Ordering number : EN6006A

CPH3101

Bipolar Transistor
−30V, −2A, Low V_{CE}(sat), PNP Single CPH3

ON Semiconductor®
http://onsemi.com

Applications

- Relay drivers, lamp drivers, motor drivers, flash

Features

- Adoption of FBET and MBIT processes
- Large current capacity
- Low collector-to-emitter saturation voltage
- High-speed switching
- Ultrasmall-sized package permitting applied sets to be made small and slim
- High allowable power dissipation

Specifications

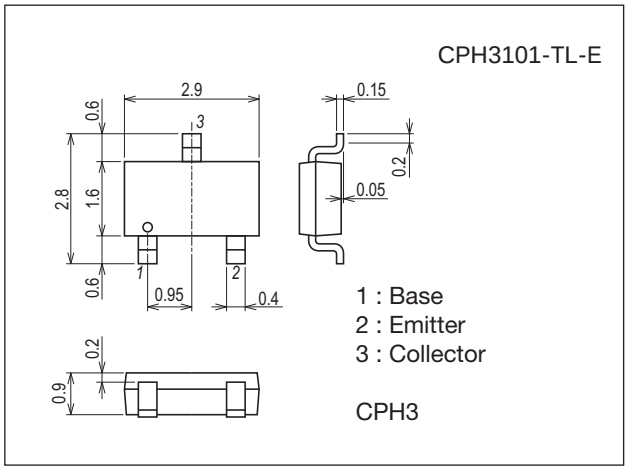
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		−30	V
Collector-to-Emitter Voltage	V_{CEO}		−30	V
Emitter-to-Base Voltage	V_{EBO}		−6	V
Collector Current	I_C		−2	A
Collector Current (Pulse)	I_{CP}		−4	A
Base Current	I_B		−400	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

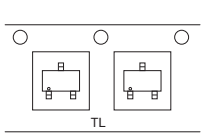
unit : mm (typ)
7015A-003



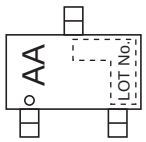
Product & Package Information

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

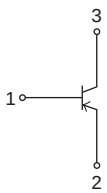
Packing Type: TL



Marking



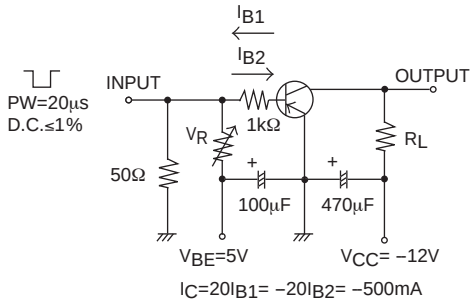
Electrical Connection



Electrical Characteristics at Ta=25°C

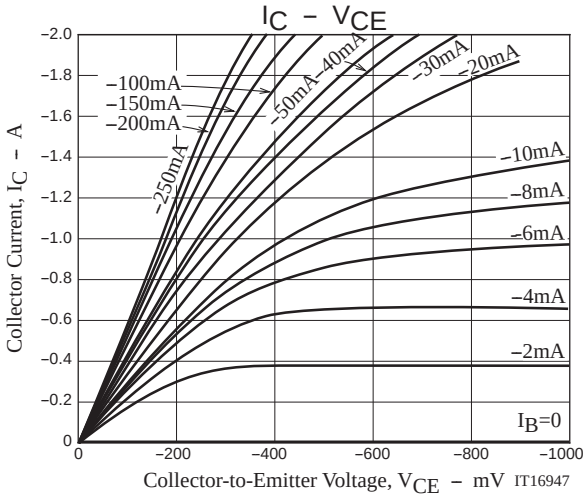
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}= −20V, I_E=0A			−0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}= −3V, I_C=0A			−0.1	μA
DC Current Gain	h_{FE}	V_{CE}= −2V, I_C= −100mA	200		400	
Gain-Bandwidth Product	f_T	V_{CE}= −10V, I_C= −50mA		150		MHz
Output Capacitance	Cob	V_{CB}= −10V, f=1MHz		32		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C= −1.5A, I_B= −75mA		−350	−600	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C= −1.5A, I_B= −75mA		−0.85	−1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C= −10μA, I_E=0A	−30			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_C= −10μA, I_C=0A	−6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		60		ns
Storage Time	t_{stg}			350		ns
Fall Time	t_f			25		ns

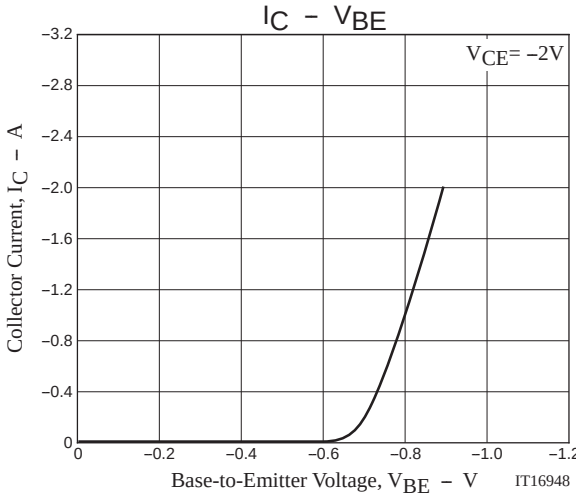
Switching Time Test Circuit

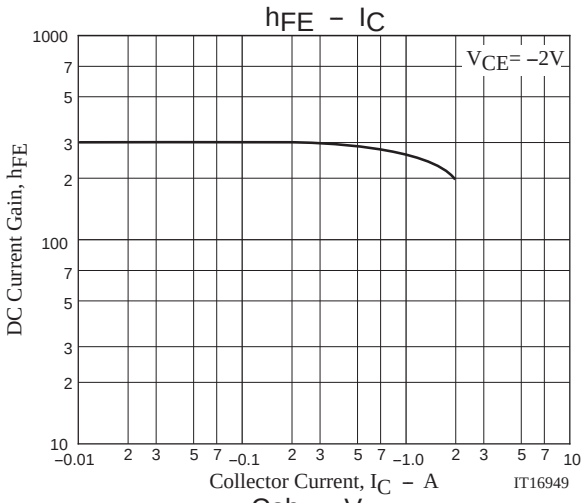


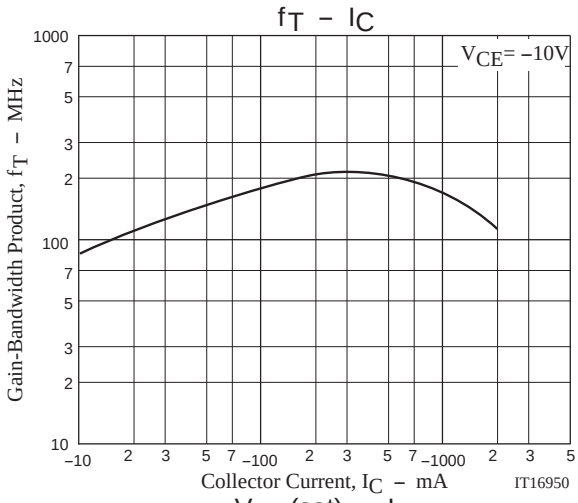
Ordering Information

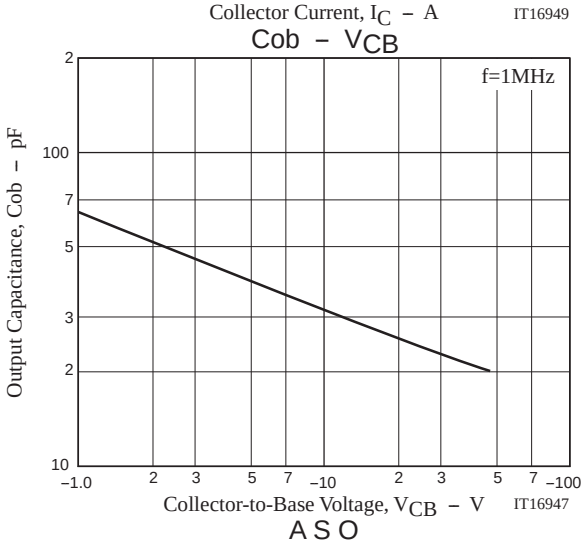
Device	Package	Shipping	memo
CPH3101-TL-E	CPH3	3,000pcs./reel	Pb Free

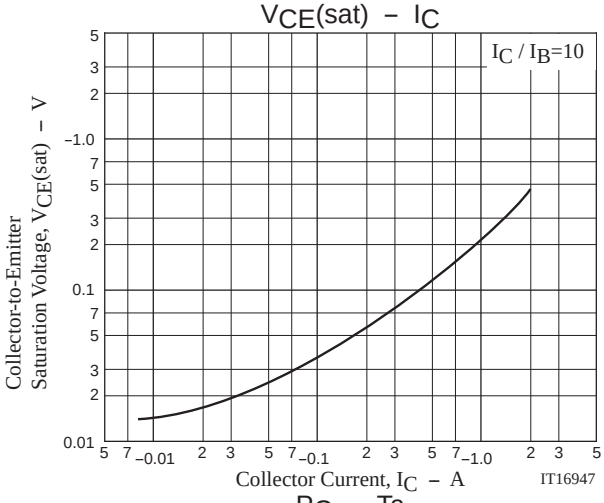


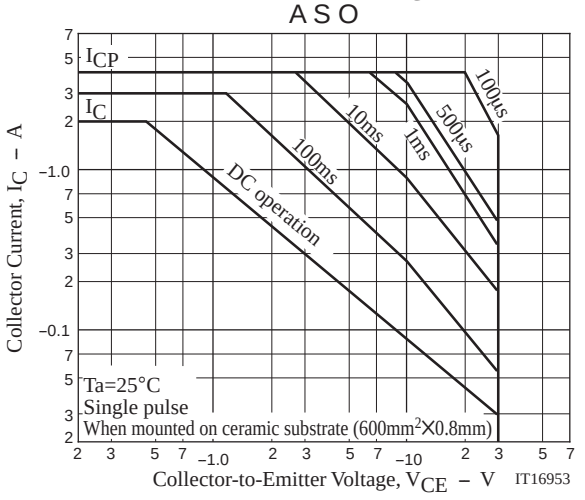


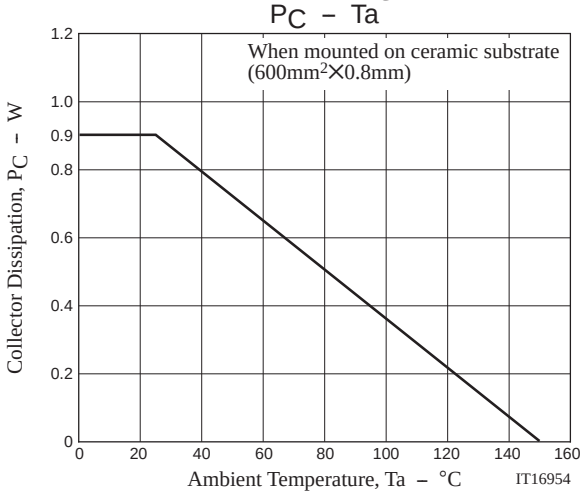

hFE – IC
VCE= –2V
DC Current Gain, hFE
Collector Current, IC – A
IT16949


fT – IC
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
IT16950


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT16947


VCE(sat) – IC
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT16947


A S O
ICP
IC
100µs
500µs
1ms
10ms
100ms
DC operation
Ta=25°C
Single pulse
When mounted on ceramic substrate (600mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT16953


PC – Ta
When mounted on ceramic substrate
(600mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT16954

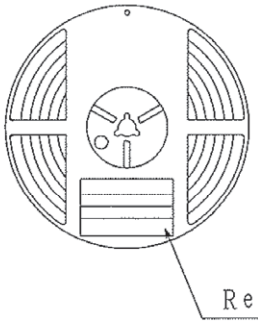
Embossed Taping Specification

CPH3101-TL-E

1. Packing Format

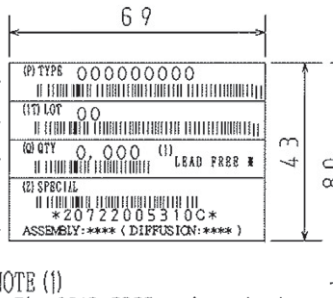
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
CPH3	CPH3	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method



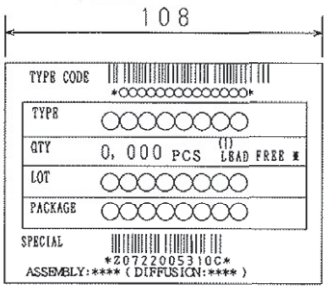
Reel label

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.

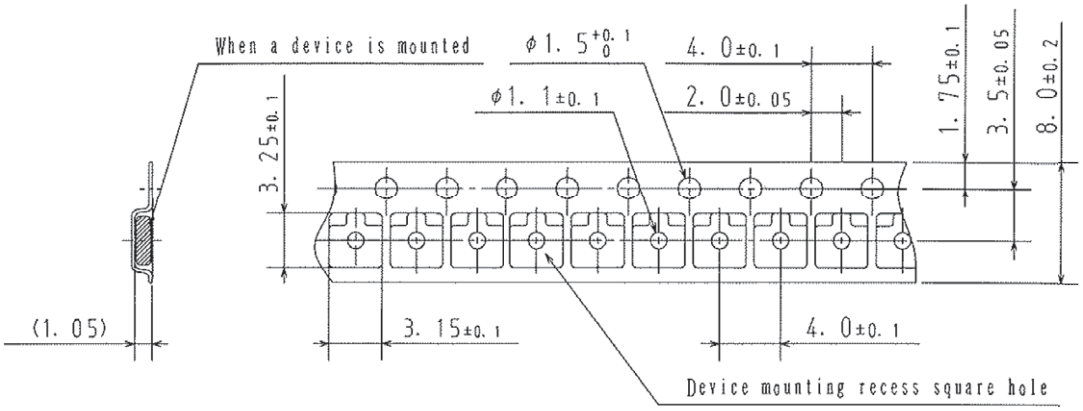


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

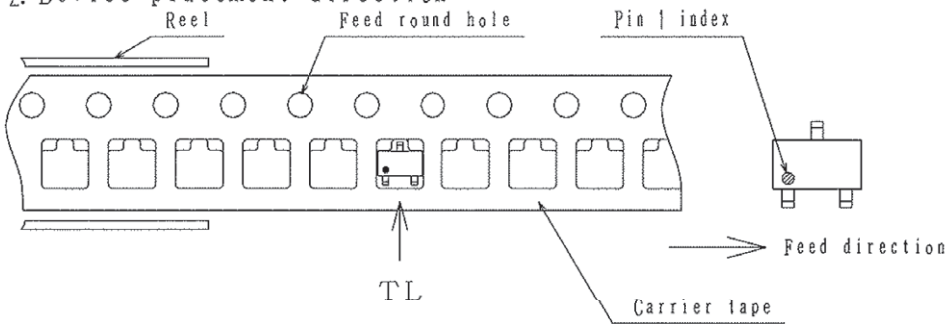
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



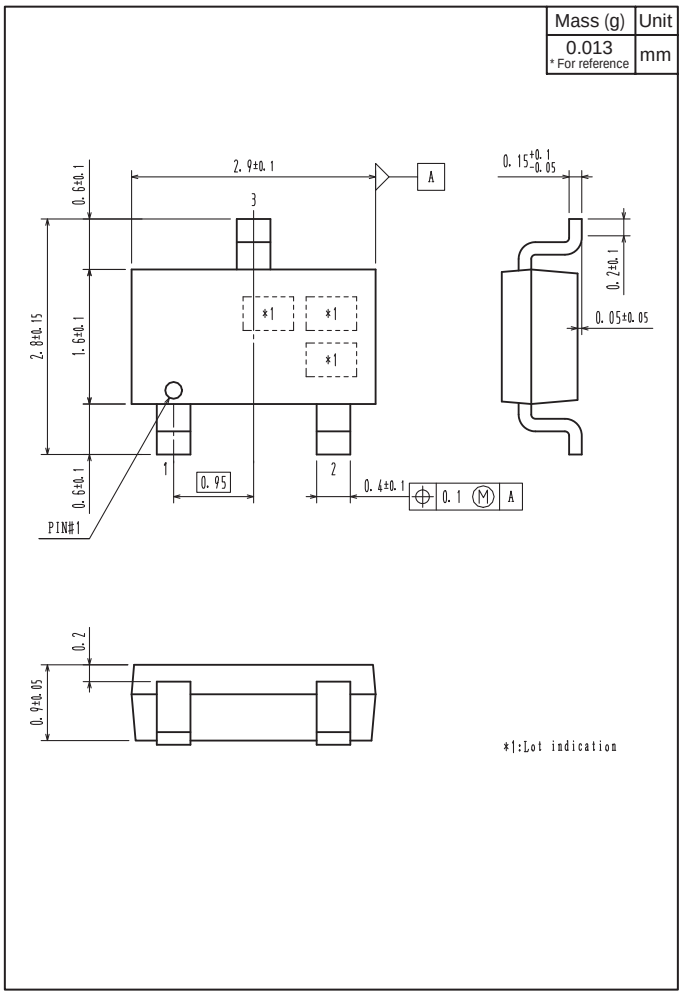
2-2. Device placement direction



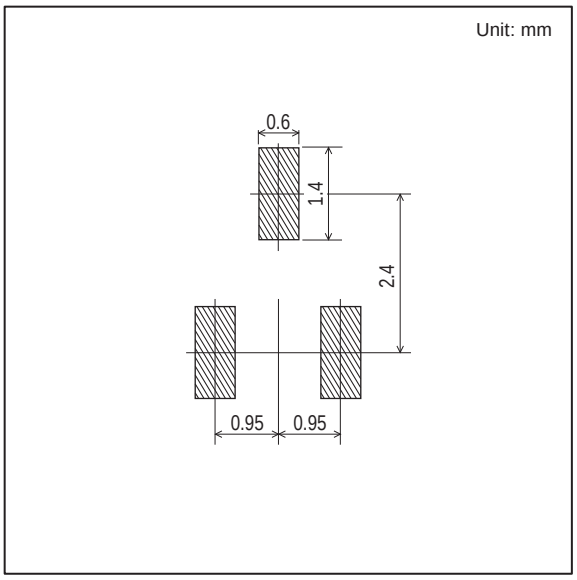
Those with one electrode terminal on the feed hole side·····TL

Outline Drawing

CPH3101-TL-E



Land Pattern Example



ON Semiconductor and the ON logo are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.