

## Transistors

## 4V Drive Nch MOS FET

## RHK005N03

## ●Structure

Silicon N-channel MOS FET

## ●Features

- 1) Low On-resistance.
- 2) High speed switching.

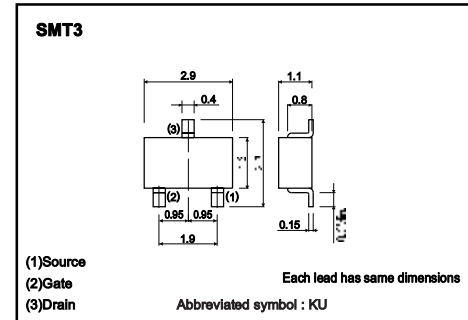
## ●Applications

Switching

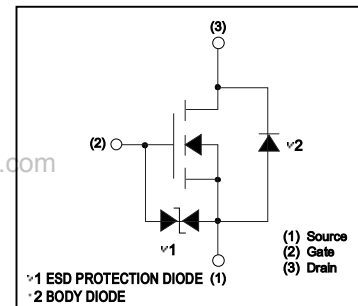
## ●Packaging specifications and hFE

| Type      | Package                      | Taping |
|-----------|------------------------------|--------|
|           | Code                         | T146   |
|           | Basic ordering unit (pieces) | 3000   |
| RHK005N03 |                              | ○      |

## ●External dimensions (Unit : mm)



## ●Inner circuit

●Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

| Parameter                    | Symbol              | Limits                 | Unit             |    |
|------------------------------|---------------------|------------------------|------------------|----|
| Drain-source voltage         | $V_{DS}$            | 30                     | V                |    |
| Gate-source voltage          | $V_{GS}$            | $\pm 20$               | V                |    |
| Drain current                | Continuous          | $I_D$                  | $\pm 500$        | mA |
|                              | Pulsed              | $I_{DP}$ <sup>1)</sup> | $\pm 2.0$        | A  |
| Total power dissipation      | $P_D$ <sup>2)</sup> | 200                    | mW               |    |
| Channel temperature          | $T_{ch}$            | 150                    | $^\circ\text{C}$ |    |
| Range of storage temperature | $T_{stg}$           | -55 to +150            | $^\circ\text{C}$ |    |

<sup>1)</sup>  $P_w \leq 10\mu\text{s}$ , Duty cycle  $\leq 1\%$ <sup>2)</sup> Each terminal mounted on a recommended land

## ●Thermal resistance

| Parameter          | Symbol                       | Limits | Unit               |
|--------------------|------------------------------|--------|--------------------|
| Channel to ambient | $R_{th(ch-a)}$ <sup>1)</sup> | 625    | $^\circ\text{C/W}$ |

<sup>1)</sup> Each terminal mounted on a recommended land

## Transistors

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

| Parameter                               | Symbol        | Min. | Typ. | Max. | Unit | Conditions                           |
|---|---------------|------|------|------|------|--------------------------------------|
| Gate-source leakage                     | $I_{GSS}$     | -    | -    | ±10  | μA   | $V_{GS} = \pm 20V, V_{DS} = 0V$      |
| 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                  | $V_{GS(th)}$  | 1.0  | -    | 2.5  | V    | $V_{DS} = 10V, I_D = 1mA$            |
| Static drain-source on-state resistance | $R_{DS(on)}$  | -    | 350  | 550  | mΩ   | $I_D = 500mA, V_{GS} = 10V$          |
|   |               | -    | 510  | 720  | mΩ   | $I_D = 500mA, V_{GS} = 4.5V$         |
|   |               | -    | 600  | 840  | mΩ   | $I_D = 500mA, V_{GS} = 4V$           |
| Forward transfer admittance             | $ Y_{fs} $    | 0.5  | -    | -    | S    | $V_{DS} = 10V, I_D = 500mA$          |
| Input capacitance                       | $C_{iss}$     | -    | 45   | -    | pF   | $V_{DS} = 10V$                       |
| Output capacitance                      | $C_{oss}$     | -    | 20   | -    | pF   | $V_{GS} = 0V$                        |
| Reverse transfer capacitance            | $C_{rss}$     | -    | 10   | -    | pF   | $f = 1MHz$                           |
| Turn-on delay time                      | $t_{d(on)}$   | -    | 10   | -    | ns   | $V_{DD} = 15V$                       |
| Rise time                               | $t_r$         | -    | 10   | -    | ns   | $I_D = 250mA$                        |
| Turn-off delay time                     | $t_{d(off)}$  | -    | 15   | -    | ns   | $V_{GS} = 10V$                       |
| Fall time                               | $t_f$         | -    | 30   | -    | ns   | $R_L = 60\Omega$<br>$R_G = 10\Omega$ |

\*Pulsed

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

| Parameter       | Symbol   | Min. | Typ. | Max. | Unit | Conditions                 |
|-----------------|----------|------|------|------|------|----------------------------|
| Forward voltage | $V_{SD}$ | -    | -    | 1.2  | V    | $I_S = 0.16A, V_{GS} = 0V$ |

## Appendix

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