Ordering number : EN8223A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

CPH5541 — PNP/NPN Epitaxial Planar Silicon Transistors Push-Pull Circuit Applications

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

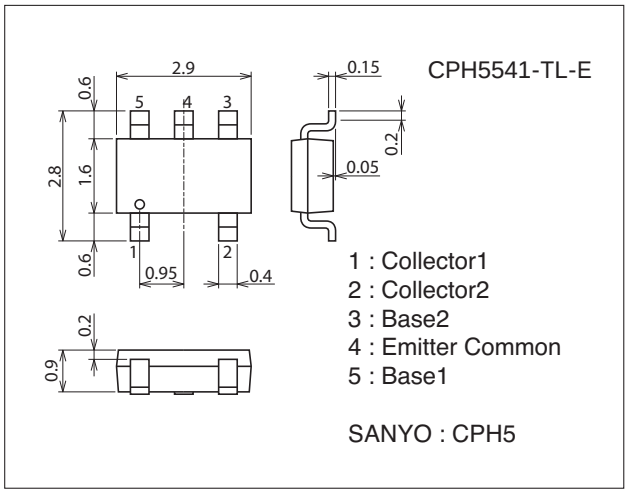
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(−30)40	V
Collector-to-Emitter Voltage	V_{CEO}		(−)30	V
Emitter-to-Base Voltage	V_{EBO}		(−)5	V
Collector Current	I_C		(−)700	mA
Collector Current (Pulse)	I_{CP}	PW≤10μs	(−)3	A
Collector Dissipation	P_C	Mounted on a ceramic board (600mm²×0.8mm)	0.6	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

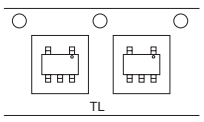
7017A-006



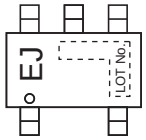
Product & Package Information

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

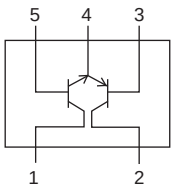
Packing Type : TL



Marking



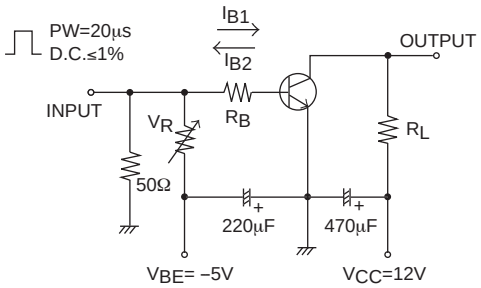
Electrical Connection



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=(−10)50mA	(200)300		(500)800	
Gain-Bandwidth Product	f_T	V_{CE}=(−)2V, I_C=(−)50mA		(520)540		MHz
Output Capacitance	Cob	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=(−)10μA, I_E=0A	(−30)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)30			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(−)10μA, 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

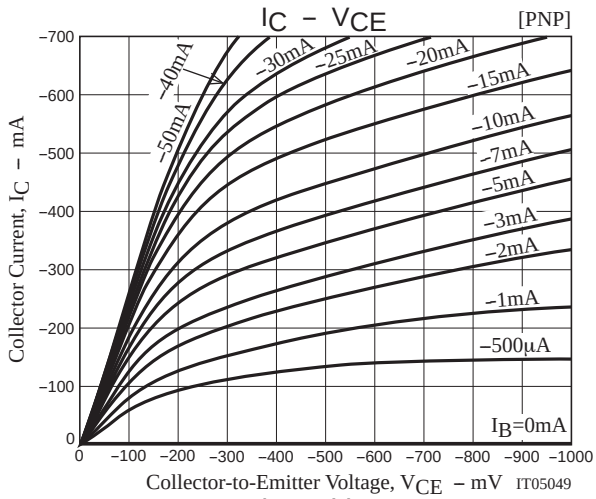
Switching Time Test Circuit

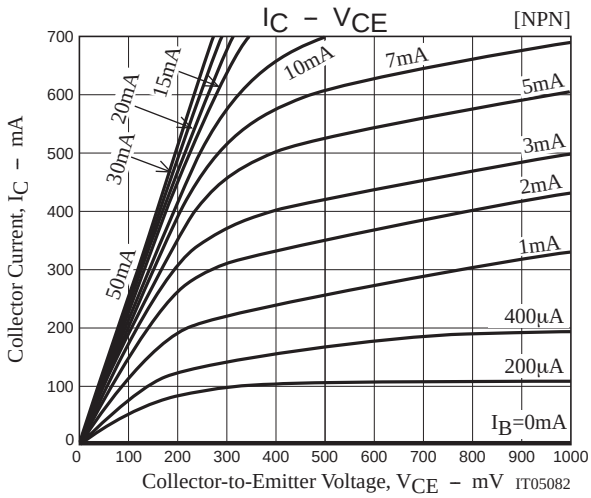


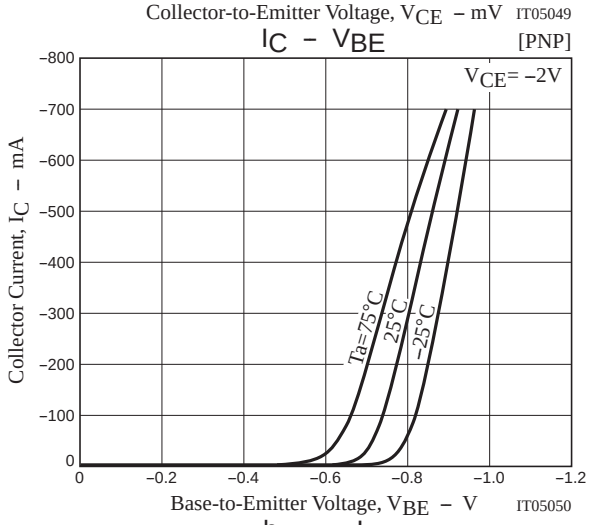
$20I_{B1}$= **−**$20I_{B2}$=I_C=300mA
For PNP, minus sign is omitted.

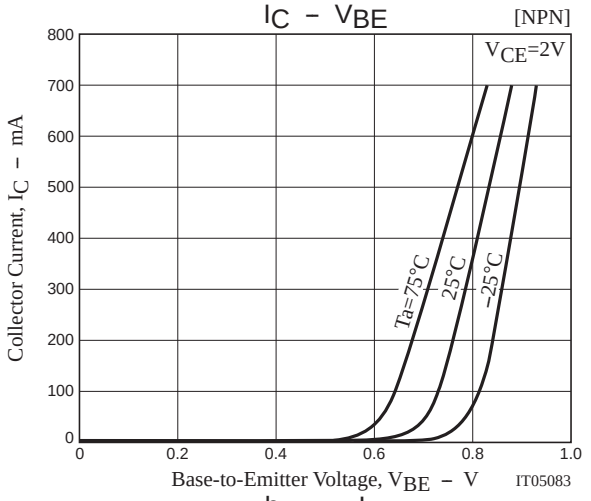
Ordering Information

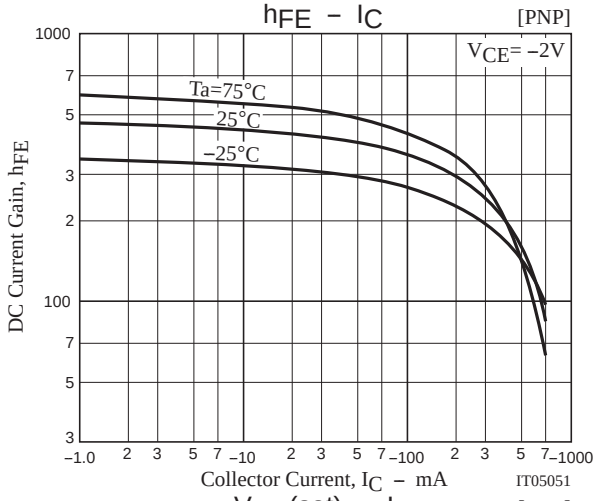
Device	Package	Shipping	memo
CPH5541-TL-E	CPH5	3,000pcs./reel	Pb Free

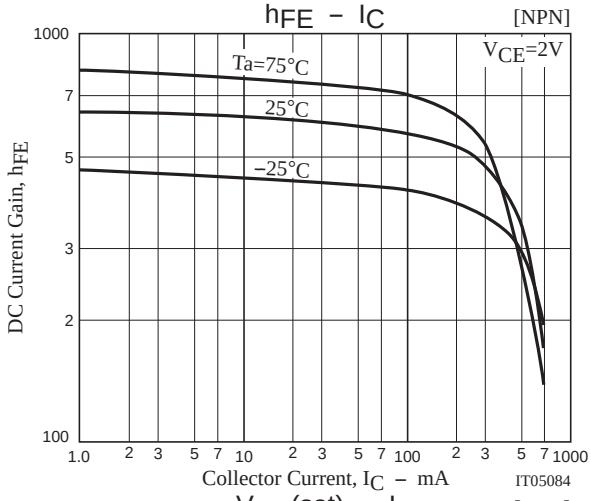

IC – VCE [PNP]
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – mV
IT05049
–40mA
–30mA
–25mA
–20mA
–15mA
–10mA
–7mA
–5mA
–3mA
–2mA
–1mA
–500µA
–50mA
IB=0mA

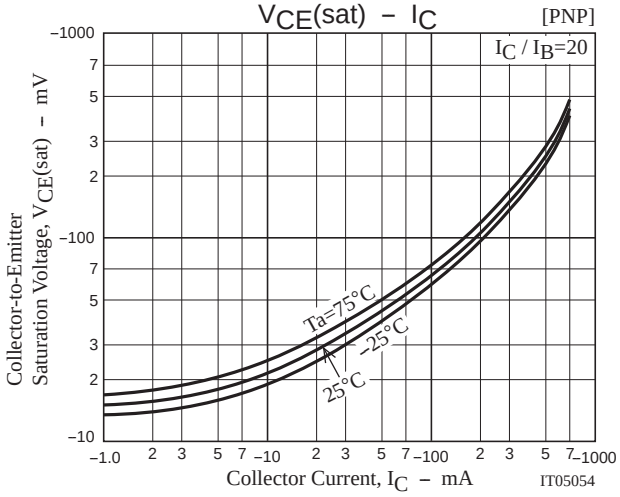

IC – VCE [NPN]
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – mV
IT05082
10mA
7mA
5mA
3mA
2mA
1mA
400µA
200µA
20mA
15mA
30mA
50mA
IB=0mA

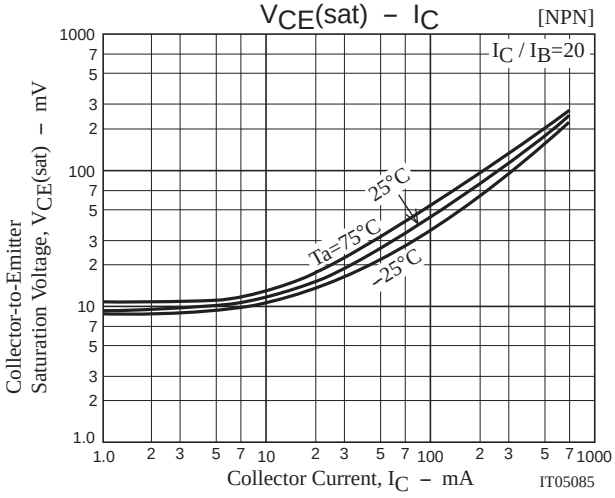

IC – VBE [PNP]
VCE= –2V
Collector Current, IC – mA
Base-to-Emitter Voltage, VBE – V
IT05050
Ta=75°C
25°C
–25°C

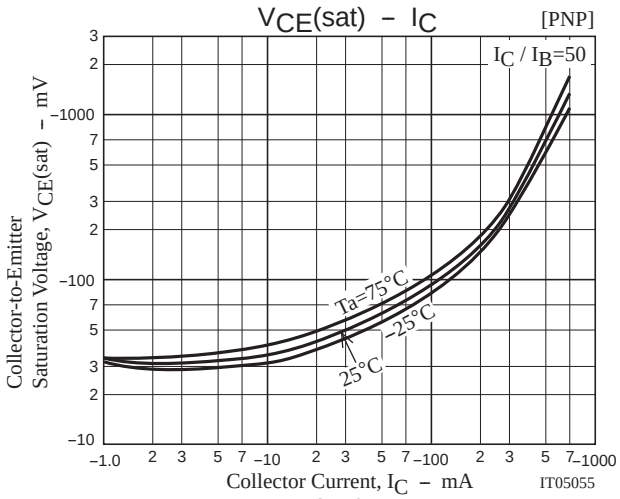

IC – VBE [NPN]
VCE=2V
Collector Current, IC – mA
Base-to-Emitter Voltage, VBE – V
IT05083
Ta=75°C
25°C
–25°C

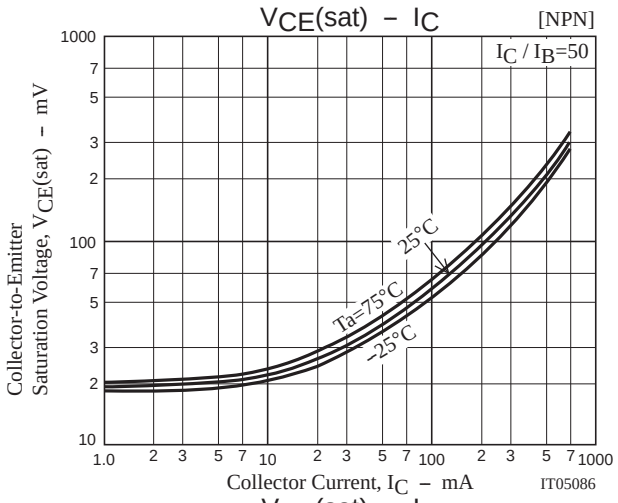

hFE – IC [PNP]
VCE= –2V
DC Current Gain, hFE
Collector Current, IC – mA
IT05051
Ta=75°C
25°C
–25°C

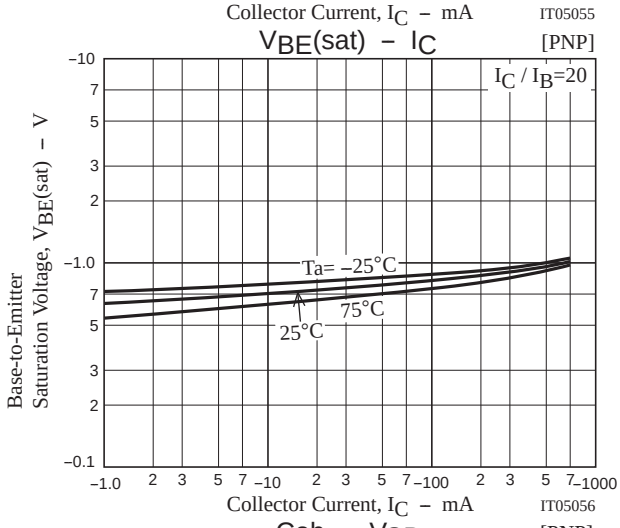

hFE – IC [NPN]
VCE=2V
DC Current Gain, hFE
Collector Current, IC – mA
IT05084
Ta=75°C
25°C
–25°C

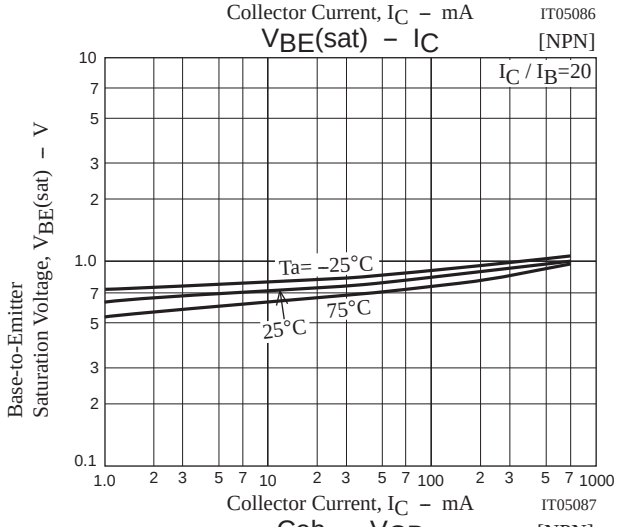

VCE(sat) – IC [PNP]
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA
IT05054
Ta=75°C
–25°C
25°C

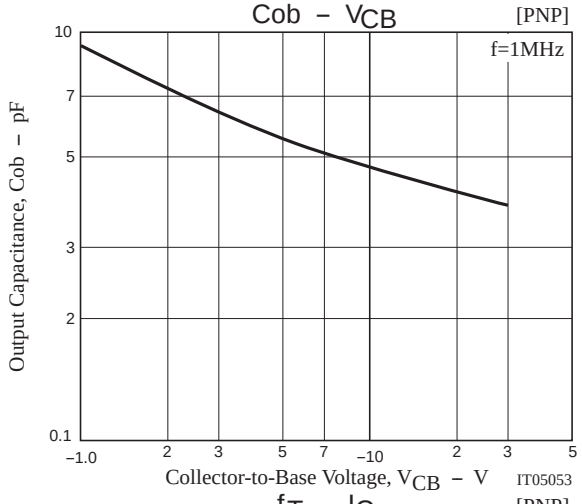

VCE(sat) – IC [NPN]
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA
IT05085
25°C
Ta=75°C
–25°C

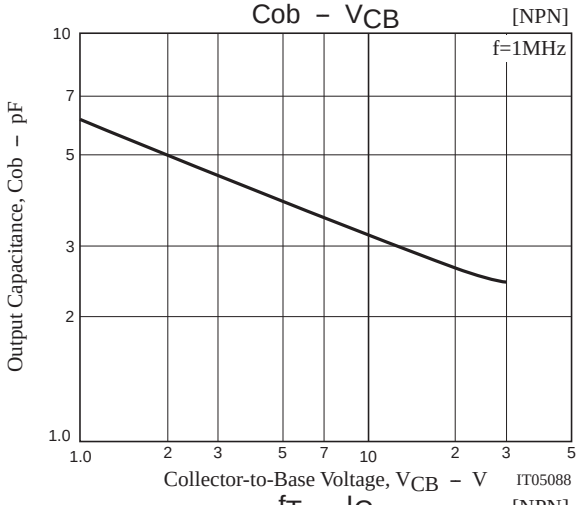

VCE(sat) – IC
[PNP]
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA
IT05055

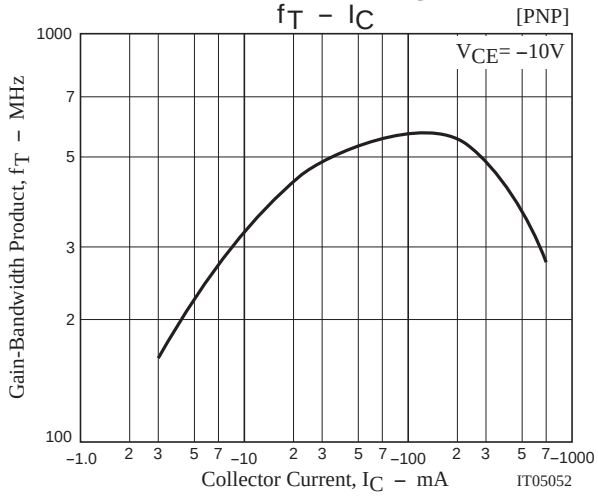

VCE(sat) – IC
[NPN]
IC / IB=50
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA
IT05086

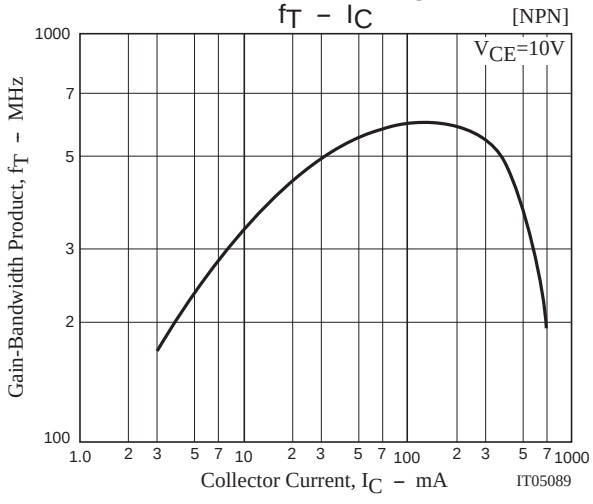

VBE(sat) – IC
[PNP]
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – mA
IT05056

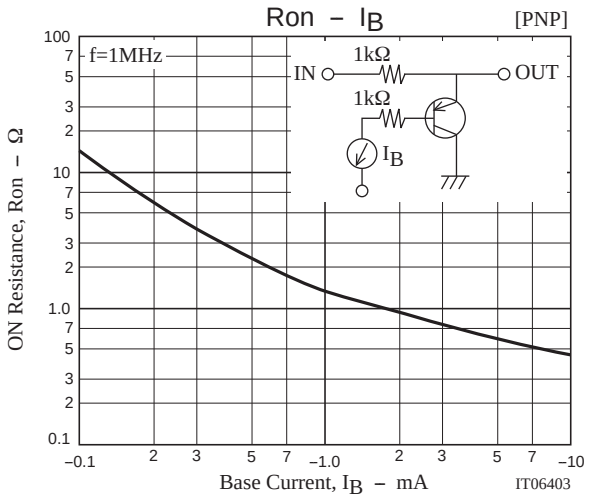

VBE(sat) – IC
[NPN]
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – mA
IT05087

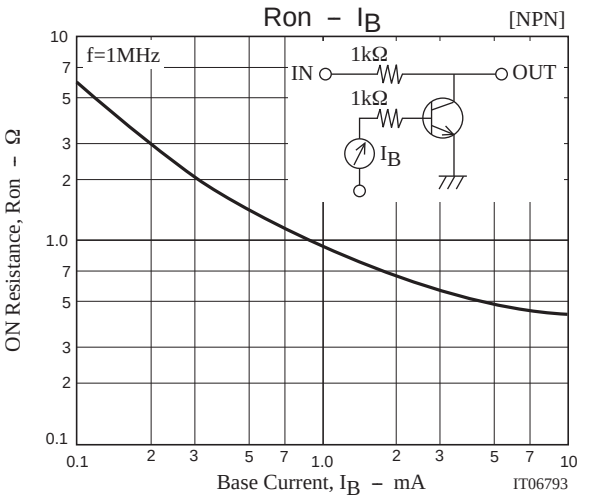

Cob – VCB
[PNP]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT05053

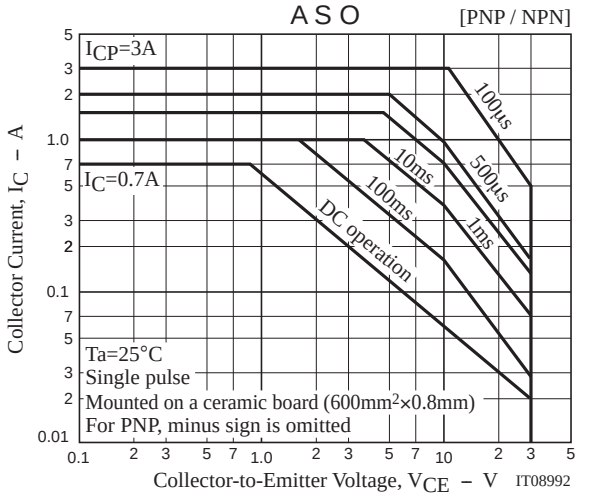

Cob – VCB
[NPN]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT05088

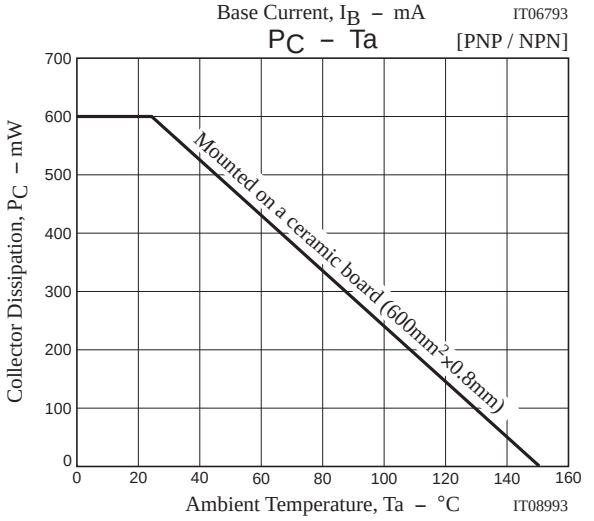

fT – IC
[PNP]
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
IT05052


fT – IC
[NPN]
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
IT05089


Ron – IB
[PNP]
f=1MHz
1kΩ
IN
OUT
1kΩ
IB
ON Resistance, Ron – Ω
Base Current, IB – mA
IT06403


Ron – IB
[NPN]
f=1MHz
1kΩ
IN
OUT
1kΩ
IB
ON Resistance, Ron – Ω
Base Current, IB – mA
IT06793


A S O
[PNP / NPN]
ICP=3A
IC=0.7A
100μs
500μs
10ms
100ms
1ms
DC operation
Ta=25°C
Single pulse
Mounted on a ceramic board (600mm2×0.8mm)
For PNP, minus sign is omitted
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT08992


PC – Ta
[PNP / NPN]
Mounted on a ceramic board (600mm2×0.8mm)
Collector Dissipation, PC – mW
Ambient Temperature, Ta – °C
IT08993

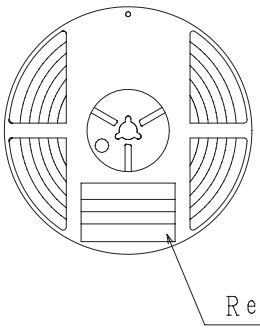
Embossed Taping Specification

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

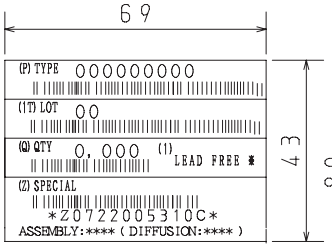
Packing method



Reel label

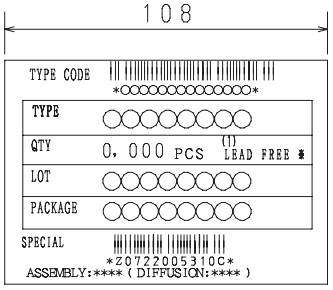
Reel label, Inner box label

(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.



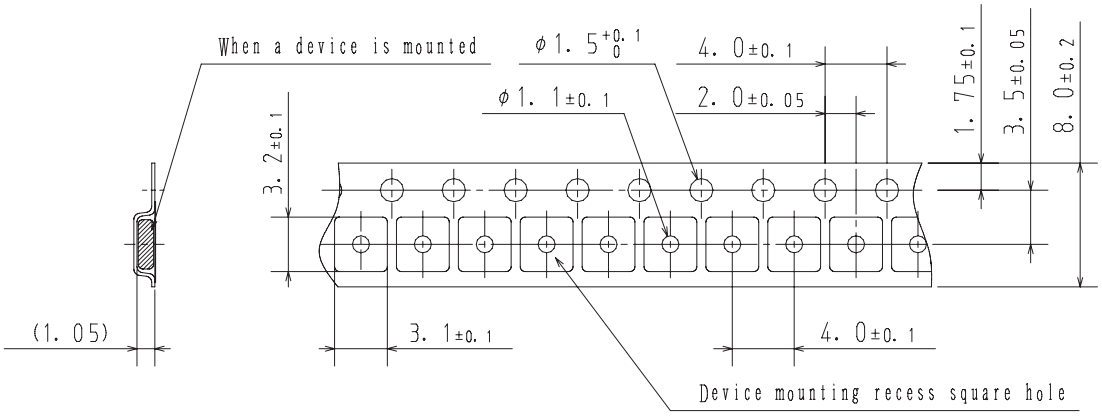
NOTE (1)

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

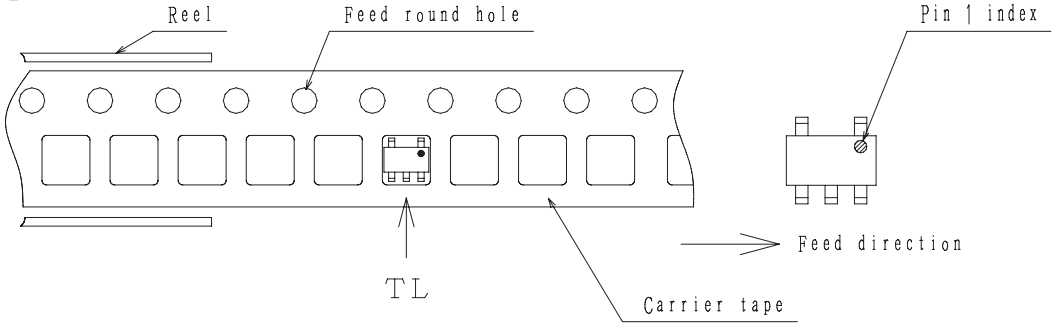
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



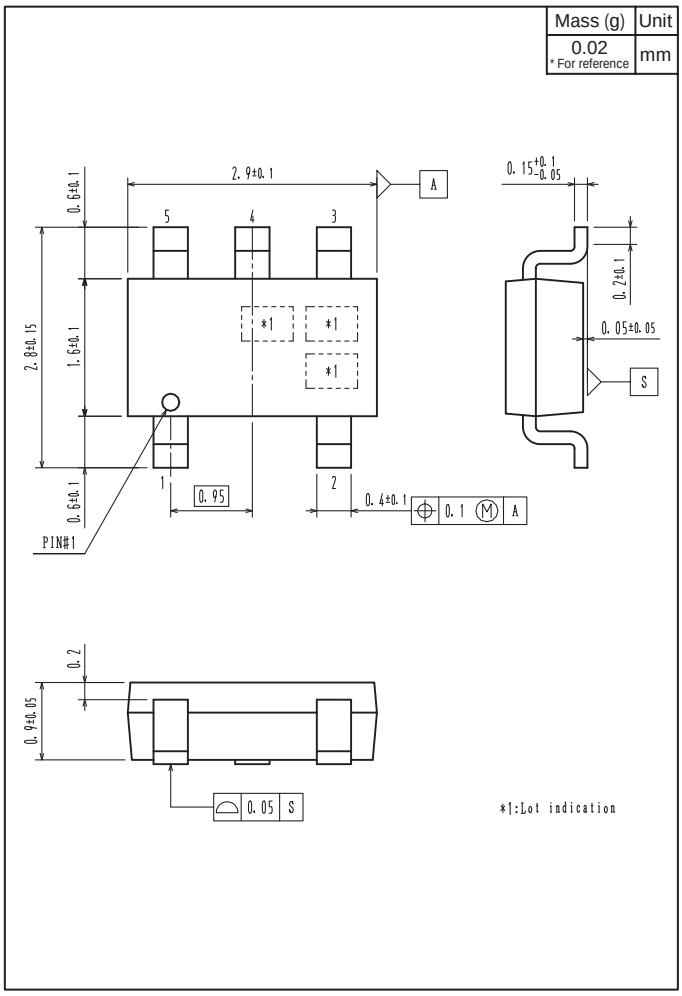
2-2. Device placement direction



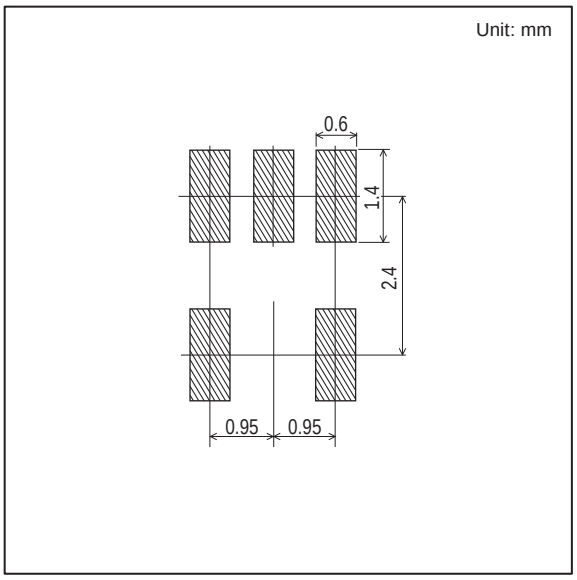
Those with pin 1 index on the feed hole side·····TL

Outline Drawing

CPH5541-TL-E



Land Pattern Example



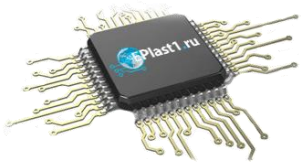
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)
Факс: 8 (812) 320-02-42
Электронная почта: org@eplast1.ru
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.