Ordering number : EN8699A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFETs

# VEC2315 — General-Purpose Switching Device Applications

## Features

- ON-resistance $R_{DS}(on)1=105m\Omega$(typ.)
- 4V drive
- High-density mounting
- Protection diode in
- Halogen free compliance

## Specifications

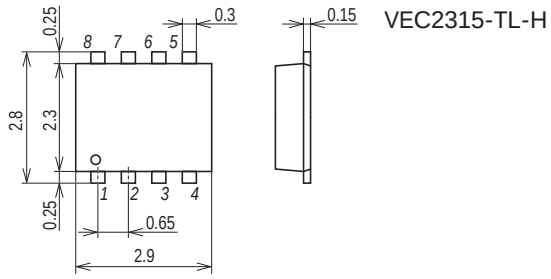
### Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | | −60 | V |
| Gate-to-Source Voltage | $V_{GSS}$ | | ±20 | V |
| Drain Current (DC) | $I_D$ | | −2.5 | A |
| Drain Current (Pulse) | $I_{DP}$ | PW≤10μs, duty cycle≤1% | −10 | A |
| Allowable Power Dissipation | $P_D$ | When mounted on ceramic substrate (900mm$^2$×0.8mm) 1unit | 0.9 | W |
| Total Dissipation | $P_T$ | When mounted on ceramic substrate (900mm$^2$×0.8mm) | 1.0 | W |
| Channel Temperature | Tch | | 150 | °C |
| Storage Temperature | Tstg | | −55 to +150 | °C |

### Package Dimensions

unit : mm (typ)

7012-002



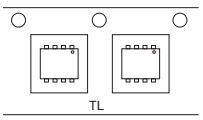

1 : Source1
2 : Gate1
3 : Source2
4 : Gate2
5 : Drain2
6 : Drain2
7 : Drain1
8 : Drain1

SANYO : VEC8

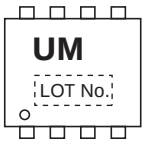
### Product & Package Information

- Package : VEC8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

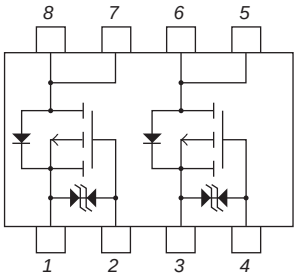
### Packing Type : TL




### Marking



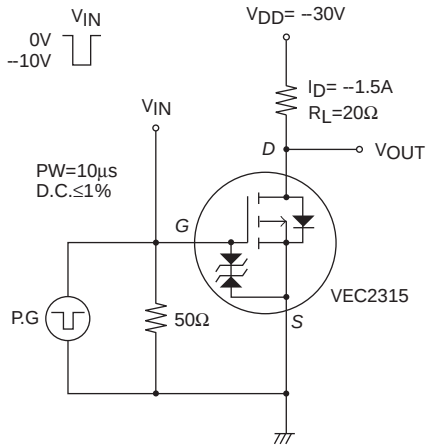

### Electrical Connection



## Electrical Characteristics at Ta=25°C

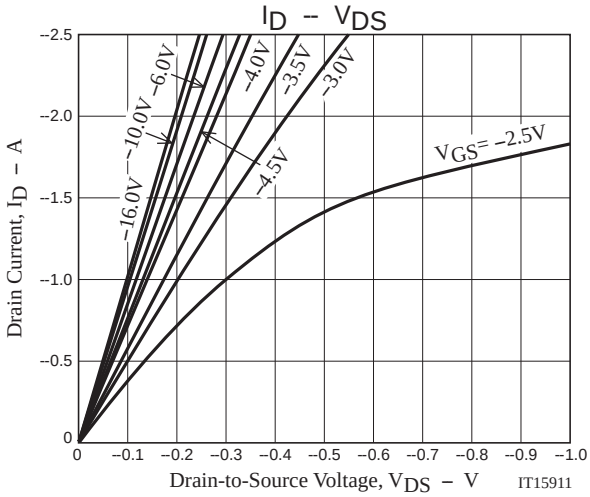
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=−1mA, $V_{GS}$=0V | −60 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=−60V, $V_{GS}$=0V | | | −1 | μA |
| Gate-to-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±16V, $V_{DS}$=0V | | | ±10 | μA |
| Cutoff Voltage | $V_{GS}$(off) | $V_{DS}$=−10V, $I_D$=−1mA | −1.2 | | −2.6 | V |
| Forward Transfer Admittance | \| yfs \| | $V_{DS}$=−10V, $I_D$=−1.5A | | 3.9 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS}$(on)1 | $I_D$=−1.5A, $V_{GS}$=−10V | | 105 | 137 | mΩ |
| | $R_{DS}$(on)2 | $I_D$=−0.75A, $V_{GS}$=−4.5V | | 128 | 180 | mΩ |
| | $R_{DS}$(on)3 | $I_D$=−0.75A, $V_{GS}$=−4V | | 138 | 194 | mΩ |
| Input Capacitance | Ciss | $V_{DS}$=−20V, f=1MHz | | 420 | | pF |
| Output Capacitance | Coss | | | 54 | | pF |
| Reverse Transfer Capacitance | Crss | | | 44 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 6.4 | | ns |
| Rise Time | $t_r$ | | | 9.8 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | | 65 | | ns |
| Fall Time | $t_f$ | | | 36 | | ns |
| Total Gate Charge | Qg | $V_{DS}$=−30V, $V_{GS}$=−10V, $I_D$=−2.5A | | 11 | | nC |
| Gate-to-Source Charge | Qgs | | | 1.4 | | nC |
| Gate-to-Drain “Miller” Charge | Qgd | | | 2 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=−2.5A, $V_{GS}$=0V | | −0.83 | −1.2 | V |

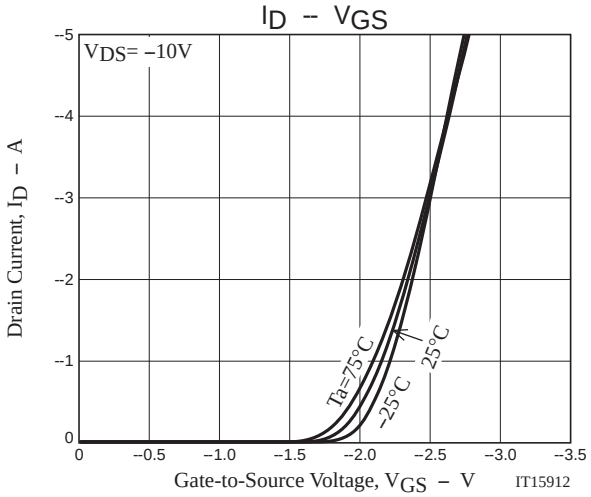
## Switching Time Test Circuit

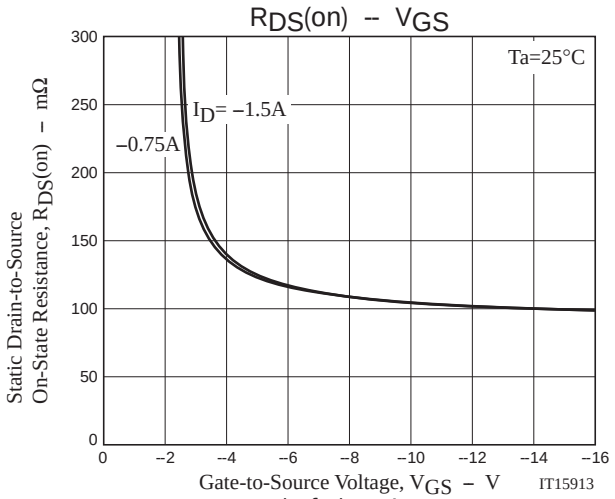


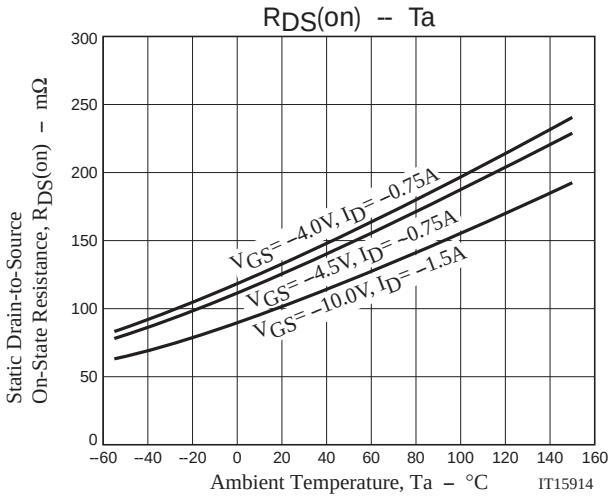

## Ordering Information

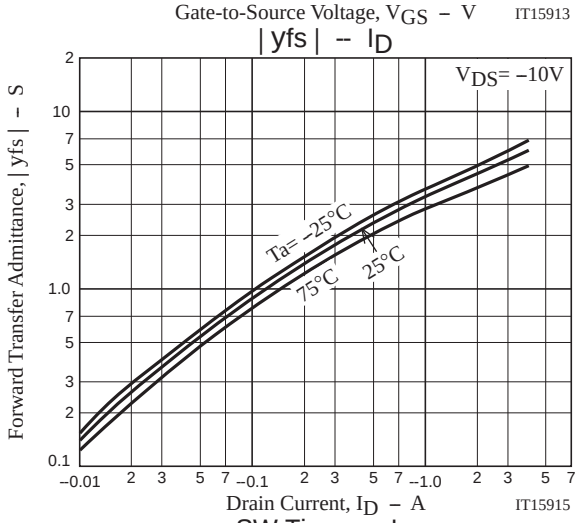
| Device | Package | Shipping | memo |
|---|---|---|---|
| VEC2315-TL-H | VEC8 | 3,000pcs./reel | Pb Free and Halogen Free |

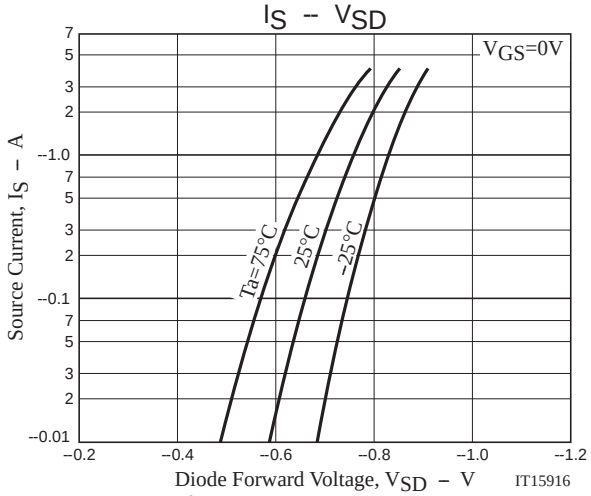


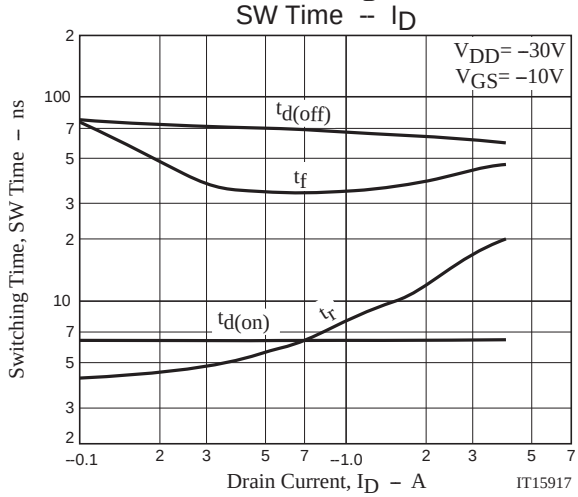



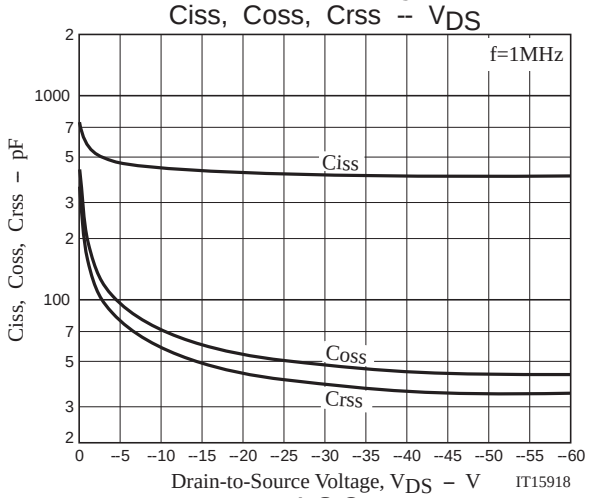

RDS(on) -- VGS
Ta=25°C
ID= –1.5A
–0.75A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15913

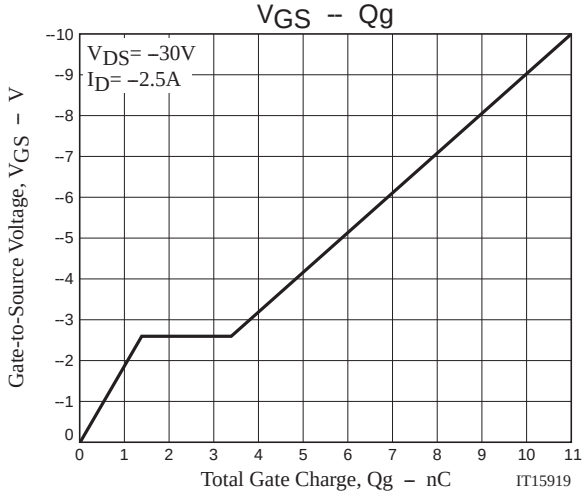

RDS(on) -- Ta
VGS= –4.0V, ID= –0.75A
VGS= –4.5V, ID= –0.75A
VGS= –10.0V, ID= –1.5A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT15914

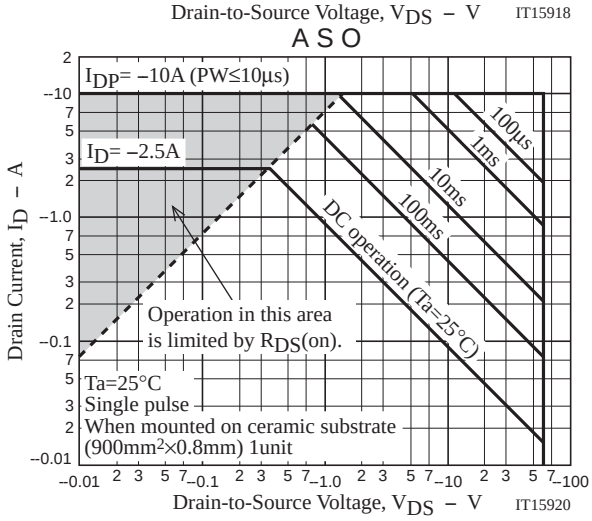

| yfs | -- ID
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT15915

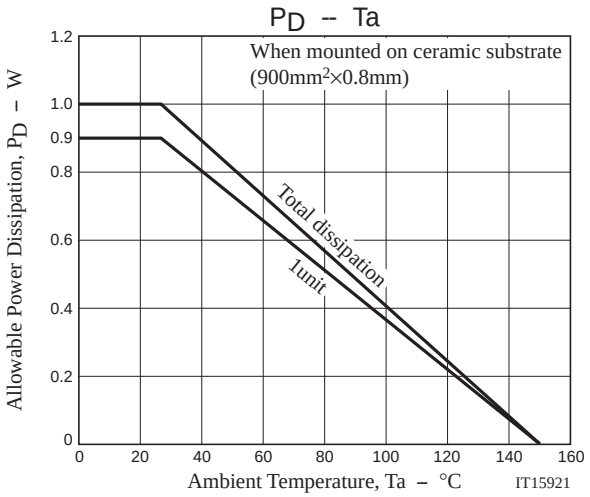

IS -- VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT15916


SW Time -- ID
VDD= –30V
VGS= –10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT15917


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15918


VGS -- Qg
VDS= –30V
ID= –2.5A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT15919


ASO
IDP= –10A (PW≤10μs)
ID= –2.5A
100μs
1ms
10ms
100ms
DC operation (Ta=25°C)
Operation in this area is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm²×0.8mm) 1unit
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15920


PD -- Ta
When mounted on ceramic substrate
(900mm2×0.8mm)
Total dissipation
1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT15921
1.2
1.0
0.9
0.8
0.6
0.4
0.2
0
0
20
40
60
80
100
120
140
160

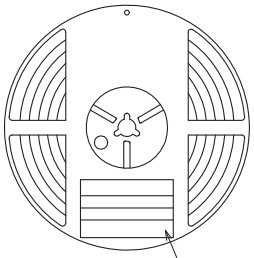
**Taping Specification**

VEC2315-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) |
| VEC8 | 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 |

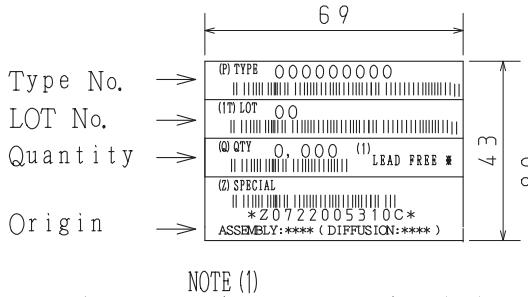
Packing method



Reel label

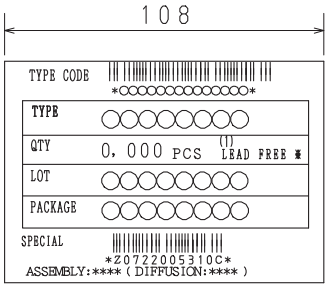
Reel label, Inner box label

(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.



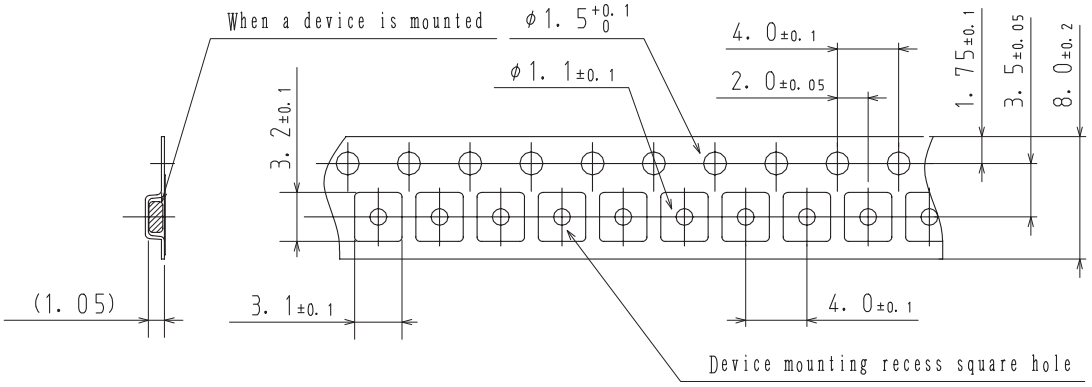

NOTE (1)

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

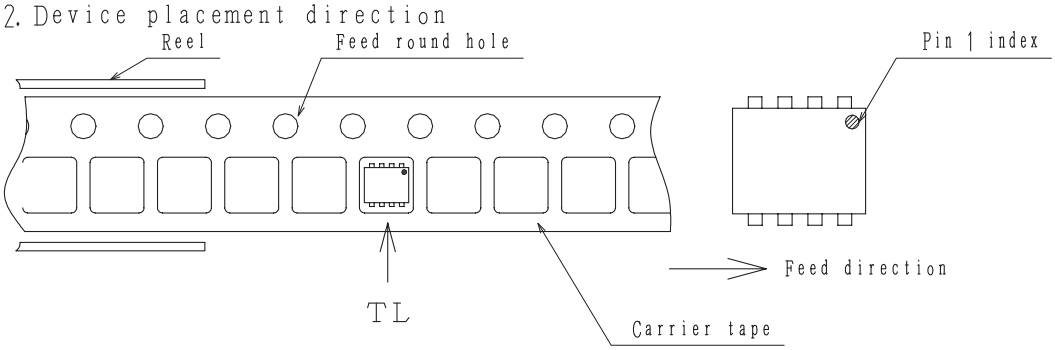
| Label | JEITA Phase |
|---|---|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

## 2. Taping configuration

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



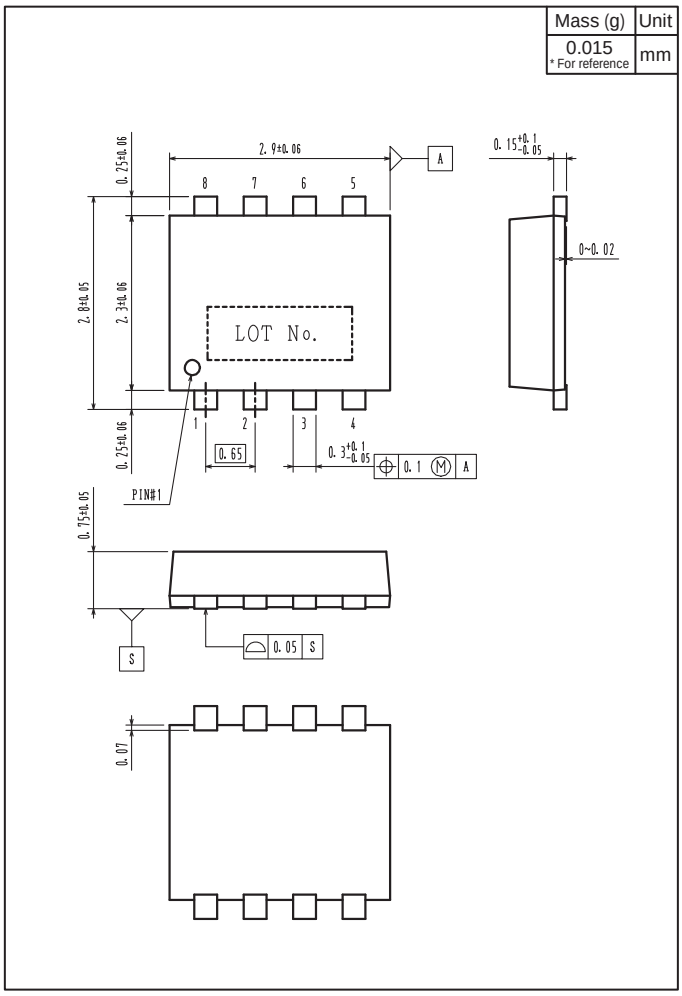

### 2-2. Device placement direction



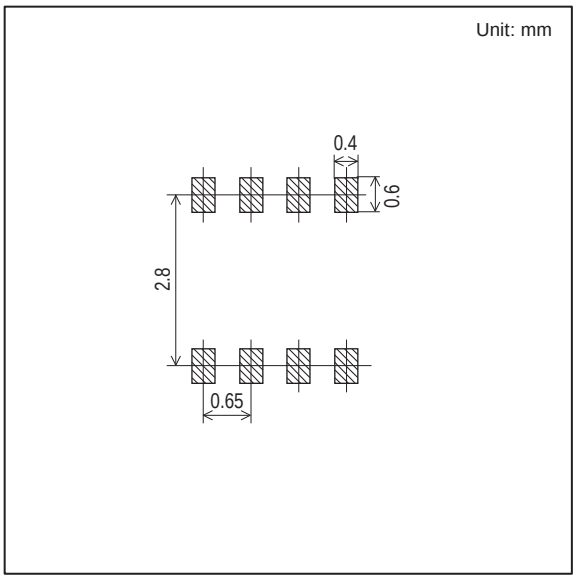

Those with oen electrode terminal on the feed hole side·····TL

## Outline Drawing

VEC2315-TL-H




## Land Pattern Example



Note on usage : Since the VEC2315 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.


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