Ordering number : ENA0492A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

CPH5518 — PNP / NPN Epitaxial Planar Silicon Transistor
High-Current Switching Applications

Applications

- 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
- The CPH5518 consists of two chips encapsulated in a package which are equivalent to the CPH3116 and the CPH3216, respectively
- Ultrasmall package facilitate miniaturization in end products (0.9mm mounting height)

Specifications ( ): PNP

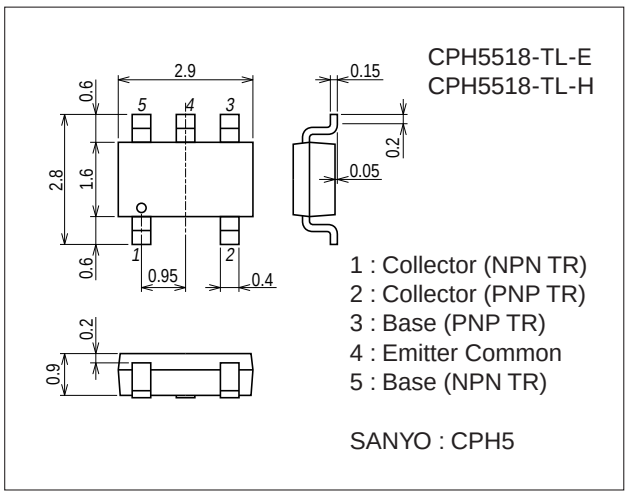
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(−50)80	V
Collector-to-Emitter Voltage	V_{CEO}		(−)50	V
Emitter-to-Base Voltage	V_{EBO}		(−)5	V
Collector Current	I_C		(−)1.0	A
Collector Current (Pulse)	I_{CP}		(−)3.0	A
Base Current	I_B		(−)200	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm^2×0.8mm)1unit	0.9	W
Total Power Dissipation	P_T	When mounted on ceramic substrate (600mm^2×0.8mm)	1.2	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

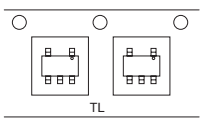
7017A-009



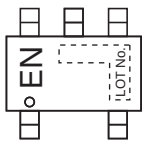
Product & Package Information

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

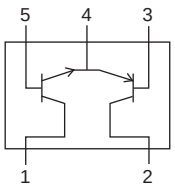
Packing Type : TL



Marking



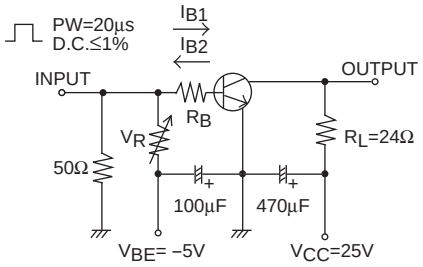
Electrical Connection



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			(−)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)4V, I_C=0A			(−)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(−)2V, I_C=(−)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(−)10V, I_C=(−)300mA		420		MHz
Output Capacitance	Cob	V_{CB}=(−)10V, f=1MHz		(9)6		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(−)500mA, I_B=(−)10mA		(−230)130	(−380)190	mV
		I_C=(−)300A, I_B=(−)6mA		(−125)90	(−200)135	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(−)500mA, I_B=(−)10mA		(−)0.81	(−)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(−)10μA, I_E=0A	(−50)80			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	(−)5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		(36)38		ns
Storage Time	t_{stg}			(173)332		ns
Fall Time	t_f			(28)40		ns

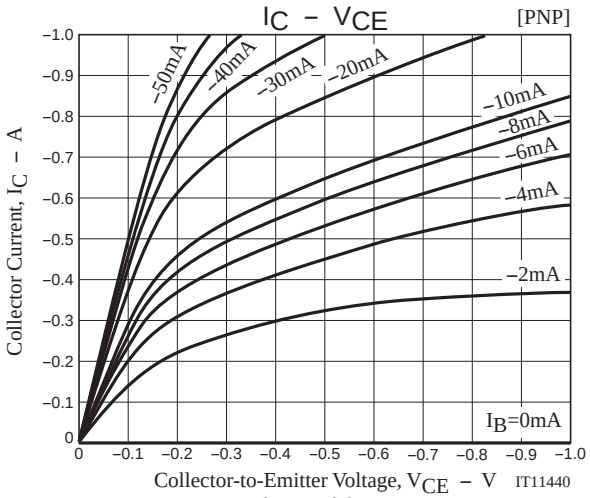
Switching Time Test Circuit

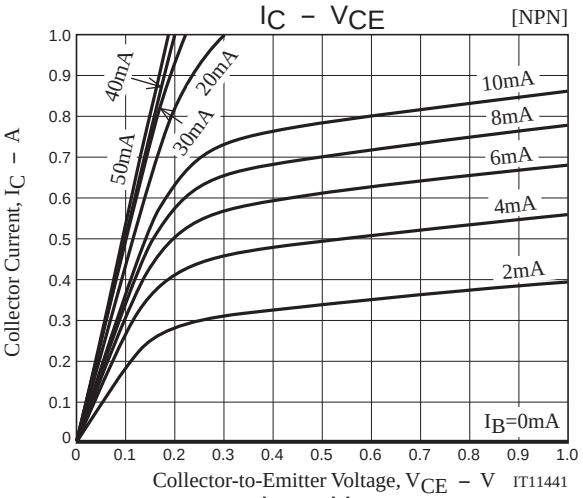


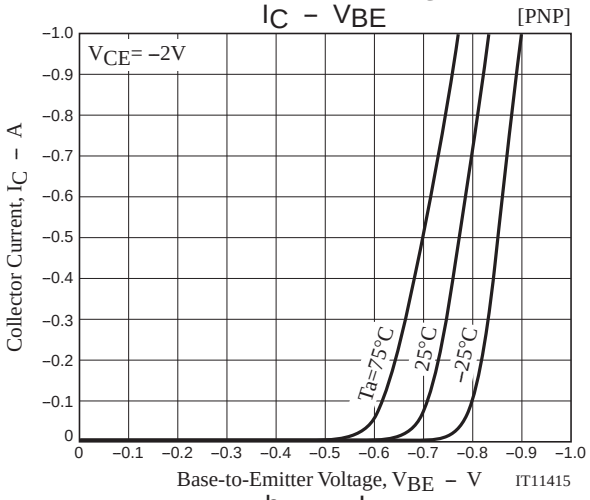
I_C=20I_{B1}= −20I_{B2}=500mA
(For PNP, the polarity is reversed.)

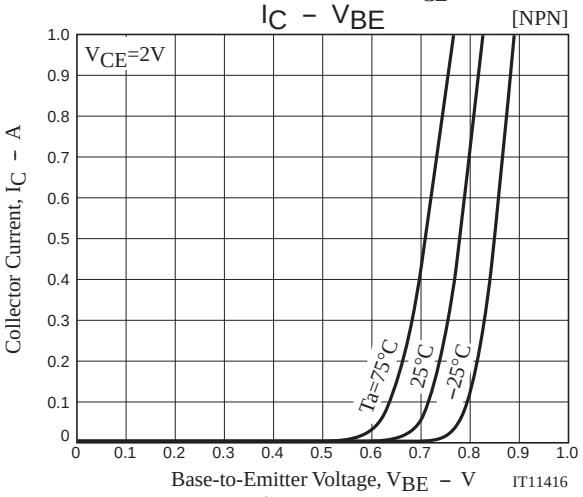
Ordering Information

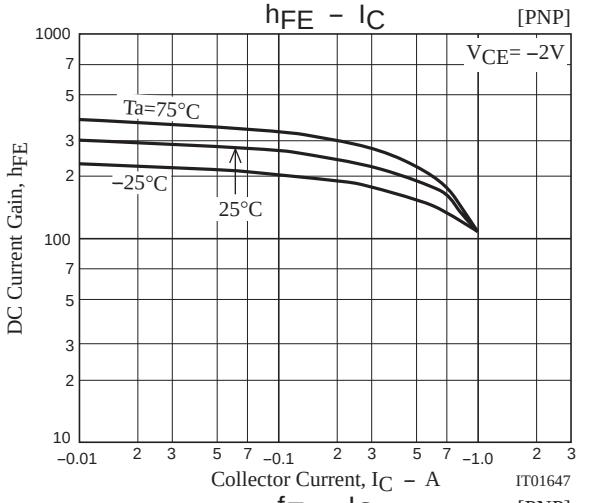
Device	Package	Shipping	memo
CPH5518-TL-E	CPH5	3,000pcs./reel	Pb Free
CPH5518-TL-H	CPH5	3,000pcs./reel	Pb Free and Halogen Free

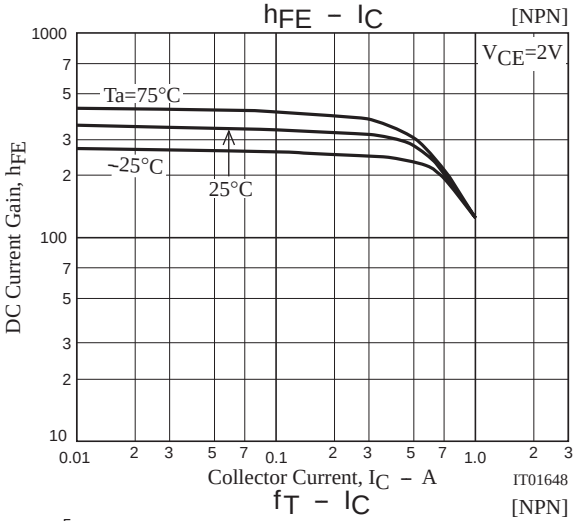

IC – VCE
[PNP]
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT11440
–50mA
–40mA
–30mA
–20mA
–10mA
–8mA
–6mA
–4mA
–2mA
IB=0mA

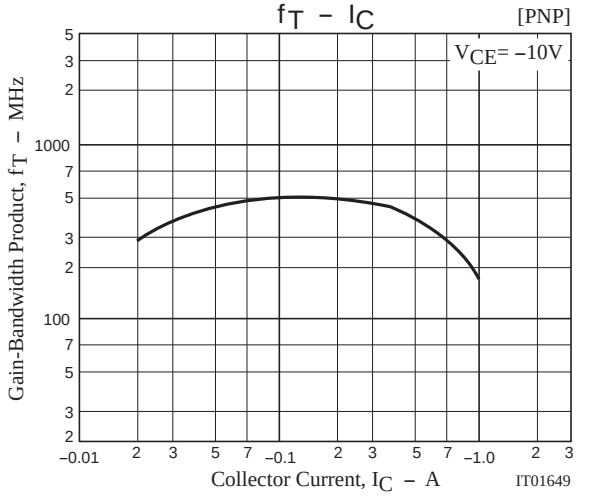

IC – VCE
[NPN]
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT11441
40mA
50mA
30mA
20mA
10mA
8mA
6mA
4mA
2mA
IB=0mA

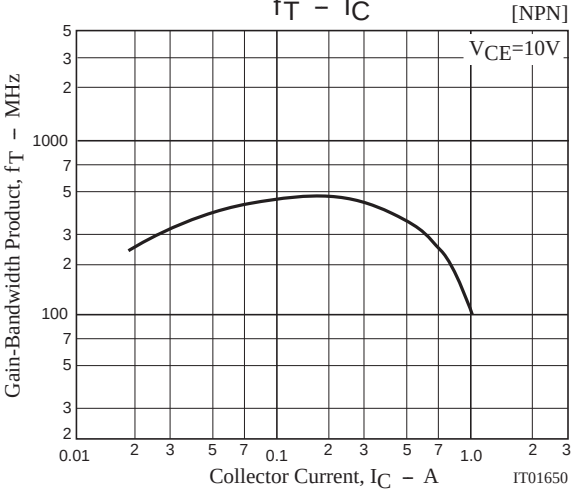

IC – VBE
[PNP]
VCE= –2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT11415
Ta=75°C
25°C
–25°C

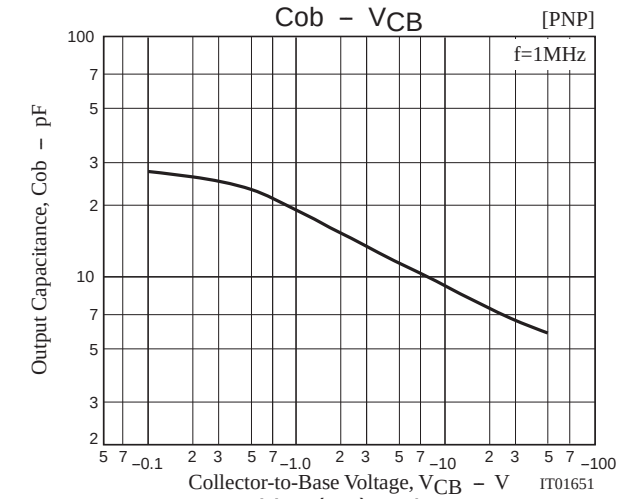

IC – VBE
[NPN]
VCE=2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT11416
Ta=75°C
25°C
–25°C

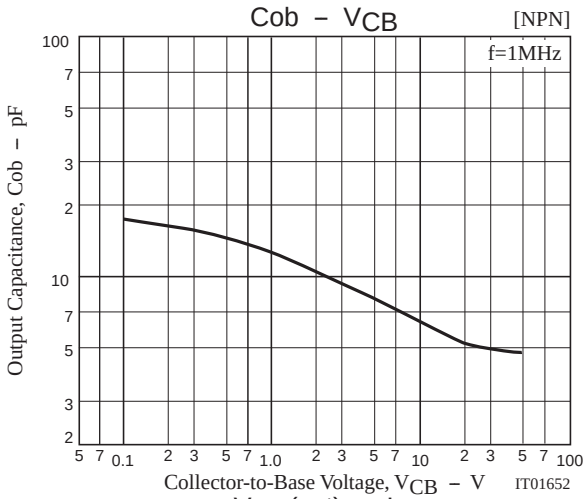

hFE – IC
[PNP]
VCE= –2V
DC Current Gain, hFE
Collector Current, IC – A
IT01647
Ta=75°C
–25°C
25°C

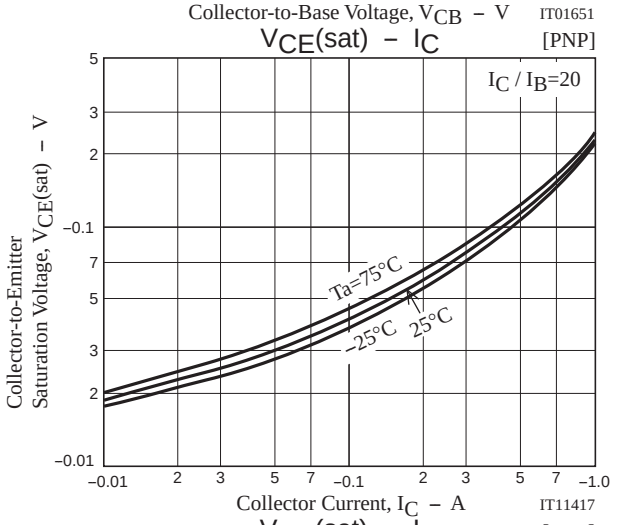

hFE – IC
[NPN]
VCE=2V
DC Current Gain, hFE
Collector Current, IC – A
IT01648
Ta=75°C
–25°C
25°C

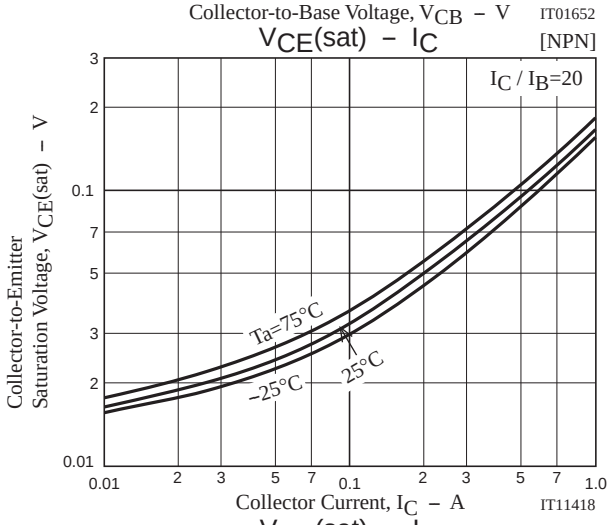

fT – IC
[PNP]
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01649

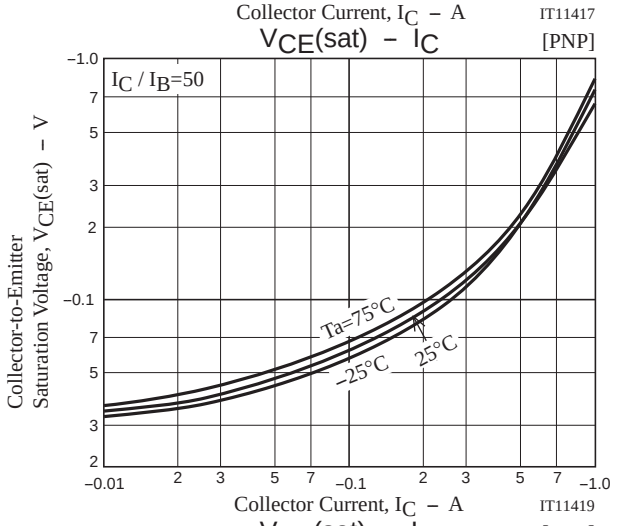

fT – IC
[NPN]
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01650

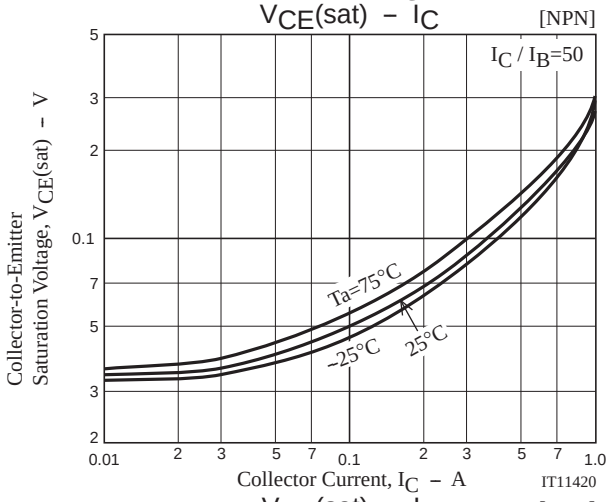

Cob – VCB
[PNP]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01651

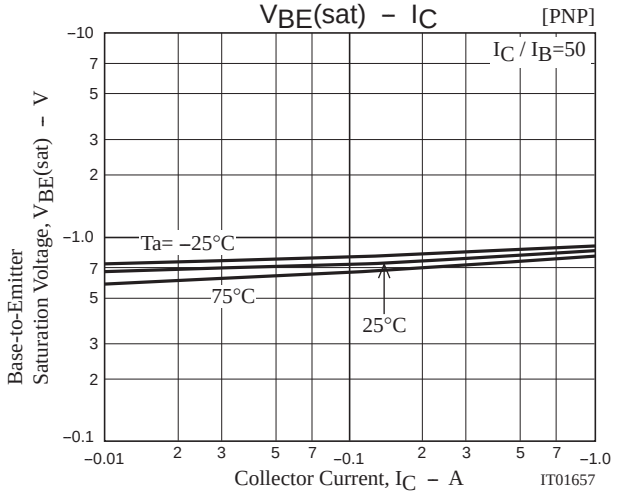

Cob – VCB
[NPN]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01652

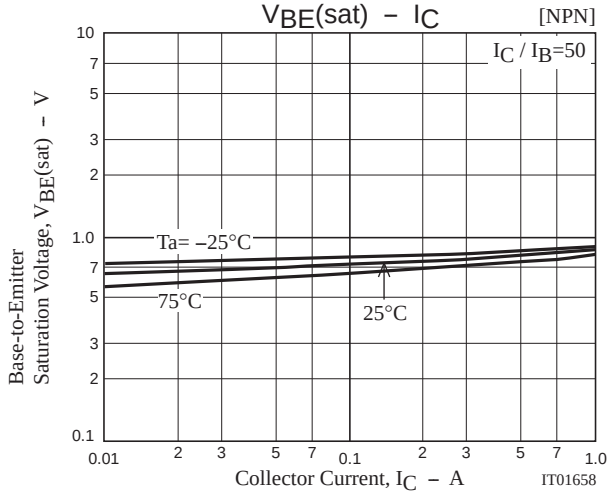

VCE(sat) – IC
[PNP]
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11417

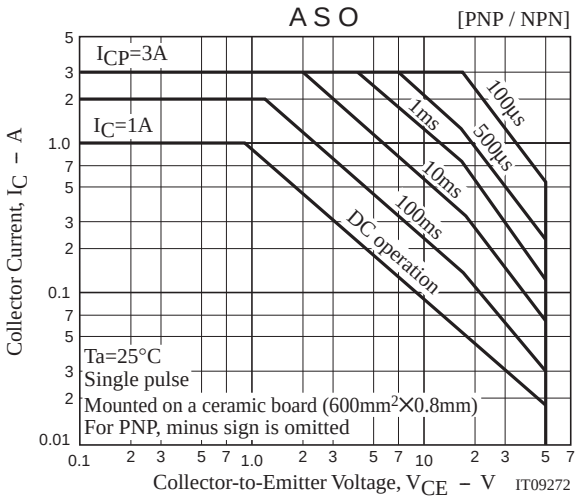

VCE(sat) – IC
[NPN]
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11418

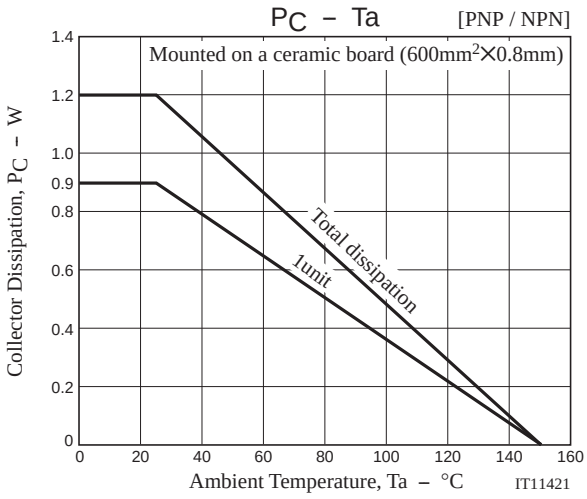

VCE(sat) – IC
[PNP]
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11419


VCE(sat) – IC
[NPN]
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11420


VBE(sat) – IC
[PNP]
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT01657


VBE(sat) – IC
[NPN]
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT01658


ASO
[PNP / NPN]
ICP=3A
IC=1A
100µs
1ms
500µs
10ms
100ms
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
IT09272


PC – Ta
[PNP / NPN]
Mounted on a ceramic board (600mm2×0.8mm)
Total dissipation
1unit
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT11421

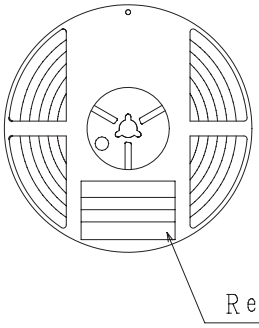
Embossed Taping Specification

CPH5518-TL-E, CPH5518-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)
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

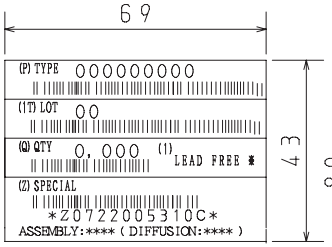
Packing method



Reel label

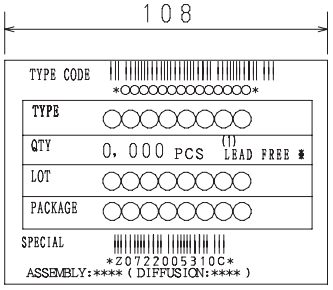
Reel label, Inner box label

(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.



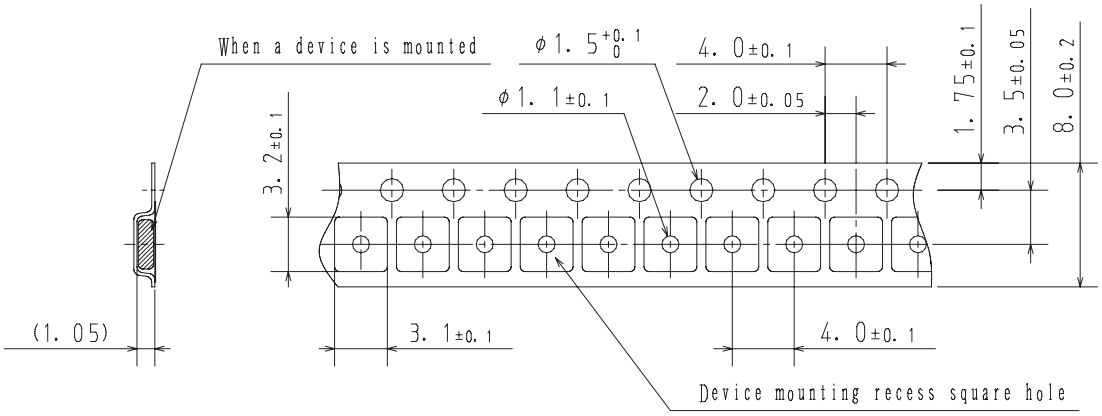
NOTE (1)

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

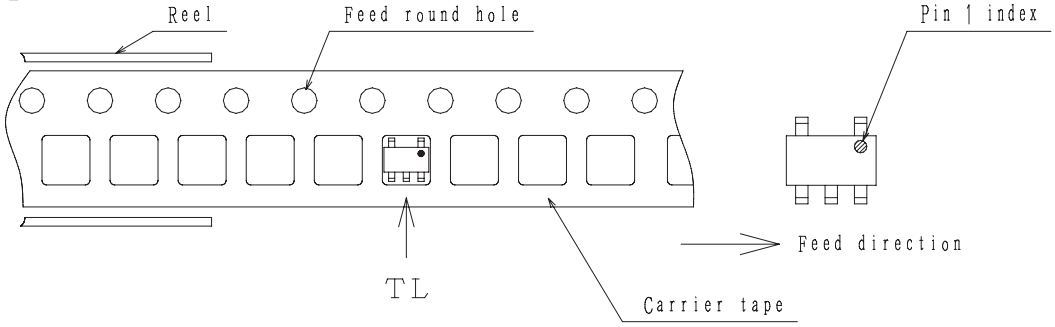
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



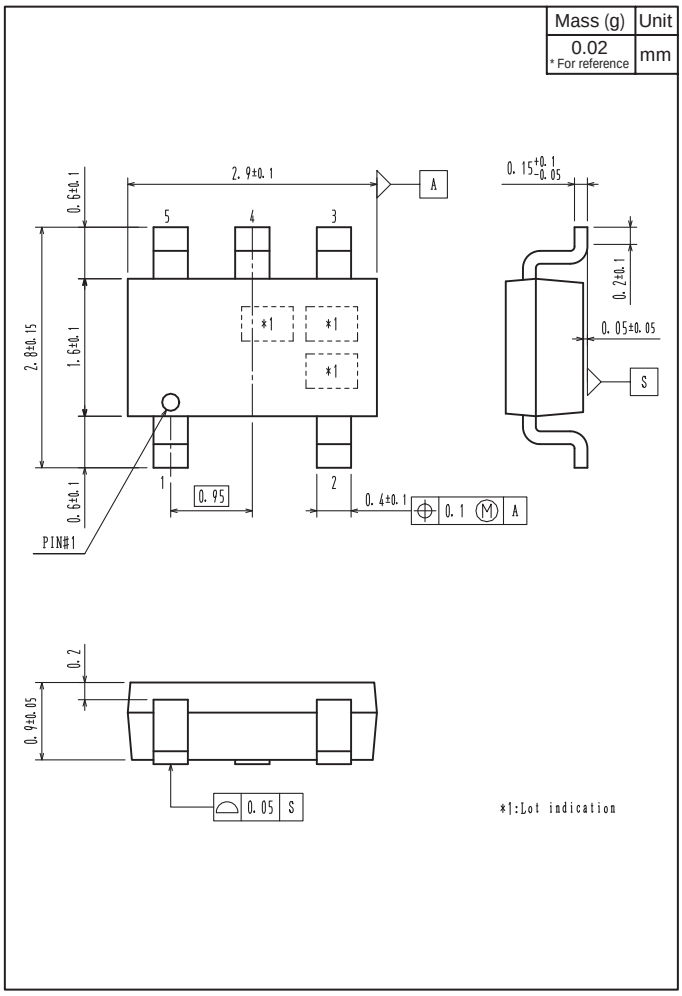
2-2. Device placement direction



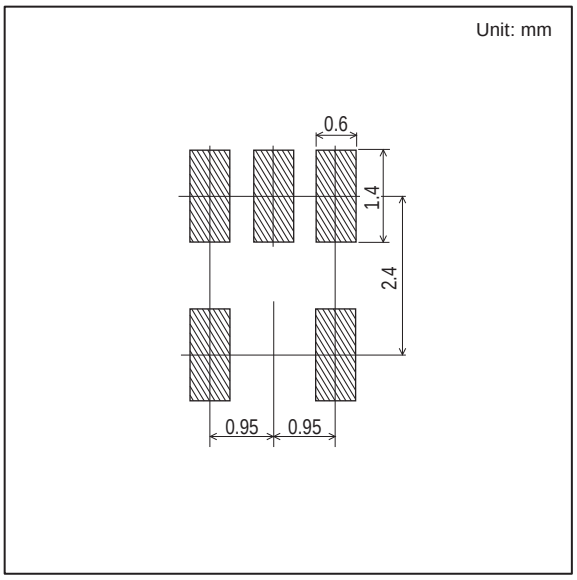
Those with pin 1 index on the feed hole side·····TL

Outline Drawing

CPH5518-TL-E, CPH5518-TL-H



Land Pattern Example



This catalog provides information as of September, 2012. Specifications and information herein are subject to change without notice.

Стандарт Электрон Связь

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Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург, Промышленная ул, дом № 19, литера Н, помещение 100-Н Офис 331