Ordering number : EN5810A

# CPH6102

## Bipolar Transisitor
## −50V, −1A, Low $V_{CE}$(sat) PNP Single CPH6

ON Semiconductor®
http://onsemi.com

### Applications

- DC-DC converter, relay drivers, lamp drivers, motor drivers, strobes

### Features

- Adoption of FBET, MBIT processes
- Large current capacity
- Low collector to emitter saturation voltage
- High-speed switching
- Ultrasmall package permitting applied sets to be made small and slim (0.9mm)
- High allowable power dissipation

### Specifications

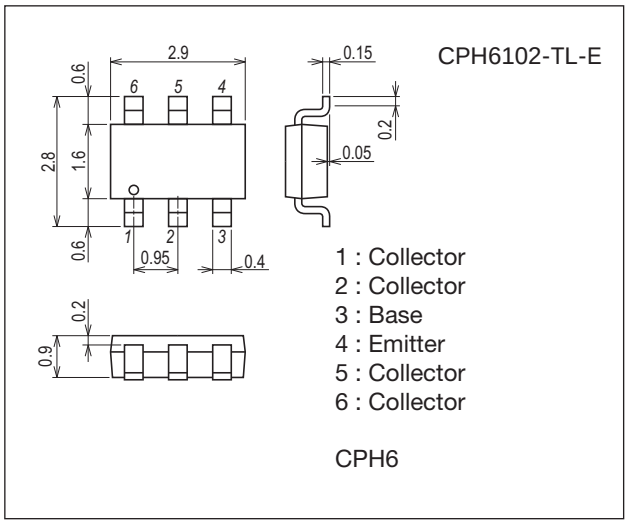
**Absolute Maximum Ratings** at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | | −60 | 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) | $I_{CP}$ | | −2 | A |
| Collector Dissipation | $P_C$ | When mounted on ceramic substrate (600mm$^2$×0.8mm) | 1.3 | 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

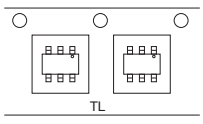
unit : mm (typ)
7018A-002



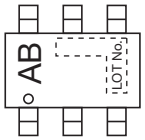

### Product & Package Information

- Package : CPH6
- JEITA, JEDEC : SC-74, SOT-26, SOT-457
- Minimum Packing Quantity : 3,000 pcs./reel

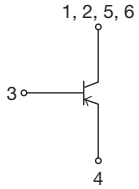
### Packing Type: TL




### Marking



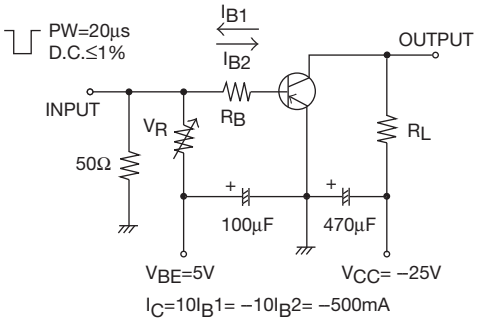

### Electrical Connection



## Electrical Characteristics at Ta=25°C

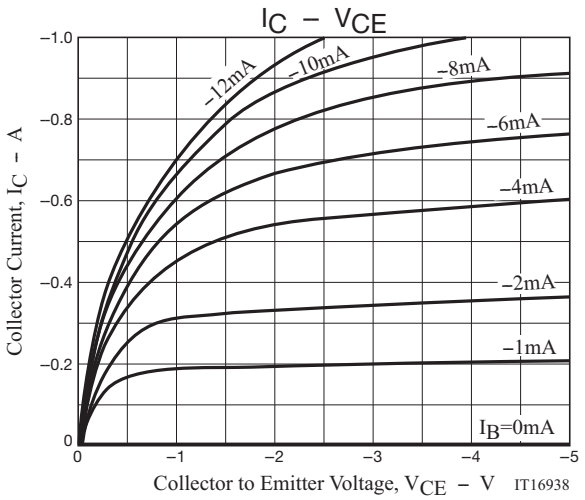
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$= −50V, $I_E$=0A | | | −100 | nA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$= −4V, $I_C$=0A | | | −100 | nA |
| DC Current Gain | $h_{FE}1$ | $V_{CE}$= −2V, $I_C$= −100mA | 200 | | 560 | |
| | $h_{FE}2$ | $V_{CE}$= −2V, $I_C$= −1A | 30 | | | |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$= −10V, $I_C$= −50mA | | 150 | | MHz |
| Output Capacitance | Cob | $V_{CB}$= −10V, f=1MHz | | 12 | | pF |
| Collector to Emitter Saturation Voltage | $V_{CE}$(sat) | $I_C$= −500mA, $I_B$= −50mA | | −180 | −500 | mV |
| Base to Emitter Saturation Voltage | $V_{BE}$(sat) | $I_C$= −500mA, $I_B$= −50mA | | −0.9 | −1.2 | V |
| Collector to Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$= −10μA, $I_E$=0A | −60 | | | 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. | | 40 | | ns |
| Storage Time | $t_{stg}$ | | | 300 | | ns |
| Fall Time | $t_f$ | | | 30 | | ns |

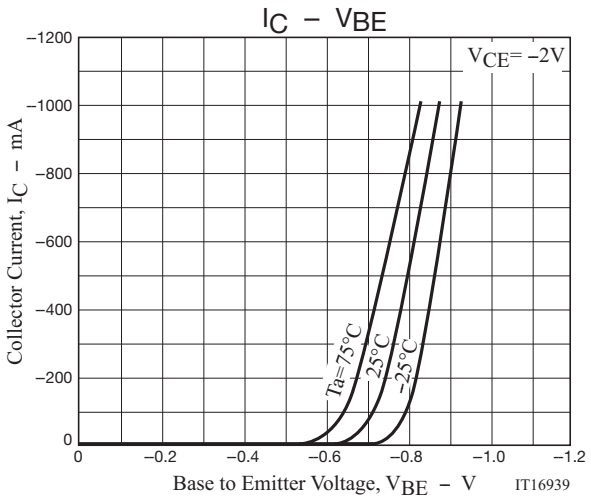
## Switching Time Test Circuit

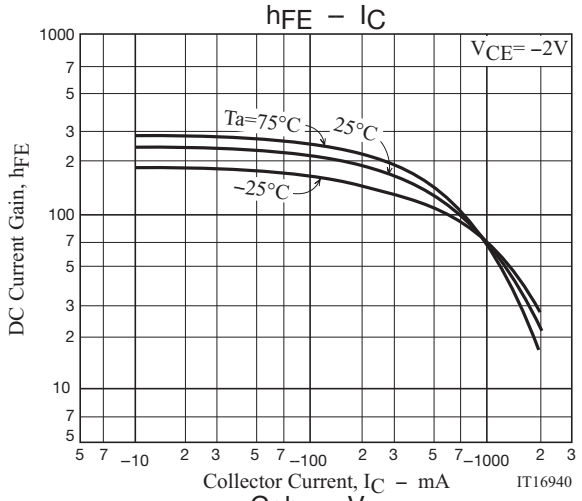


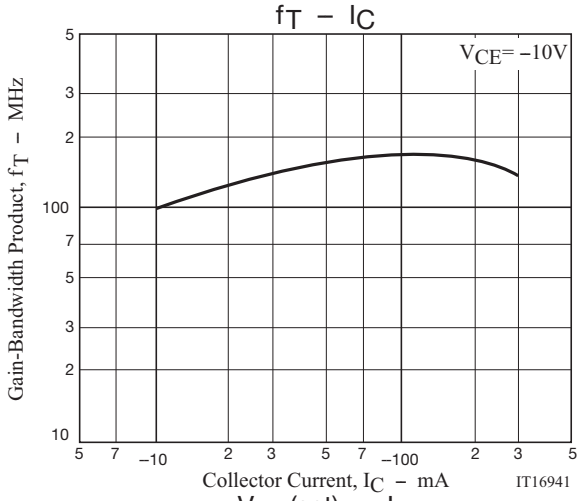

## Ordering Information

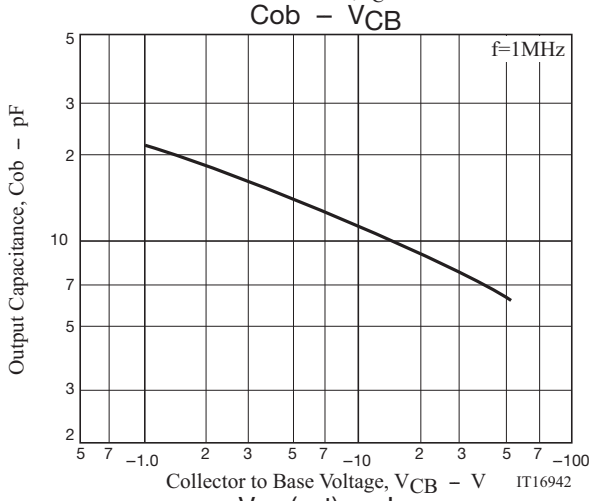
| Device | Package | Shipping | memo |
|---|---|---|---|
| CPH6102-TL-E | CPH6 | 3,000pcs./reel | Pb Free |

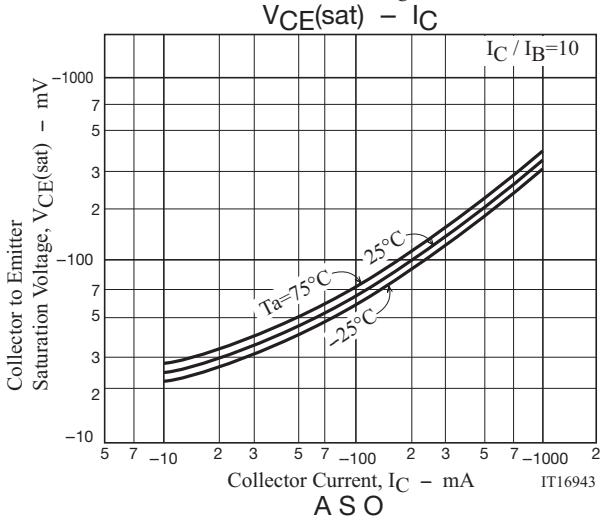


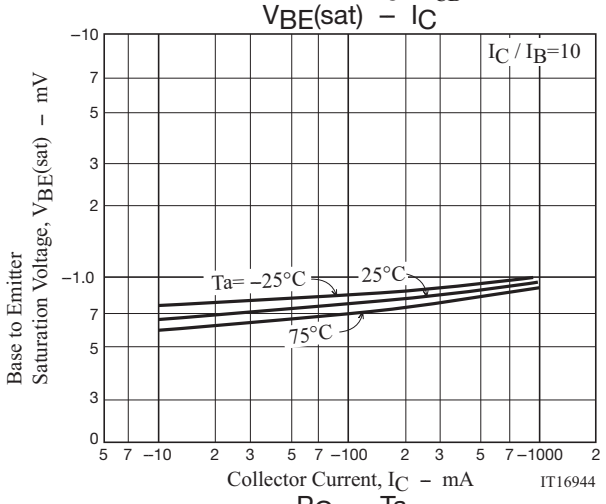



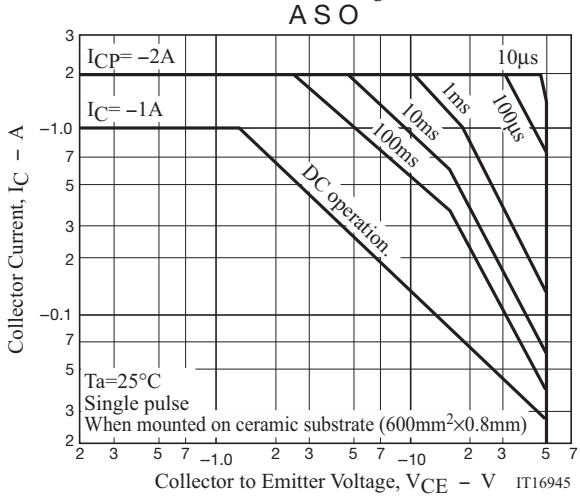

hFE – IC
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – mA
IT16940

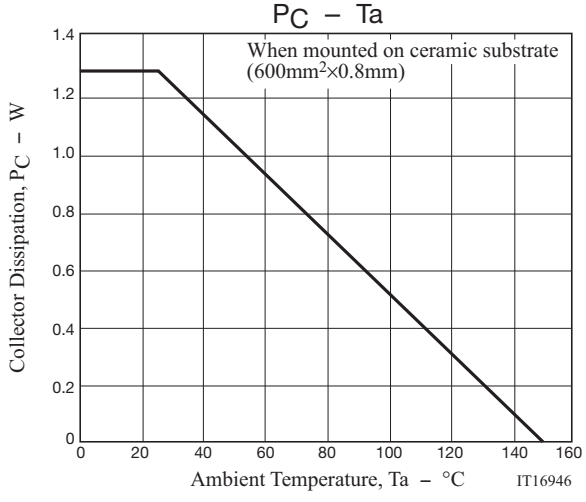

fT – IC
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
IT16941


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector to Base Voltage, VCB – V
IT16942


VCE(sat) – IC
IC / IB=10
Collector to Emitter Saturation Voltage, VCE(sat) – mV
Ta=75°C
25°C
–25°C
Collector Current, IC – mA
IT16943

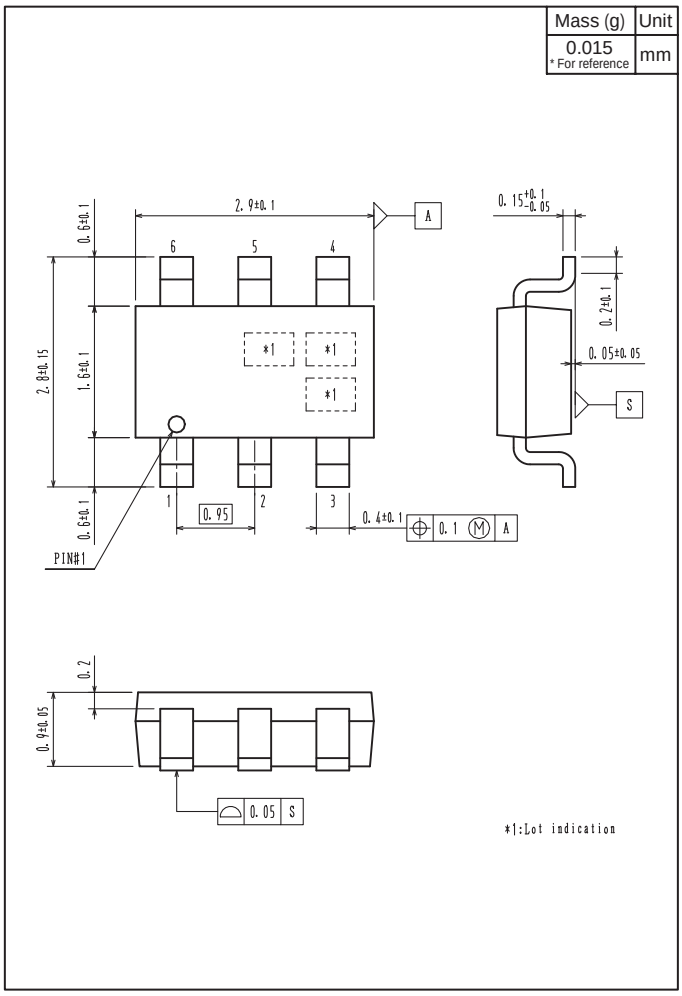

VBE(sat) – IC
IC / IB=10
Base to Emitter Saturation Voltage, VBE(sat) – mV
Ta= –25°C
25°C
75°C
Collector Current, IC – mA
IT16944


A S O
ICP= –2A
IC= –1A
10µs
1ms
10ms
100ms
100µs
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
IT16945


PC – Ta
When mounted on ceramic substrate
(600mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT16946

## Outline Drawing

CPH6102-TL-E




## Land Pattern Example