



# ECH8501 — PNP/NPN Epitaxial Planar Silicon Transistors

## Gate Drive Applications

### Features

- Composite type, facilitating high-density mounting
- Low collector-to-emitter saturation voltage  
 NPN :  $V_{CE(sat)}=0.075V(\text{typ.})@I_C=2.5A$   
 PNP :  $V_{CE(sat)}=-0.1V(\text{typ.})@I_C=-2.5A$
- Halogen free compliance
- Mounting height 0.9mm

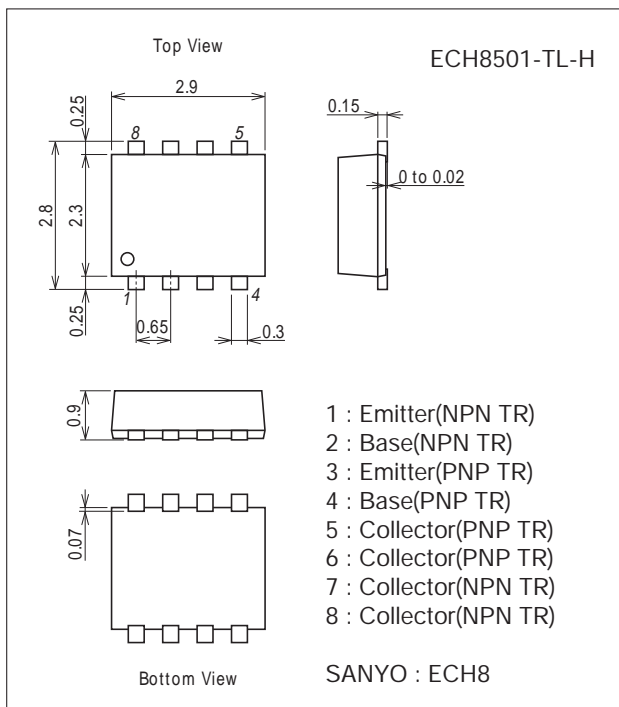
### Specifications ( ) : PNP

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		(-30)40	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-30)	V
Emitter-to-Base Voltage	$V_{EBO}$		(-6)	V
Collector Current	$I_C$		(-5)	A
Collector Current (Pulse)	$I_{CP}$	$PW \leq 1\mu s, \text{ duty cycle} \leq 1\%$	(-30)	A
Base Current	$I_B$		(-600)	mA
Collector Dissipation	$P_C$	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit	1.3	W
Total Dissipation	$P_T$	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.6	W
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

### Package Dimensions

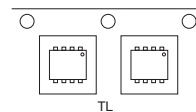
unit : mm (typ)  
7011A-007



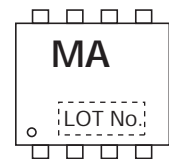
### Product & Package Information

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

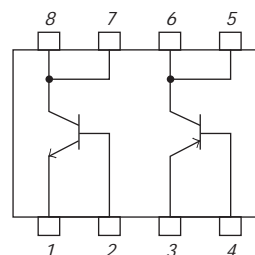
### Packing Type : TL



### Marking



### Electrical Connection



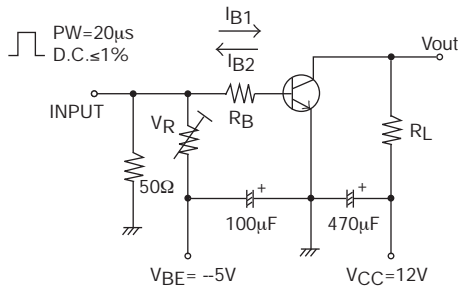
# ECH8501

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)30V, I_E=0A$			(-)0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0A$			(-)0.1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=(-)2V, I_C=(-)500mA$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)500mA$		(260)280		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(49)32		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)2.5A, I_B=(-)125mA$		(-100)75	(-170)110	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2.5A, I_B=(-)125mA$		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-30)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)30			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	(-)6			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		(37)30		ns
Storage Time	$t_{stg}$			(147)220		ns
Fall Time	$t_f$			(14)12		ns

Note : The specifications shown above are for each individual transistor.

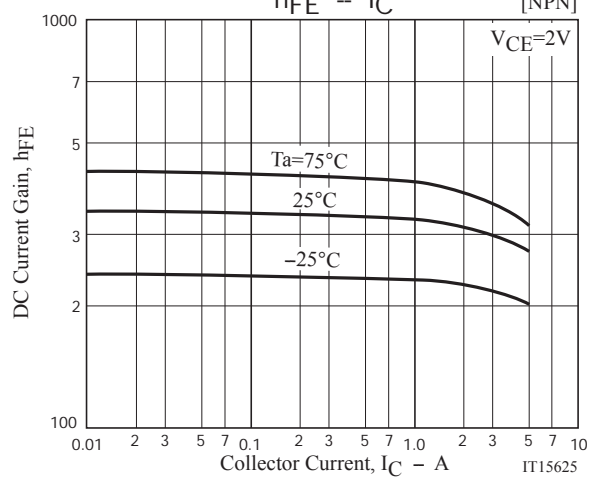
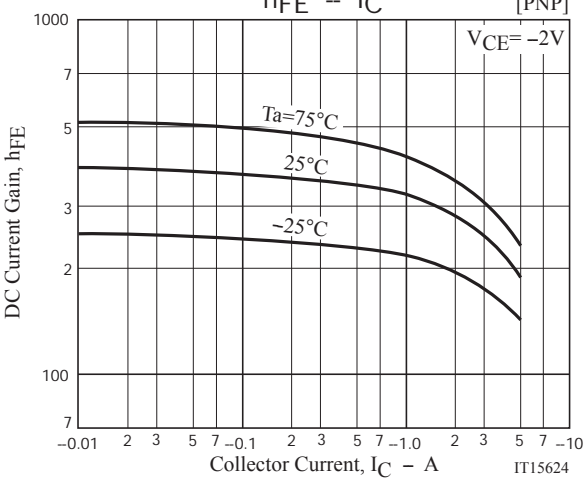
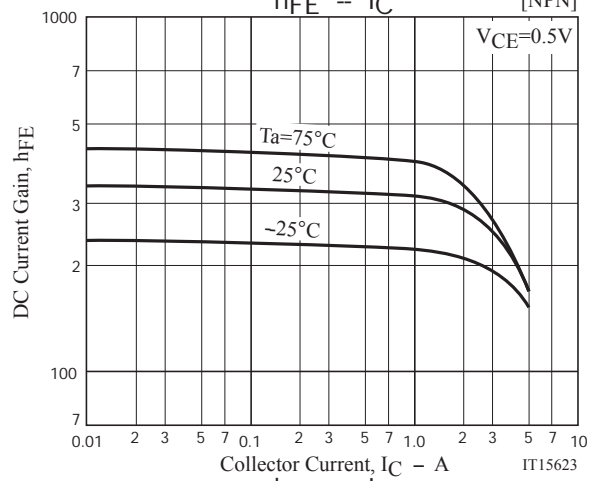
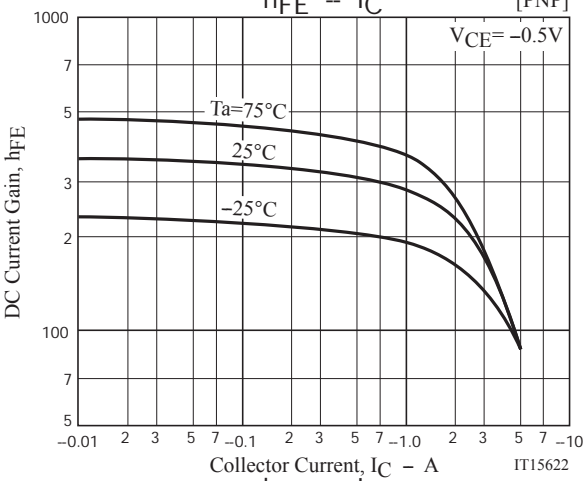
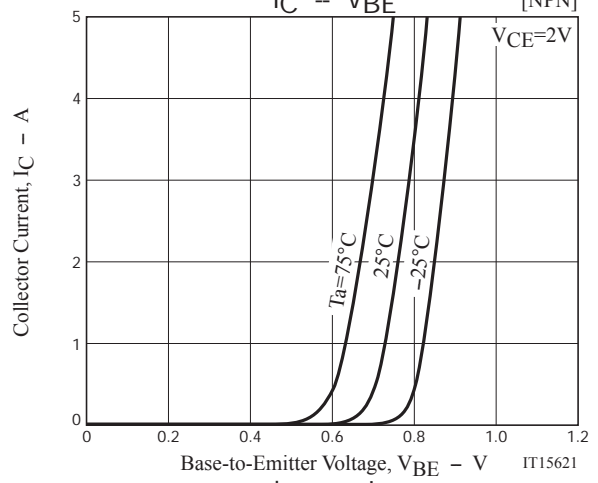
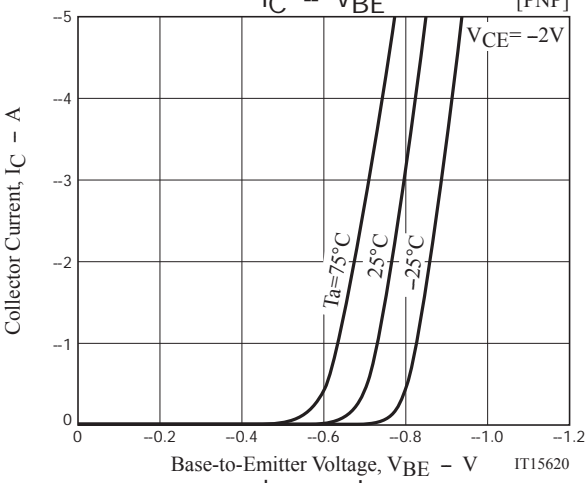
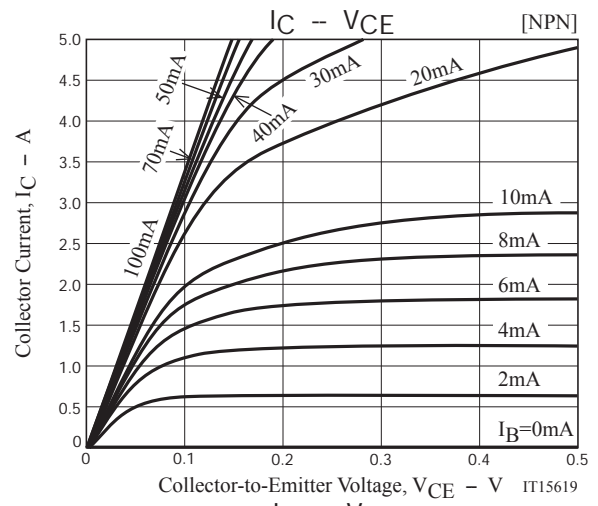
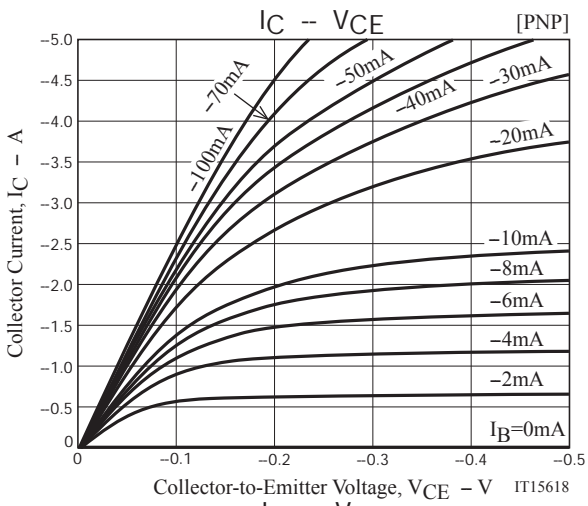
## Switching Time Test Circuit

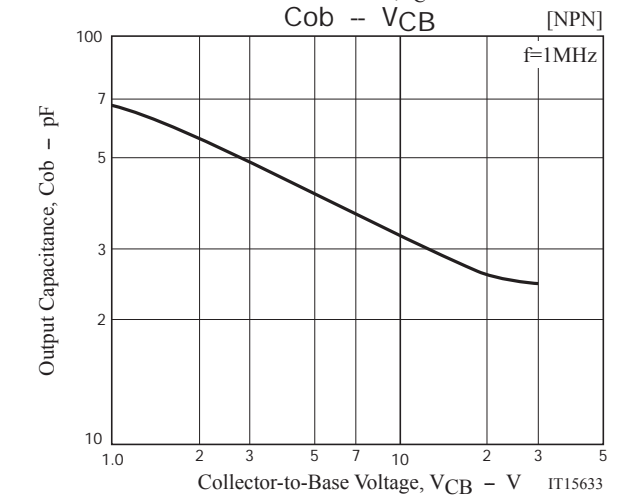
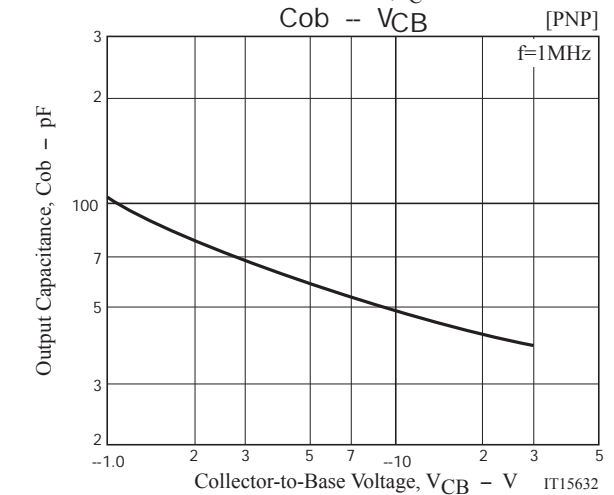
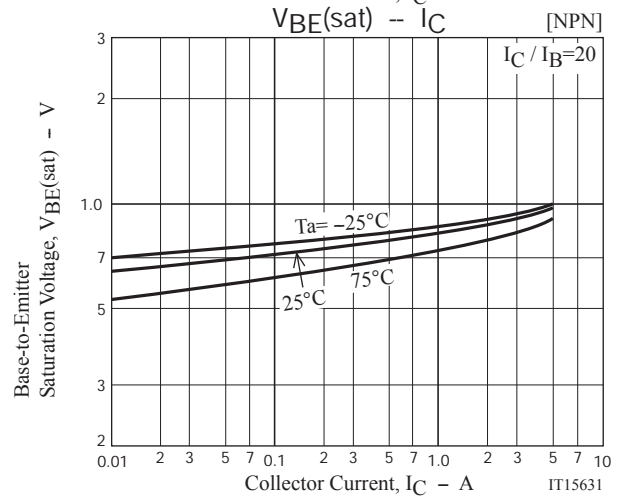
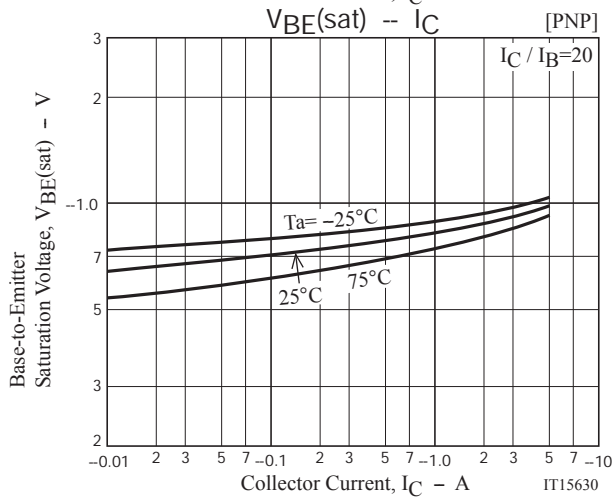
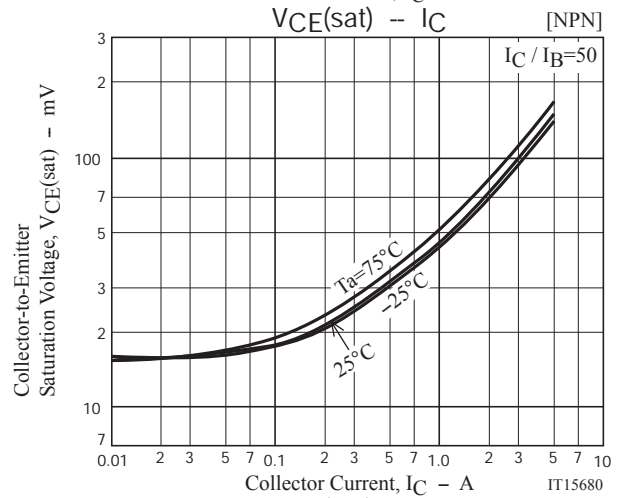
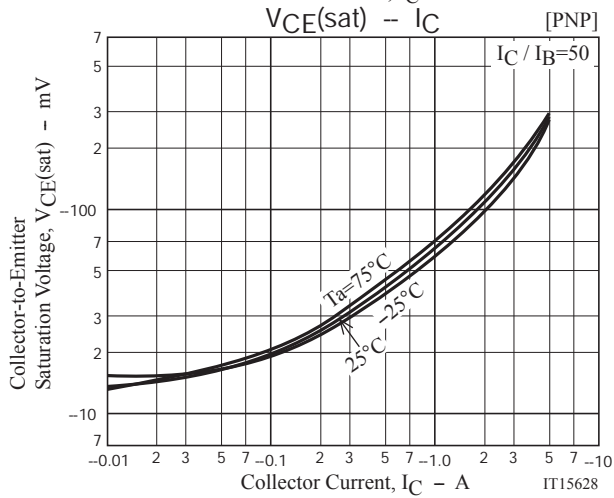
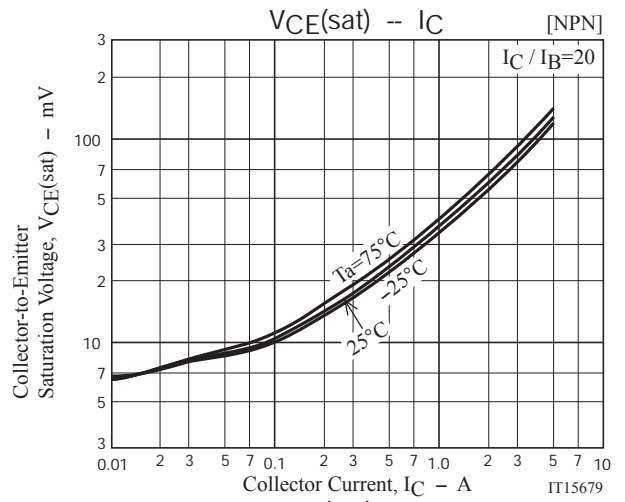
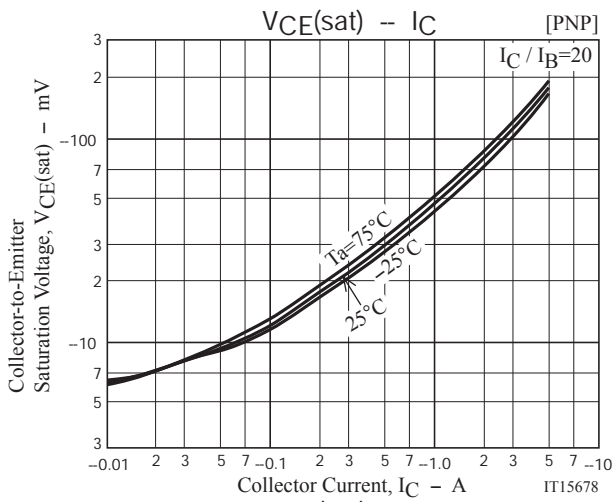


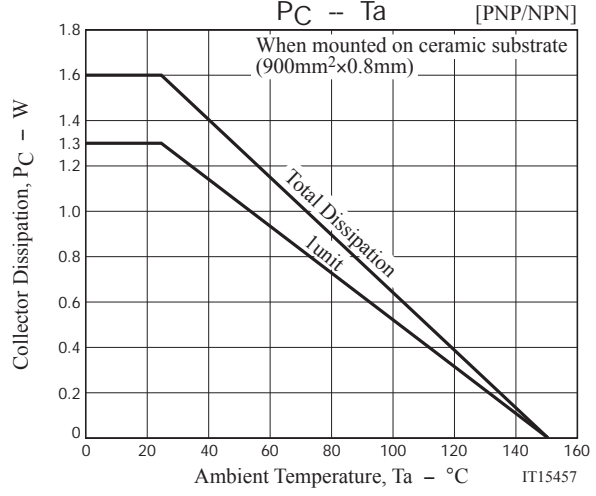
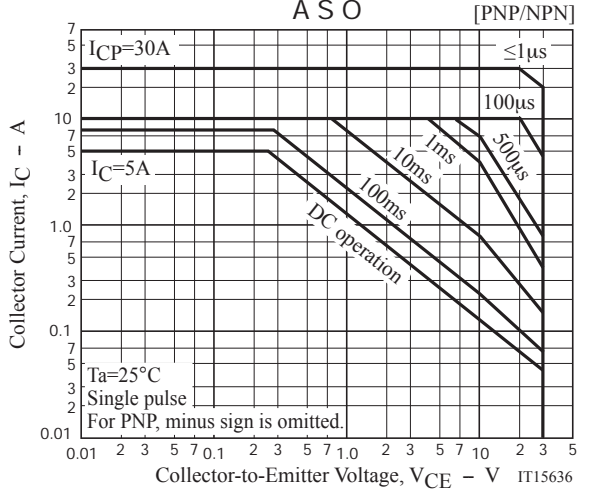
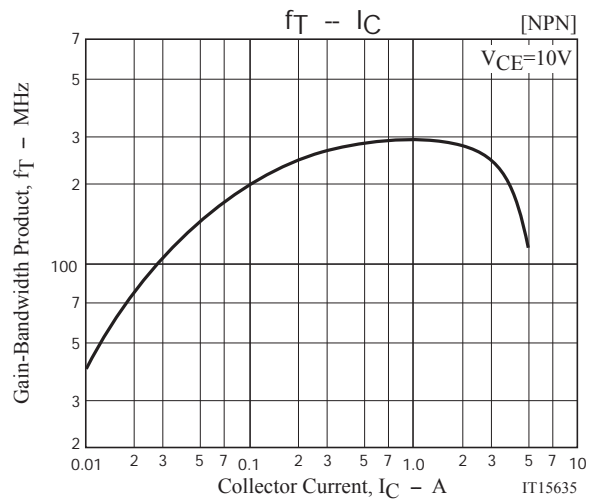
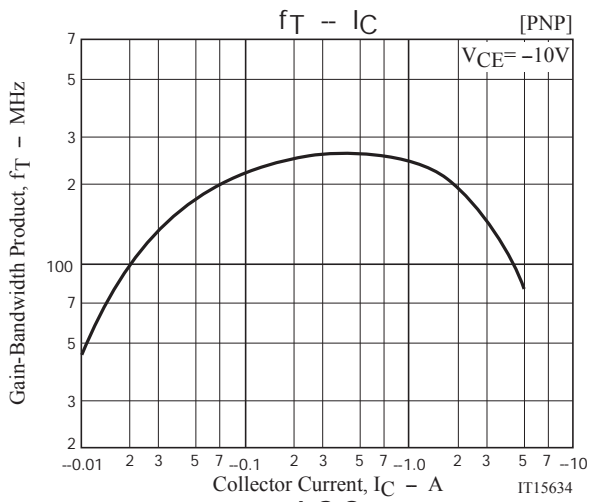
$I_C = 20I_{B1} = -20I_{B2} = 2.5A$   
 (For PNP, the polarity is reversed.)

## Ordering Information

Device	Package	Shipping	memo
ECH8501-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free







Embossed Taping Specification

ECH8501-TL-H

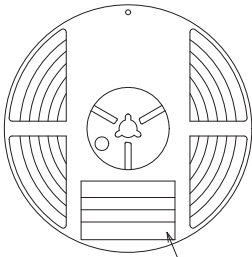
1. Packing Format

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)

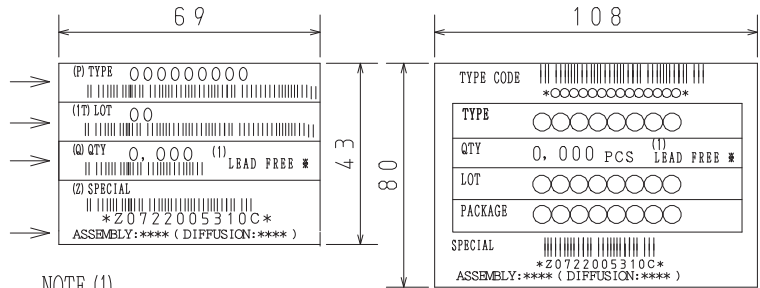
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



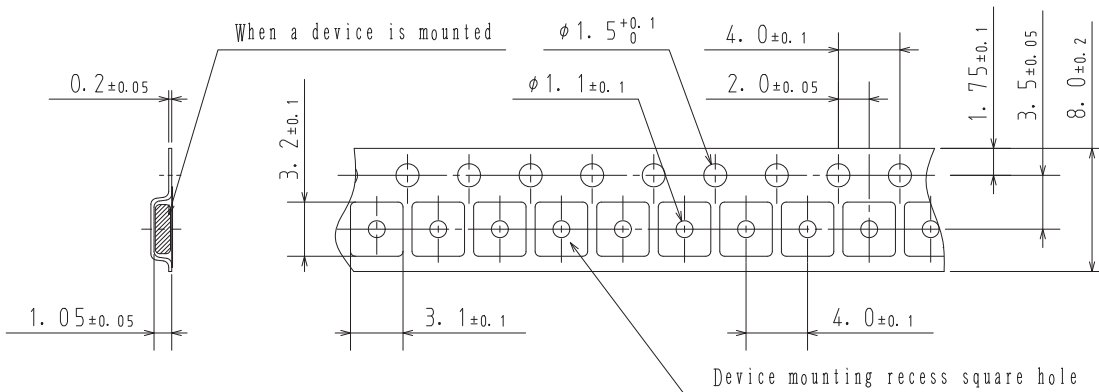
NOTE (1)

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

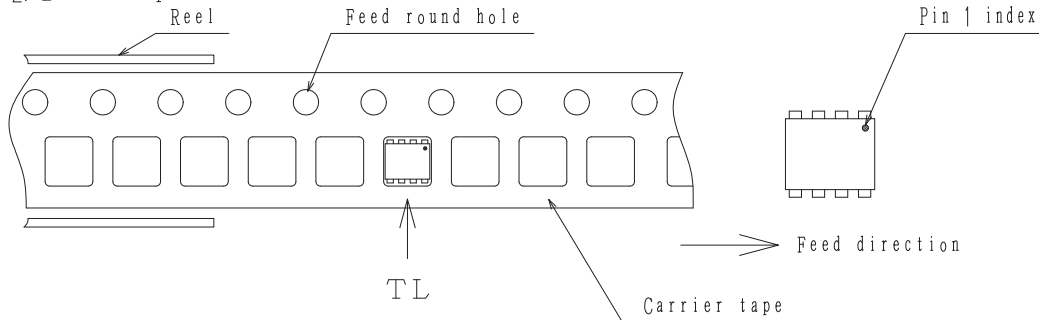
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



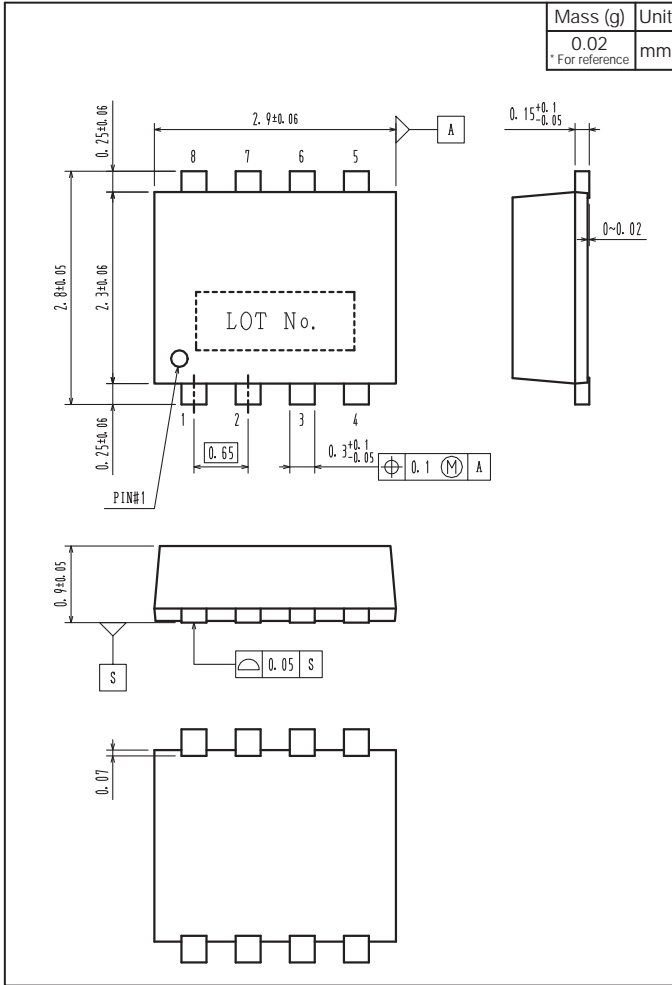
2-2. Device placement direction



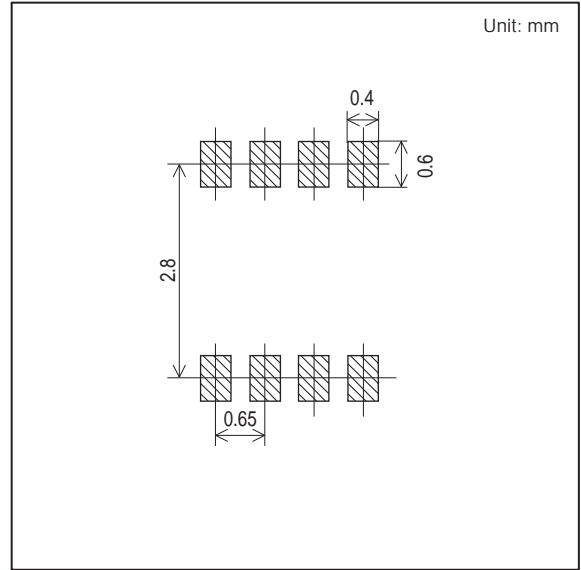
Those with pin 1 index on the feed hole side.....TL

# ECH8501

## Outline Drawing ECH8501-TL-H



## Land Pattern Example



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