

# 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).

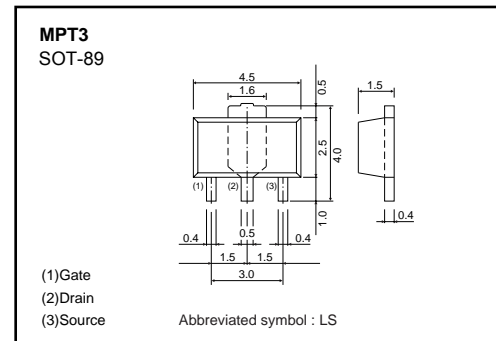
### ●Applications

Switching

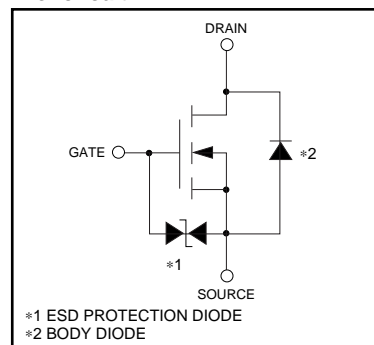
### ●Packaging specifications

| 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           | $V_{DSS}$  | 60          | V         |   |
| Gate-source voltage            | $V_{GSS}$  | $\pm 12$    | 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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| JAPAN     | USA       | EU         | CHINA     |
|-----------|-----------|------------|-----------|
| CLASS III | CLASS III | CLASS II b | CLASS III |
| CLASS IV  |           | CLASS III  |           |

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  - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
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- De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.
- Confirm that operation temperature is within the specified range described in the product specification.
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- When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification

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This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of Ionizer, friction prevention and temperature / humidity control).

### Precaution for Storage / Transportation

1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
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  - [b] the temperature or humidity exceeds those recommended by ROHM
  - [c] the Products are exposed to direct sunshine or condensation
  - [d] the Products are exposed to high Electrostatic
2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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[Distribution Inventory](#)

|                             |           |
|-----------------------------|-----------|
| Part Number                 | RJP020N06 |
| Package                     | MPT3      |
| Unit Quantity               | 1000      |
| Minimum Package Quantity    | 1000      |
| Packing Type                | Taping    |
| Constitution Materials List | inquiry   |
| RoHS                        | Yes       |