



# CPH5541

## Bipolar Transistor (-30V, (-)3A, Low VCE(sat) Complementary Dual CPH5

ON Semiconductor®

<http://onsemi.com>

### Applications

- MOSFET gate drivers, relay drivers, lamp drivers, motor drivers

### Features

- Composite type with a PNP transistor and an NPN transistor contained in one package, facilitating high-density mounting
- Ultrasmall package facilitate miniaturization in end products. (0.9mm mounting height)

### Specifications ( ) : PNP

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

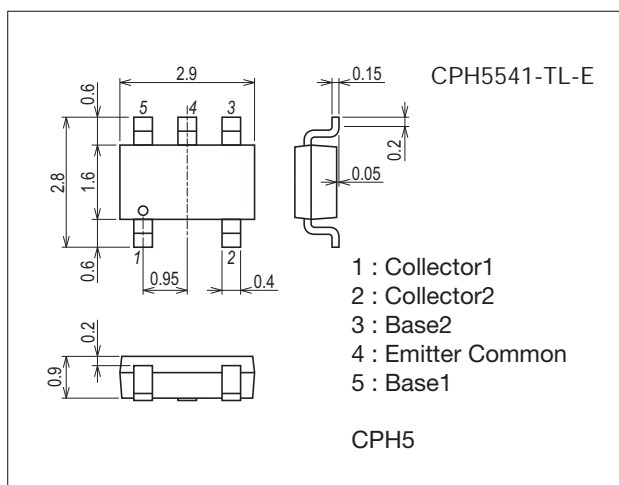
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CBO</sub>		(-30)40	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-)30	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)5	V
Collector Current	I <sub>C</sub>		(-)700	mA
Collector Current (Pulse)	I <sub>CP</sub>	PW≤10μs	(-)3	A
Collector Dissipation	PC	Mounted on a ceramic board (600mm <sup>2</sup> ×0.8mm)	0.6	W
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

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)

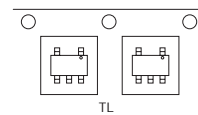
7017A-006



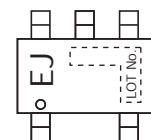
### Product & Package Information

- Package : CPH5
- JEITA, JEDEC : SC-74A, SOT-25
- Minimum Packing Quantity : 3,000 pcs./reel

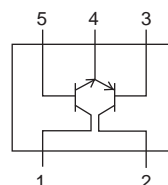
### Packing Type : TL



### Marking



### Electrical Connection

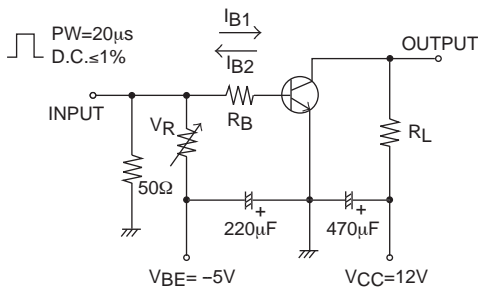


# CPH5541

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)30V, I_E = 0A$			(-)100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0A$			(-)100	nA
DC Current Gain	$h_{FE}$	$V_{CE} = (-)2V, I_C = (-)50mA$	(200)300		(500)800	
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)2V, I_C = (-)50mA$		(520)540		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10V, f = 1MHz$		(4.7)3.3		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)200mA, I_B = (-)10mA$		(-110)85	(-220)190	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)200mA, I_B = (-)10mA$		(-)0.9	(-)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	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0A$	(-)5			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		35		ns
Storage Time	$t_{stg}$			(125)255		ns
Fall Time	$t_f$			(25)40		ns

## Switching Time Test Circuit

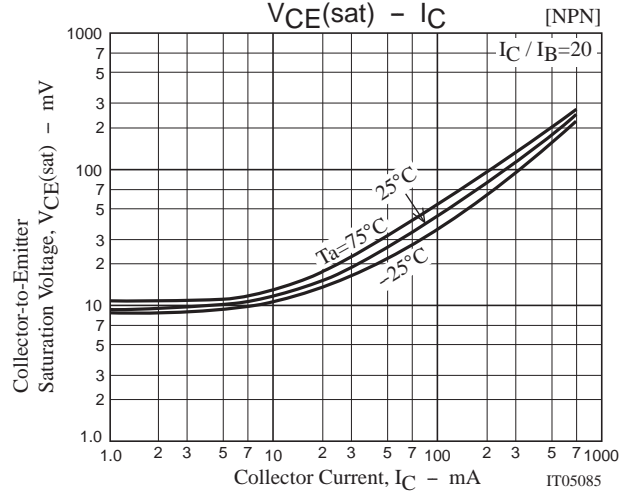
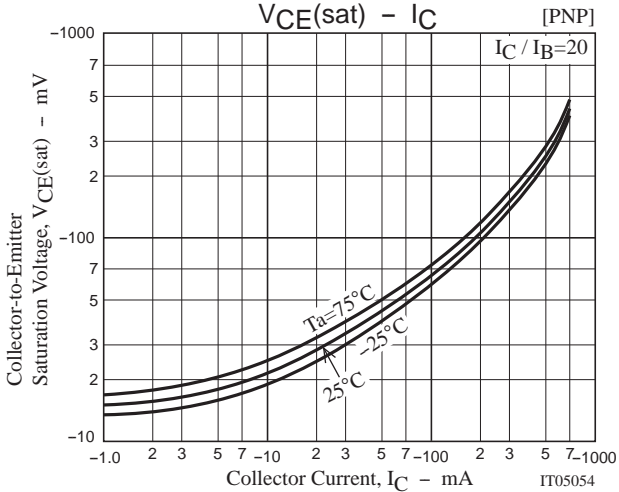
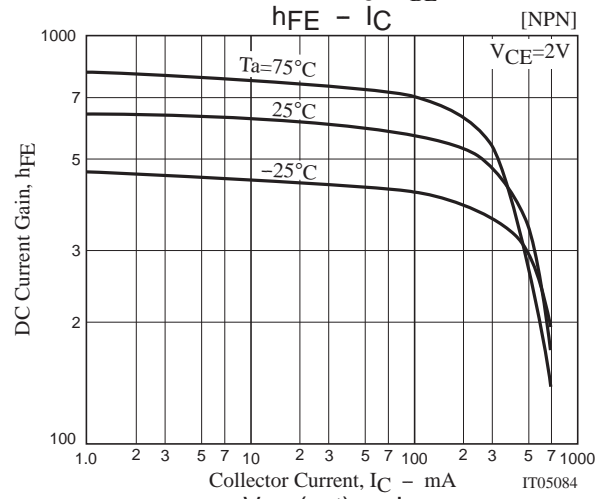
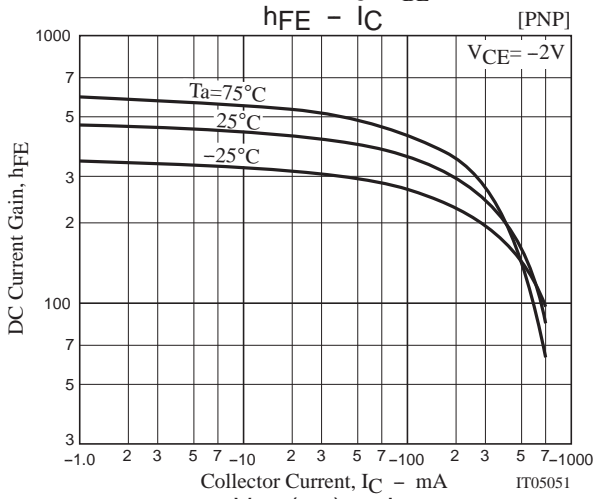
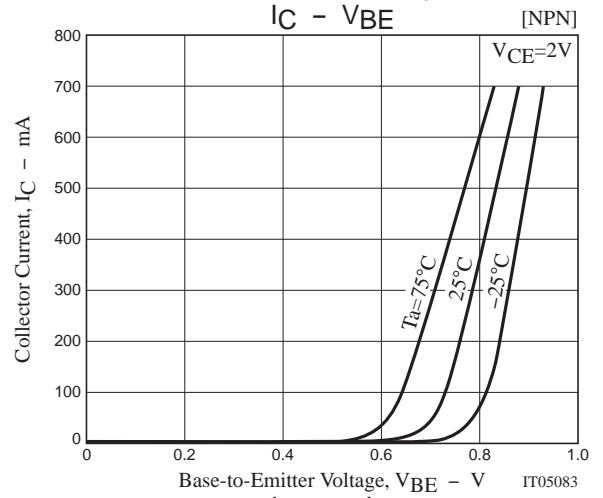
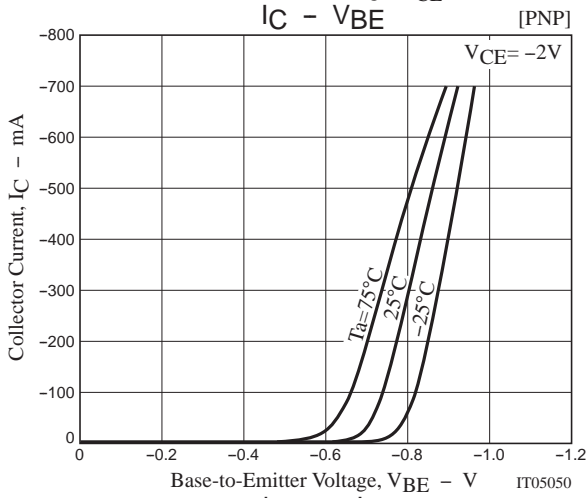
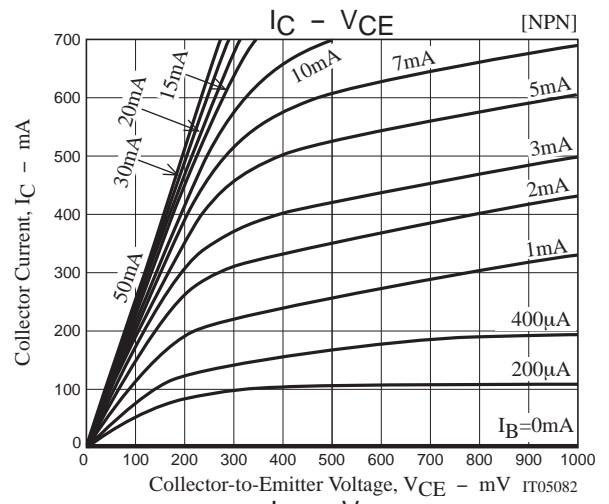
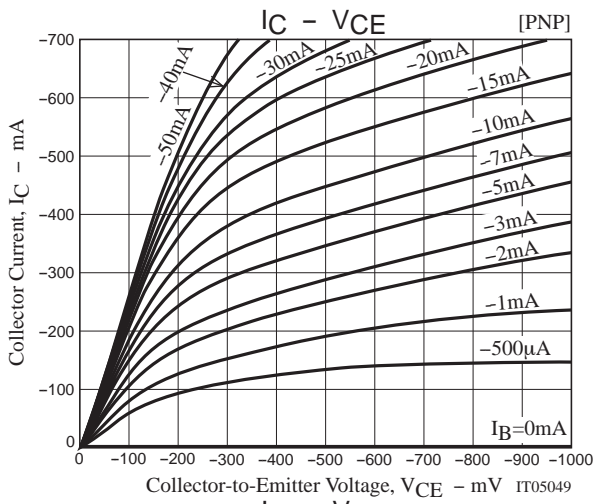


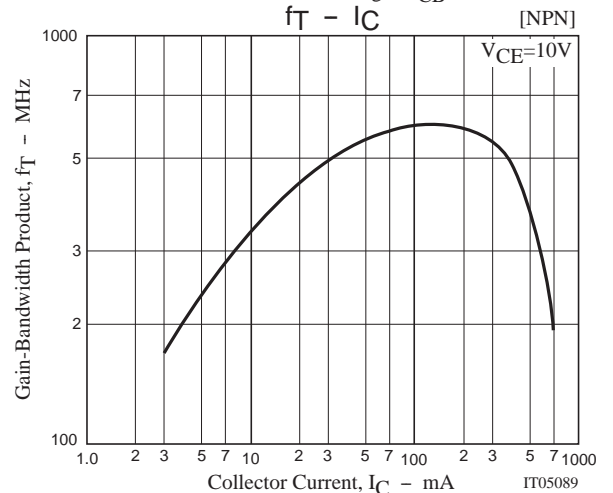
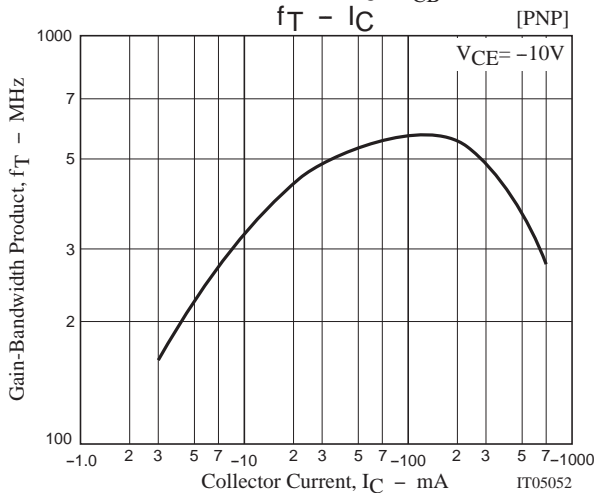
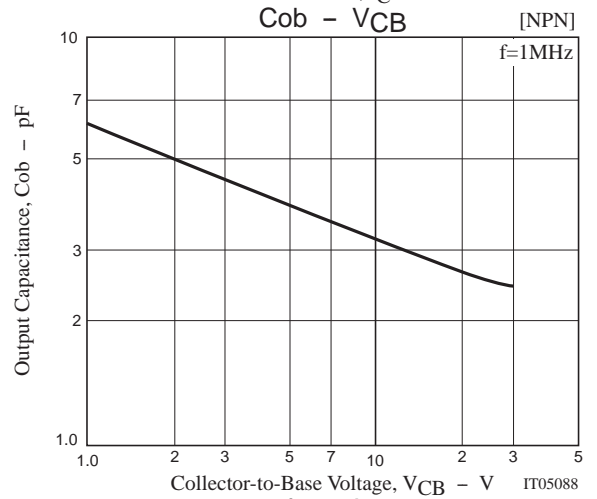
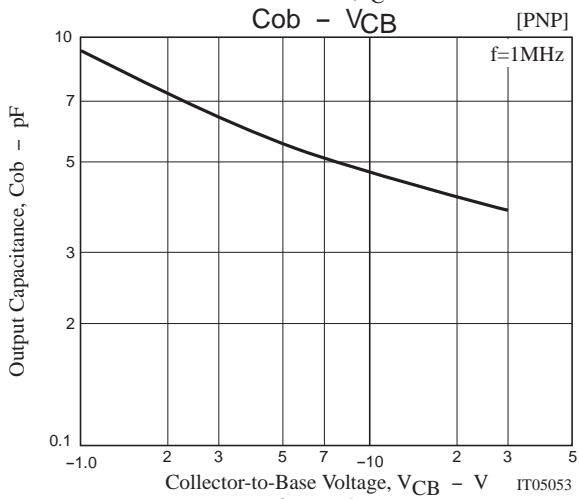
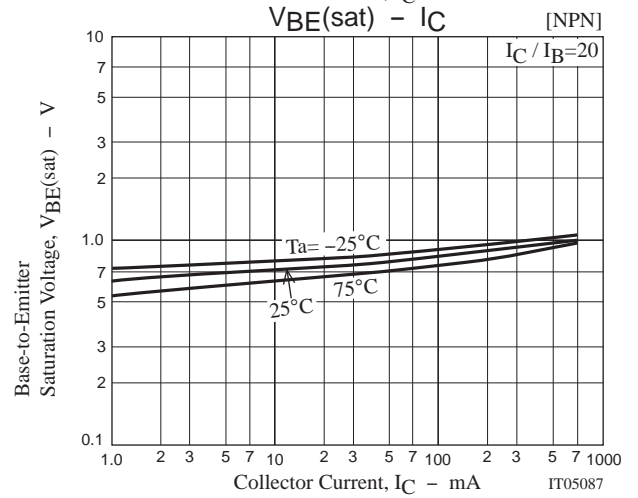
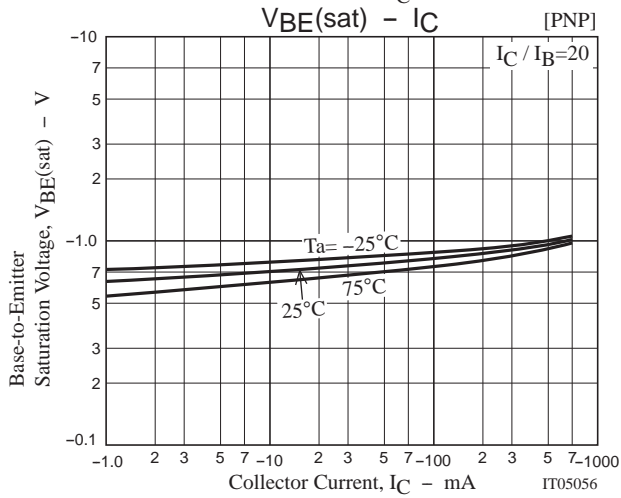
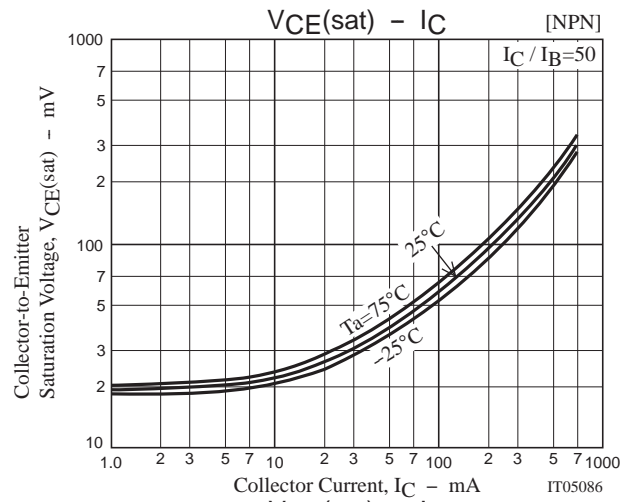
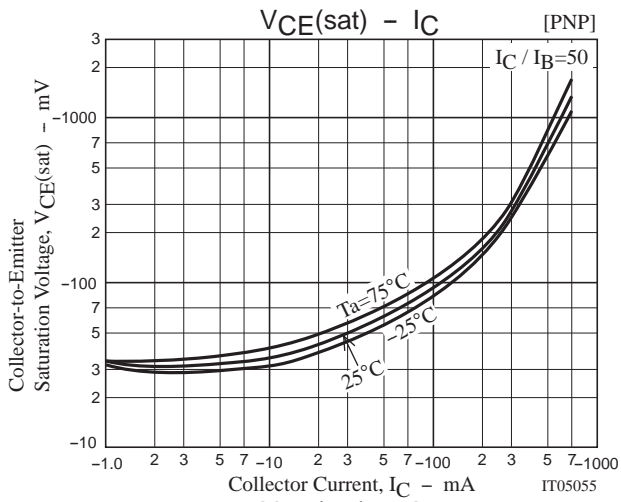
$$20I_{B1} = -20I_{B2} = I_C = 300mA$$

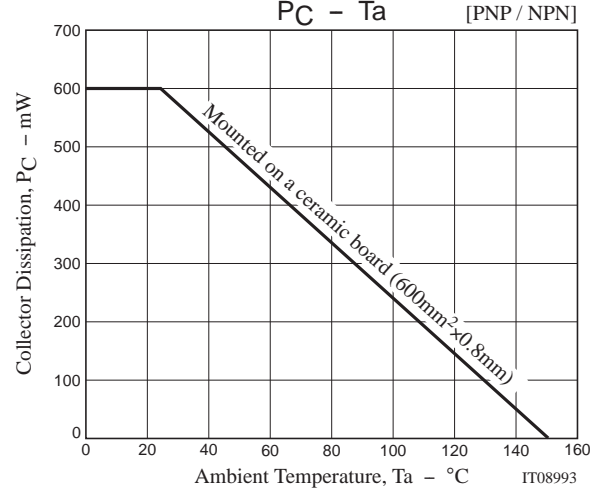
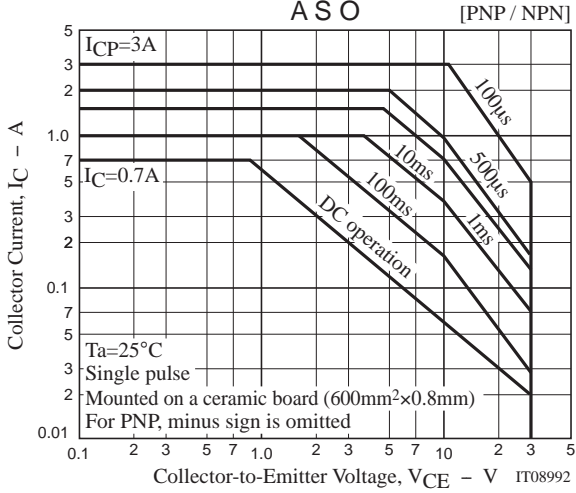
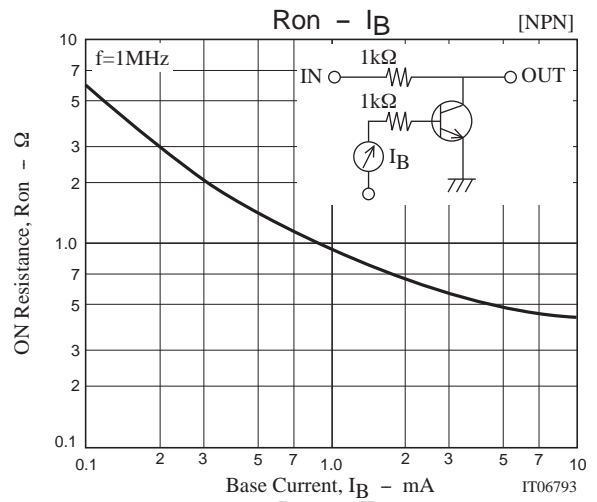
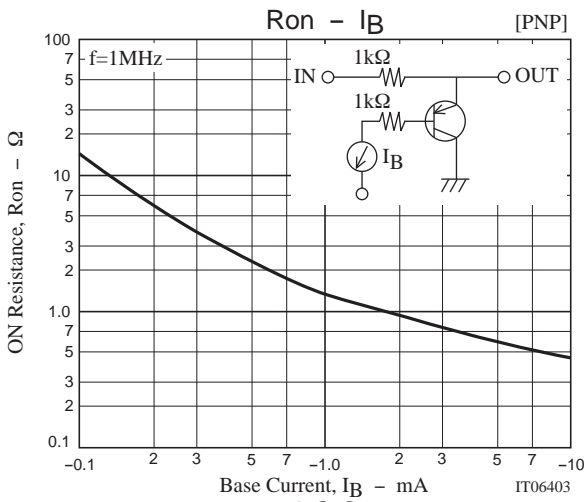
For PNP, minus sign is omitted.

## Ordering Information

Device	Package	Shipping	memo
CPH5541-TL-E	CPH5	3,000pcs./reel	Pb Free







Embossed Taping Specification

CPH5541-TL-E

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)
CPH5	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)

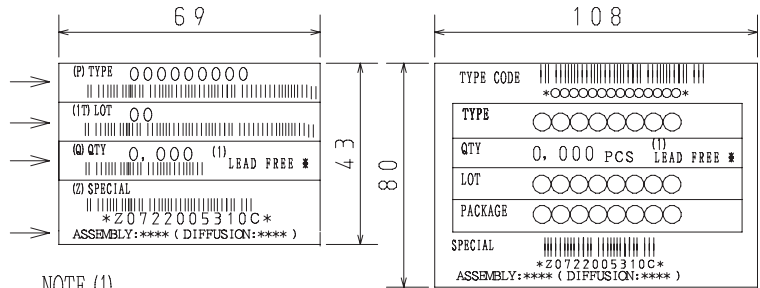
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



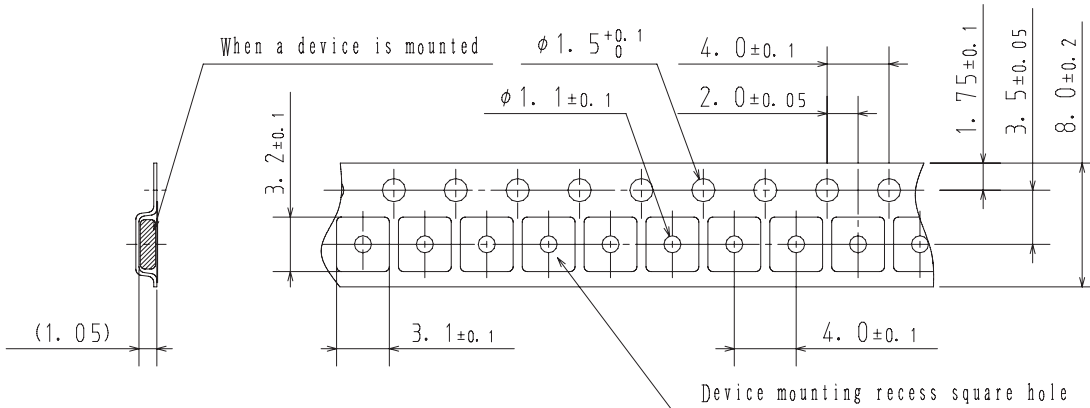
NOTE (1)

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

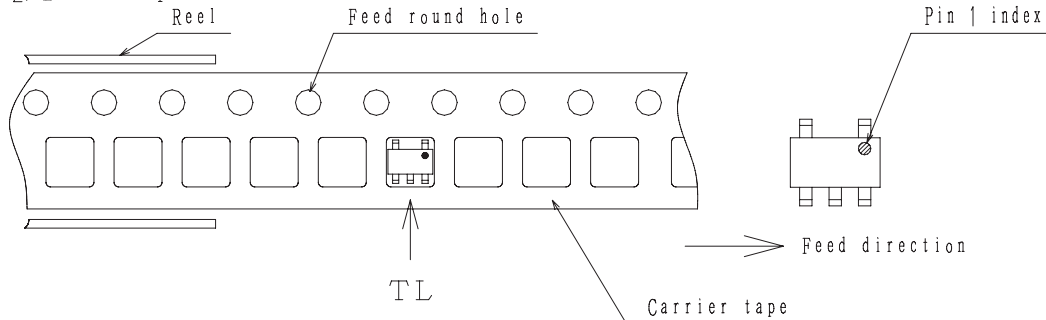
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



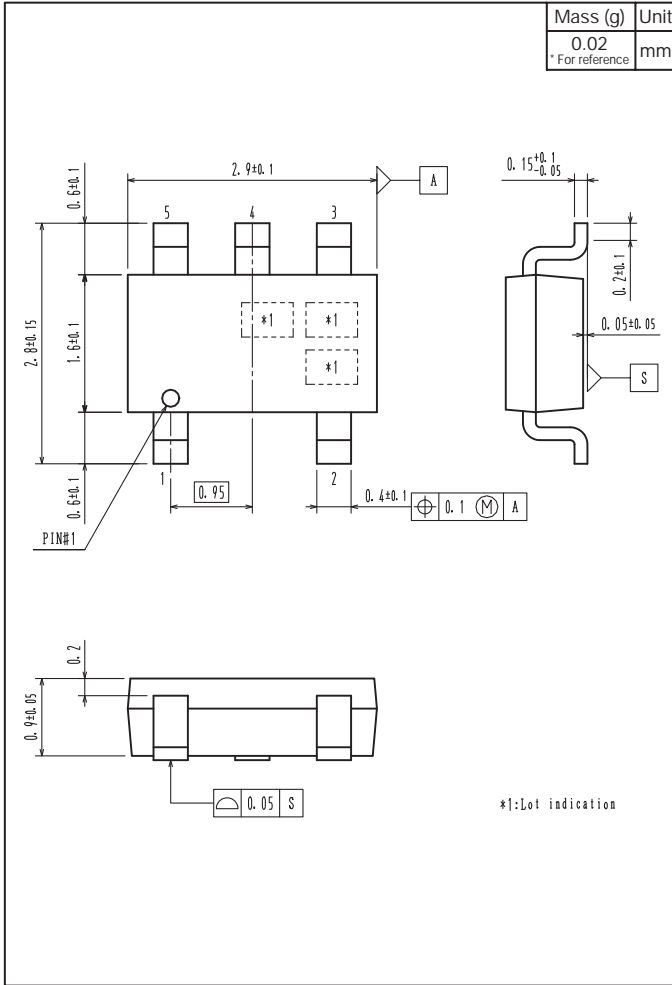
2-2. Device placement direction



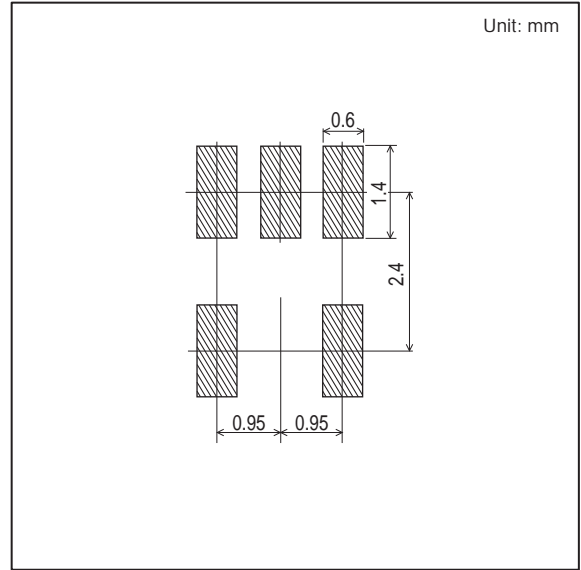
Those with pin 1 index on the feed hole side.....TL

# CPH5541

## Outline Drawing CPH5541-TL-E



## Land Pattern Example



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