



# SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

# SCH1433 — General-Purpose Switching Device Applications

## Features

- 1.8V drive
- Halogen free compliance
- Protection diode in

## Specifications

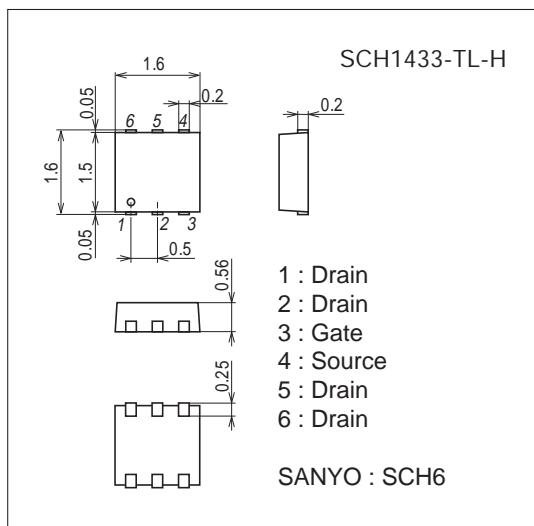
### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

| Parameter                   | Symbol    | Conditions   | Ratings     | Unit             |
|-----------------------------|-----------|--|-------------|------------------|
| Drain-to-Source Voltage     | $V_{DSS}$ |  | 20          | V                |
| Gate-to-Source Voltage      | $V_{GSS}$ |  | $\pm 10$    | V                |
| Drain Current (DC)          | $I_D$     |  | 3.5         | A                |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$                | 14          | A                |
| Allowable Power Dissipation | $P_D$     | When mounted on ceramic substrate (900mm <sup>2</sup> x 0.8mm) | 0.8         | W                |
| Channel Temperature         | $T_{ch}$  |  | 150         | $^\circ\text{C}$ |
| Storage Temperature         | $T_{stg}$ |  | -55 to +150 | $^\circ\text{C}$ |

## Package Dimensions

unit : mm (typ)

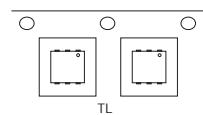
7028-002



## Product & Package Information

- Package : SCH6
- JEITA, JEDEC : SOT-563
- Minimum Packing Quantity : 5,000 pcs./reel

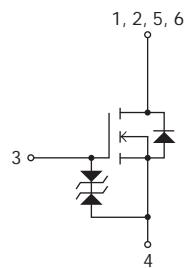
## Packing Type : TL



## Marking



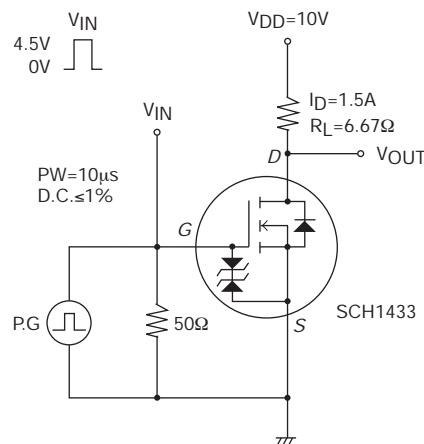
## Electrical Connection



Electrical Characteristics at  $T_a=25^\circ C$ 

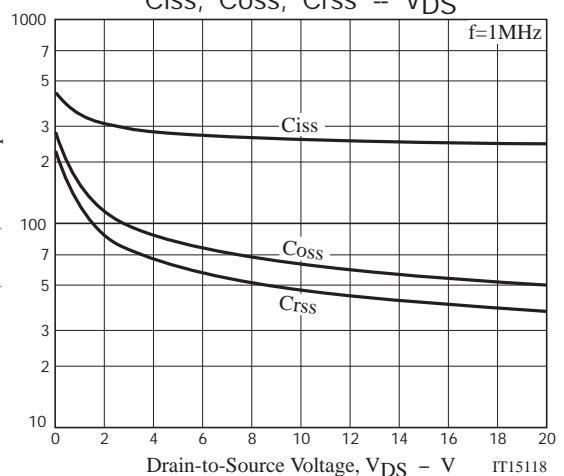
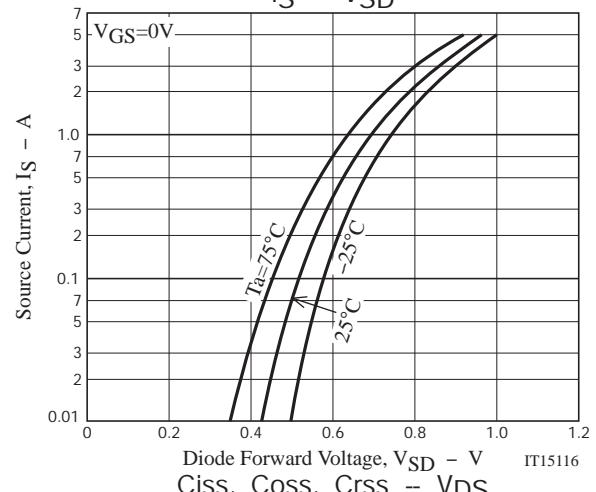
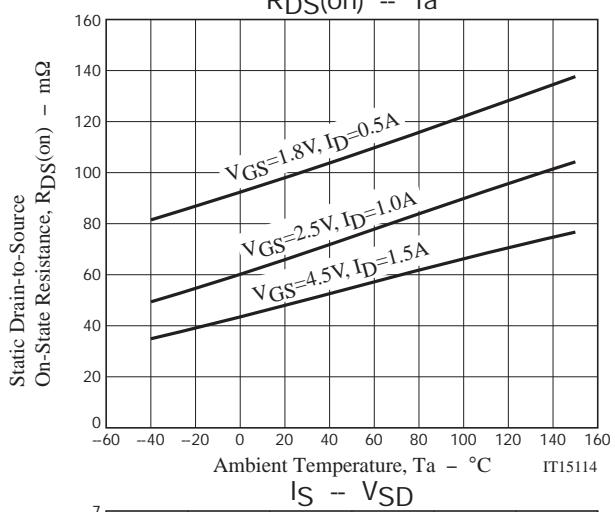
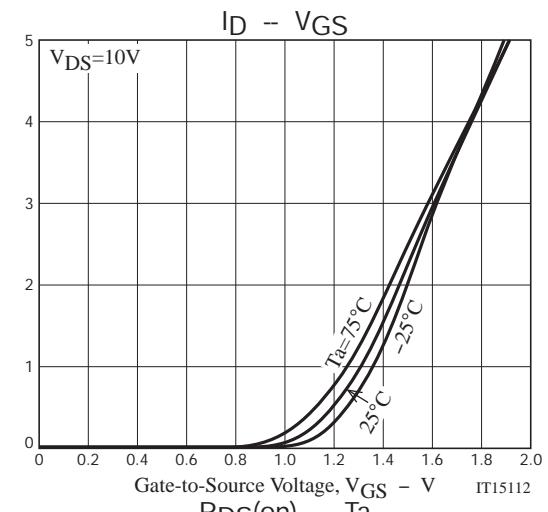
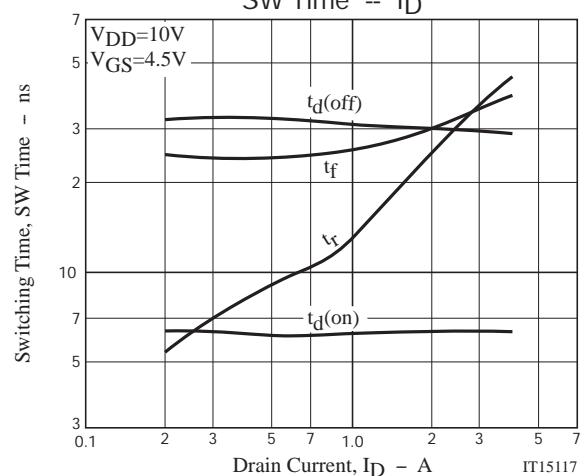
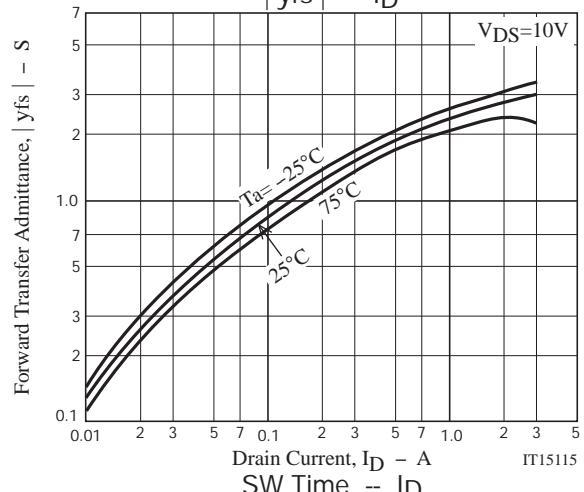
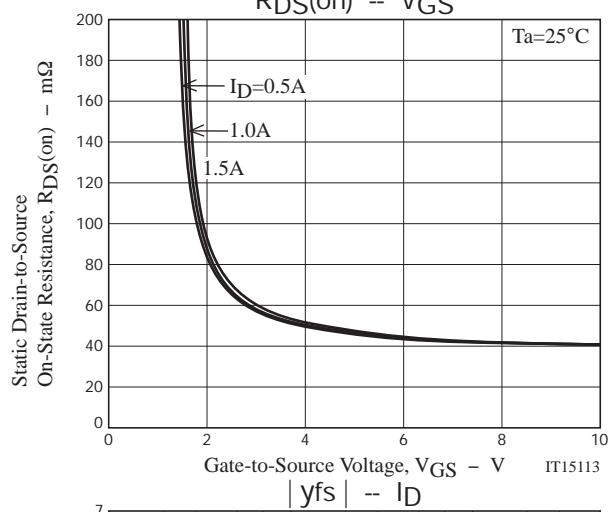
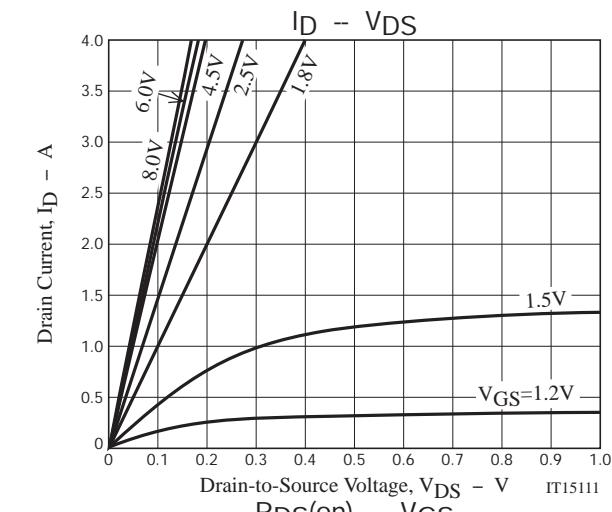
| Parameter                                  | Symbol               | Conditions   | Ratings |      |          | Unit             |
|--|----------------------|--|---------|------|----------|------------------|
|  |                      |  | min     | typ  | max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$        | $I_D=1\text{mA}, V_{GS}=0\text{V}$                       | 20      |      |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$            | $V_{DS}=20\text{V}, V_{GS}=0\text{V}$                    |         |      | 1        | $\mu\text{A}$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$            | $V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$                 |         |      | $\pm 10$ | $\mu\text{A}$    |
| Cutoff Voltage                             | $V_{GS(\text{off})}$ | $V_{DS}=10\text{V}, I_D=1\text{mA}$                      | 0.4     |      | 1.3      | V                |
| Forward Transfer Admittance                | $ y_{fs} $           | $V_{DS}=10\text{V}, I_D=1.5\text{A}$                     | 1.68    | 2.8  |          | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(\text{on})1}$ | $I_D=1.5\text{A}, V_{GS}=4.5\text{V}$                    |         | 49   | 64       | $\text{m}\Omega$ |
|  | $R_{DS(\text{on})2}$ | $I_D=1\text{A}, V_{GS}=2.5\text{V}$                      |         | 68   | 95       | $\text{m}\Omega$ |
|  | $R_{DS(\text{on})3}$ | $I_D=0.5\text{A}, V_{GS}=1.8\text{V}$                    |         | 99   | 149      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$            | $V_{DS}=10\text{V}, f=1\text{MHz}$                       |         | 260  |          | $\text{pF}$      |
| Output Capacitance                         | $C_{oss}$            |  |         | 65   |          | $\text{pF}$      |
| Reverse Transfer Capacitance               | $C_{rss}$            |  |         | 50   |          | $\text{pF}$      |
| Turn-ON Delay Time                         | $t_{d(\text{on})}$   | See specified Test Circuit.                              |         | 6.2  |          | ns               |
| Rise Time                                  | $t_r$                |  |         | 19   |          | ns               |
| Turn-OFF Delay Time                        | $t_{d(\text{off})}$  |  |         | 30   |          | ns               |
| Fall Time                                  | $t_f$                |  |         | 28   |          | ns               |
| Total Gate Charge                          | $Q_g$                | $V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=3.5\text{A}$ |         | 2.8  |          | $\text{nC}$      |
| Gate-to-Source Charge                      | $Q_{gs}$             |  |         | 0.6  |          | $\text{nC}$      |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$             |  |         | 0.9  |          | $\text{nC}$      |
| Diode Forward Voltage                      | $V_{SD}$             | $I_S=3.5\text{A}, V_{GS}=0\text{V}$                      |         | 0.85 | 1.2      | V                |

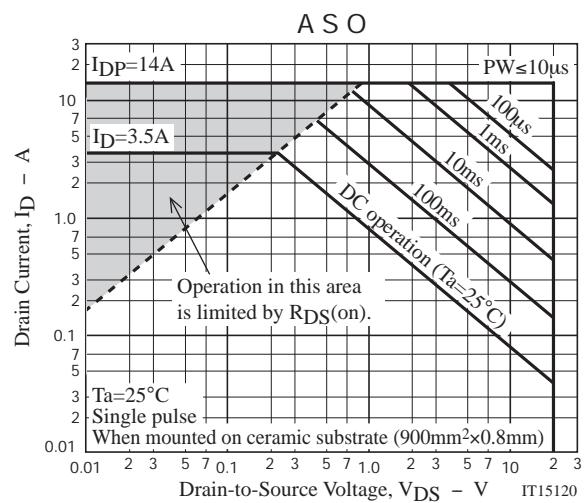
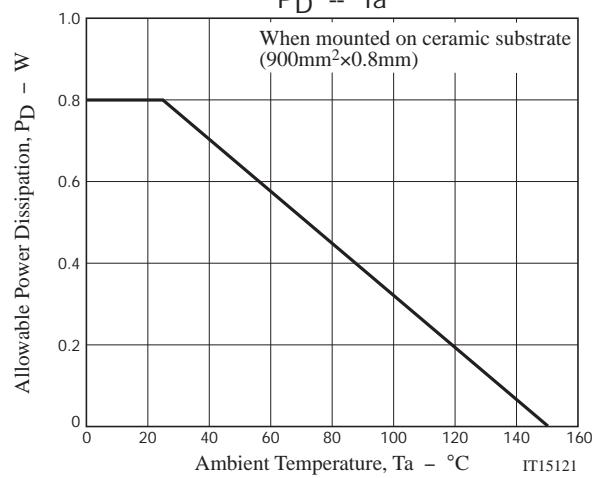
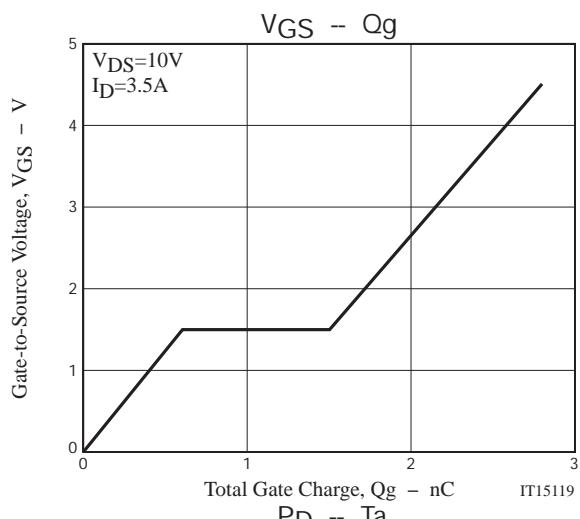
## Switching Time Test Circuit



## Ordering Information

| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| SCH1433-TL-H | SCH6    | 5,000pcs./reel | Pb Free and Halogen Free |



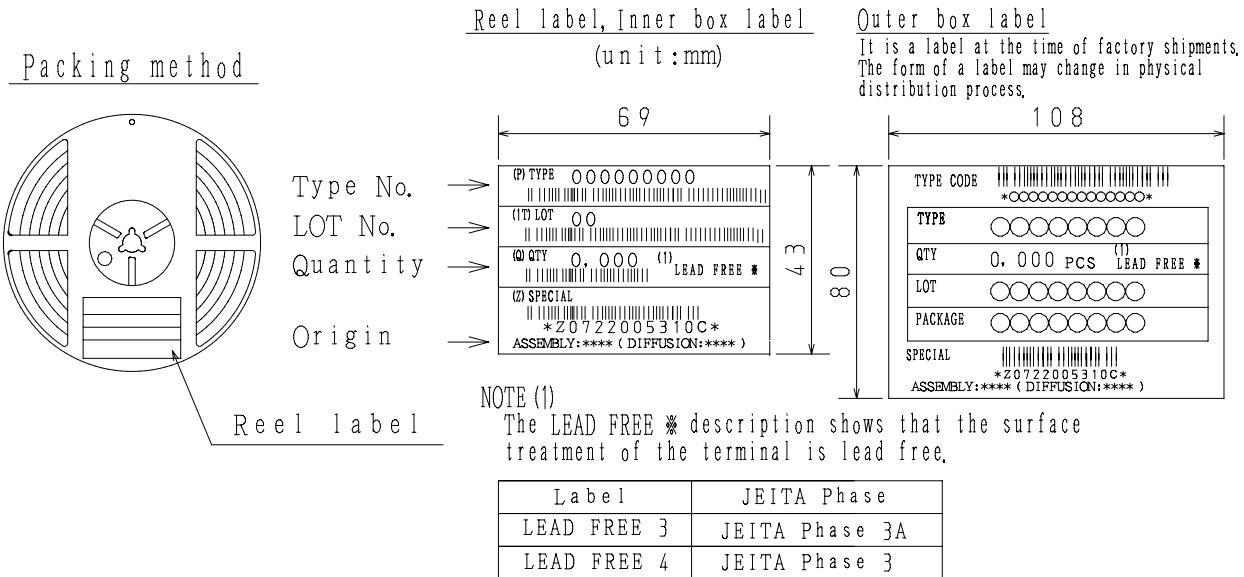


## Taping Specification

SCH1433-TL-H

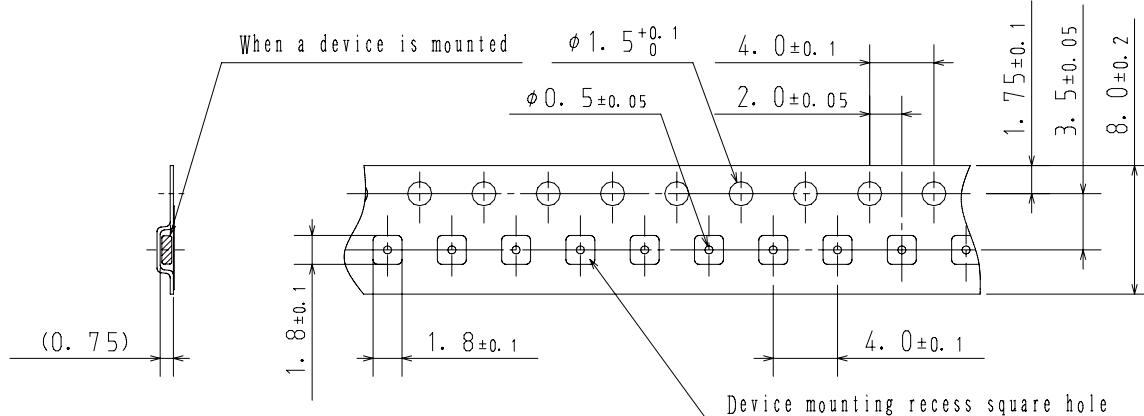
## 1. Packing Format

| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) |           |           | Packing format  |  |
|--------------|-------------------|---|-----------|-----------|---|--|
|              |                   | Reel                                      | Inner box | Outer box | Inner BOX (C-1)   | Outer BOX (A-7)  |
| SCH6         | SCH6              | 5,000                                     | 25,000    | 150,000   | 5 reels contained<br>Dimensions:mm (external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm (external)<br>440×195×210 |

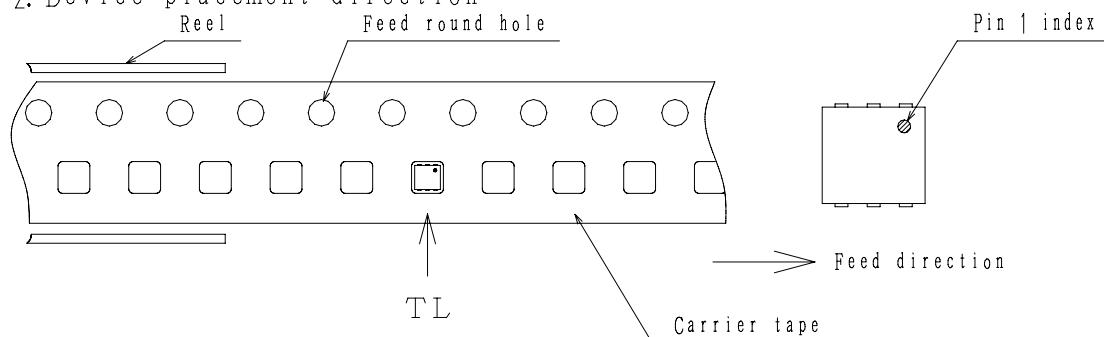


## 2. Taping configuration

## 2-1. Carrier tape size (unit:mm)



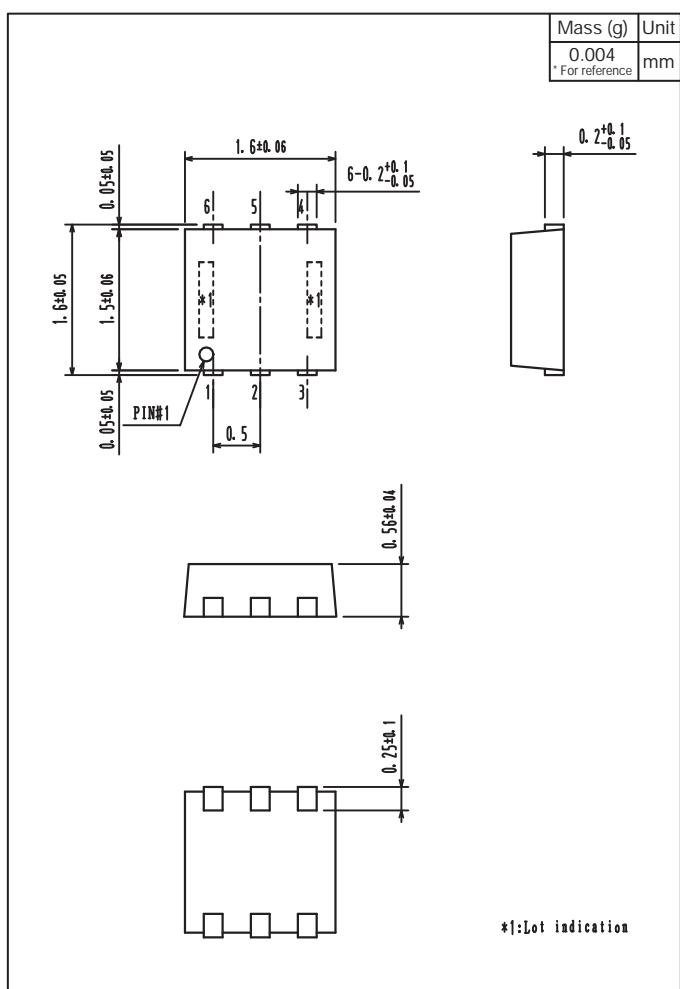
## 2-2. Device placement direction



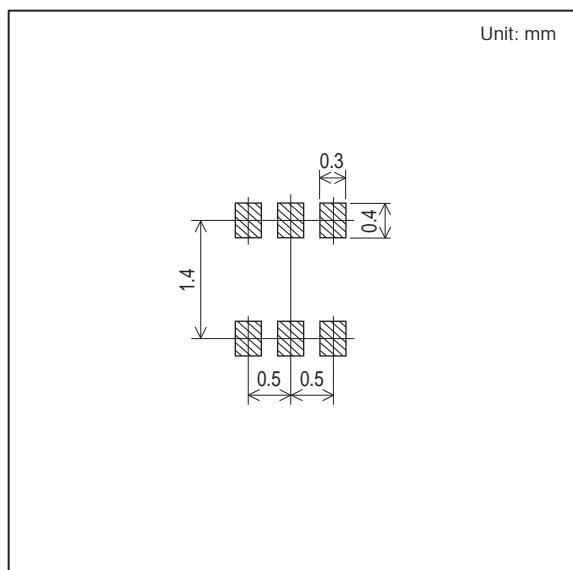
Those with pin 1 index on the feed hole side.....TL

## Outline Drawing

SCH1433-TL-H



## Land Pattern Example



Note on usage : Since the SCH1433 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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