

Transistors

# 2.5V Drive Nch MOS FET

## RTF015N03

●Structure

Silicon N-channel MOS FET

●Features

- 1) Low On-resistance.
- 2) Space saving, small surface mount package (TUMT3).
- 3) Low voltage drive (2.5V drive).

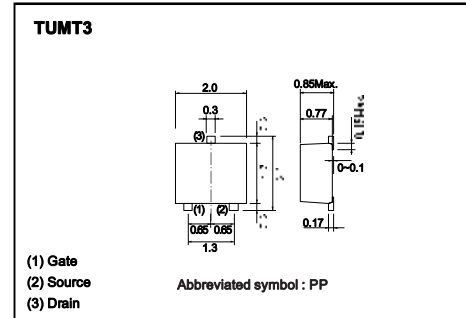
●Applications

Switching

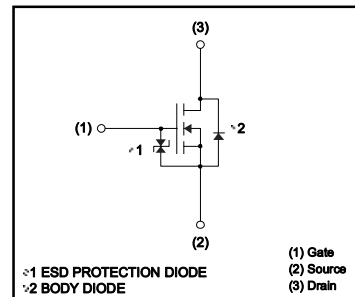
●Packaging specifications

| Type      | Package                      | Taping |
|-----------|------------------------------|--------|
|           | Code                         | TL     |
|           | Basic ordering unit (pieces) | 3000   |
| RTF015N03 |                              | ○      |

●External dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

| Parameter                    | Symbol            | Limits             | Unit |   |
|------------------------------|-------------------|--------------------|------|---|
| Drain-source voltage         | V <sub>DSS</sub>  | 30                 | V    |   |
| Gate-source voltage          | V <sub>GSS</sub>  | 12                 | V    |   |
| Drain current                | Continuous        | I <sub>D</sub>     | ±1.5 | A |
|                              | Pulsed            | I <sub>DP</sub> ⊃1 | ±6.0 | A |
| Source current (Body diode)  | Continuous        | I <sub>S</sub>     | 0.6  | A |
|                              | Pulsed            | I <sub>SP</sub> ⊃1 | 6.0  | A |
| Total power dissipation      | P <sub>D</sub> ⊃2 | 0.8                | W    |   |
| Channel temperature          | T <sub>ch</sub>   | 150                | °C   |   |
| Range of storage temperature | T <sub>stg</sub>  | -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 | R <sub>th(ch-a)</sub> * | 156    | °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   | $\mu A$   | $V_{GS}=12V, V_{DS}=0V$          |
| Drain-source breakdown voltage          | $V_{(BR)DSS}$ | 30   | –    | –    | V         | $I_D=1mA, V_{GS}=0V$             |
| Zero gate voltage drain current         | $I_{DSS}$     | –    | –    | 1    | $\mu A$   | $V_{DS}=30V, V_{GS}=0V$          |
| Gate threshold voltage                  | $V_{GS(th)}$  | 0.5  | –    | 1.5  | V         | $V_{DS}=10V, I_D=1mA$            |
| Static drain-source on-state resistance | $R_{DS(on)}$  | –    | 170  | 240  | $m\Omega$ | $I_D=1.5A, V_{GS}=4.5V$          |
|   |               | –    | 180  | 250  | $m\Omega$ | $I_D=1.5A, V_{GS}=4V$            |
|   |               | –    | 240  | 340  | $m\Omega$ | $I_D=1.5A, V_{GS}=2.5V$          |
| Forward transfer admittance             | $ Y_{fs} $    | 1.5  | –    | –    | S         | $V_{DS}=10V, I_D=1.5A$           |
| Input capacitance                       | $C_{iss}$     | –    | 80   | –    | pF        | $V_{DS}=10V$                     |
| Output capacitance                      | $C_{oss}$     | –    | 14   | –    | pF        | $V_{GS}=0V$                      |
| Reverse transfer capacitance            | $C_{rss}$     | –    | 12   | –    | pF        | $f=1MHz$                         |
| Turn-on delay time                      | $t_d(on)$     | –    | 7    | –    | ns        | $V_{DD}=15V$                     |
| Rise time                               | $t_r$         | –    | 9    | –    | ns        | $I_D=0.75A$                      |
| Turn-off delay time                     | $t_d(off)$    | –    | 15   | –    | ns        | $V_{GS}=4.5V$                    |
| Fall time                               | $t_f$         | –    | 6    | –    | ns        | $R_L=20\Omega$<br>$R_G=10\Omega$ |
| Total gate charge                       | $Q_g$         | –    | 1.6  | 2.2  | nC        | $V_{DD}=15V, V_{GS}=4.5V$        |
| Gate-source charge                      | $Q_{gs}$      | –    | 0.5  | –    | nC        | $I_D=1.5A$                       |
| Gate-drain charge                       | $Q_{gd}$      | –    | 0.3  | –    | nC        | $R_L=10\Omega, R_G=10\Omega$     |

Pulsed

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

| Parameter       | Symbol   | Min. | Typ. | Max. | Unit | Conditions            |
|-----------------|----------|------|------|------|------|-----------------------|
| Forward voltage | $V_{SD}$ | –    | –    | 1.2  | V    | $I_S=0.6A, V_{GS}=0V$ |

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