

1.5V Drive Pch MOSFET

RZF030P01

●Structure

Silicon P-channel
MOSFET

●Features

- 1) Low on-resistance.
- 2) High power package.
- 3) Low voltage drive. (1.5V)

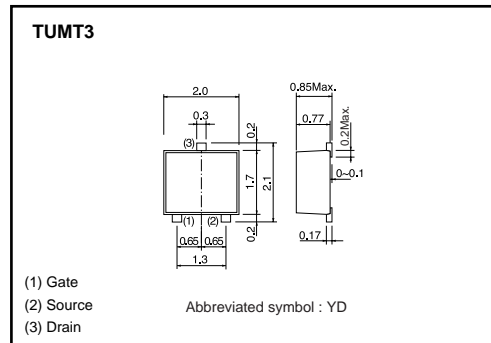
●Applications

Switching

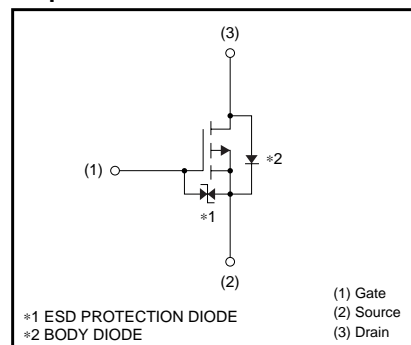
●Packaging specifications

| | | |
|-----------|------------------------------|--------|
| Type | Package | Taping |
| | Code | TL |
| | Basic ordering unit (pieces) | 3000 |
| RZF030P01 | | ○ |

●Dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit | |
|------------------------------|------------|-------------|-------|---|
| Drain-source voltage | V_{DSS} | -12 | V | |
| Gate-source voltage | V_{GSS} | ±10 | V | |
| Drain current | Continuous | I_D | ±3 | A |
| | Pulsed | I_{DP} *1 | ±12 | A |
| Source current (Body diode) | Continuous | I_S *1 | -0.65 | A |
| | Pulsed | I_{SP} | -12 | A |
| Total power dissipation | P_D *2 | 0.8 | 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 cycles $\leq 1\%$
*2 Mounted on a ceramic board

●Thermal resistance

| Parameter | Symbol | Limits | Unit |
|--------------------|------------------|--------|--------|
| Channel to ambient | $R_{th(ch-a)}$ * | 156 | °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 | $V_{GS}=\pm 10V, V_{DS}=0V$ |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | -12 | - | - | V | $I_D=-1mA, V_{GS}=0V$ |
| Zero gate voltage drain current | I_{DSS} | - | - | -1 | μA | $V_{DS}=-12V, V_{GS}=0V$ |
| Gate threshold voltage | $V_{GS(th)}$ | -0.3 | - | -1.0 | V | $V_{DS}=-6V, I_D=-1mA$ |
| Static drain-source on-state resistance | $R_{DS(on)}$ * | - | 28 | 39 | $m\Omega$ | $I_D=-3A, V_{GS}=-4.5V$ |
| | | - | 39 | 54 | $m\Omega$ | $I_D=-1.5A, V_{GS}=-2.5V$ |
| | | - | 51 | 76 | $m\Omega$ | $I_D=-1.5A, V_{GS}=-1.8V$ |
| | | - | 72 | 144 | $m\Omega$ | $I_D=-0.6A, V_{GS}=-1.5V$ |
| Forward transfer admittance | $ Y_{fs} $ * | 5 | - | - | S | $V_{DS}=-6V, I_D=-3A$ |
| Input capacitance | C_{iss} | - | 1860 | - | pF | $V_{DS}=-6V$ |
| Output capacitance | C_{oss} | - | 210 | - | pF | $V_{GS}=0V$ |
| Reverse transfer capacitance | C_{rss} | - | 200 | - | pF | $f=1MHz$ |
| Turn-on delay time | $t_{d(on)}$ * | - | 9 | - | ns | $I_D=-1.5A$ |
| Rise time | t_r * | - | 40 | - | ns | $V_{DD}\doteq -6V$ |
| Turn-off delay time | $t_{d(off)}$ * | - | 210 | - | ns | $V_{GS}=-4.5V$ |
| Fall time | t_f * | - | 120 | - | ns | $R_L\doteq 4\Omega$ |
| Total gate charge | Q_g * | - | 18 | - | nC | $V_{DD}\doteq -6V \quad R_L\doteq 2\Omega$ |
| Gate-source charge | Q_{gs} * | - | 3.0 | - | nC | $I_D=-3A \quad R_G=10\Omega$ |
| Gate-drain charge | Q_{gd} * | - | 2.5 | - | nC | $V_{GS}=-4.5V$ |

*Pulsed

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------|------------|------|------|------|------|----------------------|
| Forward voltage | V_{SD} * | - | - | -1.2 | V | $I_S=-3A, V_{GS}=0V$ |

*Pulsed

●Electrical characteristic curves

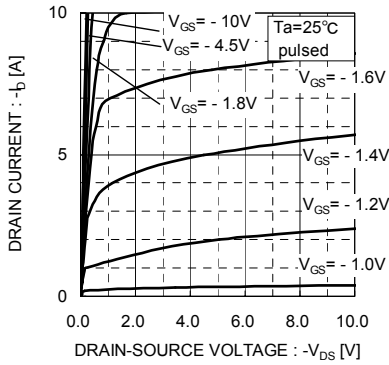


Fig.1 Typical Output Characteristics (I)

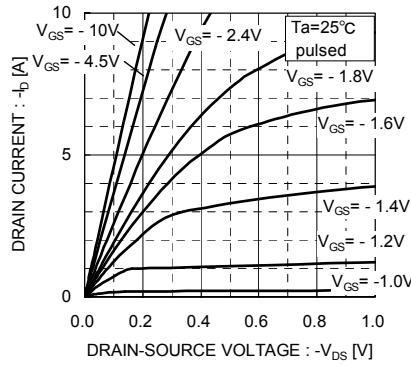


Fig.2 Typical Output Characteristics (II)

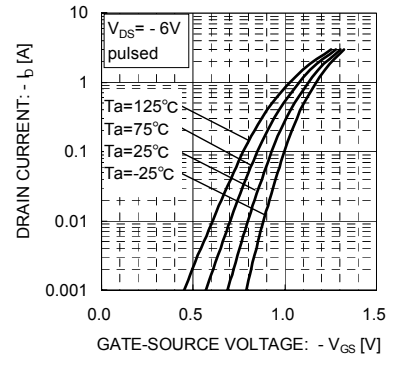


Fig.3 Typical Transfer Characteristics

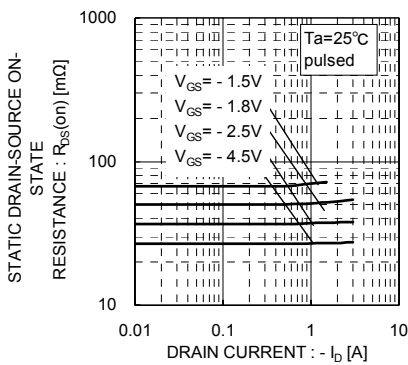


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

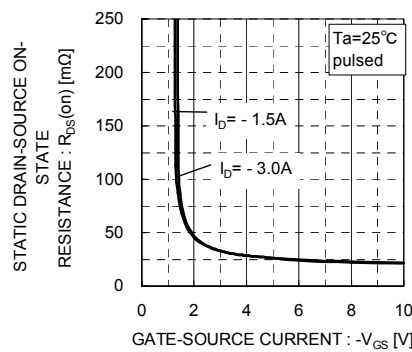


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

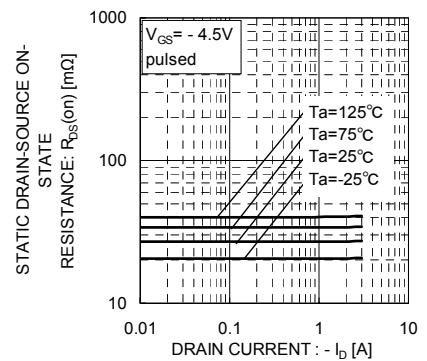


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current

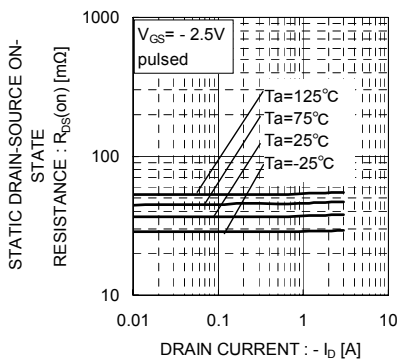


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current

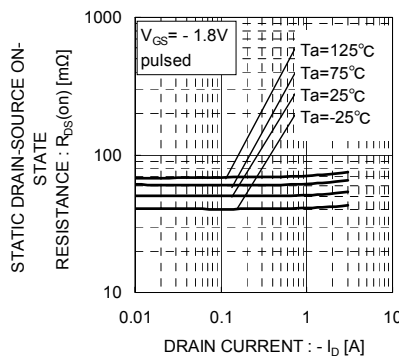


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current

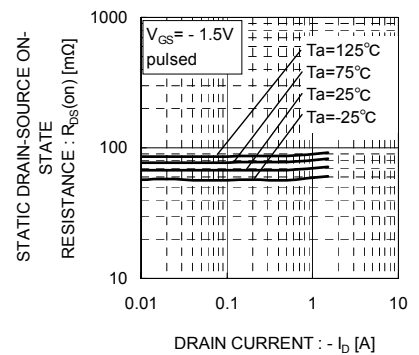


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current

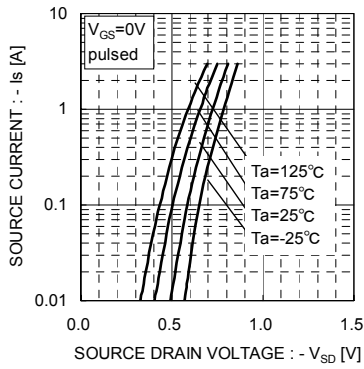


Fig.10 Source Current vs. Source-Drain Voltage

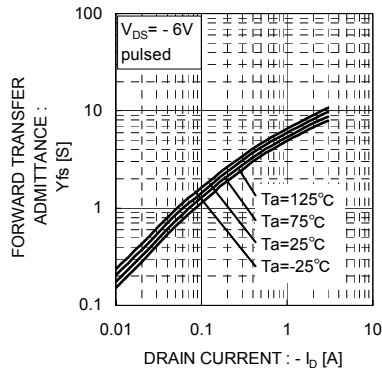


Fig.11 Forward Transfer Admittance vs. Drain Current

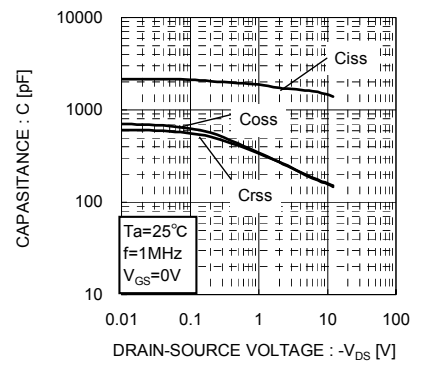


Fig.12 Typical Capacitance vs. Drain-Source Voltage

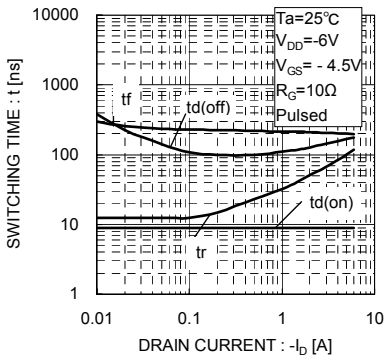


Fig.13 Switching Characteristics

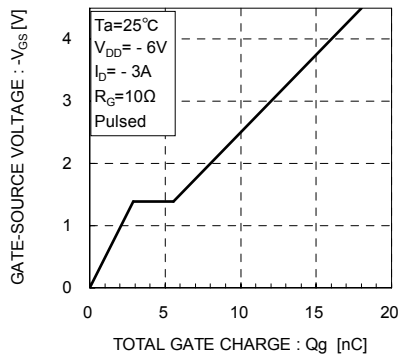


Fig.14 Dynamic Input Characteristics

●Measurement circuits

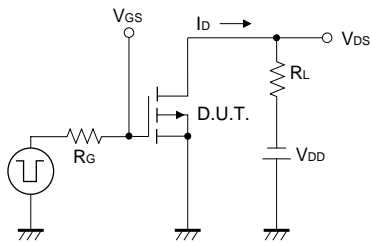


Fig.1-1 Switching Time Measurement Circuit

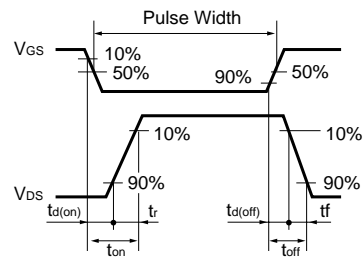


Fig.1-2 Switching Waveforms

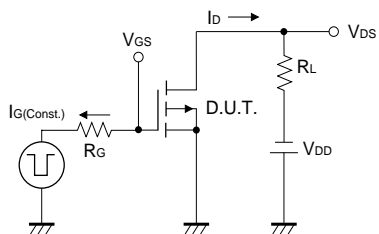


Fig.2-1 Gate Charge Measurement Circuit

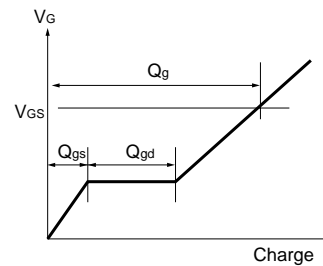


Fig.2-2 Gate Charge Waveforms

●Notice

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

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