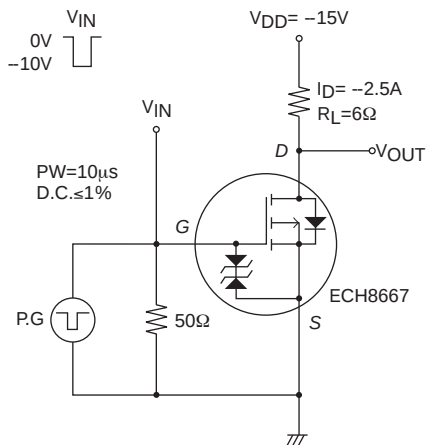
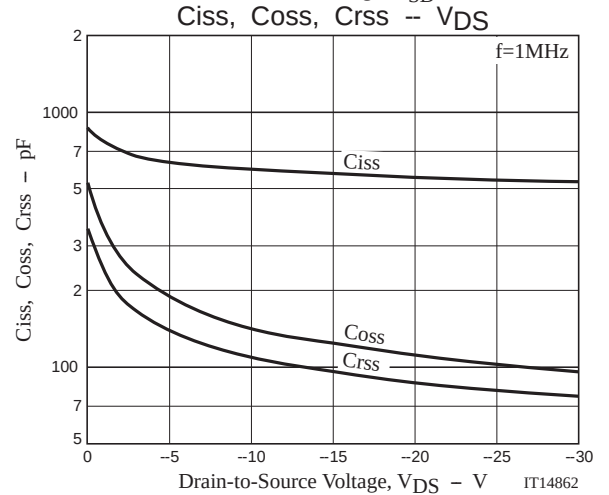
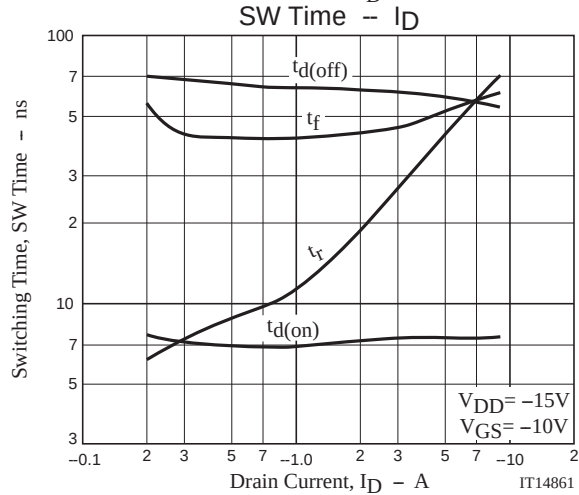
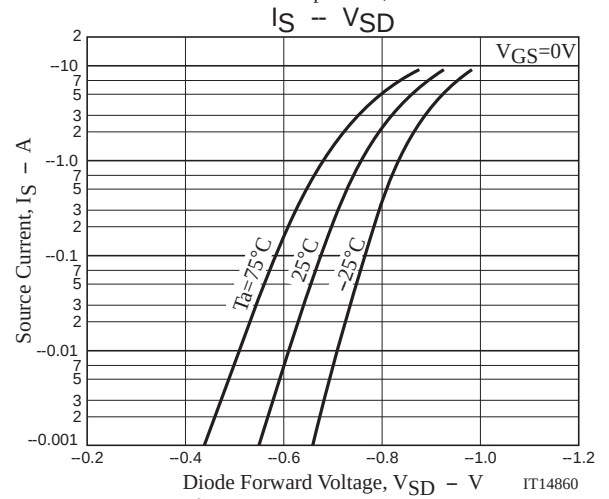
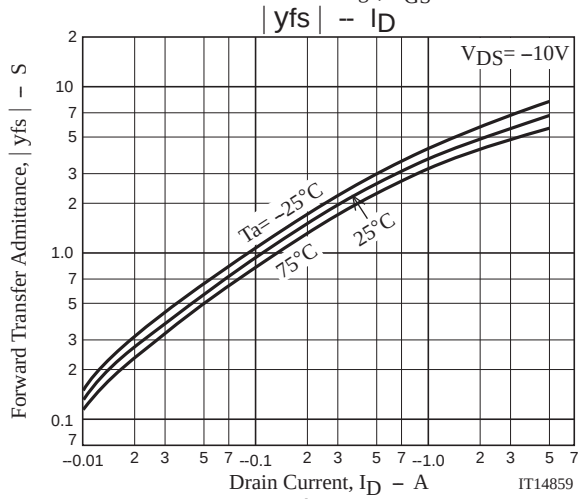
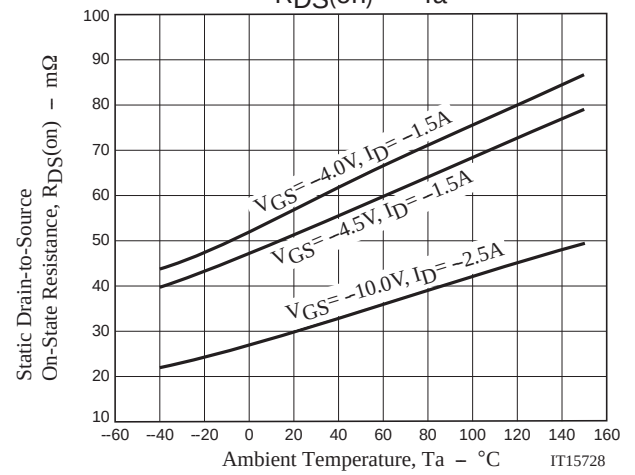
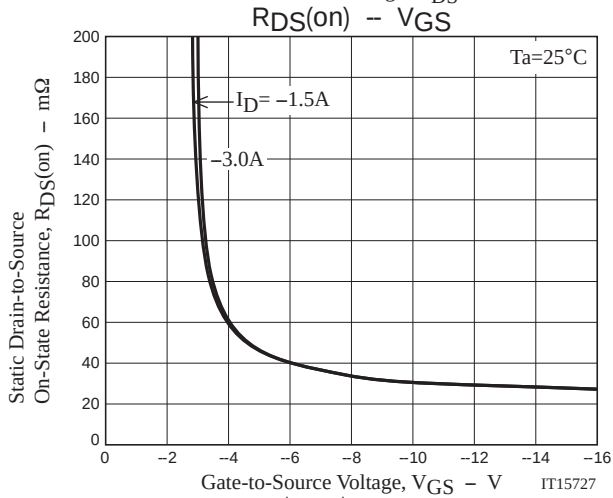
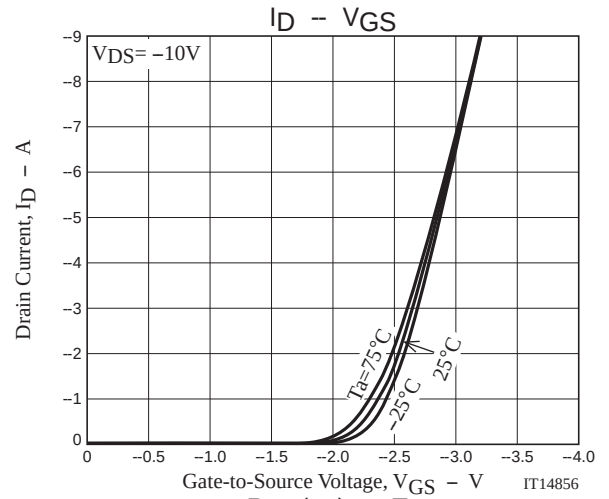
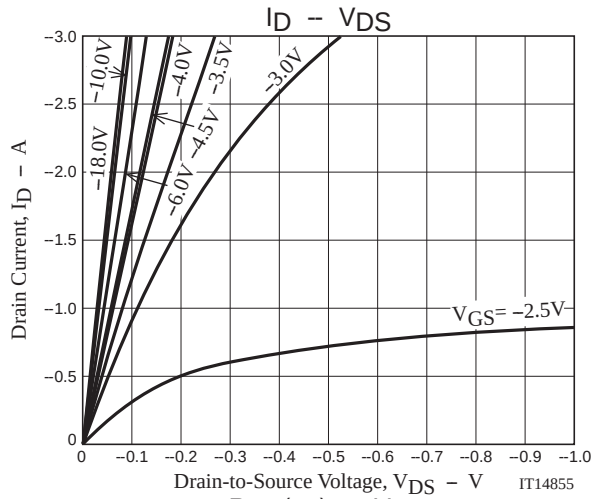


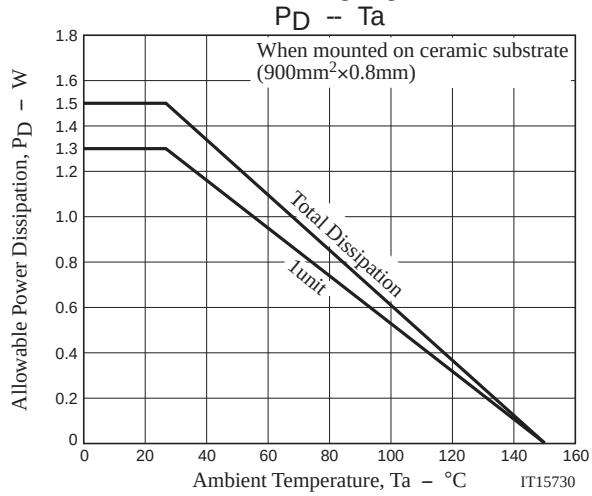
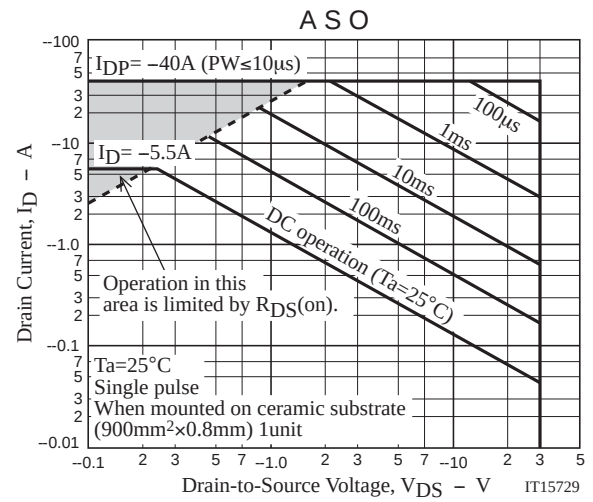
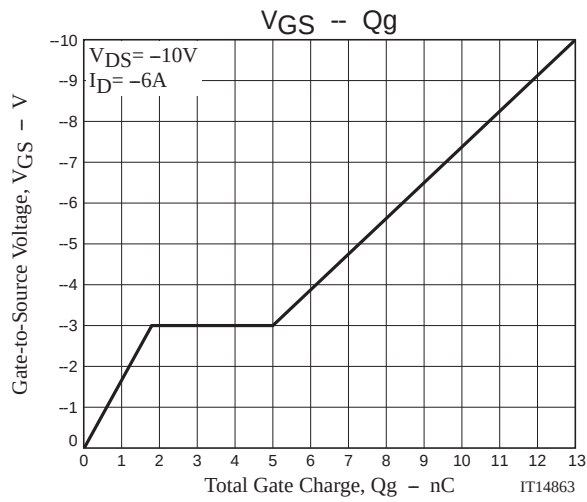
**Electrical Characteristics** at  $T_a=25^{\circ}\text{C}$ 

| Parameter                                  | Symbol        | Conditions                                                       | Ratings |       |          | Unit             |
|--------------------------------------------|---------------|------------------------------------------------------------------|---------|-------|----------|------------------|
|                                            |               |                                                                  | min     | typ   | max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D=-1\text{mA}$ , $V_{GS}=0\text{V}$                           | -30     |       |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=-30\text{V}$ , $V_{GS}=0\text{V}$                        |         |       | -1       | $\mu\text{A}$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$                     |         |       | $\pm 10$ | $\mu\text{A}$    |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS}=-10\text{V}$ , $I_D=-1\text{mA}$                         | -1.2    |       | -2.6     | V                |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS}=-10\text{V}$ , $I_D=-2.5\text{A}$                        |         | 5.2   |          | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-2.5\text{A}$ , $V_{GS}=-10\text{V}$                        |         | 30    | 39       | $\text{m}\Omega$ |
|                                            | $R_{DS(on)2}$ | $I_D=-1.5\text{A}$ , $V_{GS}=-4.5\text{V}$                       |         | 55    | 77       | $\text{m}\Omega$ |
|                                            | $R_{DS(on)3}$ | $I_D=-1.5\text{A}$ , $V_{GS}=-4\text{V}$                         |         | 58    | 82       | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=-10\text{V}$ , $f=1\text{MHz}$                           |         | 600   |          | pF               |
| Output Capacitance                         | $C_{oss}$     |                                                                  |         | 145   |          | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$     |                                                                  |         | 110   |          | pF               |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit.                                      |         | 7.2   |          | ns               |
| Rise Time                                  | $t_r$         |                                                                  |         | 23    |          | ns               |
| Turn-OFF Delay Time                        | $t_{d(off)}$  |                                                                  |         | 63    |          | ns               |
| Fall Time                                  | $t_f$         |                                                                  |         | 42    |          | ns               |
| Total Gate Charge                          | $Q_g$         | $V_{DS}=-15\text{V}$ , $V_{GS}=-10\text{V}$ , $I_D=-5.5\text{A}$ |         | 13    |          | nC               |
| Gate-to-Source Charge                      | $Q_{gs}$      |                                                                  |         | 1.8   |          | nC               |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      |                                                                  |         | 3.2   |          | nC               |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S=-5.5\text{A}$ , $V_{GS}=0\text{V}$                          |         | -0.82 | -1.2     | V                |

**Switching Time Test Circuit****Ordering Information**

| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| ECH8667-TL-H | ECH8    | 3,000pcs./reel | Pb Free and Halogen Free |





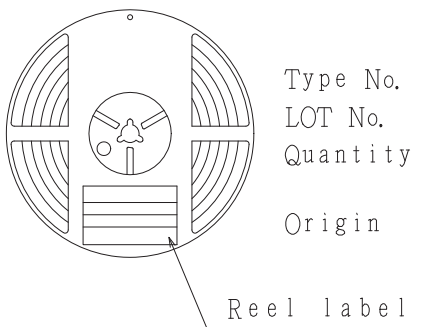
## Embossed Taping Specification

ECH8667-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 |

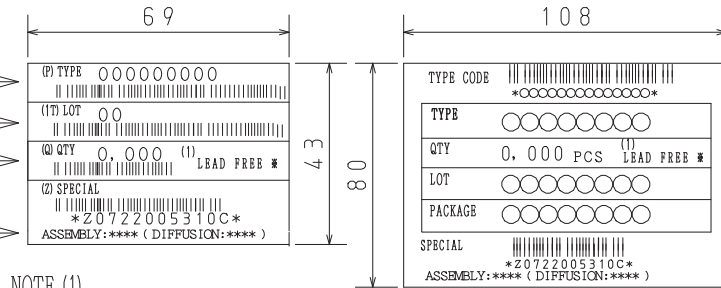
#### Packing method



Reel label, Inner box label  
(unit:mm)

Outer box label

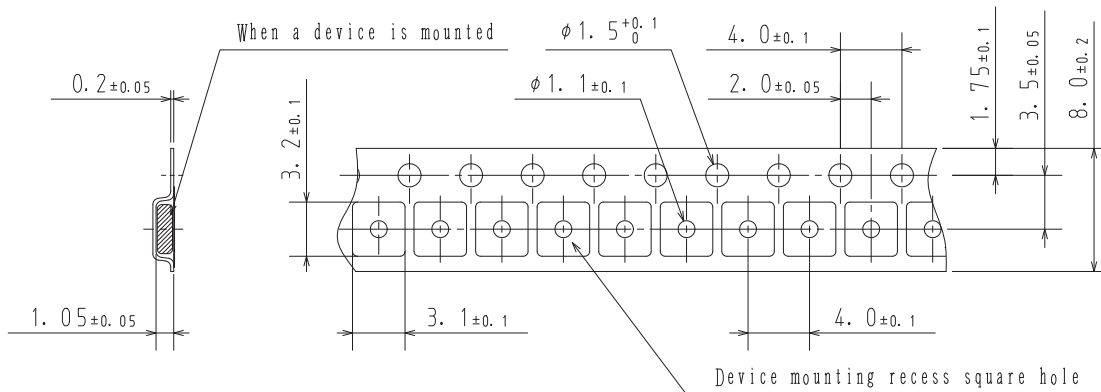
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.



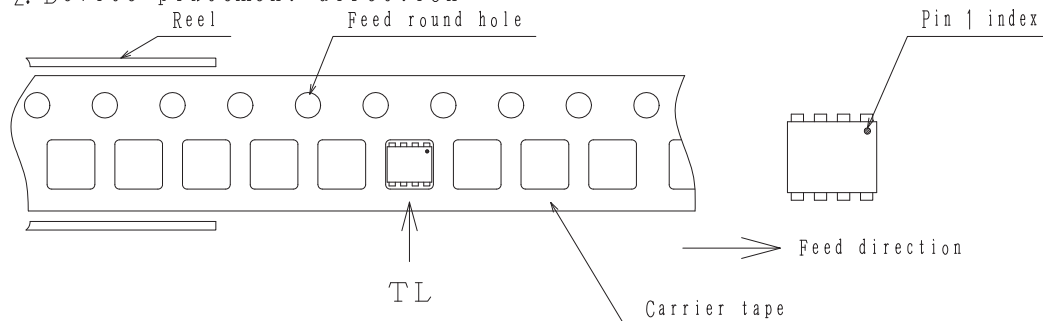
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

### 2. Taping configuration

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

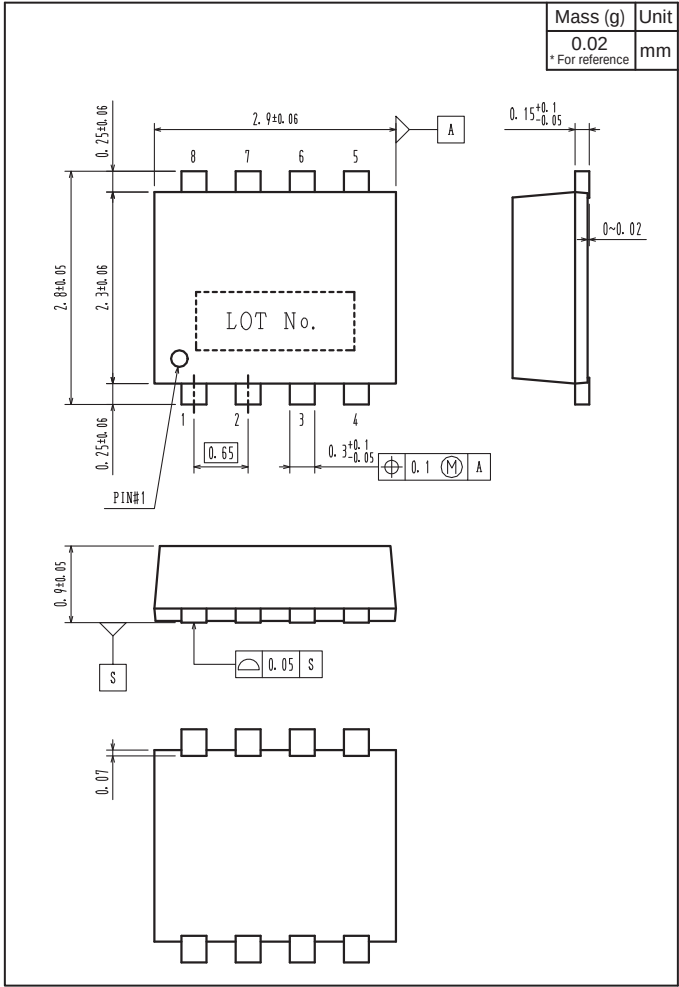


#### 2-2. Device placement direction

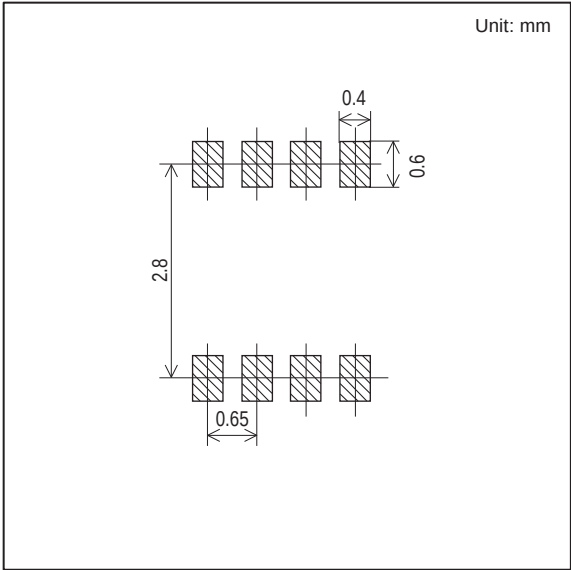


Those with pin 1 index on the feed hole side.....TL

Outline Drawing  
ECH8667-TL-H



Land Pattern Example



Note on usage : Since the ECH8667 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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