10Ω$

*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

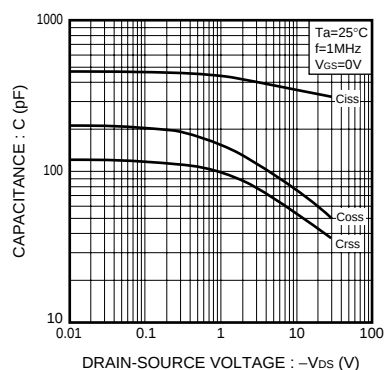


Fig.1 Typical Capacitance vs. Drain-Source Voltage

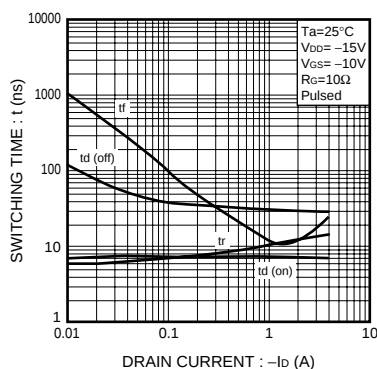


Fig.2 Switching Characteristics

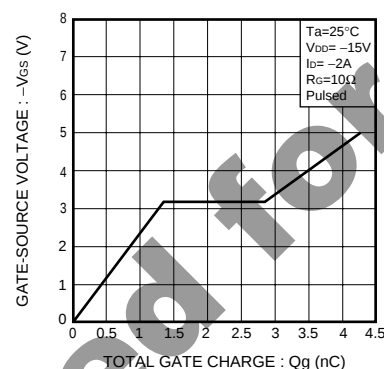


Fig.3 Dynamic Input Characteristics

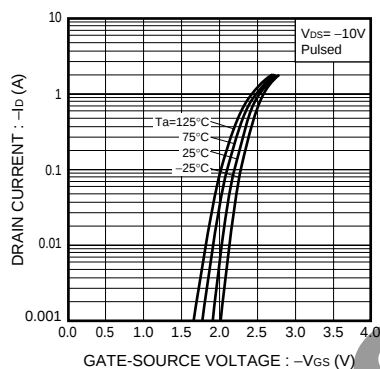


Fig.4 Typical Transfer Characteristics

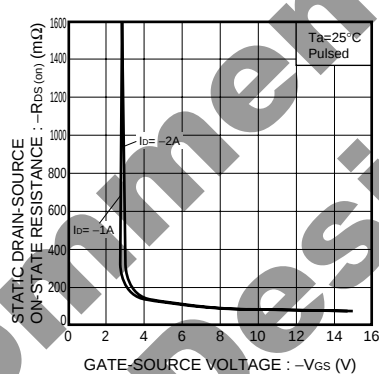


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

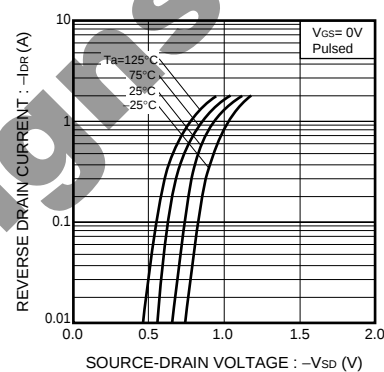


Fig.6 Reverse Drain Current vs. Source-Drain Voltage

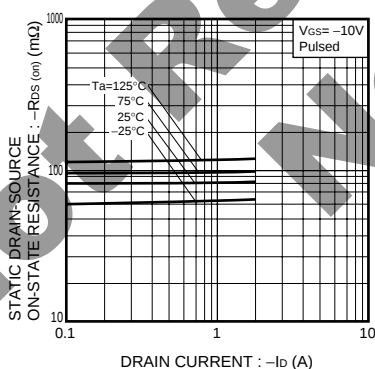


Fig.7 Static Drain-Source On-State Resistance vs. Drain current (I)

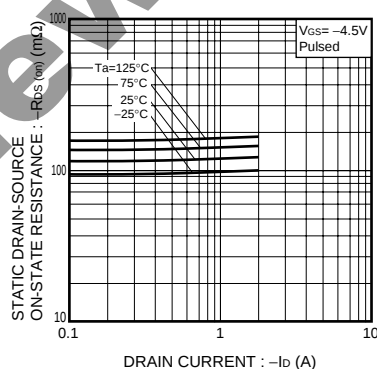


Fig.8 Static Drain-Source On-State Resistance vs. Drain current (II)

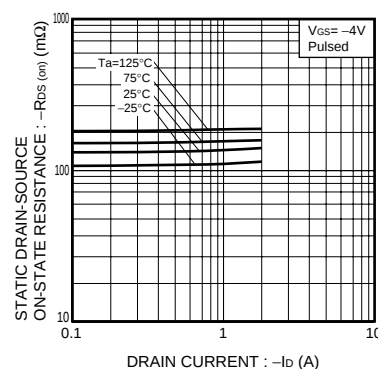


Fig.9 Static Drain-Source On-State Resistance vs. Drain current (III)

Transistors

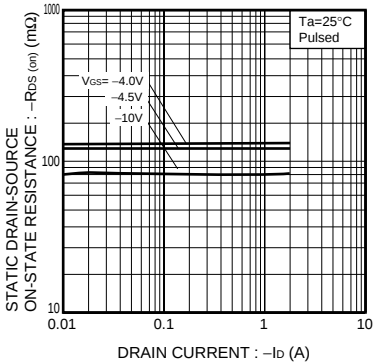


Fig.10 Static Drain-Source On-State Resistance vs. Drain current (I_D)

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