Ordering number : EN6084E

CPH3105/CPH3205

Bipolar Transistor

(–)50V, (–)3A, Low V_{CE}(sat), (PNP)NPN Single CPH3

ON Semiconductor®

http://onsemi.com

Applications

- DC-DC converters, relay drivers, lamp drivers, motor drivers, flash

Features

- Adoption of FBIT, MBIT processes
- Large current capacity
- Low collector-to-emitter saturation voltage
- High-speed switching
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.9mm)
- High allowable power dissipation

Specifications ( ): CPH3105

Absolute Maximum Ratings at Ta=25°C

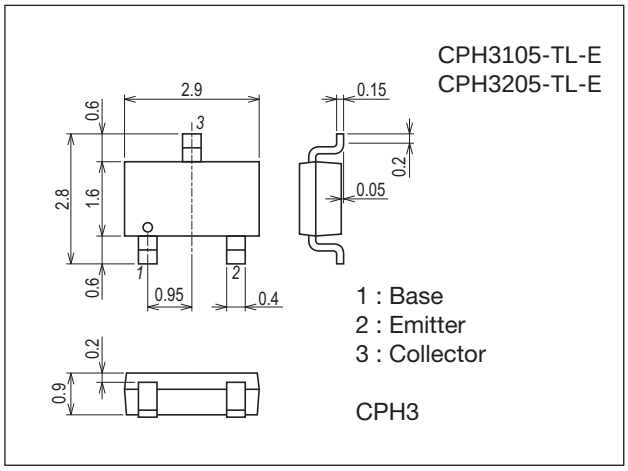
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–50)100	V
Collector-to-Emitter Voltage	V_{CES}		(–50)100	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)3	A
Collector Current (Pulse)	I_{CP}		(–)6	A
Base Current	I_B		(–)600	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm^2×0.8mm)	0.9	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–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)

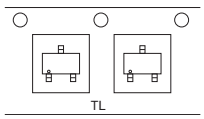
7015A-003



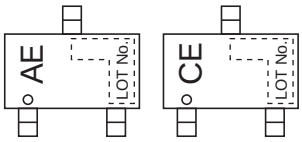
Product & Package Information

- Package : CPH3
- JEITA, JEDEC : SC-59, TO-236, SOT-23
- Minimum Packing Quantity : 3,000 pcs./reel

Packing Type: TL

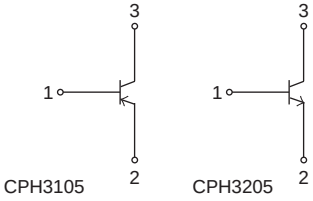


Marking



CPH3105 CPH3205

Electrical Connection



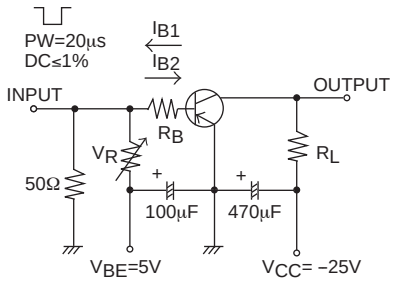
CPH3105 CPH3205

Semiconductor Components Industries, LLC, 2013

Electrical Characteristics at Ta=25°C

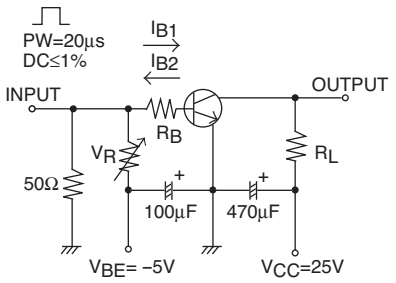
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(−)40V, I_E=0A			(−)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)4V, I_C=0A			(−)1	μA
DC Current Gain	h_{FE}	V_{CE}=(−)2V, I_C=(−)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(−)10V, I_C=(−)500mA		(360)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		(−100)80	(−200)120	mV
	V_{CE}(sat)2	I_C=(−)2A, I_B=(−)100mA		(−185)140	(−500)210	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-Base Breakdown Voltage	$V_{(BR)CES}$	I_C=(−)100μA,R_{BE}=0Ω	(−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			(15)22		ns

Switching Time Test Circuit



$-10I_{B1}=10I_{B2}=I_C=-1A$

CPH3105

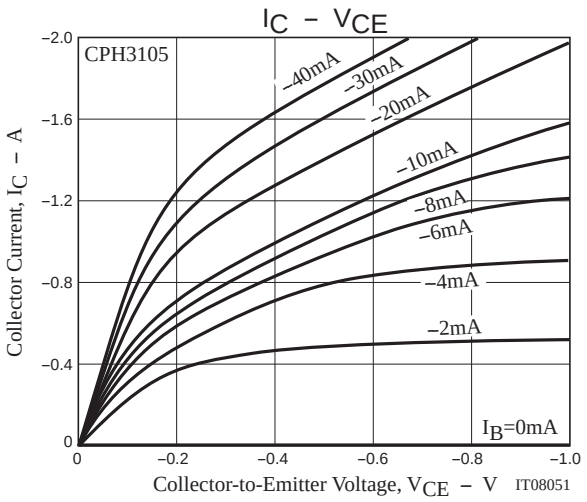


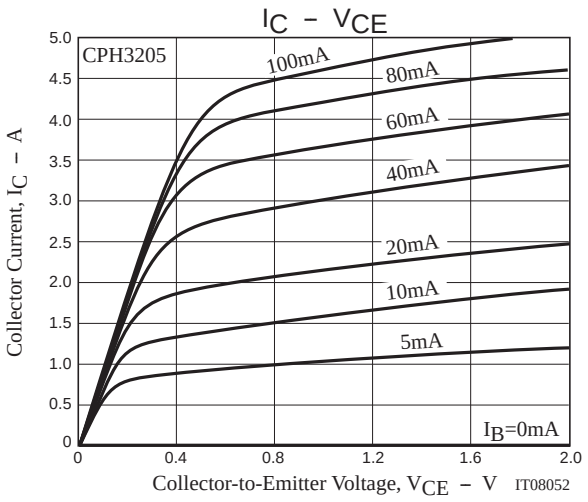
$10I_{B1}=-10I_{B2}=I_C=1A$

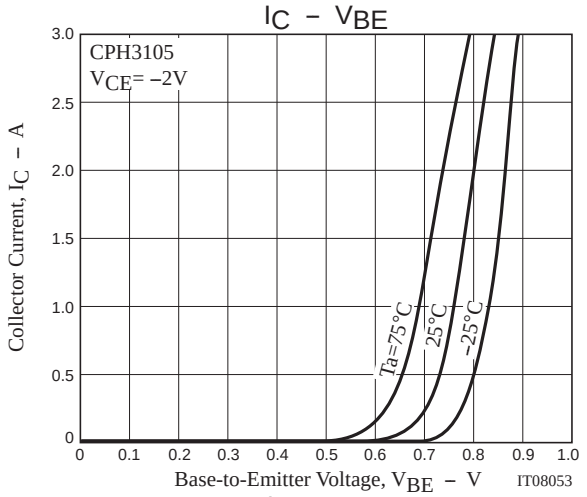
CPH3205

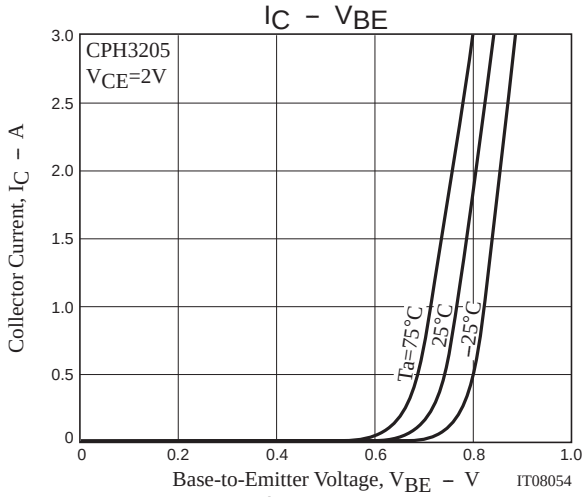
Ordering Information

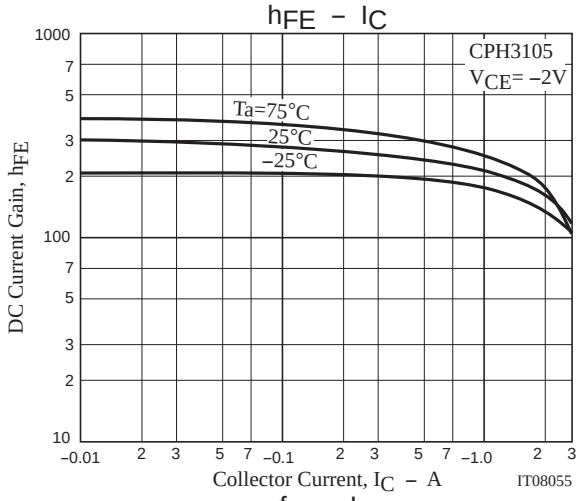
Device	Package	Shipping	memo
CPH3105-TL-E	CPH3	3,000pcs./reel	Pb Free
CPH3205-TL-E	CPH3	3,000pcs./reel	Pb Free

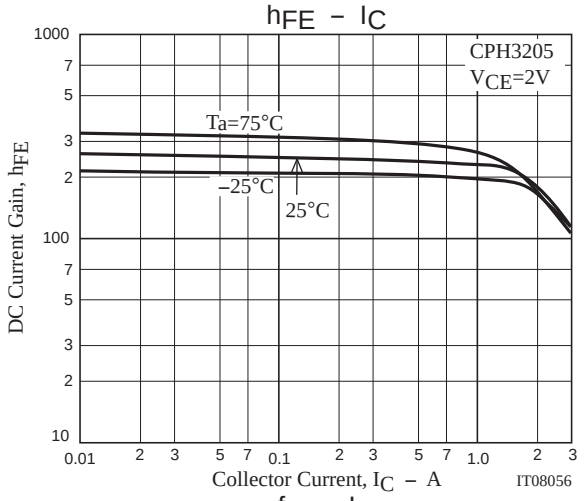


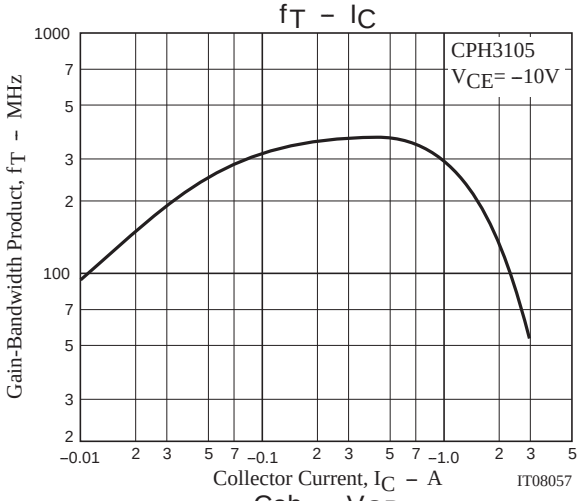


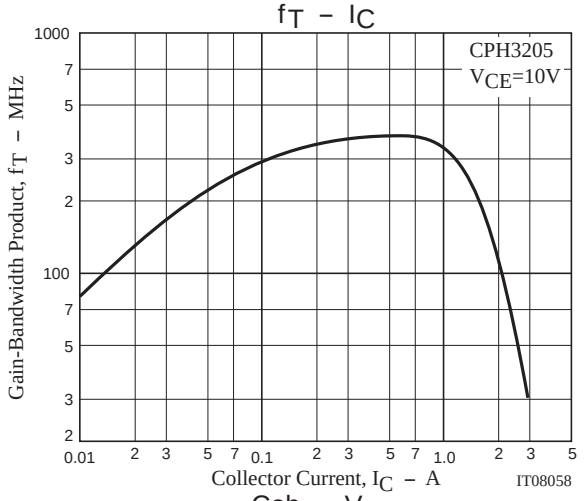

IC – VBE
CPH3105
VCE= –2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT08053

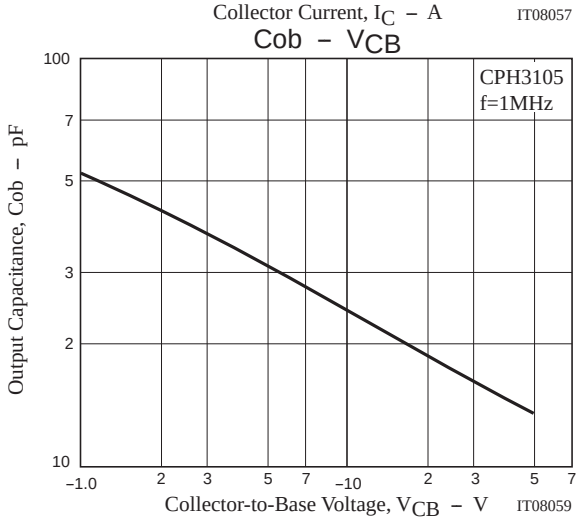

IC – VBE
CPH3205
VCE=2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT08054

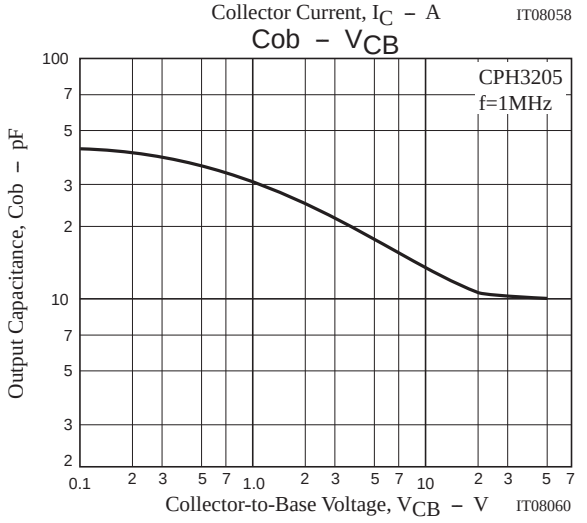

hFE – IC
CPH3105
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT08055

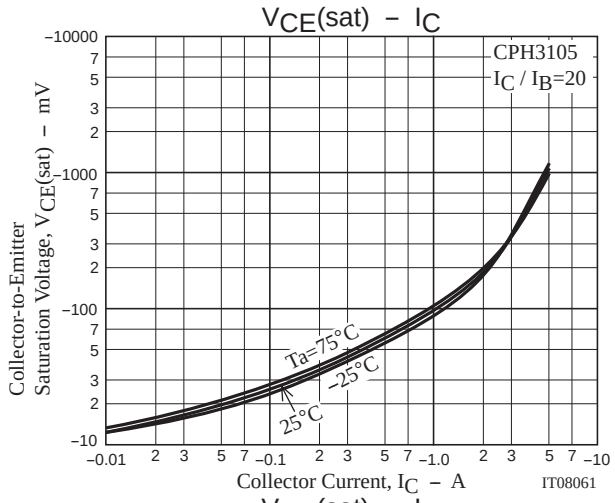

hFE – IC
CPH3205
VCE=2V
Ta=75°C
–25°C
25°C
DC Current Gain, hFE
Collector Current, IC – A
IT08056

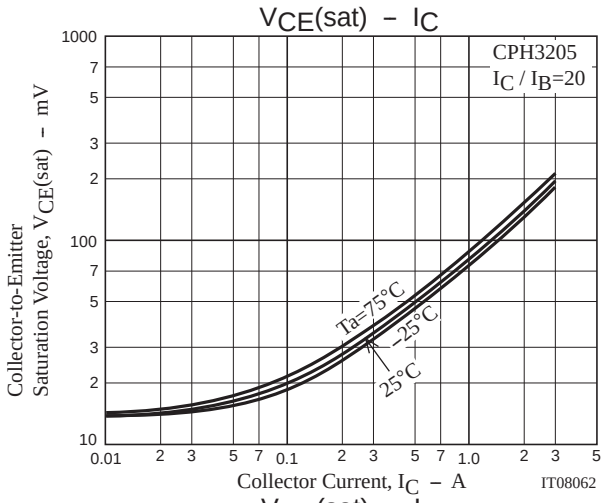

fT – IC
CPH3105
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08057

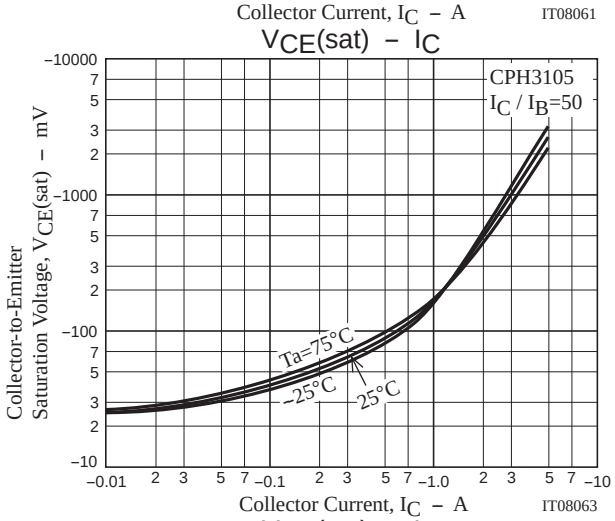

fT – IC
CPH3205
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08058

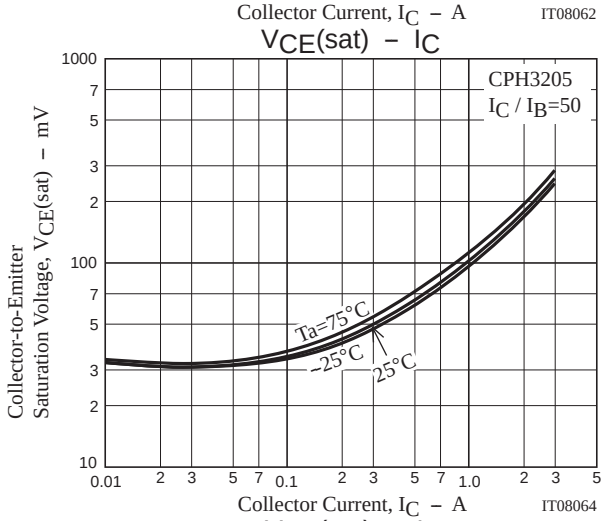

Cob – VCB
CPH3105
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT08059

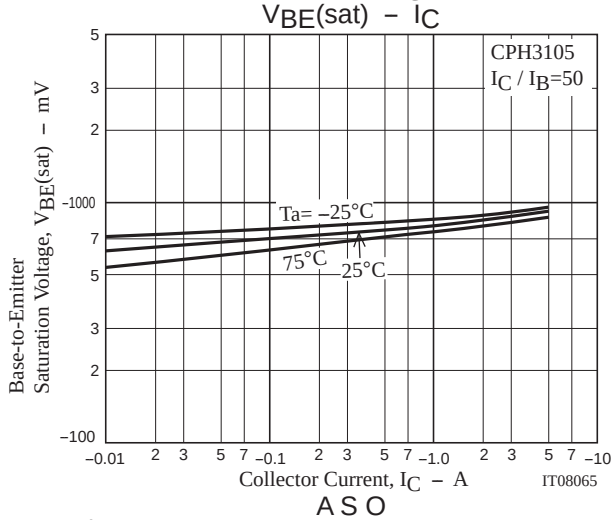

Cob – VCB
CPH3205
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT08060

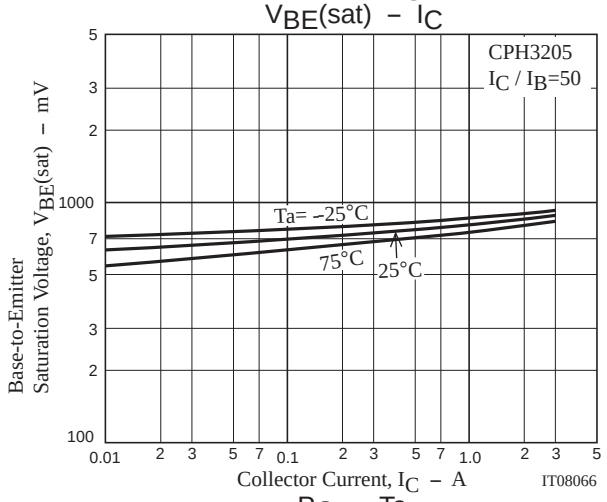

VCE(sat) – IC
CPH3105
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT08061

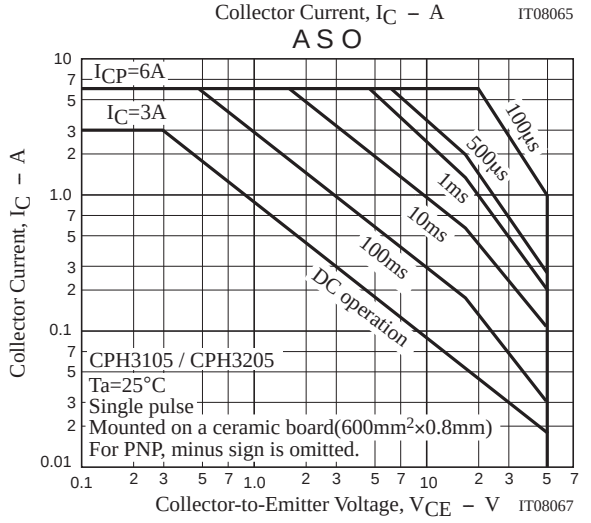

VCE(sat) – IC
CPH3205
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT08062

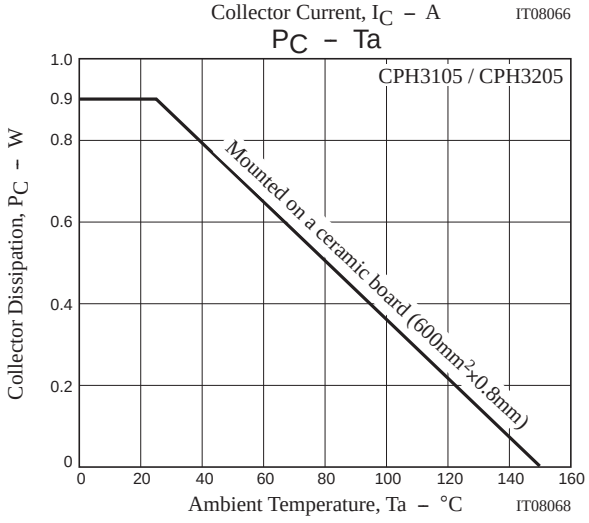

VCE(sat) – IC
CPH3105
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT08063


VCE(sat) – IC
CPH3205
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT08064


VBE(sat) – IC
CPH3105
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A
IT08065


VBE(sat) – IC
CPH3205
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A
IT08066


A S O
ICP=6A
IC=3A
100µs
500µs
1ms
10ms
100ms
DC operation
CPH3105 / CPH3205
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
IT08067


PC – Ta
CPH3105 / CPH3205
Mounted on a ceramic board (600mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT08068

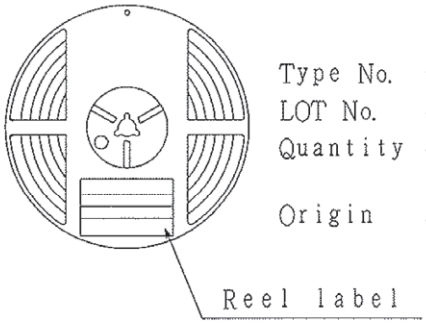
Embossed Taping Specification

CPH3105-TL-E, CPH3205-TL-E

1. Packing Format

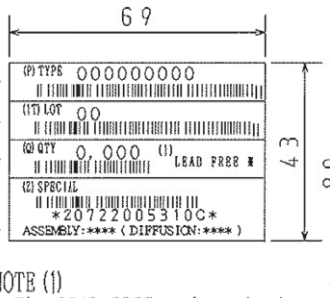
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
CPH3	CPH3	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method



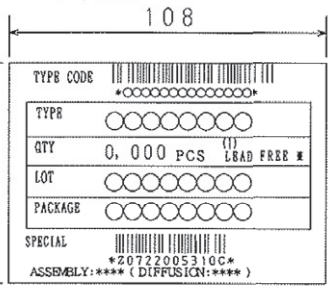
Reel label, Inner box label

(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.

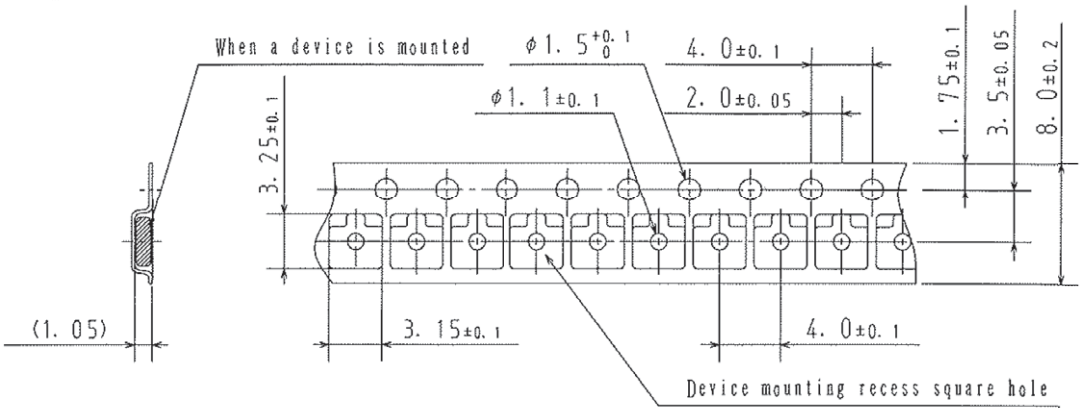


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

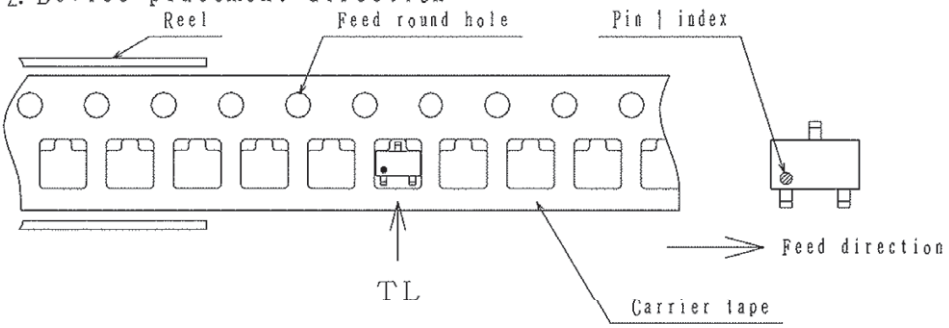
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



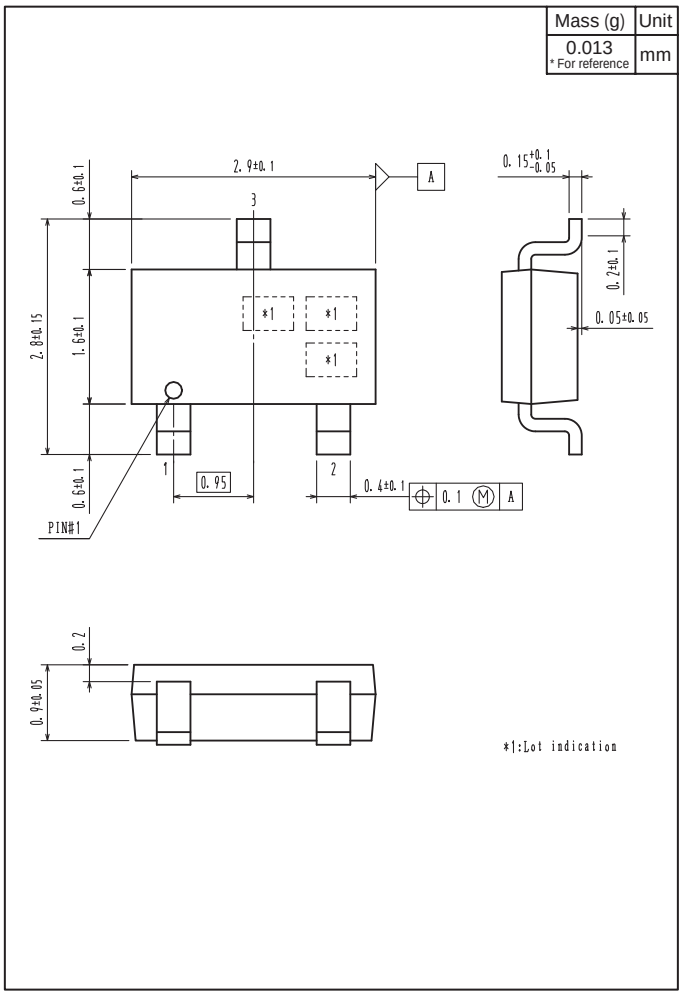
2-2. Device placement direction



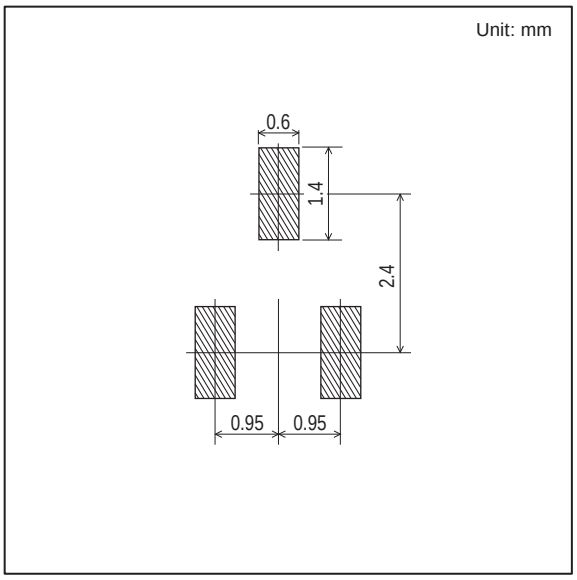
Those with one electrode terminal on the feed hole side·····TL

Outline Drawing

CPH3105-TL-E, CPH3205-TL-E



Land Pattern Example



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Click below to explore more details on WIN SOURCE:

- View CPH3105-TL-E on WIN SOURCE
- ON Semiconductor Information

Optimize Your Supply Chain with WIN SOURCE Solutions

- Global Sourcing Solution
- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management