Ordering number : EN6590B

CPH5506

Bipolar Transistor
(−)30V, (−)5A, Low V_{CE}(sat) Complementary Dual CPH5

ON Semiconductor®
http://onsemi.com

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 CPH5506 consists of two chips encapsulated in a package which are equivalent to the CPH3115 and the CPH3215, respectively
- Ultrasmall package facilitate miniaturization in end products. (0.9mm mounting height)

Specifications ( ): PNP

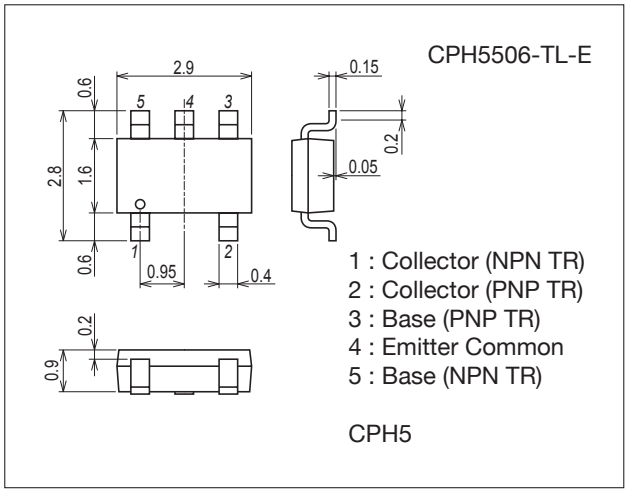
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(−30)40	V
Collector-to-Emitter Voltage	V_{CEO}		(−)30	V
Emitter-to-Base Voltage	V_{EBO}		(−)5	V
Collector Current	I_C		(−)1.5	A
Collector Current (Pulse)	I_{CP}		(−)5	A
Base Current	I_B		(−)300	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm^2×0.8mm)	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

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Package Dimensions

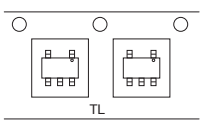
unit : mm (typ)
7017A-009



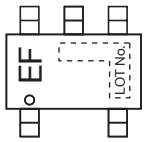
Product & Package Information

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

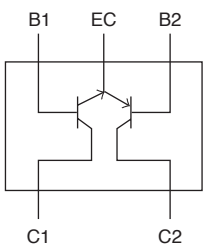
Packing Type : TL



Marking



Electrical Connection



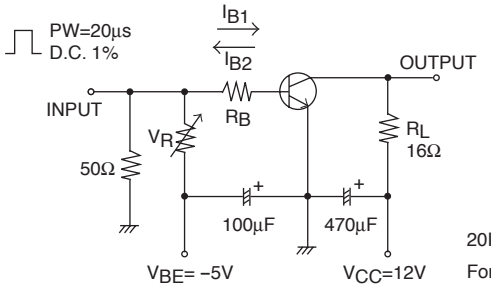
ORDERING INFORMATION
See detailed ordering and shipping information on page 2 of this data sheet.

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)30V, 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		(450)500		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(9)8		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)750mA, I_B=(–)15mA		(–250)150	(–375)225	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)750mA, I_B=(–)15mA		(–)0.85	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0A	(–30)40			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_E=(–)10μA, I_C=0A	(–)5			V
Turn-On Time	t_{on}	See specified Test Circuit.		35		ns
Storage Time	t_{stg}			(115)205		ns
Fall Time	t_f			30		ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

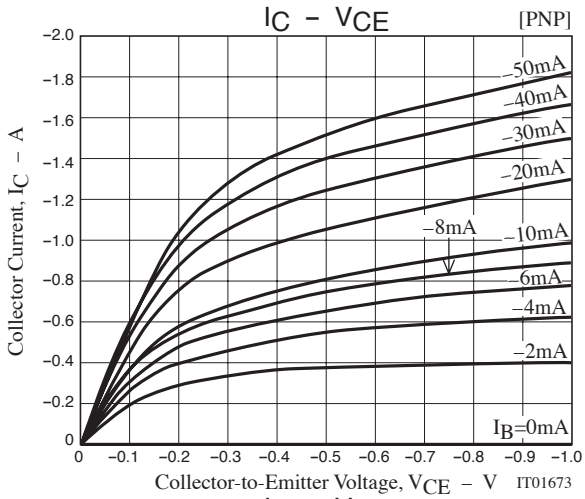
Switching Time Test Circuit

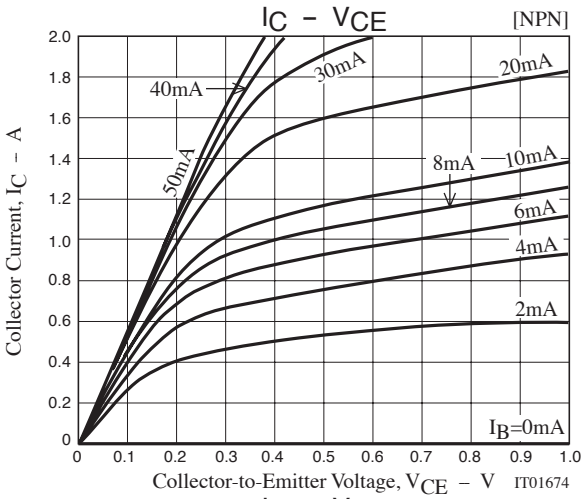


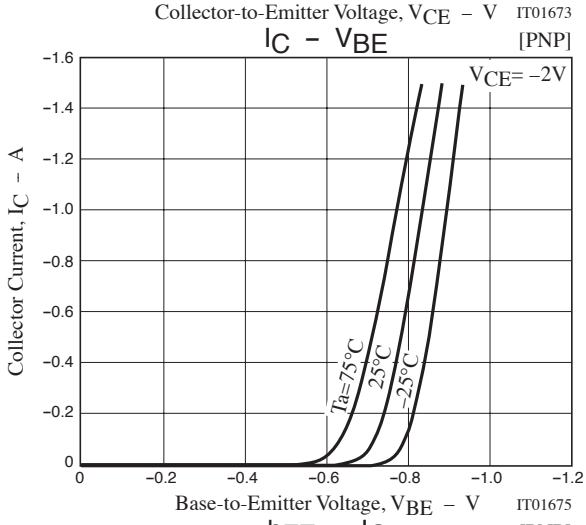
$20I_{B1}$= −$20I_{B2}$=I_C=750mA
For PNP, the polarity is reversed.

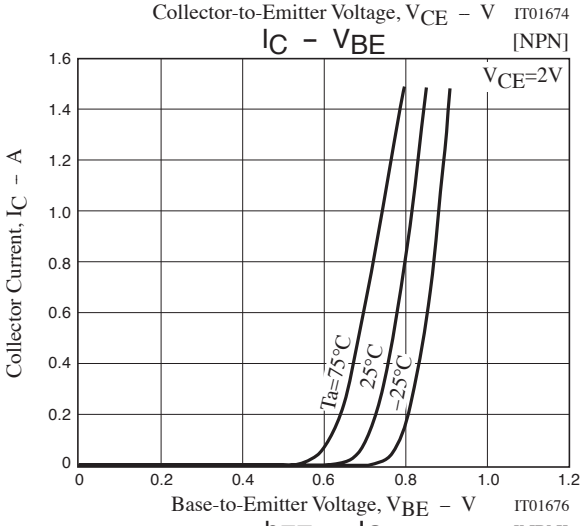
Ordering Information

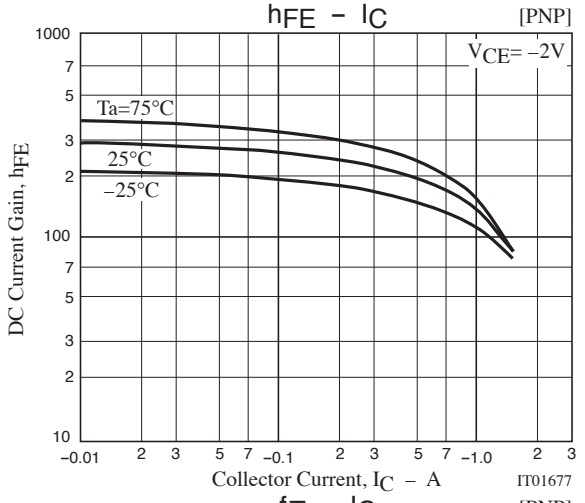
Device	Package	Shipping	memo
CPH5506-TL-E	CPH5	3,000pcs./reel	Pb Free

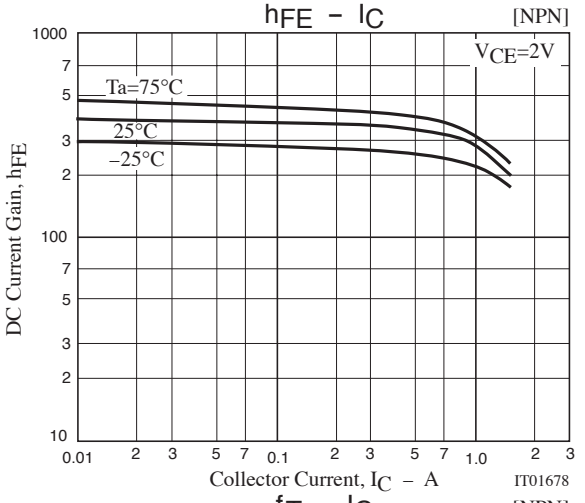

IC – VCE
[PNP]
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT01673
–50mA
–40mA
–30mA
–20mA
–8mA
–10mA
–6mA
–4mA
–2mA
IB=0mA

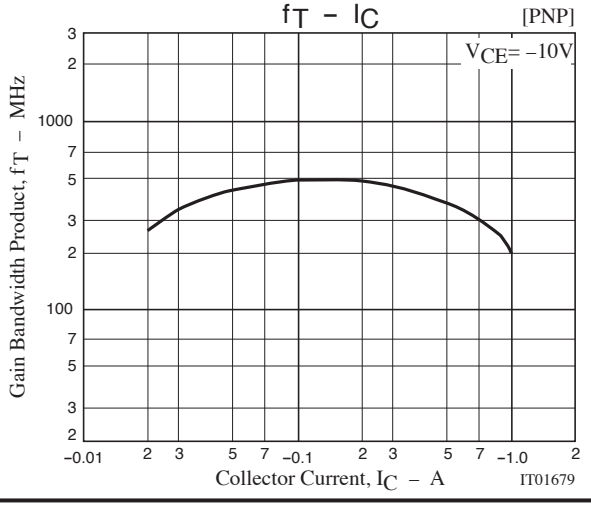

IC – VCE
[NPN]
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT01674
40mA
30mA
20mA
50mA
8mA
10mA
6mA
4mA
2mA
IB=0mA

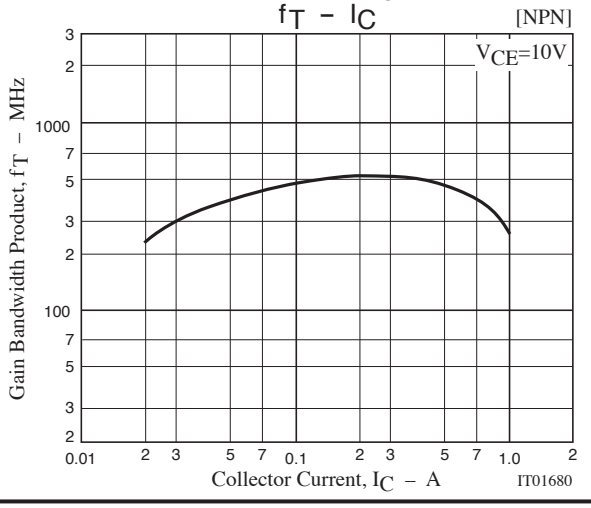

IC – VBE
[PNP]
VCE= –2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT01675
Ta=75°C
25°C
–25°C

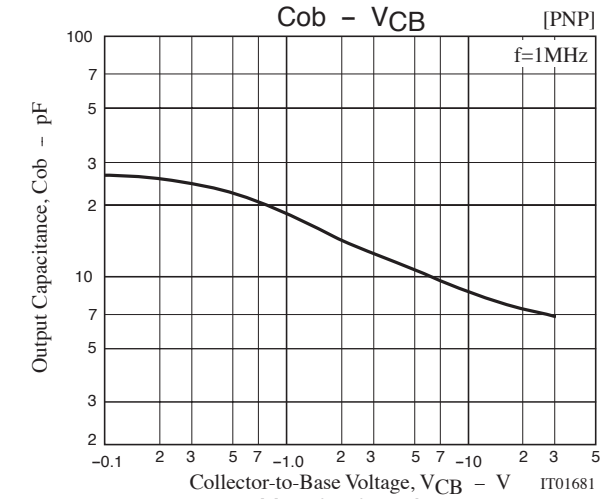

IC – VBE
[NPN]
VCE=2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT01676
Ta=75°C
25°C
–25°C

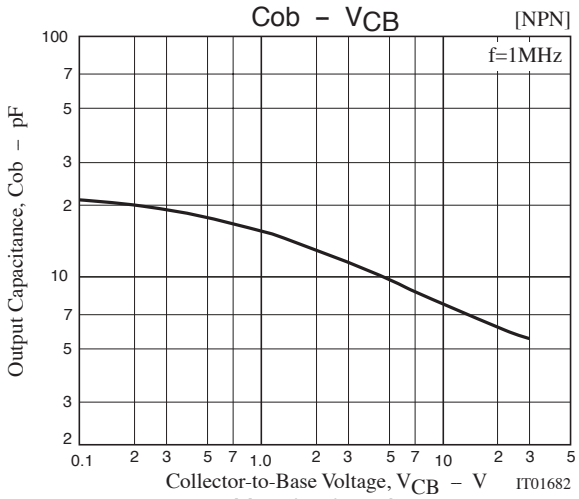

hFE – IC
[PNP]
VCE= –2V
DC Current Gain, hFE
Collector Current, IC – A
IT01677
Ta=75°C
25°C
–25°C

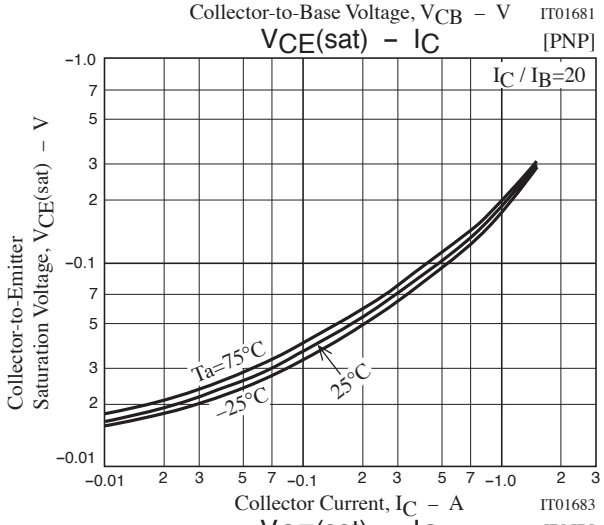

hFE – IC
[NPN]
VCE=2V
DC Current Gain, hFE
Collector Current, IC – A
IT01678
Ta=75°C
25°C
–25°C

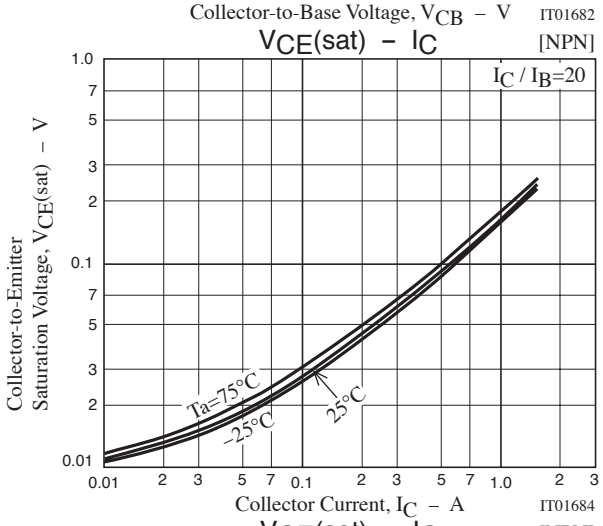

fT – IC
[PNP]
VCE= –10V
Gain Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01679

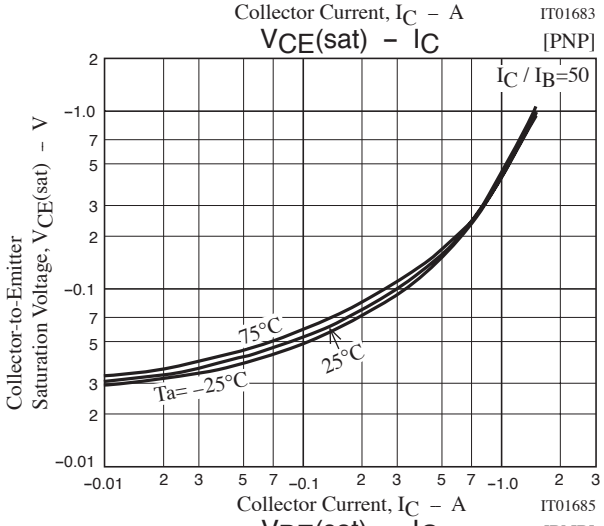

fT – IC
[NPN]
VCE=10V
Gain Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01680

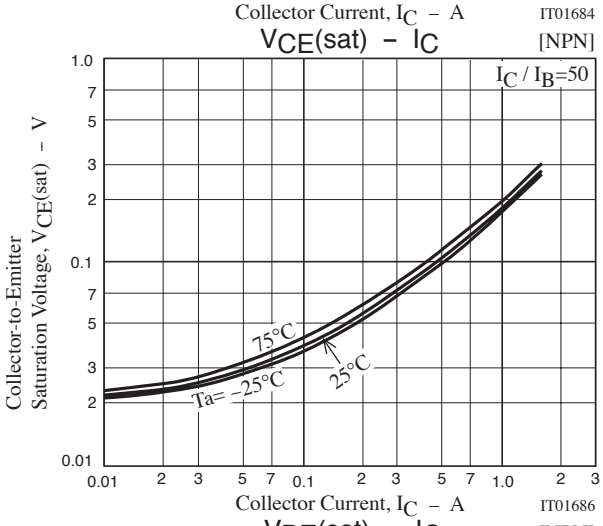

Cob – VCB
[PNP]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01681

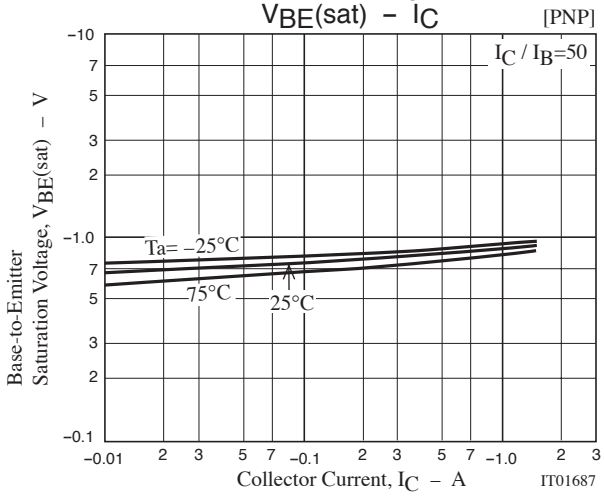

Cob – VCB
[NPN]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01682

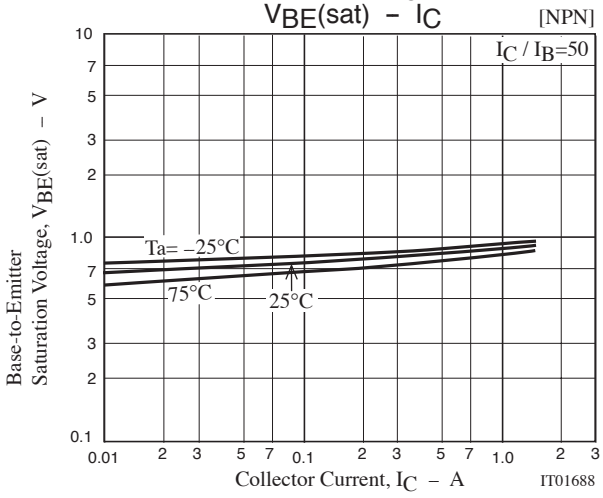

VCE(sat) – IC
[PNP]
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
IT01683

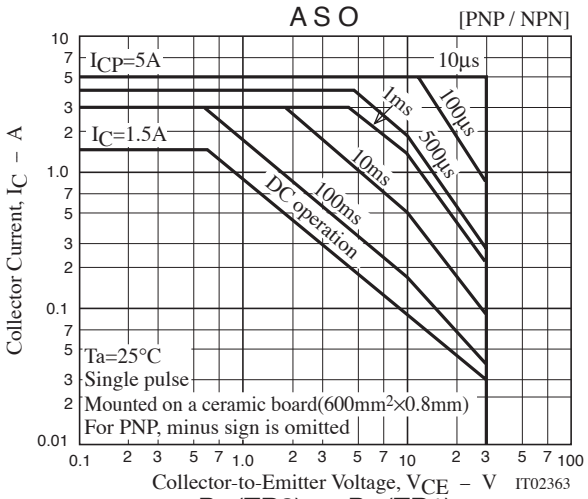

VCE(sat) – IC
[NPN]
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
IT01684

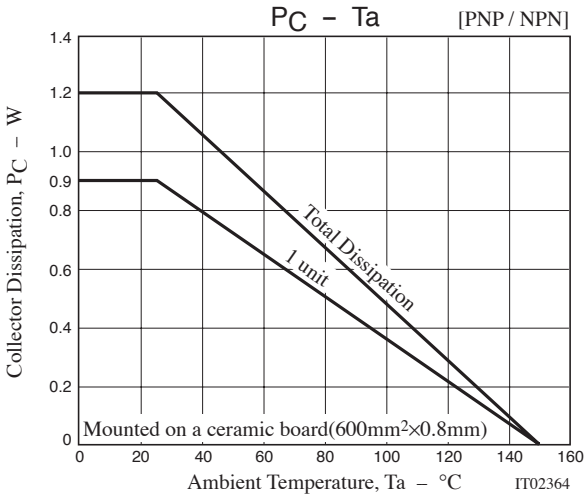

VCE(sat) – IC
[PNP]
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
75°C
25°C
Ta= –25°C
Collector Current, IC – A
IT01685

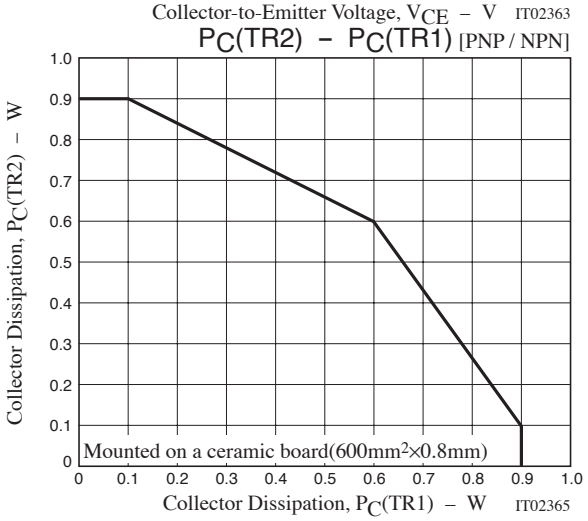

VCE(sat) – IC
[NPN]
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
75°C
25°C
Ta= –25°C
Collector Current, IC – A
IT01686


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
IT01687


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
IT01688

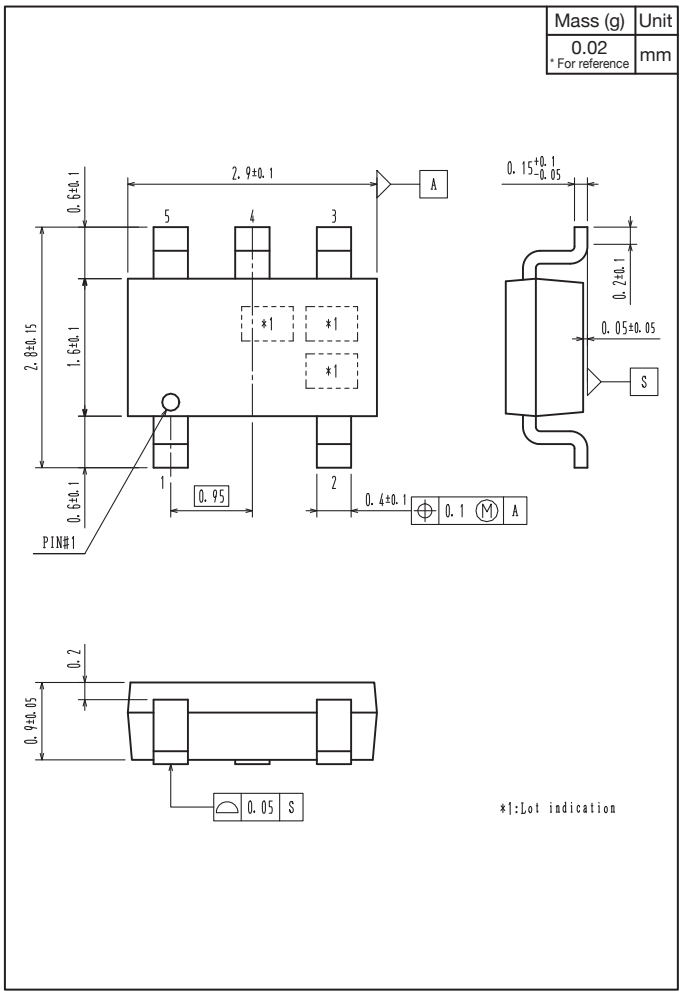

A S O
[PNP / NPN]
I_{CP}=5A
I_C=1.5A
10µs
1ms
100µs
500µs
10ms
100ms
DC operation
Ta=25°C
Single pulse
Mounted on a ceramic board(600mm²×0.8mm)
For PNP, minus sign is omitted
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V
IT02363


P_C – Ta
[PNP / NPN]
Total Dissipation
1 unit
Mounted on a ceramic board(600mm²×0.8mm)
Collector Dissipation, P_C – W
Ambient Temperature, Ta – °C
IT02364

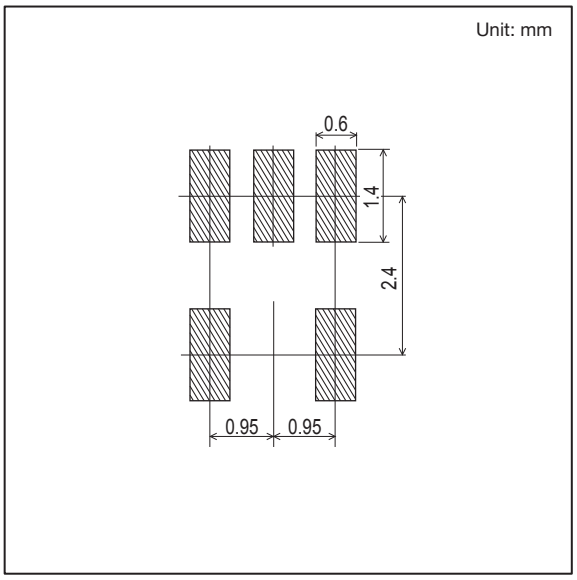

P_C(TR2) – P_C(TR1) [PNP / NPN]
Mounted on a ceramic board(600mm²×0.8mm)
Collector Dissipation, P_C(TR2) – W
Collector Dissipation, P_C(TR1) – W
IT02365

Outline Drawing

CPH5506-TL-E



Land Pattern Example



AMEYA360
Components Supply Platform

Authorized Distribution Brand :

Website :

Welcome to visit www.ameya360.com

Contact Us :

- ### Address :

  401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
  Minhang District, Shanghai , China

- ### Sales :

  Direct +86 (21) 6401-6692

  Email amall@ameya360.com

  QQ 800077892

  Skype ameyasales1 ameyasales2

- ### Customer Service :

  Email service@ameya360.com

- ### Partnership :

  Tel +86 (21) 64016692-8333

  Email mkt@ameya360.com