



# TIG065E8

## N-Channel IGBT 400V, 150A, $V_{CE(sat)}$ ;4.2V, Single ECH8

ON Semiconductor®

<http://onsemi.com>

### Features

- Low-saturation voltage
- Enhancement type
- Mounting Height 0.9mm, Mounting Area 8.12mm<sup>2</sup>
- Halogen free compliance
- Low voltage drive (2.5V)
- Built-in Gate-to-Emitter protection diode
- $dv/dt$  guarantee\*

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Emitter Voltage	$V_{CES}$		400	V
Gate-to-Emitter Voltage (DC)	$V_{GES}$		$\pm 4$	V
Gate-to-Emitter Voltage (Pulse)	$V_{GES}$	$PW \leq 1\text{ms}$	$\pm 5$	V
Collector Current (Pulse)	$I_{CP}$	$V_{GE}=2.5\text{V}, C_M=100\mu\text{F}$	150	A
Maximum Collector-to-Emitter $dv/dt$	$dv/dt$	$V_{CE} \leq 320\text{V}$ , starting $T_{ch}=25^\circ\text{C}$	400	V / $\mu\text{s}$
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-40 to +150	$^\circ\text{C}$

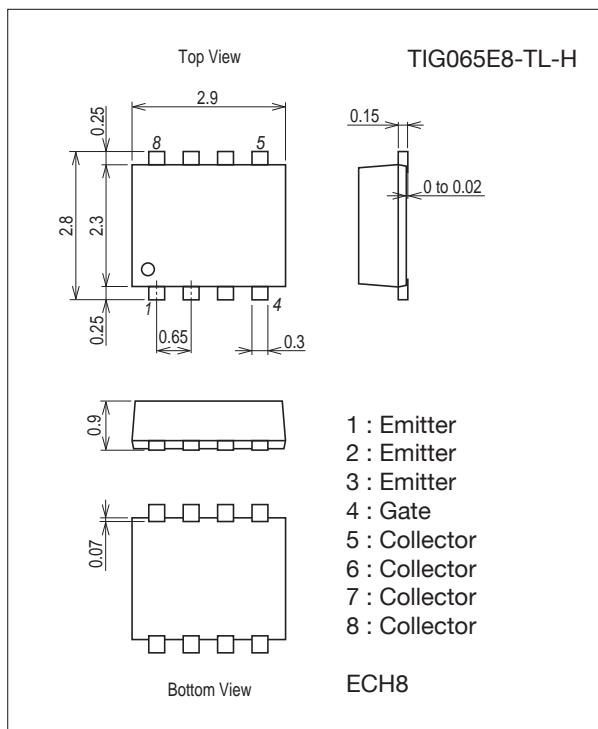
\* : Concerning  $dv/dt$  (slope of Collector Voltage at the time of Turn-OFF), will be 100% screen-detected in the circuit shown as Fig. 1.

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

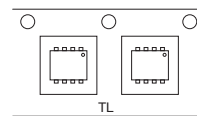
7011A-004



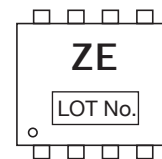
### Product & Package Information

- Package : ECH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3000 pcs./reel

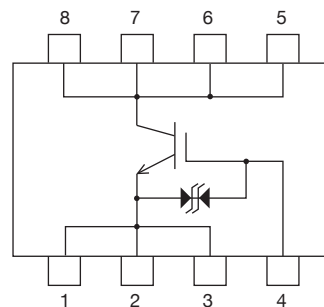
### Packing Type: TL



### Marking



### Electrical Connection

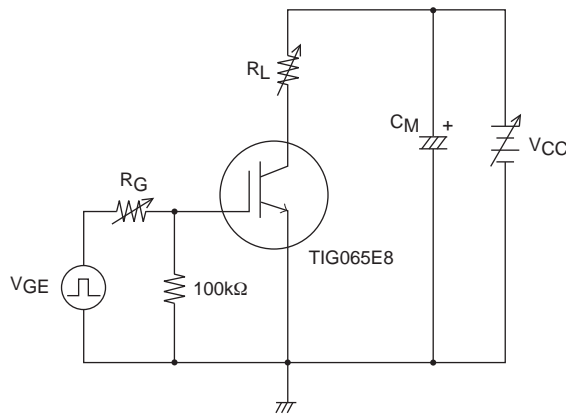


# TIG065E8

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=2mA, V_{GE}=0V$	400			V	
Collector-to-Emitter Cutoff Current	$I_{CES}$	$V_{CE}=320V, V_{GE}=0V$			10	$\mu A$	
Gate-to-Emitter Leakage Current	$I_{GES}$	$V_{GE}=\pm 4V, V_{CE}=0V$			$\pm 10$	$\mu A$	
Gate-to-Emitter Threshold Voltage	$V_{GE(off)}$	$V_{CE}=10V, I_C=1mA$	0.4		0.9	V	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100A, V_{GE}=2.5V$		4.2	7	V	
Input Capacitance	$C_{ies}$	$V_{CE}=10V, f=1MHz$		3100		pF	
Output Capacitance	$C_{oes}$				30		pF
Reverse Transfer Capacitance	$C_{res}$				23		pF

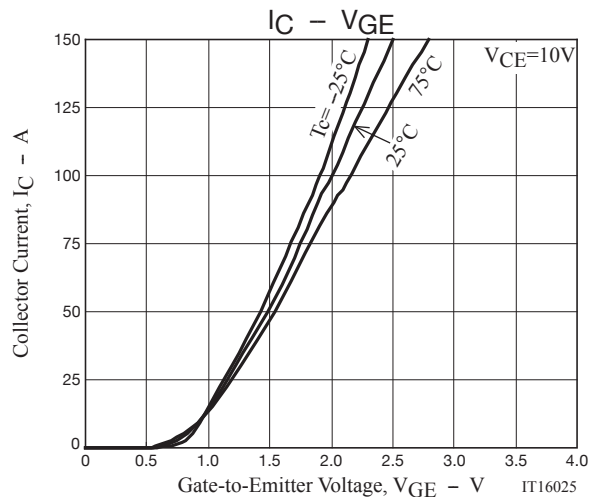
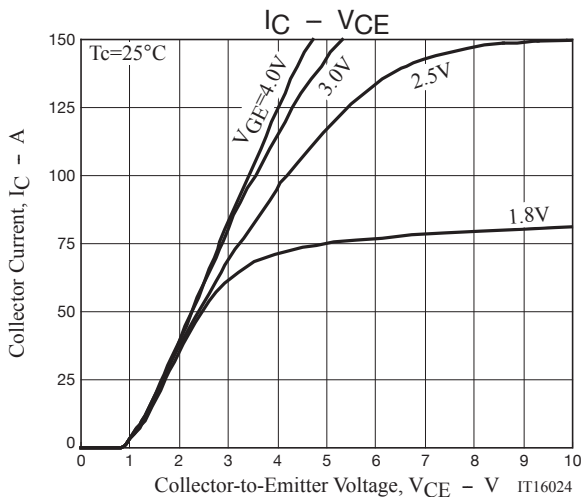
Fig.1 Large Current R Load Switching Circuit

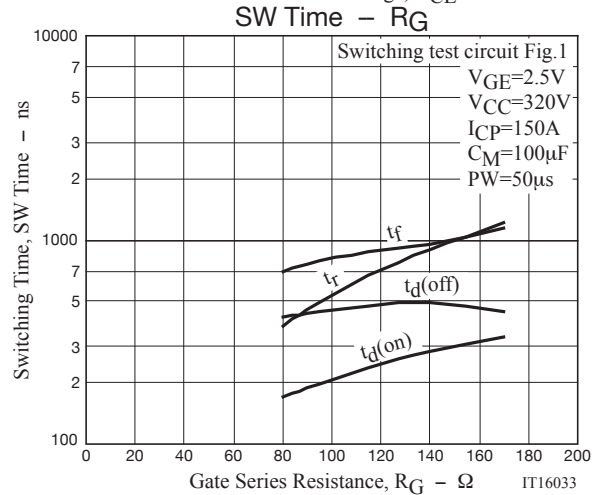
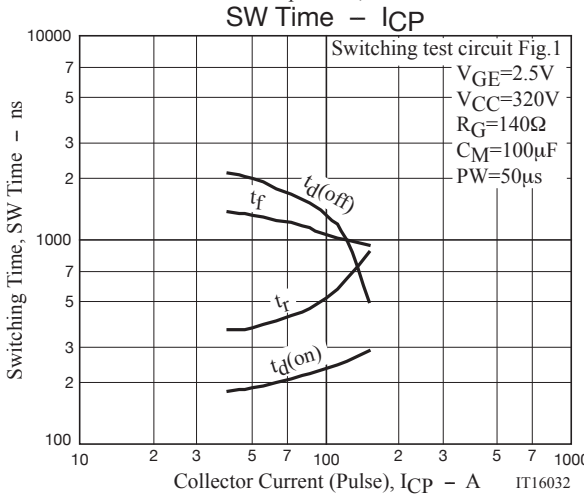
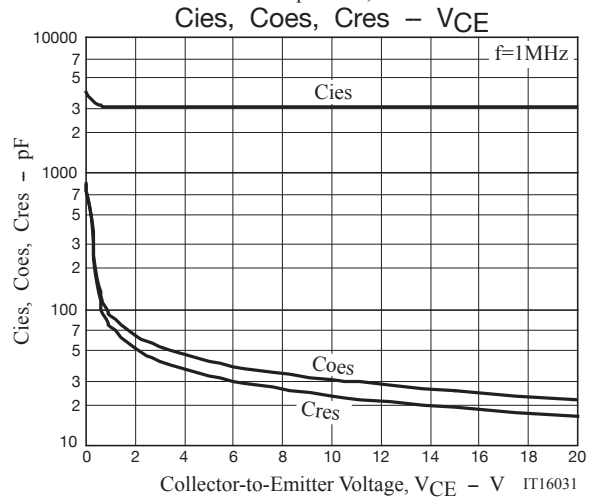
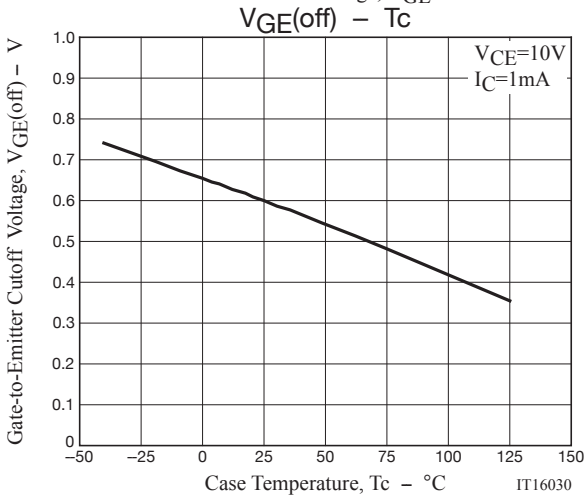
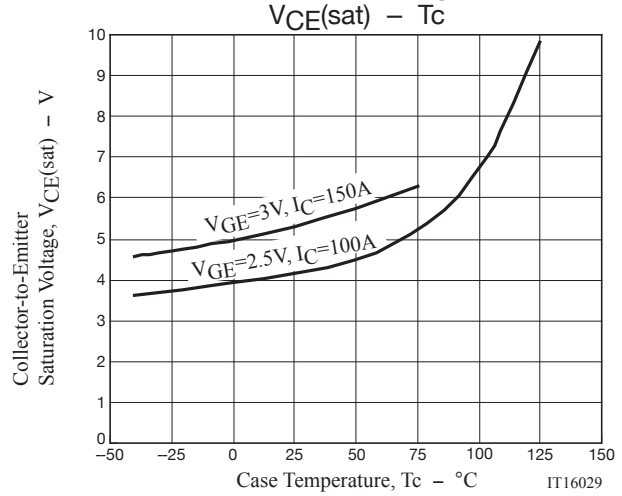
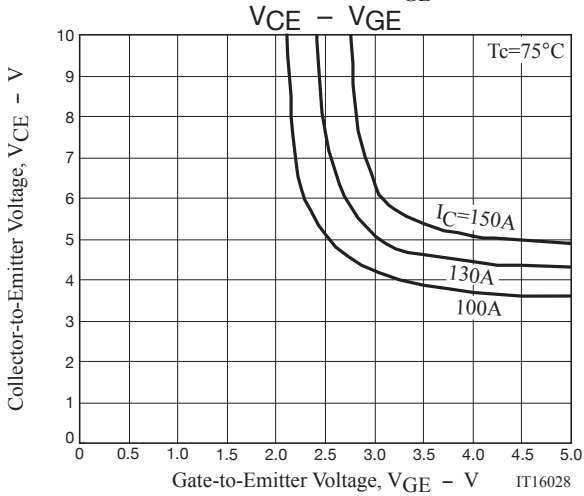
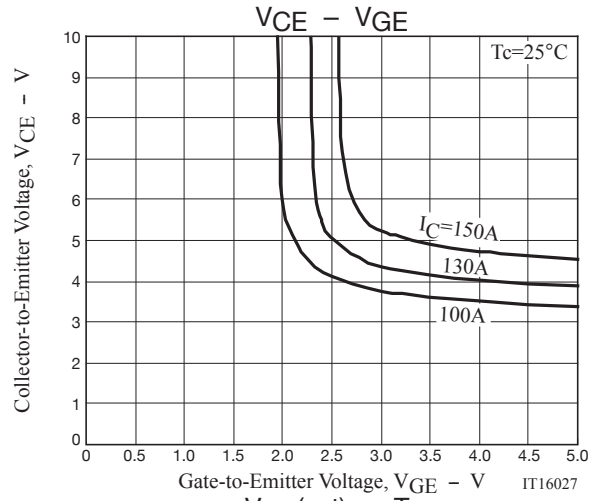
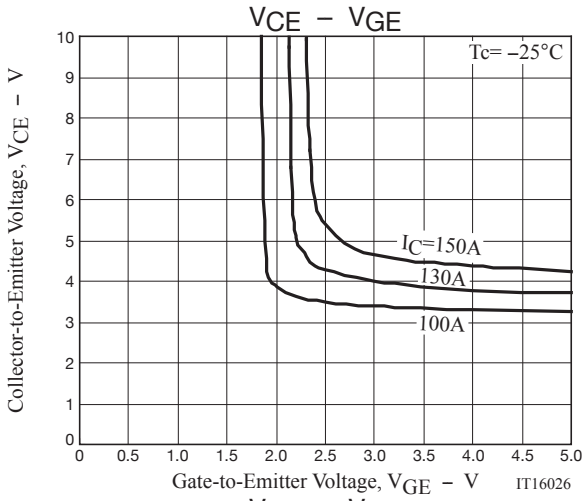


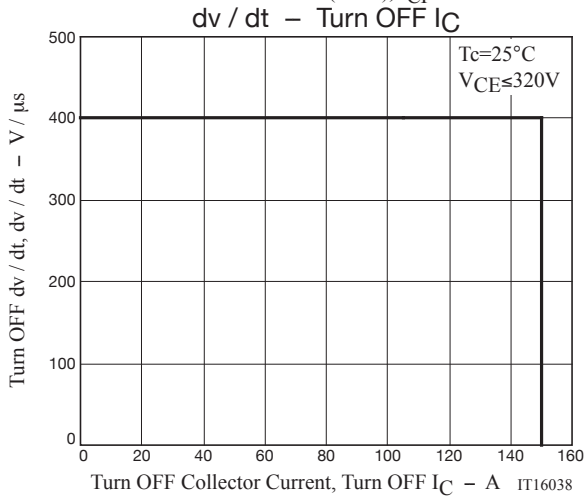
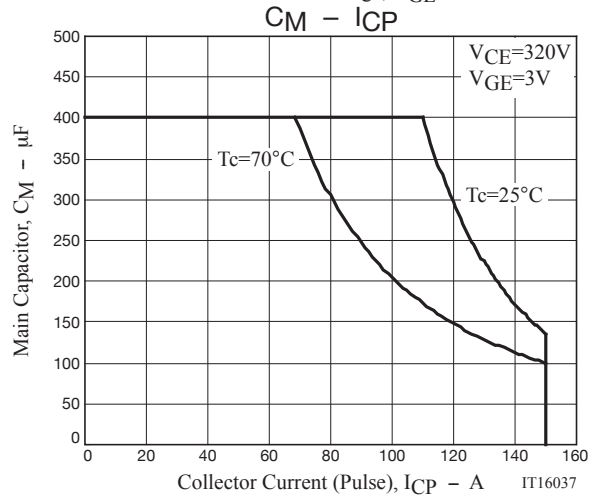
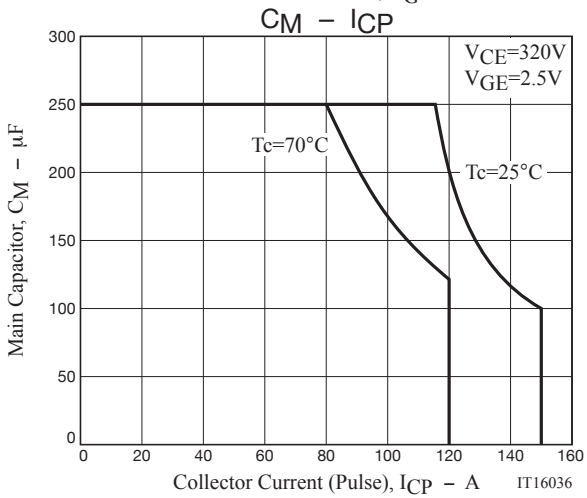
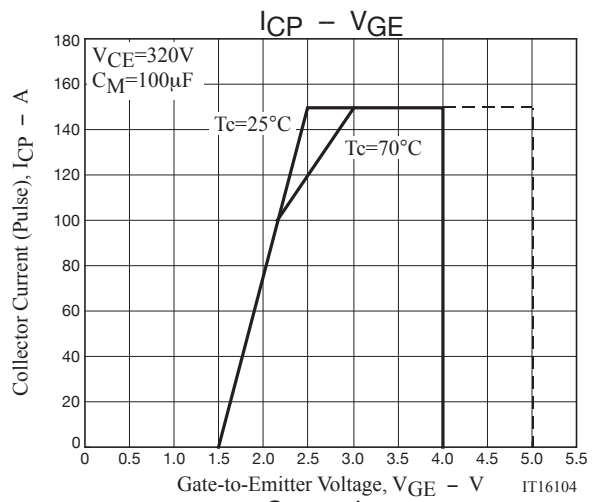
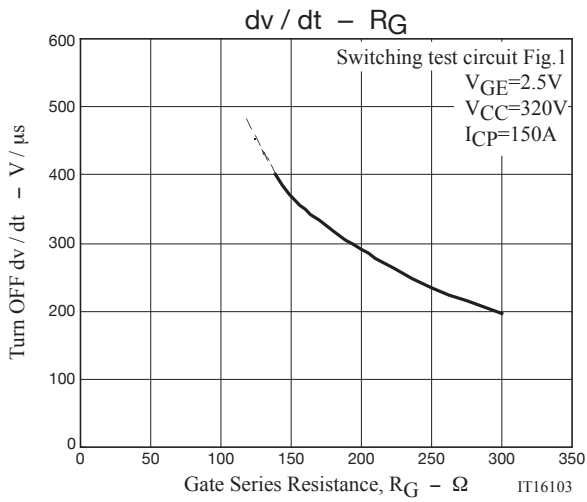
Note1. The collector voltage gradient  $dv / dt$  must be smaller than  $400V / \mu s$  to protect the device of gate-series resistance  $R_G$  when it is turned off.

## Ordering Information

Device	Package	Shipping	memo
TIG065E8-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free



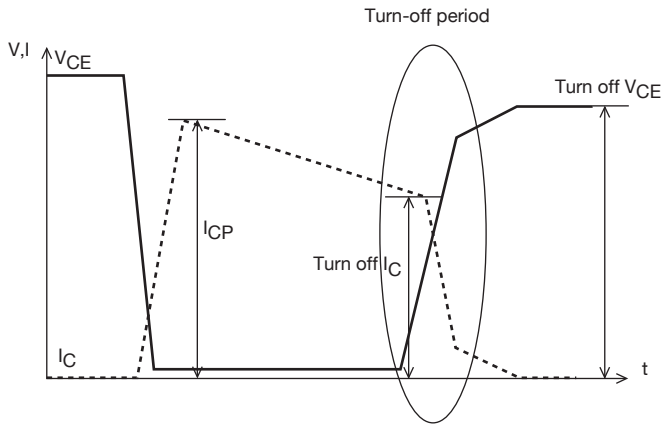




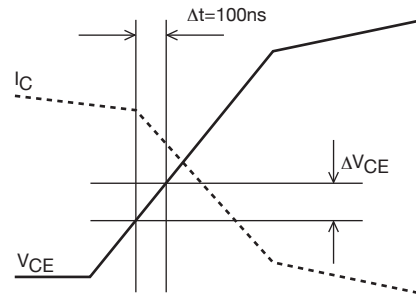
**Definition of dv/dt**

dv/dt is defined as the maximum slope of the below V<sub>CE</sub> curve during turn-off period.  
 $dv/dt = \Delta V_{CE} / \Delta t = \Delta V_{CE} / 100ns$

**Overall waveform**

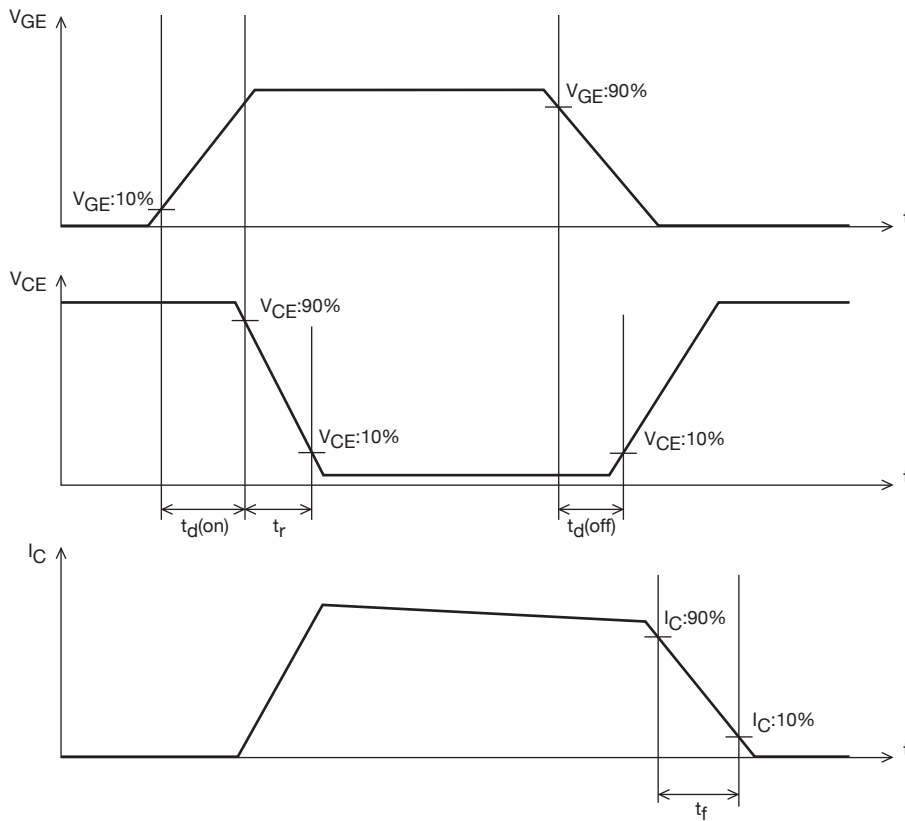


**Enlarged picture of turn-off period**



IT15323

**Definition of Switching Time**



IT15324

Embossed Taping Specification

TIG065E8-TL-H

1. Packing Format

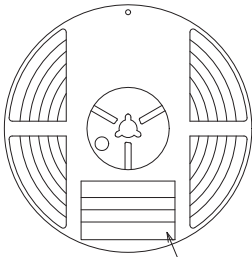
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
ECH8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label  
(unit :mm)

Outer box label

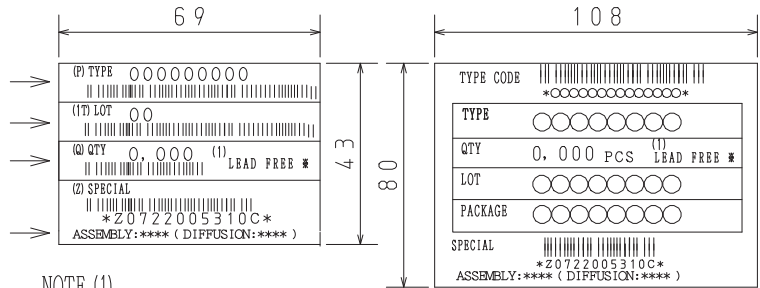
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



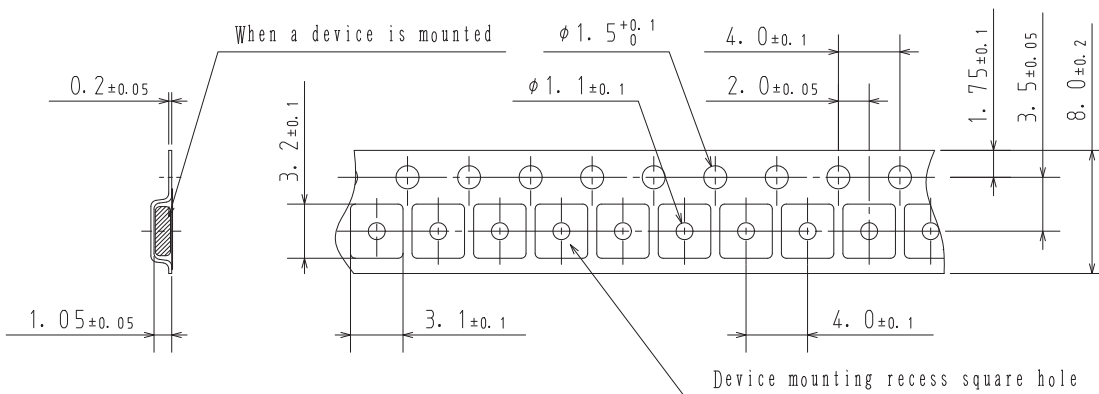
NOTE (1)

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

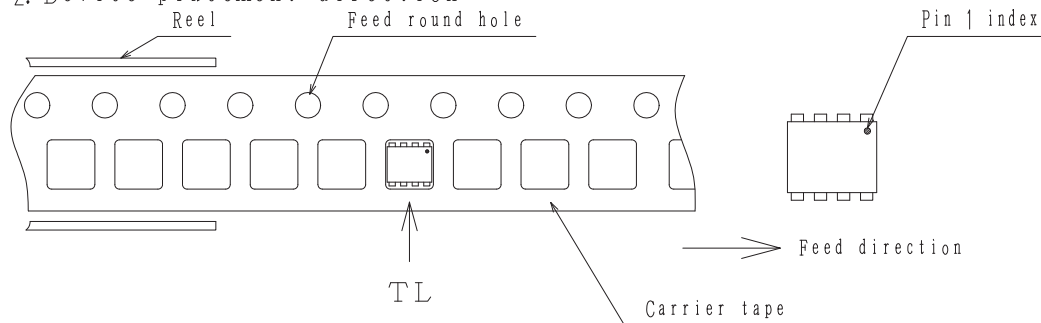
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



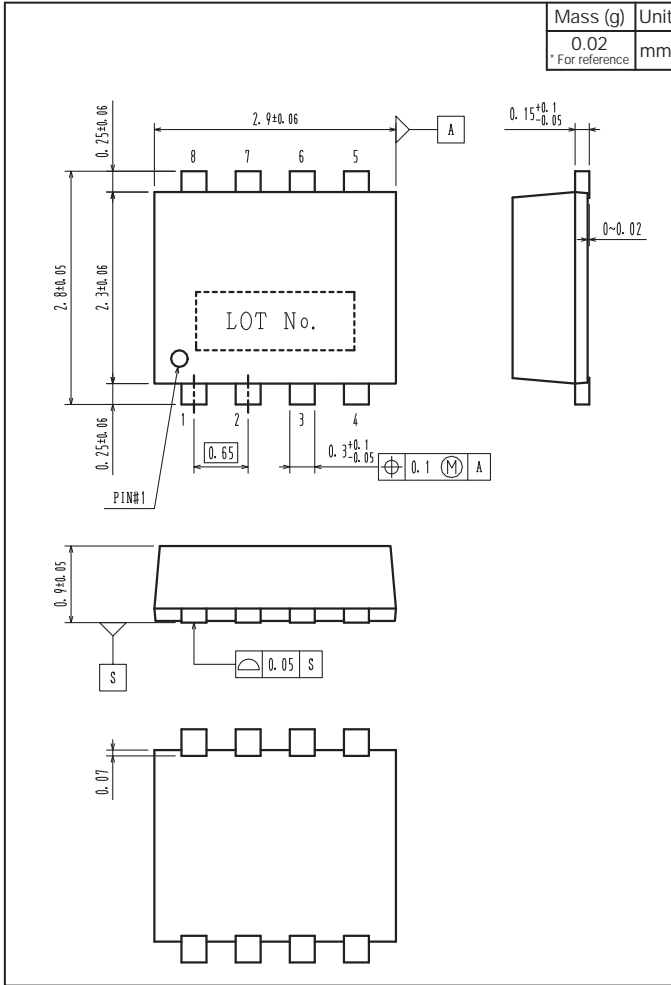
2-2. Device placement direction



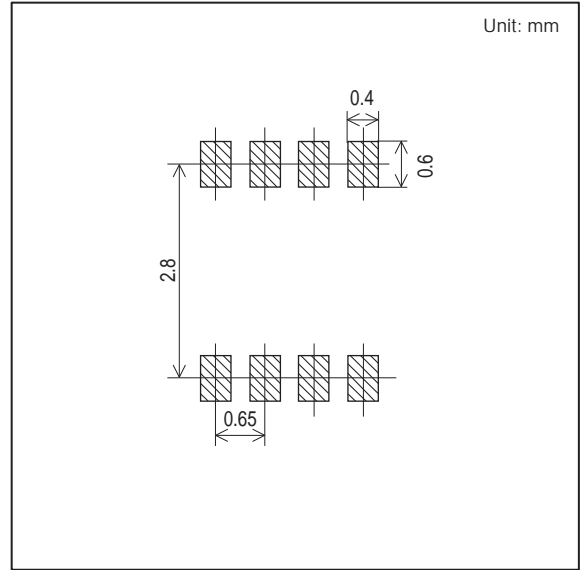
Those with pin 1 index on the feed hole side.....TL

# TIG065E8

## Outline Drawing TIG065E8-TL-H



## Land Pattern Example



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