

2.5V Drive Nch MOS FET

RTR025N03

●Structure

Silicon N-channel MOS FET

●Features

- 1) Low On-resistance.
- 2) Space saving—small surface mount package (TSMT3).
- 3) Low voltage drive (2.5V drive).

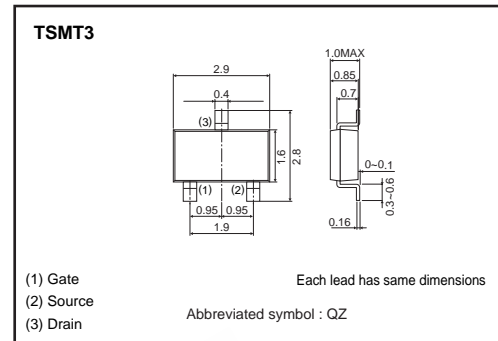
●Applications

Switching

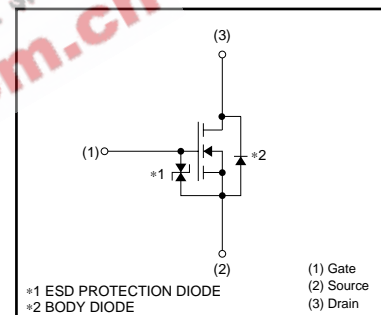
●Packaging specifications and hFE

| Type | Package | Taping |
|-----------|------------------------------|--------|
| | Code | TL |
| | Basic ordering unit (pieces) | 3000 |
| RTR025N03 | | ○ |

●External 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} | 12 | V | |
| Drain current | Continuous | I_D | ± 2.5 | A |
| | Pulsed | I_{DP} *1 | ± 10 | A |
| Source current (Body diode) | Continuous | I_S | 0.8 | A |
| | Pulsed | I_{SP} *1 | 10 | A |
| Total power dissipation | P_D *2 | 1.0 | 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 | $V_{GS}=12V, V_{DS}=0V$ |
| 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 | $V_{GS(th)}$ | 0.5 | – | 1.5 | V | $V_{DS}=10V, I_D=1mA$ |
| Static drain-source on-state resistance | $R_{DS(on)}$ * | – | 66 | 92 | $m\Omega$ | $I_D=2.5A, V_{GS}=4.5V$ |
| | | – | 70 | 98 | $m\Omega$ | $I_D=2.5A, V_{GS}=4V$ |
| | | – | 95 | 133 | $m\Omega$ | $I_D=2.5A, V_{GS}=2.5V$ |
| Forward transfer admittance | $ Y_{fs} $ * | 2.0 | – | – | S | $V_{DS}=10V, I_D=2.5A$ |
| Input capacitance | C_{iss} | – | 220 | – | pF | $V_{DS}=10V$ |
| Output capacitance | C_{oss} | – | 60 | – | pF | $V_{GS}=0V$ |
| Reverse transfer capacitance | C_{rss} | – | 35 | – | pF | $f=1MHz$ |
| Turn-on delay time | $t_{d(on)}$ * | – | 9 | – | ns | $V_{DD}\doteq 15V$ |
| Rise time | t_r * | – | 15 | – | ns | $I_D=1.25A$ |
| Turn-off delay time | $t_{d(off)}$ * | – | 25 | – | ns | $V_{GS}=4.5V$ |
| Fall time | t_f * | – | 10 | – | ns | $R_L=12\Omega$ |
| Total gate charge | Q_g * | – | 3.3 | 4.6 | nC | $V_{DD}\doteq 15V, V_{GS}=4.5V$ |
| Gate-source charge | Q_{gs} * | – | 0.7 | – | nC | $I_D=2.5A$ |
| Gate-drain charge | Q_{gd} * | – | 1.0 | – | nC | $R_L=6\Omega, R_G=10\Omega$ |

*Pulsed

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

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

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