

# 2.5V Drive Nch MOS FET

## RTQ035N03

### ●Structure

Silicon N-channel MOS FET

### ●Features

- 1) Low On-resistance.
- 2) Space saving, small surface mount package (TSMT6).
- 3) Low voltage drive (2.5V drive).

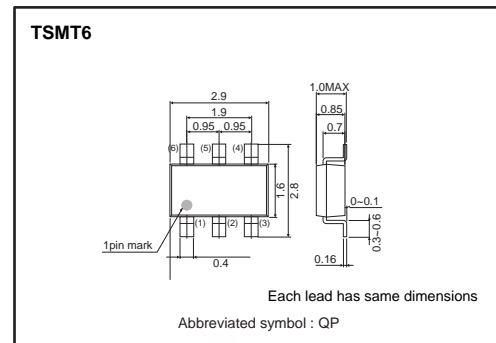
### ●Applications

Switching

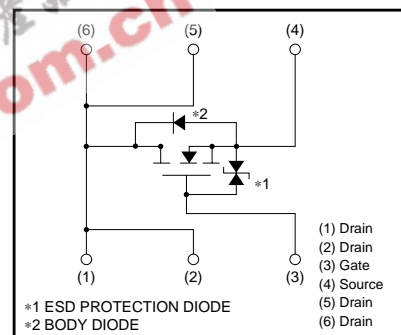
### ●Packaging specifications

| Type      | Package                      | Taping |
|-----------|------------------------------|--------|
|           | Code                         | TR     |
|           | Basic ordering unit (pieces) | 3000   |
| RTQ035N03 |                              | ○      |

### ●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 | $I_D$       | $\pm 3.5$ | A |
|                              | Pulsed     | $I_{DP}$ *1 | $\pm 15$  | A |
| Source current (Body diode)  | Continuous | $I_S$       | 1.0       | A |
|                              | Pulsed     | $I_{SP}$ *1 | 4.0       | A |
| Total power dissipation      | $P_D$ *2   | 1.25        | 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 | $R_{th(ch-a)}$ * | 100    | °C/W |

\* Mounted on a ceramic board

## Transistors

## ●Electrical characteristics (Ta=25°C)

| Parameter                               | Symbol                 | Min. | Typ. | Max. | Unit | Conditions                                    |
|---|------------------------|------|------|------|------|---|
| Gate-source leakage                     | I <sub>GSS</sub>       | –    | –    | 10   | μA   | V <sub>GS</sub> =12V, V <sub>DS</sub> =0V     |
| Drain-source breakdown voltage          | V <sub>(BR) DSS</sub>  | 30   | –    | –    | V    | I <sub>D</sub> = 1mA, V <sub>GS</sub> =0V     |
| Zero gate voltage drain current         | I <sub>DSS</sub>       | –    | –    | 1    | μA   | V <sub>DS</sub> = 30V, V <sub>GS</sub> =0V    |
| Gate threshold voltage                  | V <sub>GS (th)</sub>   | 0.5  | –    | 1.5  | V    | V <sub>DS</sub> = 10V, I <sub>D</sub> = 1mA   |
| Static drain-source on-state resistance | R <sub>DS (on)</sub> * | –    | 38   | 54   | mΩ   | I <sub>D</sub> = 3.5A, V <sub>GS</sub> = 4.5V |
|   |                        | –    | 40   | 56   | mΩ   | I <sub>D</sub> = 3.5A, V <sub>GS</sub> = 4.0V |
|   |                        | –    | 55   | 77   | mΩ   | I <sub>D</sub> = 3.5A, V <sub>GS</sub> = 2.5V |
| Forward transfer admittance             | Y <sub>fs</sub>  *     | 3.0  | –    | –    | S    | V <sub>DS</sub> = 10V, I <sub>D</sub> = 3.5A  |
| Input capacitance                       | C <sub>iss</sub>       | –    | 285  | –    | pF   | V <sub>DS</sub> = 10V                         |
| Output capacitance                      | C <sub>oss</sub>       | –    | 90   | –    | pF   | V <sub>GS</sub> =0V                           |
| Reverse transfer capacitance            | C <sub>rss</sub>       | –    | 55   | –    | pF   | f=1MHz  |
| Turn-on delay time                      | t <sub>d (on)</sub> *  | –    | 8    | –    | ns   | V <sub>DD</sub> ≐ 15V                         |
| Rise time                               | t <sub>r</sub> *       | –    | 12   | –    | ns   | I <sub>D</sub> = 1.75A                        |
| Turn-off delay time                     | t <sub>d (off)</sub> * | –    | 29   | –    | ns   | V <sub>GS</sub> = 4.5V                        |
| Fall time                               | t <sub>f</sub> *       | –    | 13   | –    | ns   | R <sub>L</sub> =8.57Ω                         |
| Total gate charge                       | Q <sub>g</sub> *       | –    | 4.6  | 6.4  | nC   | V <sub>DD</sub> ≐ 15V                         |
| Gate-source charge                      | Q <sub>gs</sub> *      | –    | 0.7  | –    | nC   | V <sub>GS</sub> = 4.5V                        |
| Gate-drain charge                       | Q <sub>gd</sub> *      | –    | 1.5  | –    | nC   | I <sub>D</sub> = 3.5A                         |

\*Pulsed

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

| Parameter       | Symbol            | Min. | Typ. | Max. | Unit | Conditions                               |
|-----------------|-------------------|------|------|------|------|--|
| Forward voltage | V <sub>SD</sub> * | –    | –    | 1.2  | V    | I <sub>S</sub> = 4A, V <sub>GS</sub> =0V |

\*Pulsed

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