



# ECH8410 — General-Purpose Switching Device Applications

N-Channel Silicon MOSFET

## Features

- Low ON-resistance.
- 4V drive.
- Halogen free compliance.
- Protection diode in

## Specifications

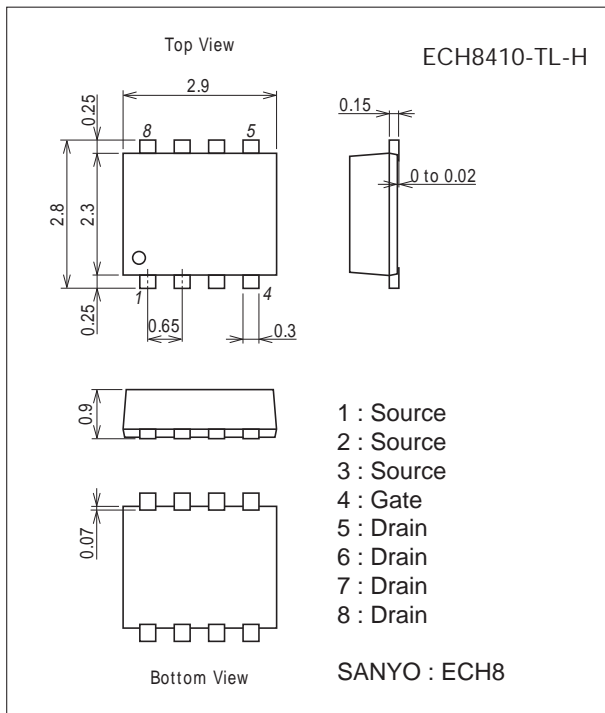
### Absolute Maximum Ratings at Ta=25°C

| Parameter                   | Symbol           | Conditions  | Ratings     | Unit |
|-----------------------------|------------------|---|-------------|------|
| Drain-to-Source Voltage     | V <sub>DSS</sub> |   | 30          | V    |
| Gate-to-Source Voltage      | V <sub>GSS</sub> |   | ±20         | V    |
| Drain Current (DC)          | I <sub>D</sub>   |   | 12          | A    |
| Drain Current (Pulse)       | I <sub>DP</sub>  | PW≤10μs, duty cycles≤1%                                       | 60          | A    |
| Allowable Power Dissipation | P <sub>D</sub>   | When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) | 1.6         | W    |
| Channel Temperature         | T <sub>ch</sub>  |   | 150         | °C   |
| Storage Temperature         | T <sub>stg</sub> |   | -55 to +150 | °C   |

## Package Dimensions

unit : mm (typ.)

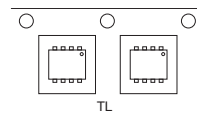
7011A-002



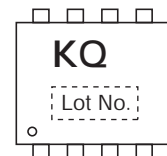
## Product & Package Information

- Package : ECH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

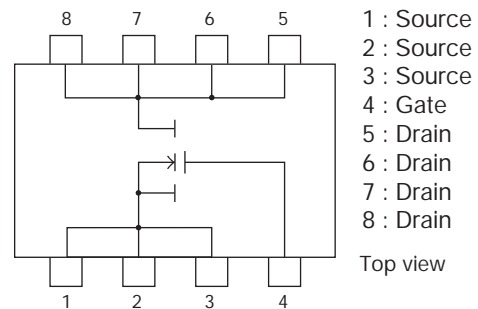
## Packing Type : TL



## Marking



## Electrical Connection

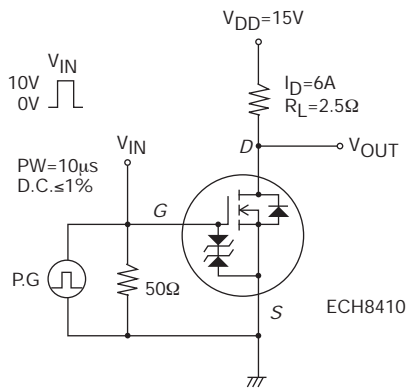


# ECH8410

## Electrical Characteristics at Ta=25°C

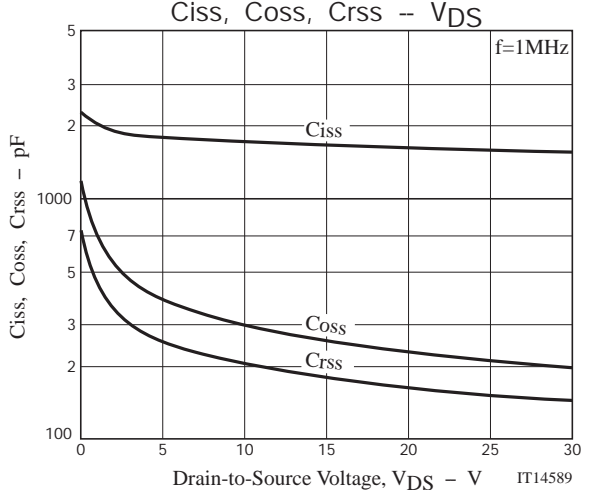
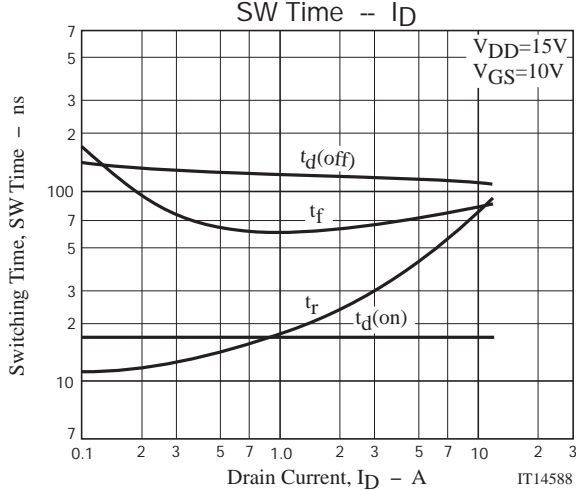
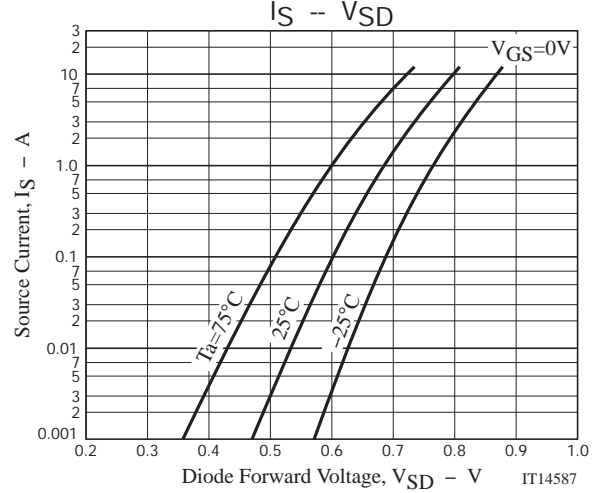
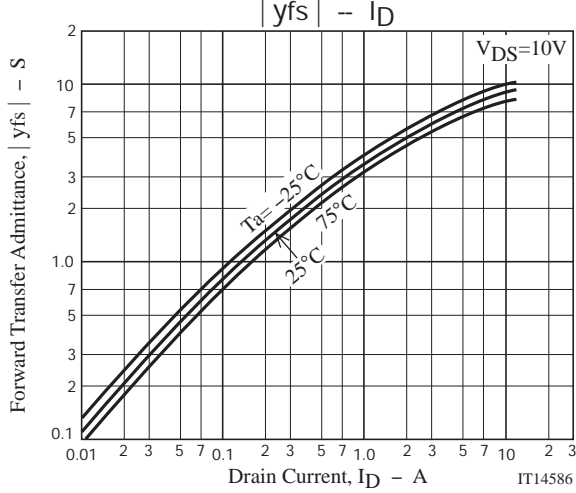
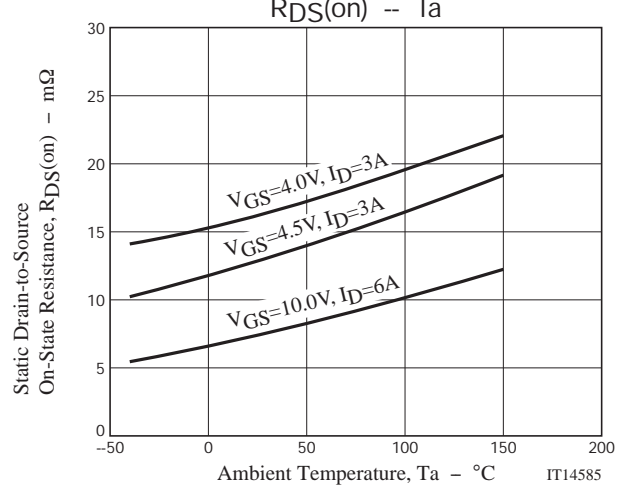
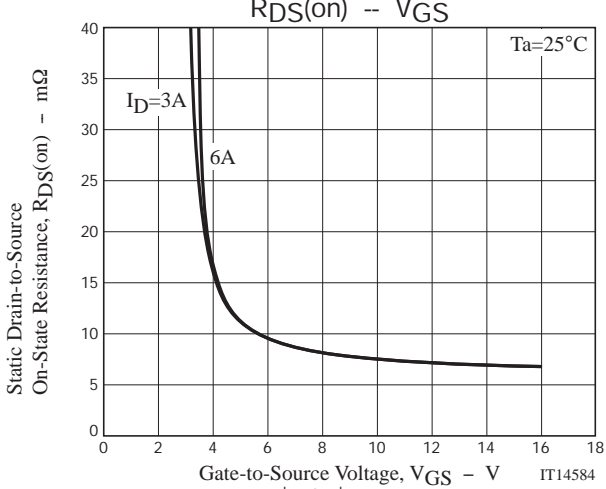
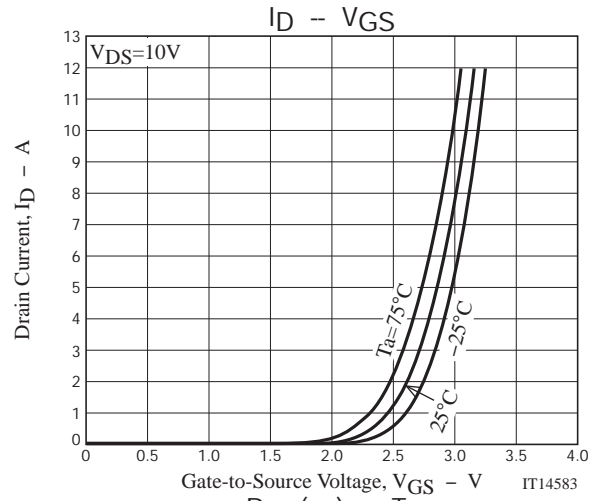
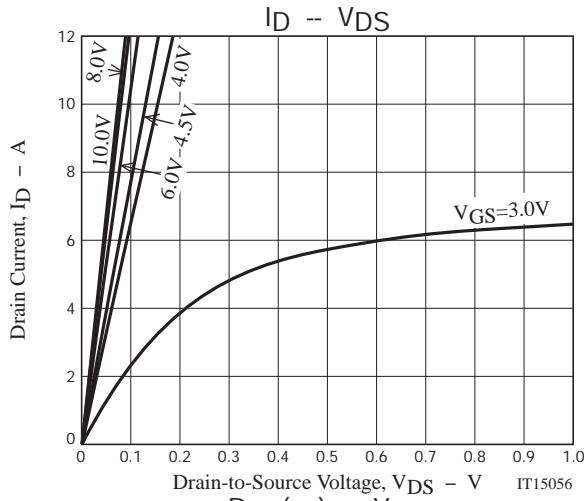
| Parameter                                  | Symbol               | Conditions  | Ratings                     |      |      | Unit |
|--|----------------------|---|-----------------------------|------|------|------|
|  |                      |   | min.                        | typ. | max. |      |
| Drain-to-Source Breakdown Voltage          | V(BR)DSS             | I <sub>D</sub> =1mA, V <sub>GS</sub> =0V                        | 30                          |      |      | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V                       |                             |      | 1    | μA   |
| Gate-to-Source Leakage Current             | I <sub>GSS</sub>     | V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V                      |                             |      | ±10  | μA   |
| Cutoff Voltage                             | V <sub>GS(off)</sub> | V <sub>DS</sub> =10V, I <sub>D</sub> =1mA                       | 1.2                         |      | 2.6  | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>DS</sub> =10V, I <sub>D</sub> =6A                        |                             | 7.5  |      | S    |
| Static Drain-to-Source On-State Resistance | R <sub>DS(on)1</sub> | I <sub>D</sub> =6A, V <sub>GS</sub> =10V                        |                             | 7.5  | 10   | mΩ   |
|  | R <sub>DS(on)2</sub> | I <sub>D</sub> =3A, V <sub>GS</sub> =4.5V                       |                             | 13   | 18.2 | mΩ   |
|  | R <sub>DS(on)3</sub> | I <sub>D</sub> =3A, V <sub>GS</sub> =4V                         |                             | 15.5 | 22   | mΩ   |
| Input Capacitance                          | C <sub>iss</sub>     | V <sub>DS</sub> =10V, f=1MHz                                    |                             | 1700 |      | pF   |
| Output Capacitance                         | C <sub>oss</sub>     |   |                             | 300  |      | pF   |
| Reverse Transfer Capacitance               | C <sub>rss</sub>     |   |                             | 200  |      | pF   |
| Turn-ON Delay Time                         | t <sub>d(on)</sub>   |   | See specified Test Circuit. |      | 17   |      |
| Rise Time                                  | t <sub>r</sub>       |   |                             | 50   |      | ns   |
| Turn-OFF Delay Time                        | t <sub>d(off)</sub>  |   |                             | 110  |      | ns   |
| Fall Time                                  | t <sub>f</sub>       |   |                             | 72   |      | ns   |
| Total Gate Charge                          | Q <sub>g</sub>       | V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =12A |                             |      | 31   |      |
| Gate-to-Source Charge                      | Q <sub>gs</sub>      |   |                             | 5.5  |      | nC   |
| Gate-to-Drain "Miller" Charge              | Q <sub>gd</sub>      |   |                             | 5.5  |      | nC   |
| Diode Forward Voltage                      | V <sub>SD</sub>      | I <sub>S</sub> =12A, V <sub>GS</sub> =0V                        |                             | 0.8  | 1.2  | V    |

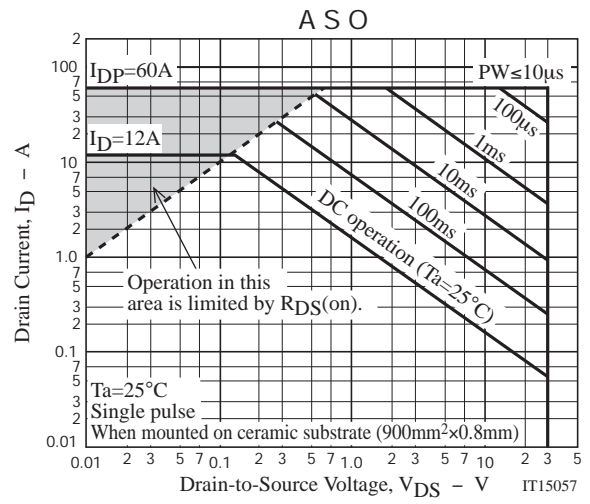
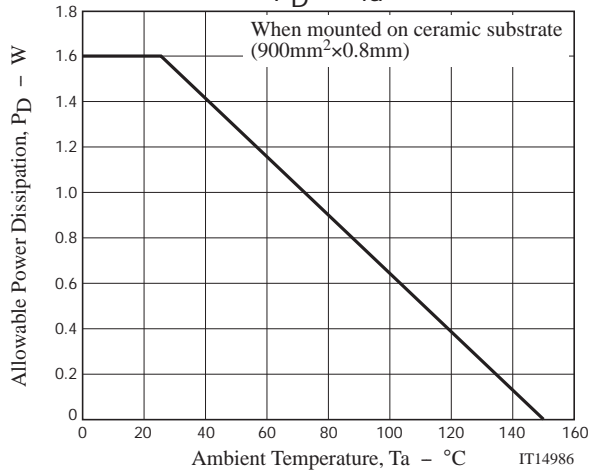
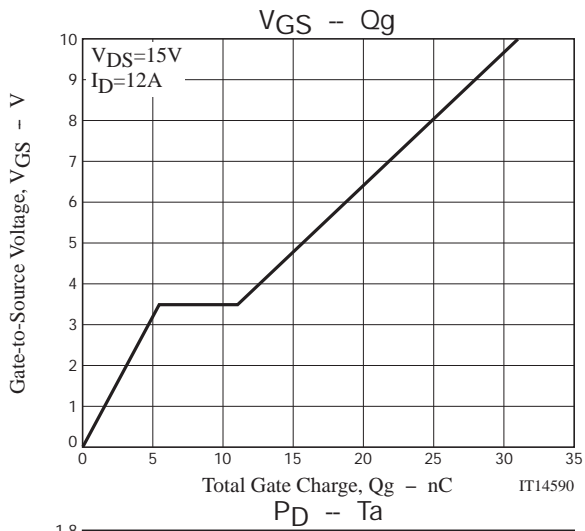
## Switching Time Test Circuit



## Ordering Information

| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| ECH8410-TL-H | ECH8    | 3,000pcs./reel | Pb Free and Halogen Free |





Embossed Taping Specification

ECH8410-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)  |
| ECH8         | CPH6              | 3,000                                     | 15,000    | 90,000    | 5 reels contained<br>Dimensions:mm (external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm (external)<br>440×195×210 |

Reel label, Inner box label  
(unit :mm)

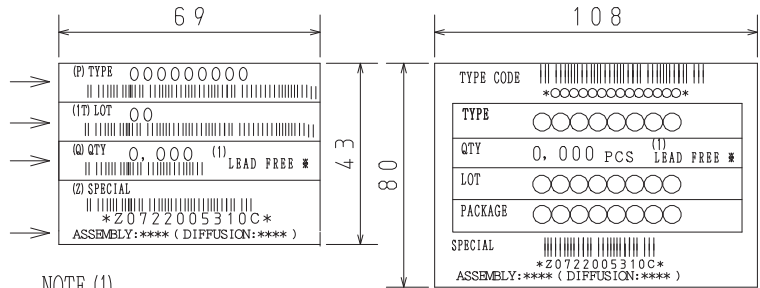
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



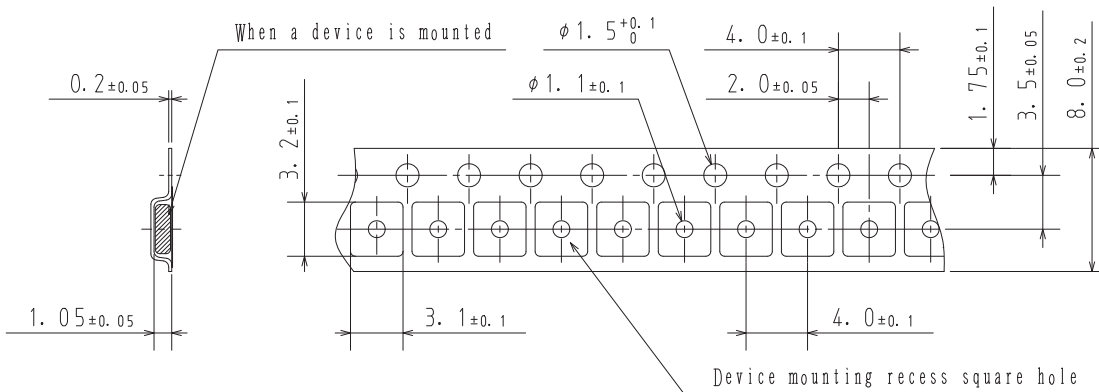
NOTE (1)

The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

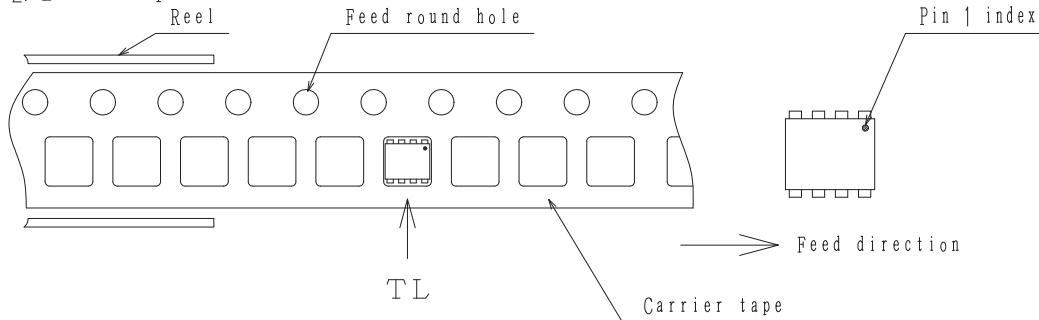
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

2. Taping configuration

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



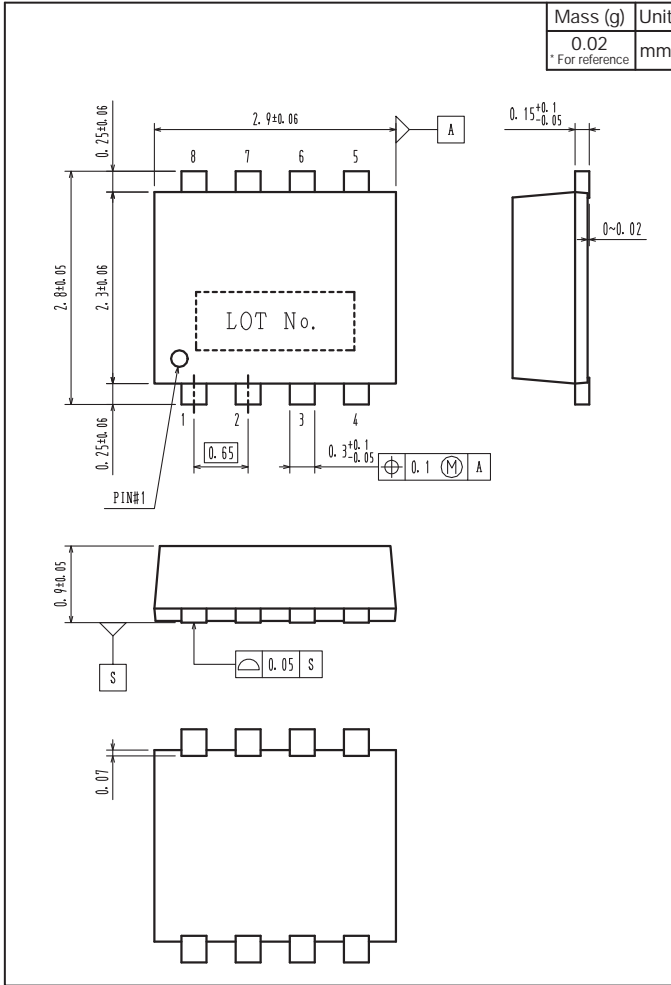
2-2. Device placement direction



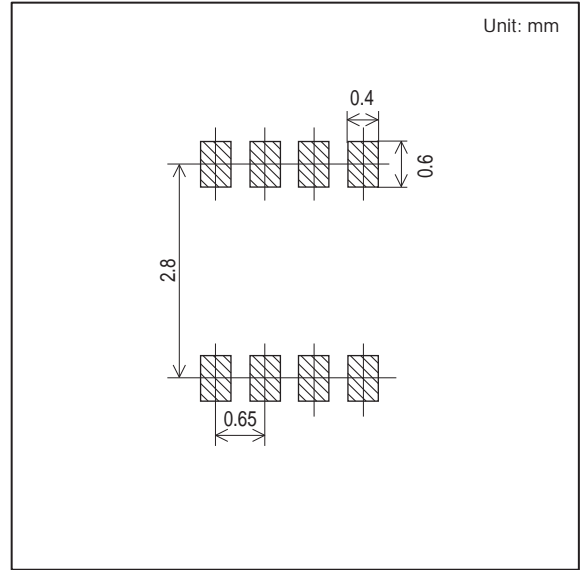
Those with pin 1 index on the feed hole side.....TL

# ECH8410

## Outline Drawing ECH8410-TL-H



## Land Pattern Example



Note on usage : Since the ECH8410 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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