Ordering number : ENA0859A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

CPH5524 — PNP/NPN Epitaxial Planar Silicon Transistors High-Current Switching Applications

Applications

- Relay drivers, lamp drivers, motor drivers, IGBT gate 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)

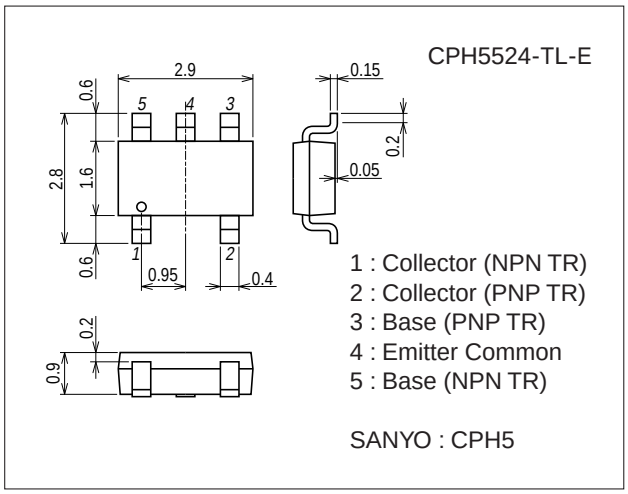
Specifications ( ): PNP

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(−50)100	V
Collector-to-Emitter Voltage	V_{CEO}		(−)50	V
Emitter-to-Base Voltage	V_{EBO}		(−)6	V
Collector Current	I_C		(−)3	A
Collector Current (Pulse)	I_{CP}		(−)6	A
Base Current	I_B		(−)600	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm^2×0.8mm) 1unit	0.9	W
Total Power Dissipation	P_T	Mounted on a ceramic board (600mm^2×0.8mm)	1.2	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

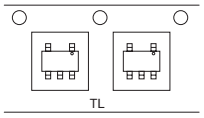
unit : mm (typ)
7017A-009



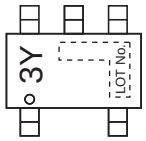
Product & Package Information

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

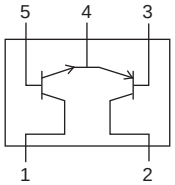
Packing Type : TL



Marking



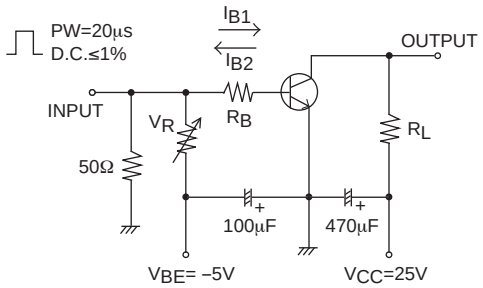
Electrical Connection



Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(−)40V, I_E=0A			(−)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)4V, I_C=0A			(−)1	μA
DC Current Gain	h_{FE}	V_{CE}=(−)2V, I_C=(−)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(−)10V, I_C=(−)500mA		(390)380		MHz
Output Capacitance	Cob	V_{CB}=(−)10V, f=1MHz		(24)13		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=(−)1A, I_B=(−)50mA		(−115)	(−230)	mV
				90	130	mV
	V_{CE}(sat)2	I_C=(−)2A, I_B=(−)100mA		(−240)	(−650)	mV
				160	240	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(−)2A, I_B=(−)100mA		(−)0.88	(−)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(−)10μA, I_E=0A	(−50)100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(−)10μA, I_C=0A	(−)6			V
Turn-On Time	t_{on}	See specified Test Circuit.		(30)35		ns
Storage Time	t_{stg}			(230)300		ns
Fall Time	t_f			(18)25		ns

Switching Time Test Circuit

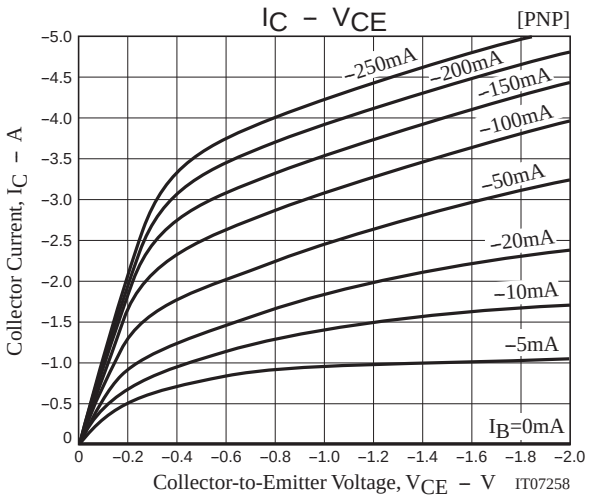


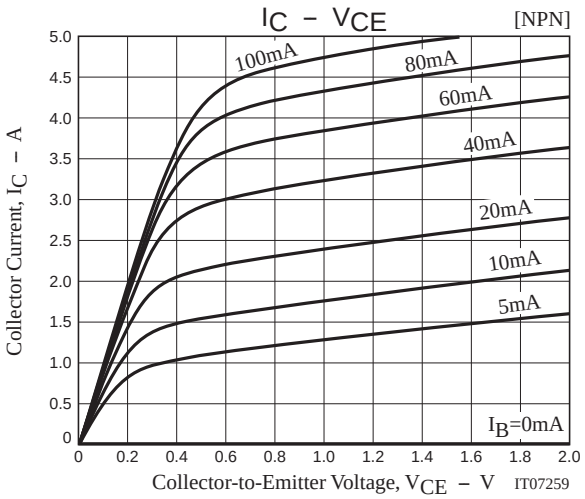
I_C=10I_{B1}= −10I_{B2}=1A

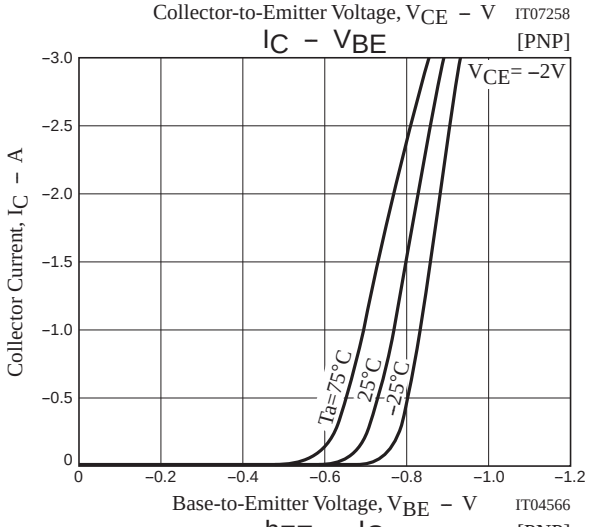
For PNP, the polarity is reversed.

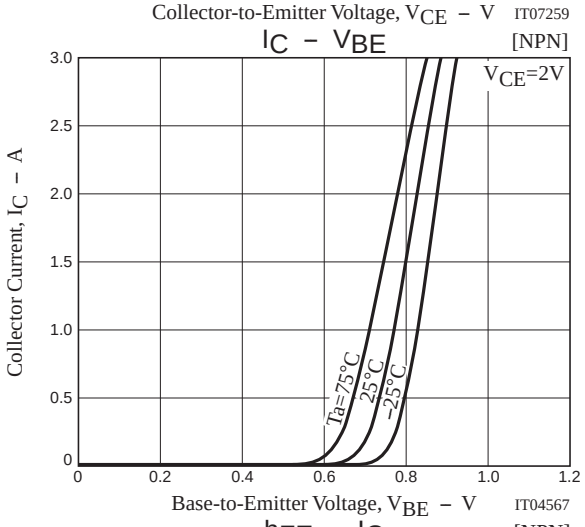
Ordering Information

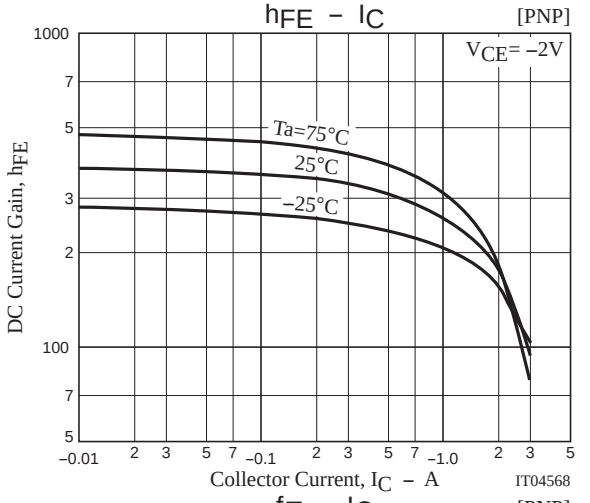
Device	Package	Shipping	memo
CPH5524-TL-E	CPH5	3,000pcs./reel	Pb Free

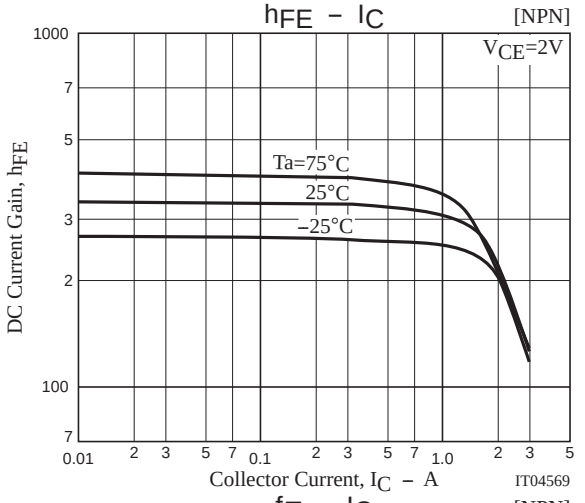

IC – VCE
[PNP]
Collector Current, IC – A
–250mA
–200mA
–150mA
–100mA
–50mA
–20mA
–10mA
–5mA
IB=0mA
Collector-to-Emitter Voltage, VCE – V
IT07258

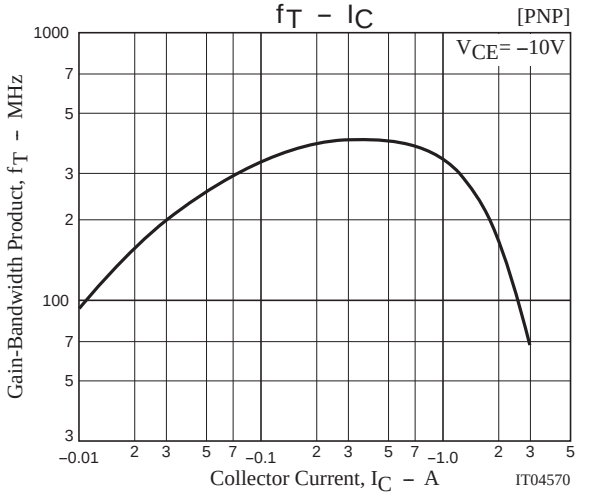

IC – VCE
[NPN]
Collector Current, IC – A
100mA
80mA
60mA
40mA
20mA
10mA
5mA
IB=0mA
Collector-to-Emitter Voltage, VCE – V
IT07259

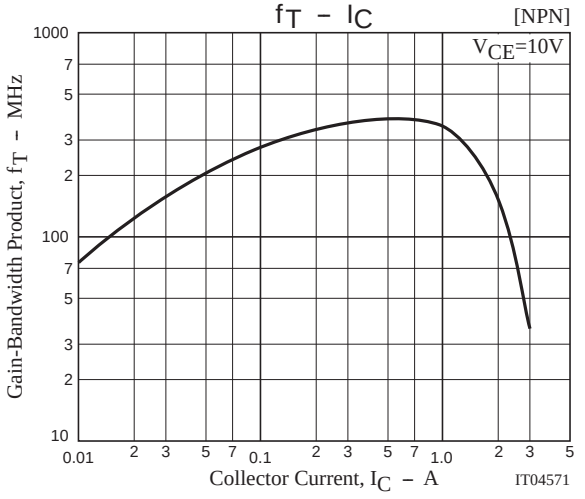

IC – VBE
[PNP]
VCE= –2V
Collector Current, IC – A
Ta=75°C
25°C
–25°C
Base-to-Emitter Voltage, VBE – V
IT04566

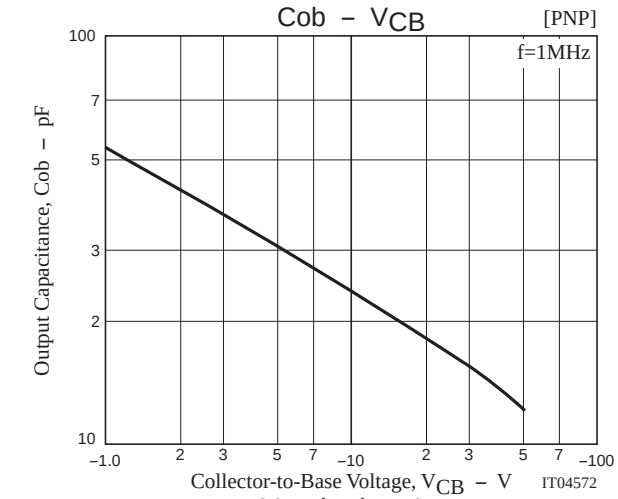

IC – VBE
[NPN]
VCE=2V
Collector Current, IC – A
Ta=75°C
25°C
–25°C
Base-to-Emitter Voltage, VBE – V
IT04567

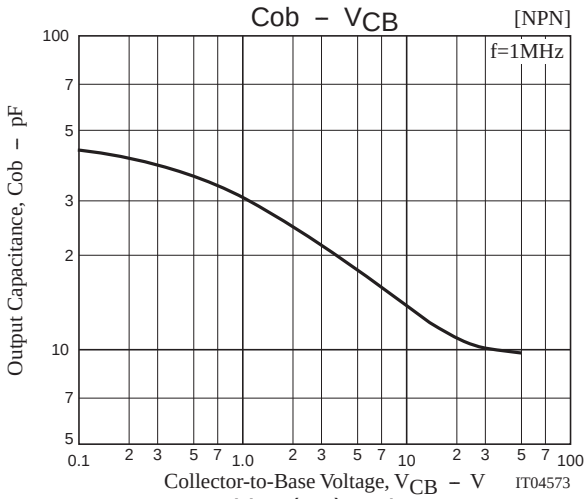

hFE – IC
[PNP]
VCE= –2V
DC Current Gain, hFE
Ta=75°C
25°C
–25°C
Collector Current, IC – A
IT04568

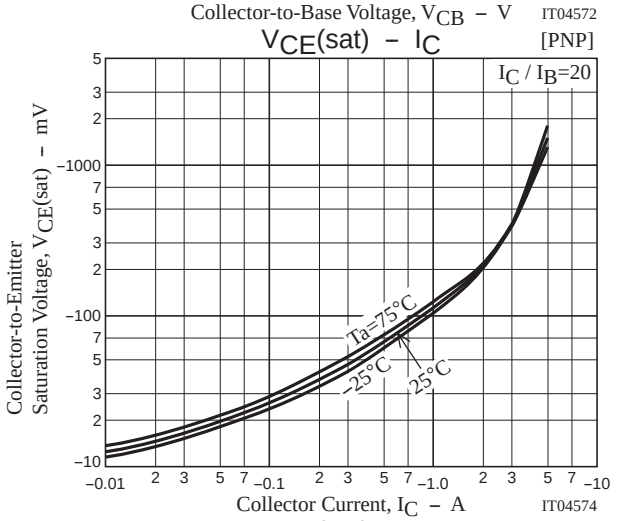

hFE – IC
[NPN]
VCE=2V
DC Current Gain, hFE
Ta=75°C
25°C
–25°C
Collector Current, IC – A
IT04569

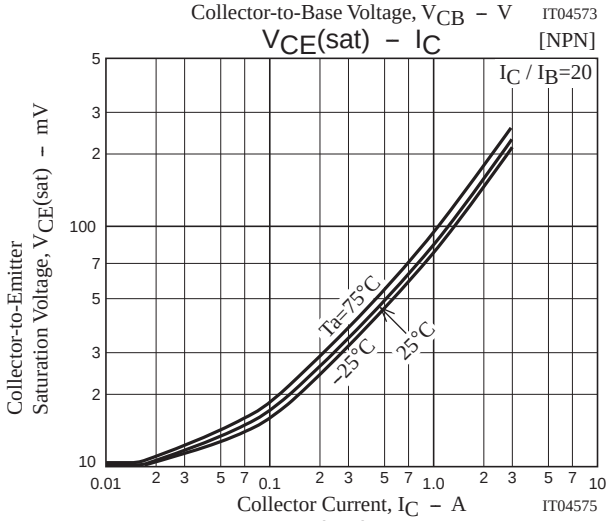

fT – IC
[PNP]
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT04570

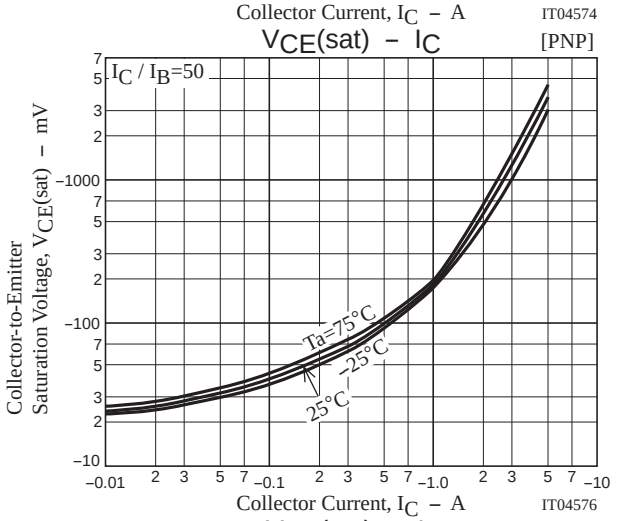

fT – IC
[NPN]
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT04571

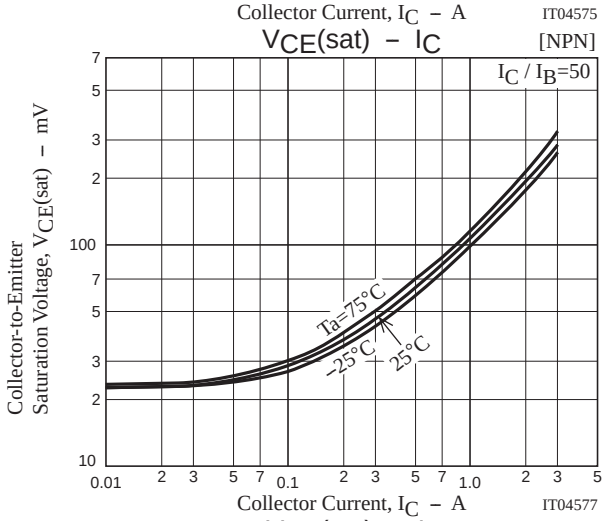

Cob – VCB
[PNP]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT04572

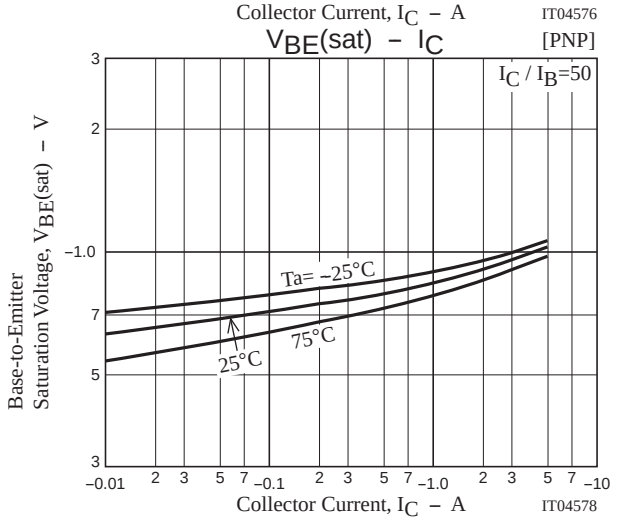

Cob – VCB
[NPN]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT04573

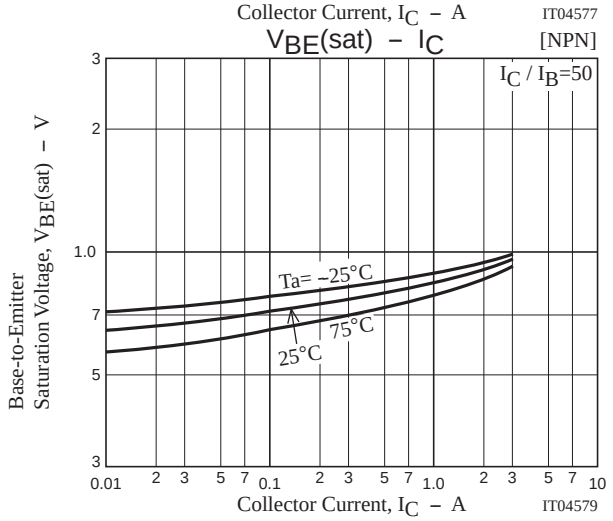

VCE(sat) – IC
[PNP]
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Ta=75°C
–25°C
25°C
Collector Current, IC – A
IT04574

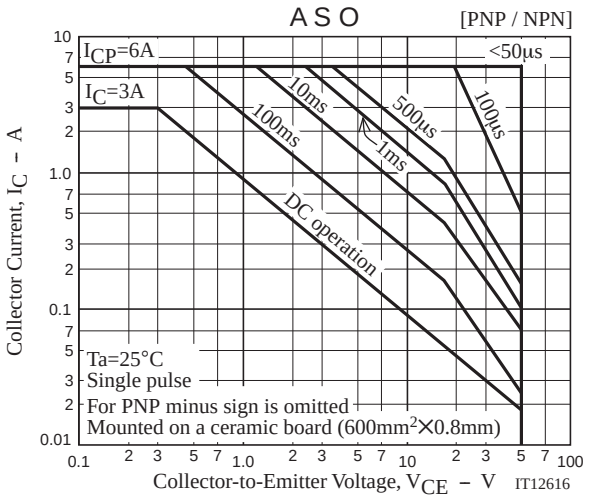

VCE(sat) – IC
[NPN]
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Ta=75°C
–25°C
25°C
Collector Current, IC – A
IT04575

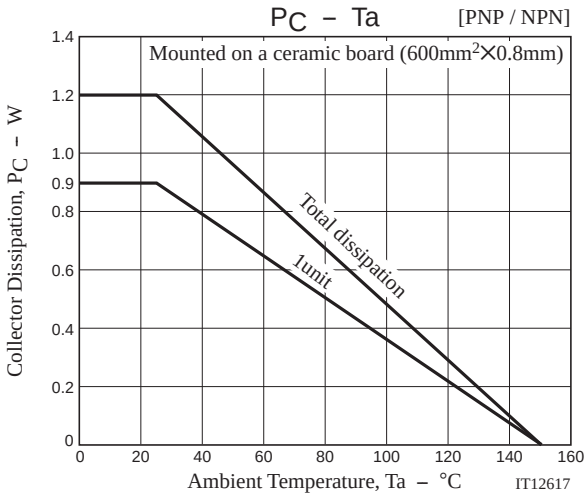

VCE(sat) – IC
[PNP]
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Ta=75°C
–25°C
25°C
Collector Current, IC – A
IT04576


VCE(sat) – IC
[NPN]
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Ta=75°C
–25°C
25°C
Collector Current, IC – A
IT04577


VBE(sat) – IC
[PNP]
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Ta= –25°C
75°C
25°C
Collector Current, IC – A
IT04578


VBE(sat) – IC
[NPN]
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Ta= –25°C
75°C
25°C
Collector Current, IC – A
IT04579


ASO
[PNP / NPN]
I_{CP}=6A
I_C=3A
<50µs
100µs
500µs
1ms
10ms
100ms
DC operation
Ta=25°C
Single pulse
For PNP minus sign is omitted
Mounted on a ceramic board (600mm²×0.8mm)
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V
IT12616


P_C – Ta
[PNP / NPN]
Mounted on a ceramic board (600mm²×0.8mm)
Total dissipation
1unit
Collector Dissipation, P_C – W
Ambient Temperature, Ta – °C
IT12617

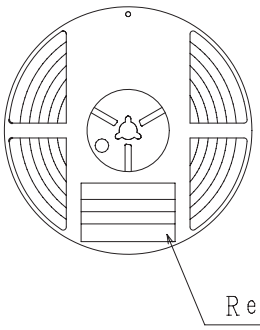
Embossed Taping Specification

CPH5524-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

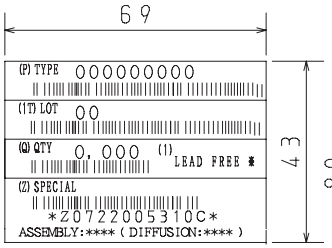
Packing method



Reel label

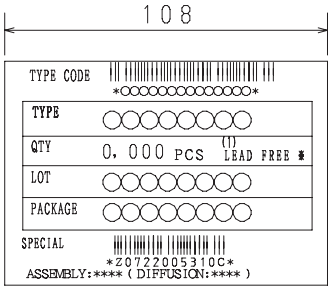
Reel label, Inner box label

(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.



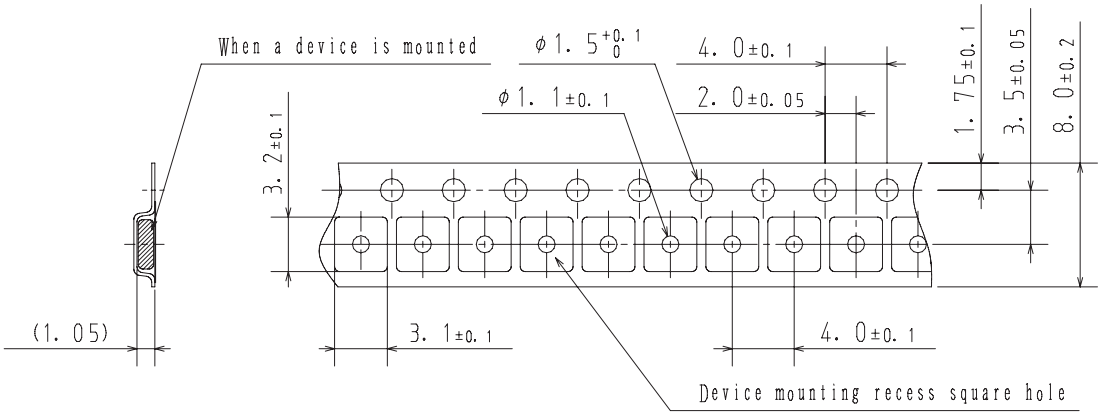
NOTE (1)

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

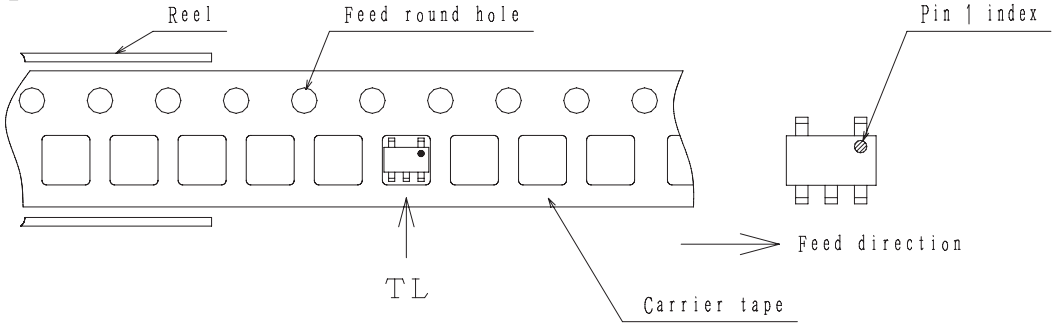
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



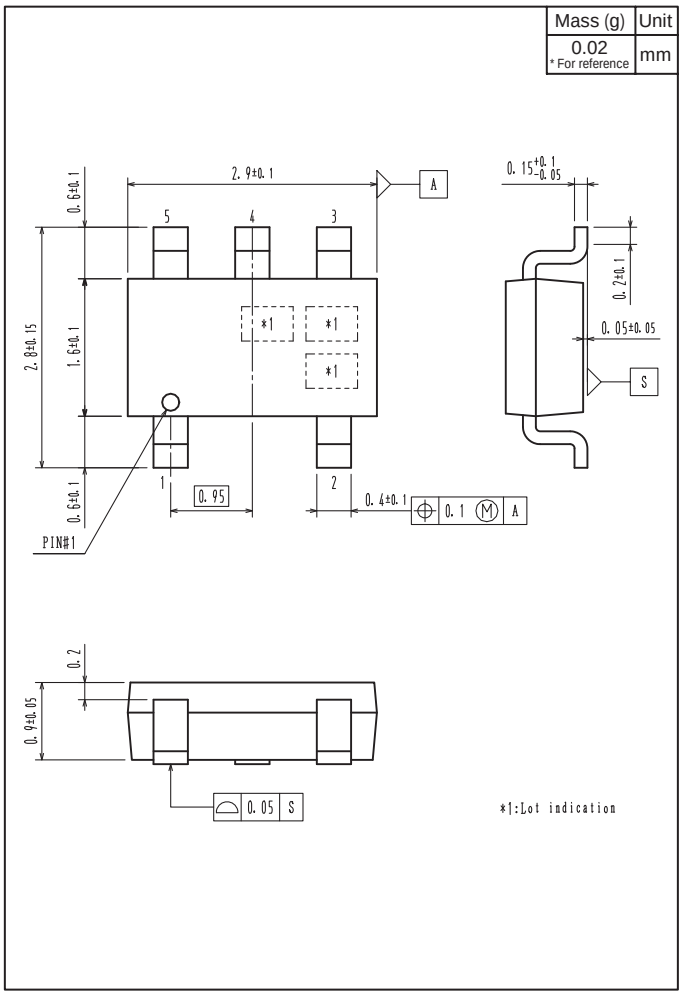
2-2. Device placement direction



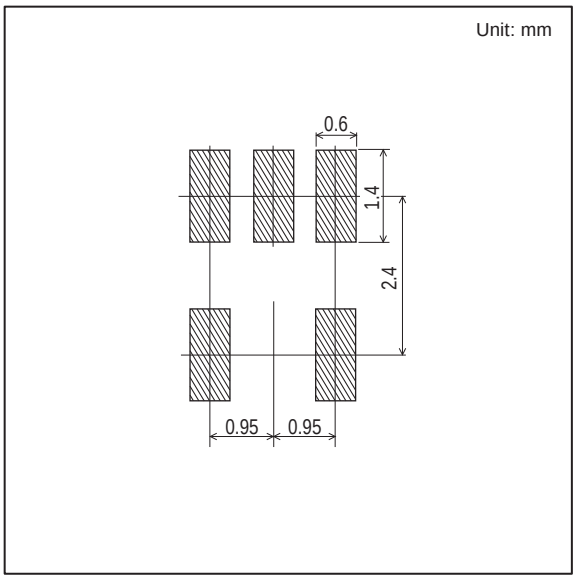
Those with pin 1 index on the feed hole side·····TL

Outline Drawing

CPH5524-TL-E



Land Pattern Example



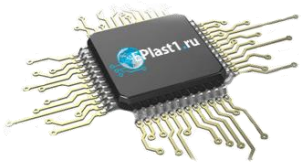
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

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

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Факс: 8 (812) 320-02-42
Электронная почта: org@eplast1.ru
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