Transistors

# 2.5V Drive Nch MOS FET

## RTQ035N03

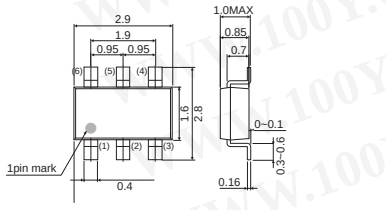
### ●Structure
Silicon N-channel MOS FET

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

### ●Applications
Switching

### ●External dimensions (Unit : mm)

TSMT6



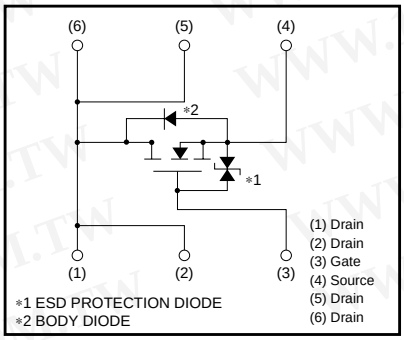

Each lead has same dimensions

Abbreviated symbol : QP

### ●Packaging specifications

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

### ●Inner circuit




### ●Absolute maximum ratings (Ta=25°C)

| Parameter | | Symbol | Limits | Unit |
|---|---|---|---|---|
| Drain-source voltage | | $V_{DSS}$ | 30 | V |
| Gate-source voltage | | $V_{GSS}$ | 12 | V |
| Drain current | Continuous | $I_D$ | ±3.5 | A |
| | Pulsed | $I_{DP}$ *1 | ±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 | | Tch | 150 | °C |
| Range of storage temperature | | Tstg | −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 | Rth(ch-a) * | 100 | °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 | $V_{GS}$=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 | $R_{DS\ (on)}$* | – | 38 | 54 | mΩ | $I_D$= 3.5A, $V_{GS}$= 4.5V |
| | | – | 40 | 56 | mΩ | $I_D$= 3.5A, $V_{GS}$= 4.0V |
| | | – | 55 | 77 | mΩ | $I_D$= 3.5A, $V_{GS}$= 2.5V |
| Forward transfer admittance | $\|Y_{fs}\|$ * | 3.0 | – | – | S | $V_{DS}$= 10V, $I_D$= 3.5A |
| Input capacitance | $C_{iss}$ | – | 285 | – | pF | $V_{DS}$= 10V |
| Output capacitance | $C_{oss}$ | – | 90 | – | 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<br>$I_D$= 1.75A<br>$V_{GS}$= 4.5V<br>$R_L$=8.57Ω<br>$R_G$=10Ω |
| Rise time | $t_r$ * | – | 12 | – | ns | |
| Turn-off delay time | $t_{d\ (off)}$ * | – | 29 | – | ns | |
| Fall time | $t_f$ * | – | 13 | – | ns | |
| Total gate charge | $Q_g$ * | – | 4.6 | 6.4 | nC | $V_{DD}$≒15V |
| Gate-source charge | $Q_{gs}$ * | – | 0.7 | – | nC | $V_{GS}$= 4.5V |
| Gate-drain charge | $Q_{gd}$ * | – | 1.5 | – | nC | $I_D$= 3.5A |

*Pulsed

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Forward voltage | $V_{SD}$* | – | – | 1.2 | V | $I_S$= 4A, $V_{GS}$=0V |

*Pulsed

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