

# 2.5V Drive Nch MOS FET

## RJP020N06

### ●Structure

Silicon N-channel MOS FET

### ●Features

- 1) Low On-resistance.
- 2) Low voltage drive (2.5V drive).

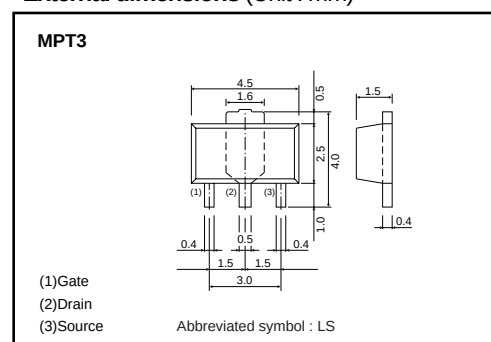
### ●Applications

Switching

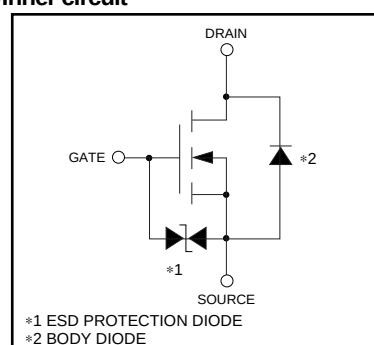
### ●Packaging specifications

| Type      | Package                      | Taping |
|-----------|------------------------------|--------|
|           | Code                         | T100   |
|           | Basic ordering unit (pieces) | 1000   |
| RJP020N06 |                              | ○      |

### ●External dimensions (Unit : mm)



### ●Inner circuit



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

| Parameter                      |            | Symbol      | Limits      | Unit |
|--------------------------------|------------|-------------|-------------|------|
| Drain-source voltage           |            | $V_{DS}$    | 60          | V    |
| Gate-source voltage            |            | $V_{GS}$    | $\pm 12$    | V    |
| Drain current                  | Continuous | $I_D$       | $\pm 2.0$   | A    |
|                                | Pulsed     | $I_{DP}$ *1 | $\pm 8.0$   | A    |
| Source current<br>(Body diode) | Continuous | $I_S$       | 2.0         | A    |
|                                | Pulsed     | $I_{SP}$ *1 | 8.0         | A    |
| Total power dissipation        |            | $P_D$       | 500         | mW   |
|                                |            |             | 2 *2        | 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 When mounted on a 40×40×0.7mm ceramic board

### ●Thermal resistance

| Parameter          | Symbol         | Limits | Unit |
|--------------------|----------------|--------|------|
| Channel to ambient | $R_{th(ch-a)}$ | 250    | °C/W |
|                    |                | 62.5 * | °C/W |

\* When mounted on a 40×40×0.7mm ceramic board

## Transistors

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

| Parameter                               | Symbol         | Min. | Typ. | Max. | Unit | Conditions                           |
|-----------------------------------------|----------------|------|------|------|------|--------------------------------------|
| Gate-source leakage                     | $I_{GSS}$      | —    | —    | ±10  | μA   | $V_{GS} = \pm 12V, V_{DS} = 0V$      |
| Drain-source breakdown voltage          | $V_{(BR) DSS}$ | 60   | —    | —    | V    | $I_D = 1mA, V_{GS} = 0V$             |
| Zero gate voltage drain current         | $I_{DSS}$      | —    | —    | 1    | μA   | $V_{DS} = 60V, V_{GS} = 0V$          |
| Gate threshold voltage                  | $V_{GS(th)}$   | 0.8  | —    | 1.5  | V    | $V_{DS} = 10V, I_D = 1mA$            |
| Static drain-source on-state resistance | $R_{DS(on)}$ * | —    | 165  | 240  | mΩ   | $I_D = 2A, V_{GS} = 4.5V$            |
|                                         |                | —    | 170  | 250  | mΩ   | $I_D = 2A, V_{GS} = 4V$              |
|                                         |                | —    | 210  | 300  | mΩ   | $I_D = 2A, V_{GS} = 2.5V$            |
| Forward transfer admittance             | $ Y_{fs} $ *   | 1.5  | —    | —    | S    | $V_{DS} = 10V, I_D = 2A$             |
| Input capacitance                       | $C_{iss}$      | —    | 160  | —    | pF   | $V_{DS} = 10V$                       |
| Output capacitance                      | $C_{oss}$      | —    | 50   | —    | pF   | $V_{GS} = 0V$                        |
| Reverse transfer capacitance            | $C_{rss}$      | —    | 45   | —    | pF   | $f = 1MHz$                           |
| Turn-on delay time                      | $t_{d(on)}$ *  | —    | 8    | —    | ns   | $V_{DD} = 30V$                       |
| Rise time                               | $t_r$ *        | —    | 18   | —    | ns   | $I_D = 1A$                           |
| Turn-off delay time                     | $t_{d(off)}$ * | —    | 40   | —    | ns   | $V_{GS} = 4V$                        |
| Fall time                               | $t_f$ *        | —    | 20   | —    | ns   | $R_L = 30\Omega$<br>$R_G = 10\Omega$ |
| Total gate charge                       | $Q_g$ *        | —    | 5    | 10   | nC   | $V_{DD} = 30V$                       |
| Gate-source charge                      | $Q_{gs}$ *     | —    | 1    | —    | nC   | $V_{GS} = 4V$                        |
| Gate-drain charge                       | $Q_{gd}$ *     | —    | 2.5  | —    | nC   | $I_D = 2A$                           |

\*Pulsed

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

| Parameter       | Symbol   | Min. | Typ. | Max. | Unit | Conditions              |
|-----------------|----------|------|------|------|------|-------------------------|
| Forward voltage | $V_{SD}$ | —    | —    | 1.2  | V    | $I_S = 2A, V_{GS} = 0V$ |

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