

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

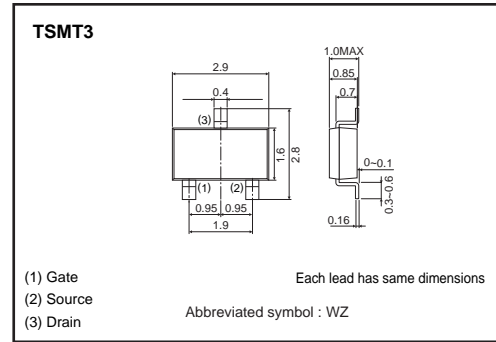
●Applications

Switching

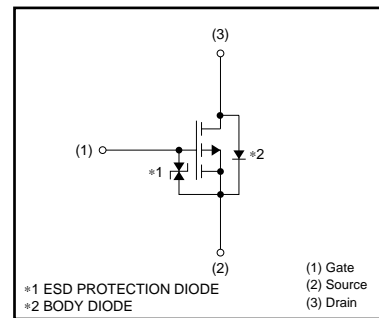
●Packaging specifications

| 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

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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 | $R_{DS(on)}$ * | – | 85 | 120 | m Ω | $I_D=-2A, V_{GS}=-10V$ |
| | | – | 135 | 190 | m Ω | $I_D=-1A, V_{GS}=-4.5V$ |
| | | – | 150 | 210 | m Ω | $I_D=-1A, V_{GS}=-4V$ |
| 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

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●Electrical characteristics curves

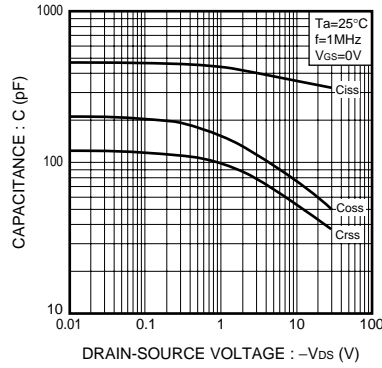


Fig.1 Typical Capacitance vs. Drain-Source Voltage

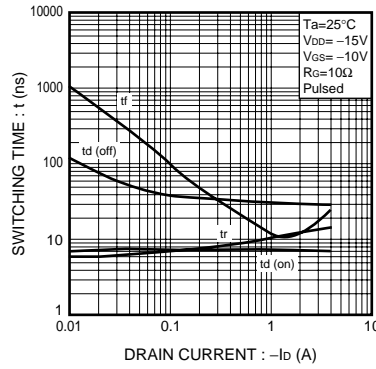


Fig.2 Switching Characteristics

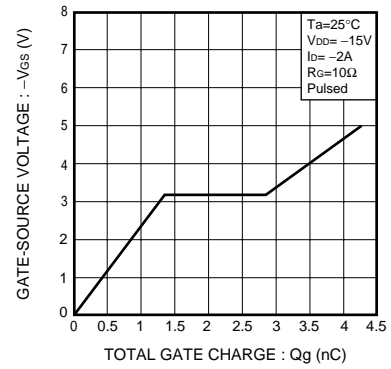


Fig.3 Dynamic Input Characteristics

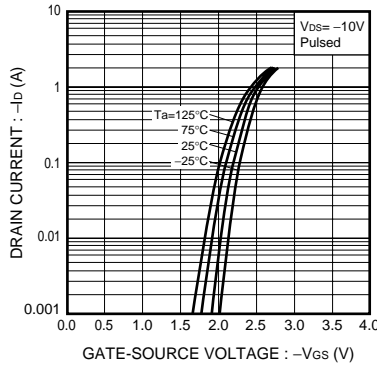


Fig.4 Typical Transfer Characteristics

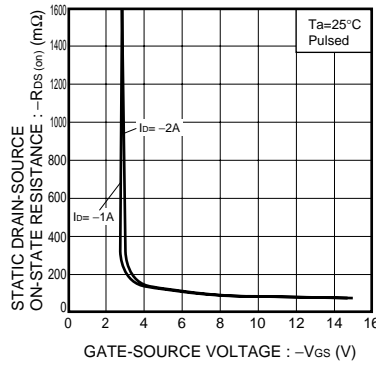


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

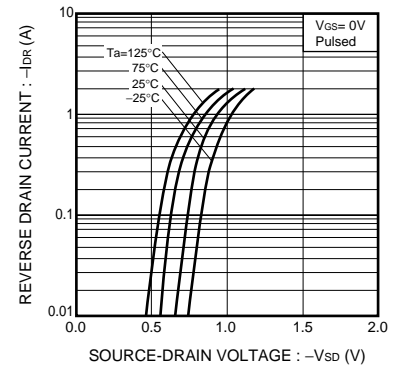


Fig.6 Reverse Drain Current vs. Source-Drain Voltage

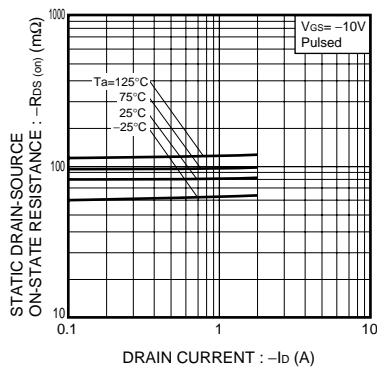


Fig.7 Static Drain-Source On-State Resistance vs. Drain current (I)

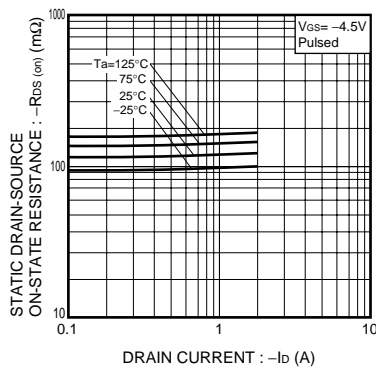


Fig.8 Static Drain-Source On-State Resistance vs. Drain current (II)

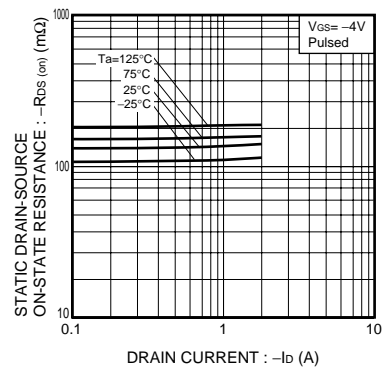


Fig.9 Static Drain-Source On-State Resistance vs. Drain current (III)

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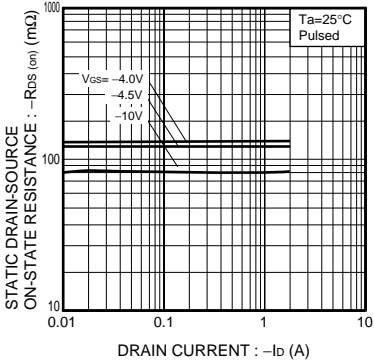


Fig.10 Static Drain-Source On-State Resistance vs. Drain current (IV)

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