Transistors

4V Drive Pch MOSFET

RSR020P03

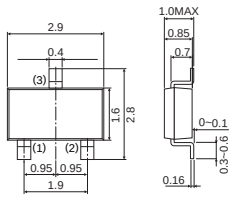
●Structure
Silicon P-channel MOSFET

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

●Applications
Switching

●Dimensions (Unit : mm)

TSMT3



(1) Gate
(2) Source
(3) Drain

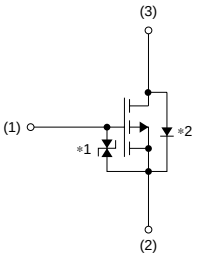
Each lead has same dimensions

Abbreviated symbol : WZ

●Packaging specifications

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

●Inner circuit



∗1 ESD PROTECTION DIODE
∗2 BODY DIODE

(1) Gate
(2) Source
(3) Drain

●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	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		Tch	150	°C
Range of storage temperature		Tstg	−55 to +150	°C

∗1 Pw≤10µs, Duty cycle≤1%
∗2 Mounted on a ceramic board

●Thermal resistance

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

∗ Mounted on a ceramic board

●**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 I_D= −1A V_{GS}= − 10V R_L=15Ω R_G=10Ω
Rise time	t_r *	–	10	–	ns	
Turn-off delay time	$t_{d\ (off)}$ *	–	35	–	ns	
Fall time	t_f *	–	11	–	ns	
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

●**Electrical characteristics curves**

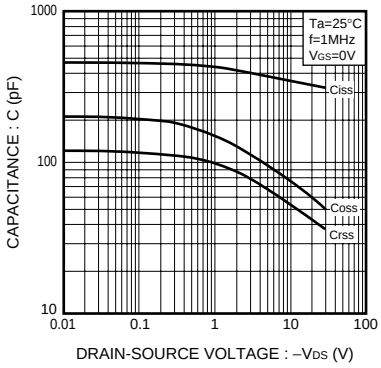


Fig.1 Typical Capacitance vs. Drain-Source Voltage

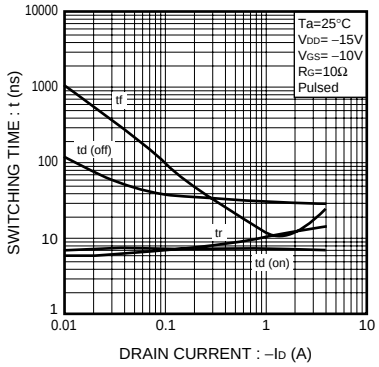


Fig.2 Switching Characteristics

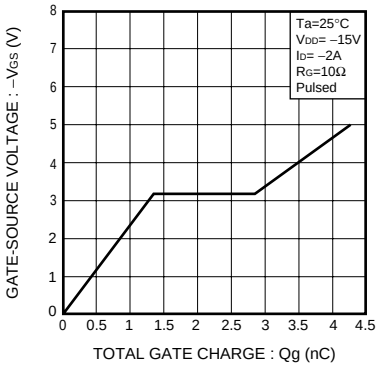


Fig.3 Dynamic Input Characteristics

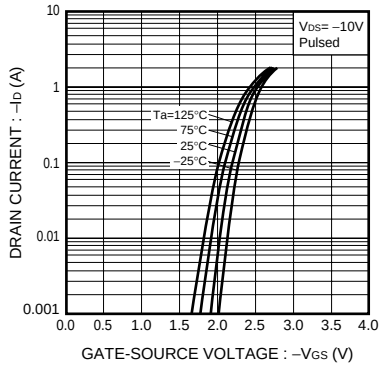


Fig.4 Typical Transfer Characteristics

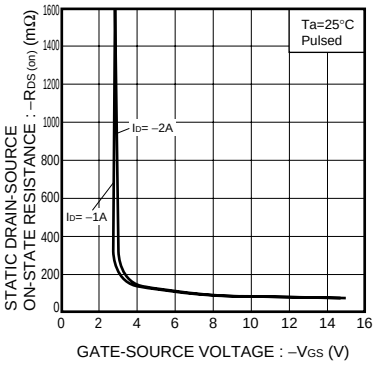


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

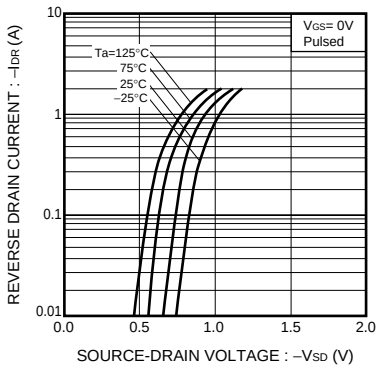


Fig.6 Reverse Drain Current vs. Source-Drain Voltage

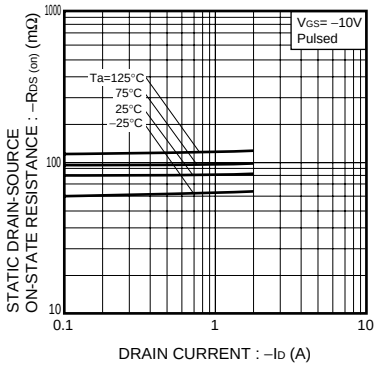


Fig.7 Static Drain-Source On-State Resistance vs. Drain current (I)

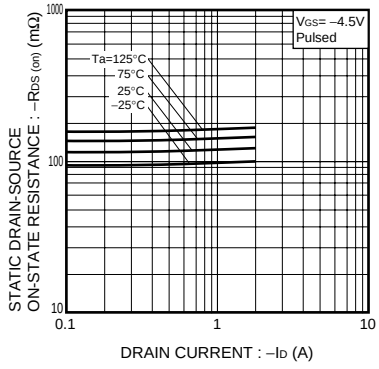


Fig.8 Static Drain-Source On-State Resistance vs. Drain current (II)

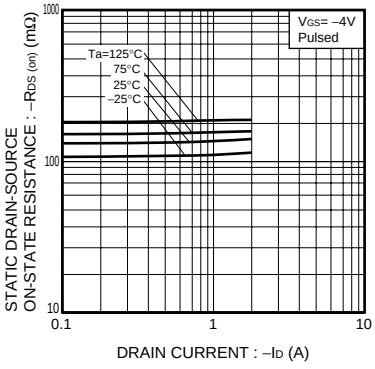


Fig.9 Static Drain-Source On-State Resistance vs. Drain current (III)

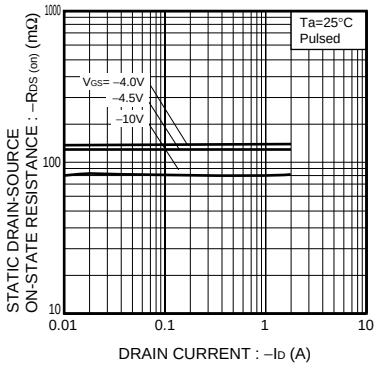


Fig.10 Static Drain-Source On-State Resistance vs. Drain current (Ⅳ)

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