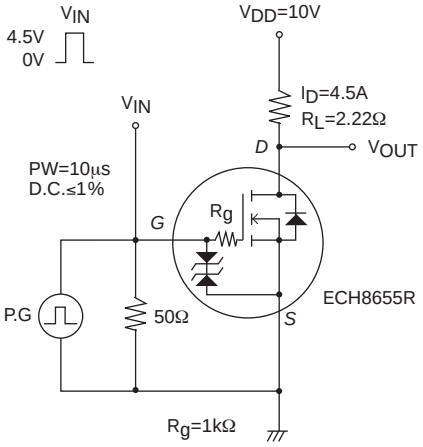
## Electrical Characteristics at Ta=25°C

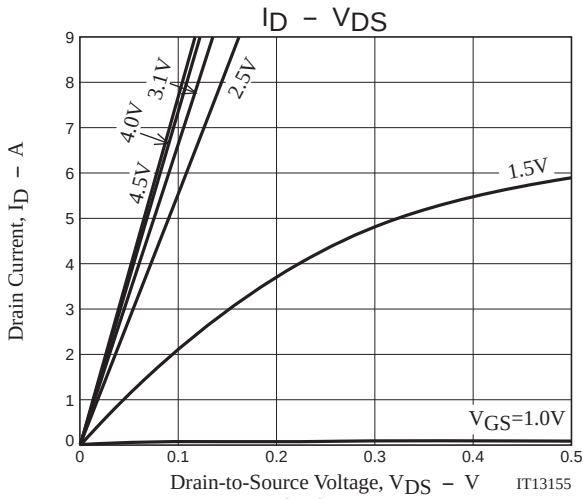
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=1mA, $V_{GS}$=0V | 24 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=20V, $V_{GS}$=0V | | | 1 | μA |
| Gate-to-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±8V, $V_{DS}$=0V | | | ±10 | μA |
| Cutoff Voltage | $V_{GS}$(off) | $V_{DS}$=10V, $I_D$=1mA | 0.5 | | 1.3 | V |
| Forward Transfer Admittance | \| yfs \| | $V_{DS}$=10V, $I_D$=4.5A | 4.8 | 8 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS}$(on)1 | $I_D$=4.5A, $V_{GS}$=4.5V | 9 | 13 | 17 | mΩ |
| | $R_{DS}$(on)2 | $I_D$=4.5A, $V_{GS}$=4.0V | 9 | 13.5 | 18 | mΩ |
| | $R_{DS}$(on)3 | $I_D$=4.5A, $V_{GS}$=3.1V | 9.2 | 15 | 21 | mΩ |
| | $R_{DS}$(on)4 | $I_D$=2A, $V_{GS}$=2.5V | 10.5 | 18 | 25.5 | mΩ |
| Turn-ON Delay Time | $t_d$(on) | See specified Test Circuit. | | 320 | | ns |
| Rise Time | $t_r$ | | | 1100 | | ns |
| Turn-OFF Delay Time | $t_d$(off) | | | 2400 | | ns |
| Fall Time | $t_f$ | | | 2100 | | ns |
| Total Gate Charge | Qg | $V_{DS}$=10V, $V_{GS}$=10V, $I_D$=9A | | 16.8 | | nC |
| Gate-to-Source Charge | Qgs | | | 1.6 | | nC |
| Gate-to-Drain “Miller” Charge | Qgd | | | 4.8 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=9A, $V_{GS}$=0V | | 0.8 | 1.2 | V |

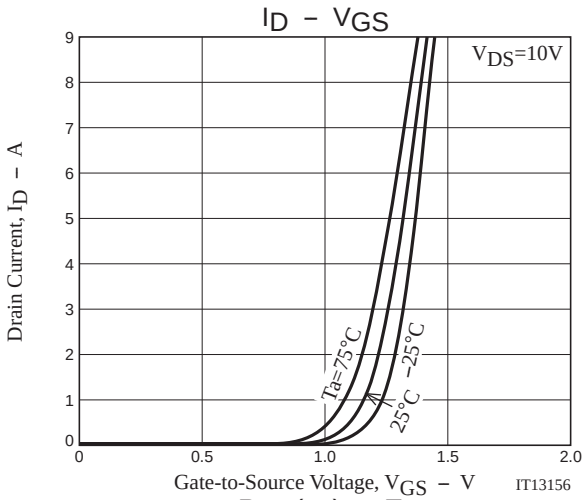
## Switching Time Test Circuit

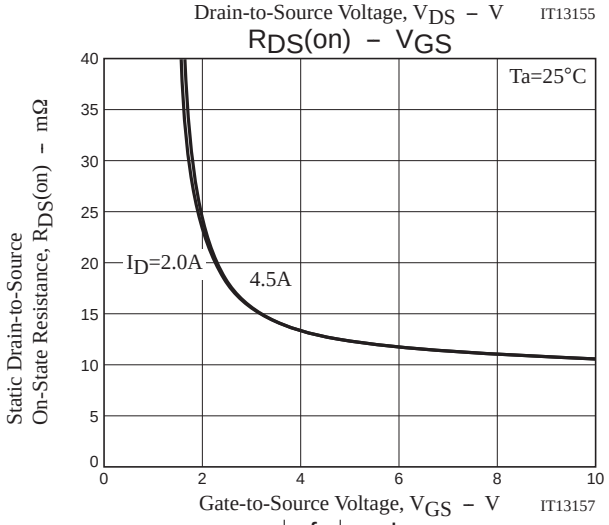


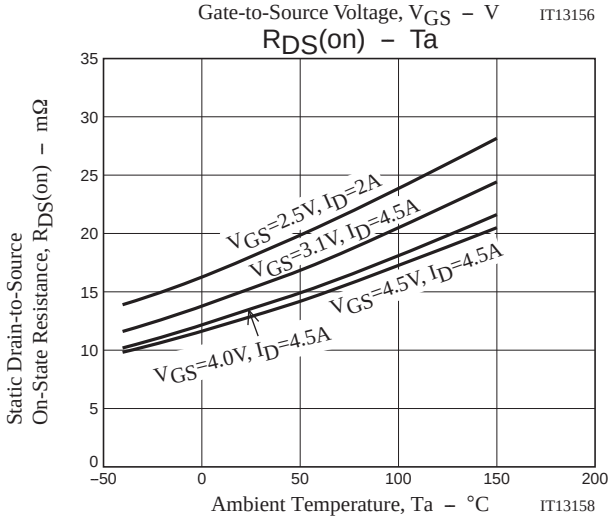

## Ordering Information

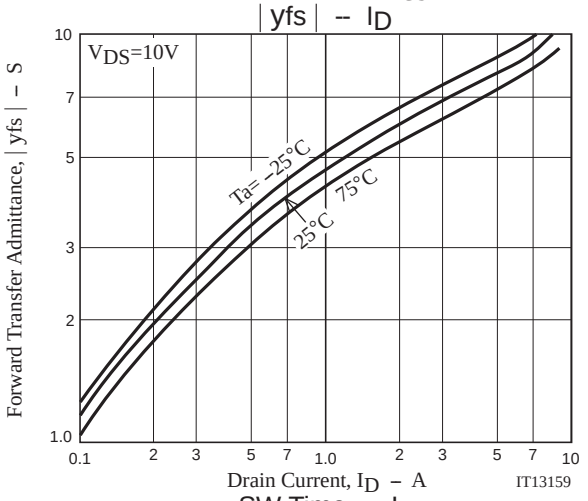
| Device | Package | Shipping | memo |
|---|---|---|---|
| ECH8655R-TL-H | ECH8 | 3,000pcs./reel | Pb Free and Halogen Free |

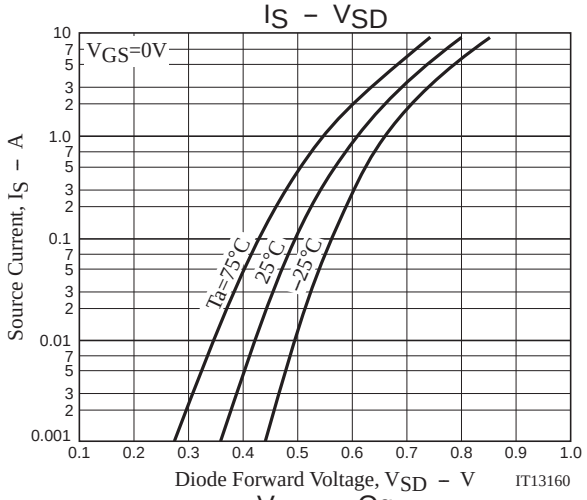


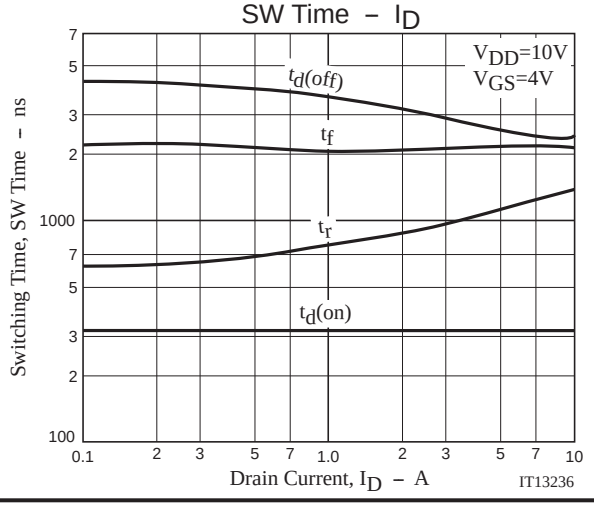



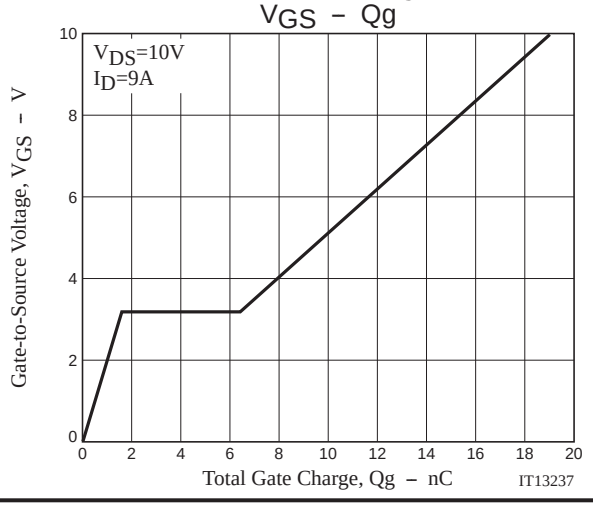



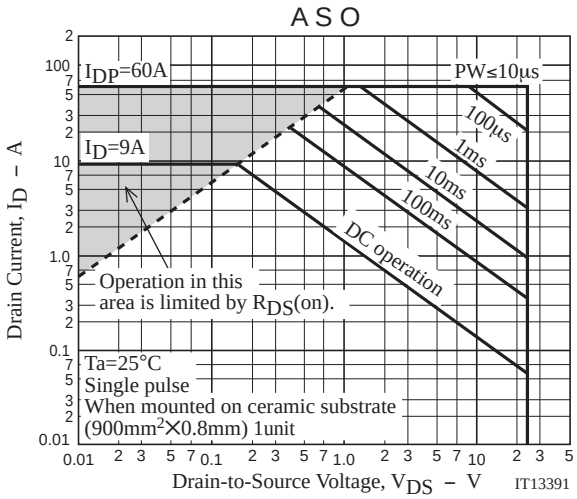



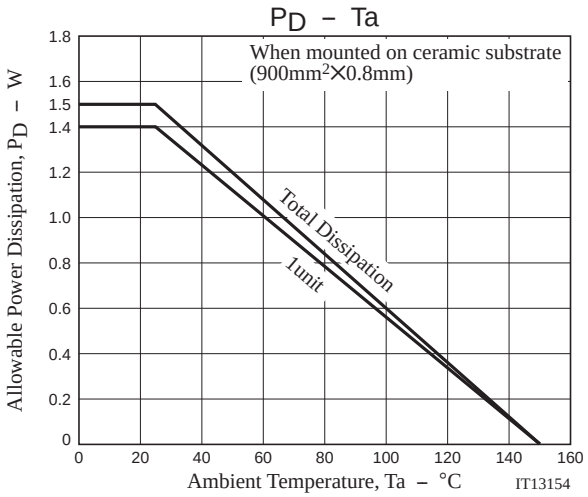





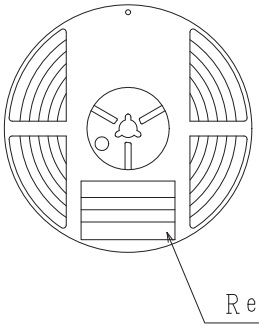
**Embossed Taping Specification**

ECH8655R-TL-H

## 1. Packing Format

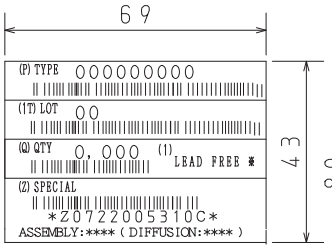
| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) | | | Packing format | |
|---|---|---|---|---|---|---|
| | | Reel | Inner box | Outer box | Inner BOX (C-1) | Outer BOX (A-7) |
| ECH8 | CPH6 | 3,000 | 15,000 | 90,000 | 5 reels contained<br>Dimensions:mm(external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm(external)<br>440×195×210 |

Packing method



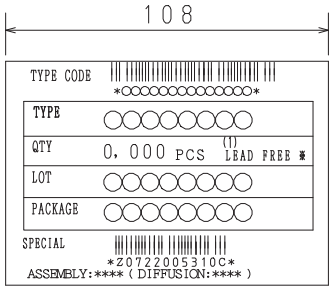

Reel label, Inner box label

(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.



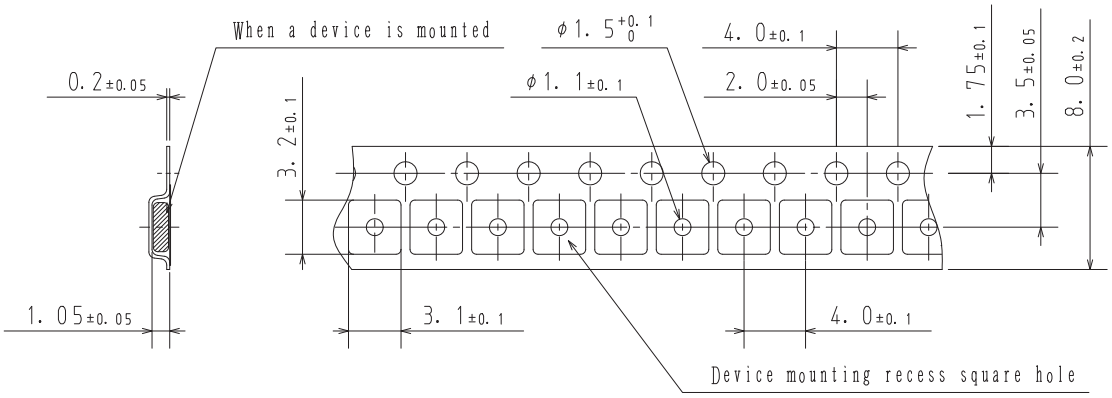

NOTE (1)

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

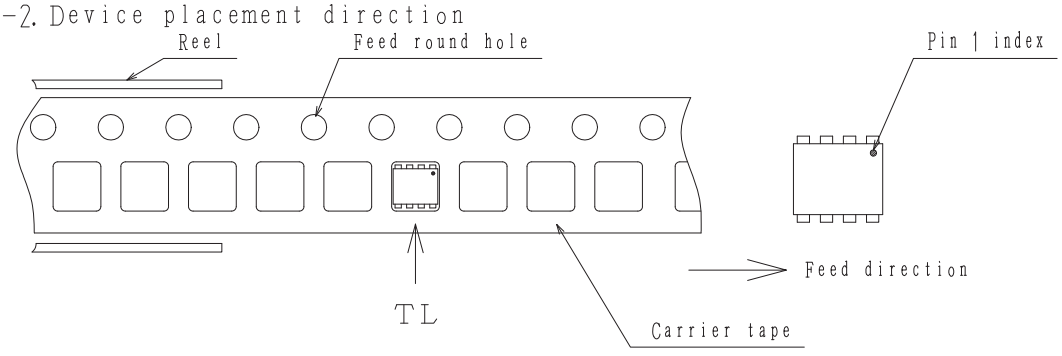
| Label | JEITA Phase |
|---|---|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

## 2. Taping configuration

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



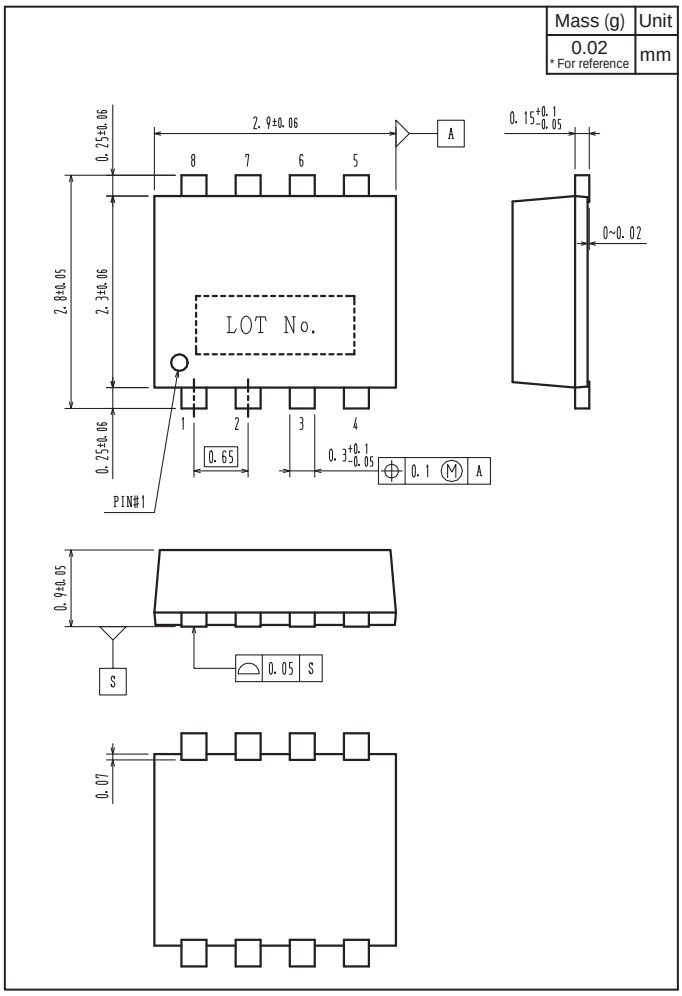

### 2-2. Device placement direction



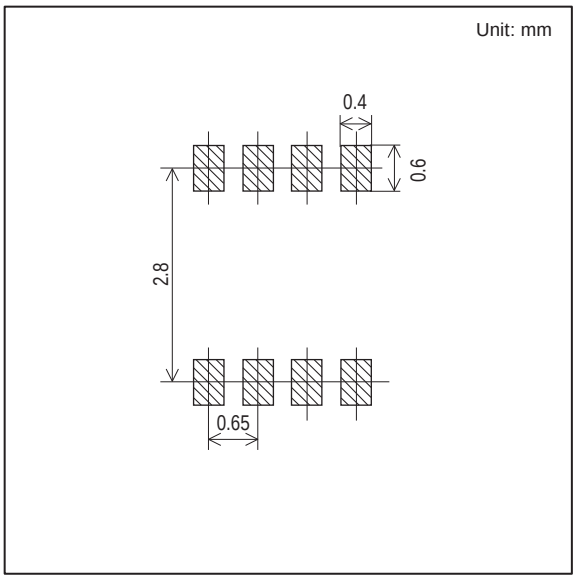

Those with pin 1 index on the feed hole side·····TL

## Outline Drawing

ECH8655R-TL-H




## Land Pattern Example



Note on usage : Since the ECH8655R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.