Ordering number:EN6006

PNP/NPN Silicon Epitaxial Planar Transistors

CPH3101/3201

DC/DC Converter Applications

Applications

· Relay drivers, lamp drivers, motor drivers, strobes.

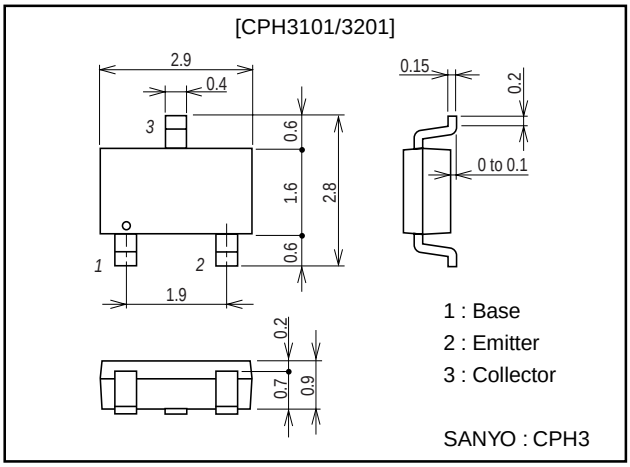
Features

· Adoption of FBET and MBIT processes.
· High current capacitance.
· 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.

Package Dimensions

unit:mm

2150



( ) : CPH3101

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	Mounted on a ceramic board (600mm²×0.8mm)	0.9	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)20V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)3V, I_C=0			(–)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		19(32)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)1.5A, I_B=(–)75mA		180	400	mV
				(–350)	(–600)	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)1.5A, I_C=(–)75mA		(–)0.85	(–)1.2	V

Marking : CPH3101 : AA, CPH3201 : CA

Continued on next page.

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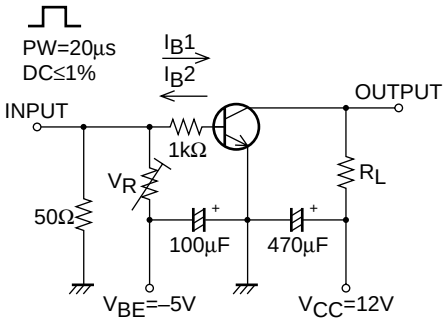
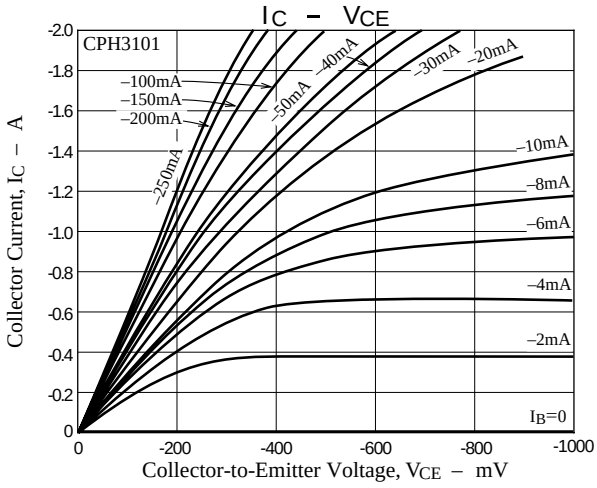
Continued from preceding page.

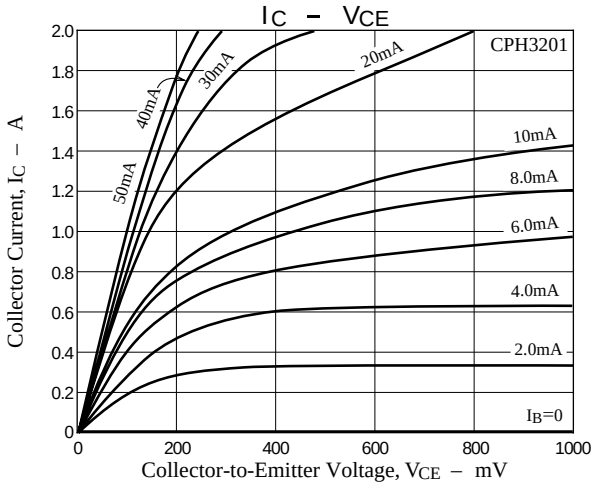
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)30			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)30			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_C=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified test circuit.		60(60)		ns
Storage Time	t_{stg}	See specified test circuit.		500		ns
				(350)		ns
Turn-OFF Time	t_f	See specified test circuit.		25(25)		ns

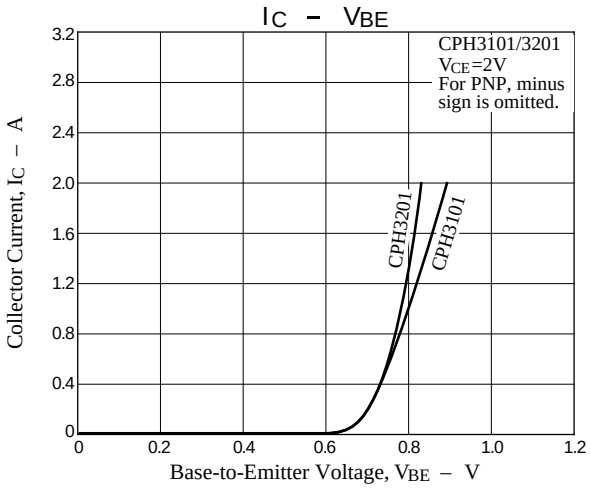
Switching Time Test Circuit

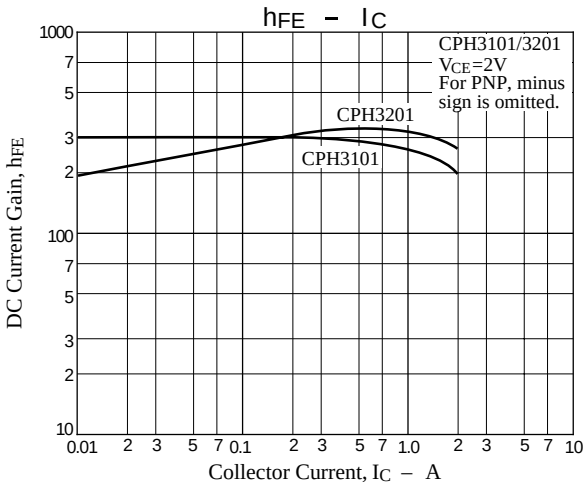


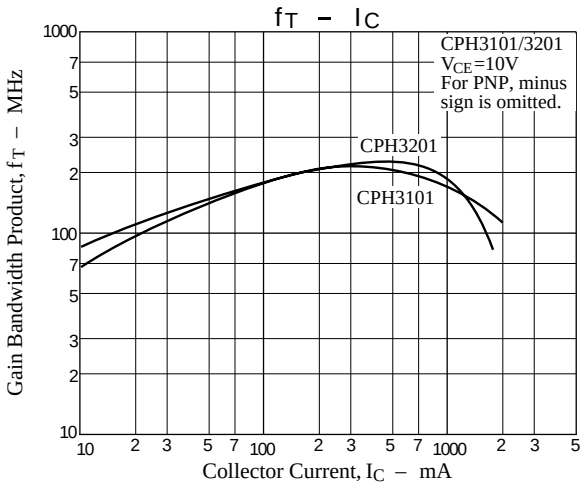
$20I_{B}1=-20I_{B}2=I_C=500$mA
(For PNP, the polarity is reversed.)

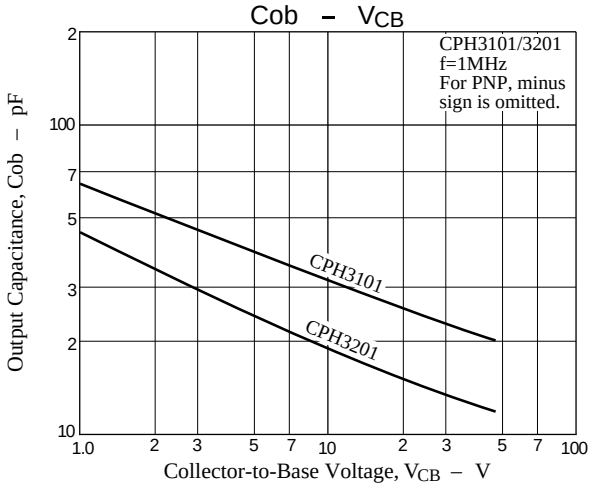


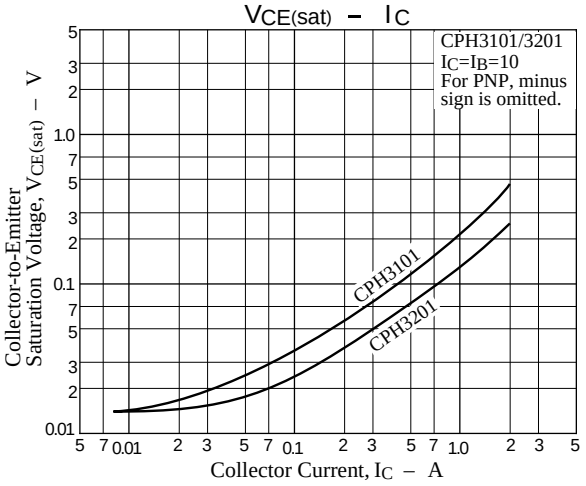


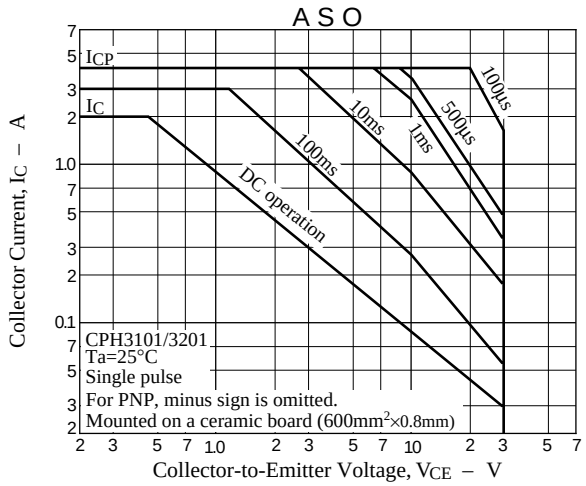


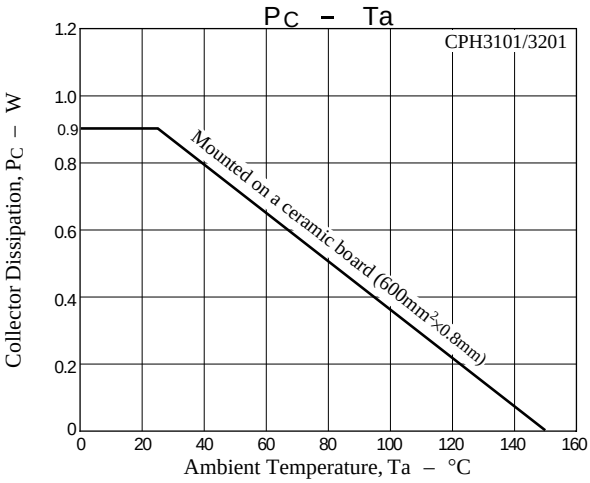



fT – IC
CPH3101/3201
VCE=10V
For PNP, minus sign is omitted.
CPH3201
CPH3101
Gain Bandwidth Product, fT – MHz
Collector Current, IC – mA


Cob – VCB
CPH3101/3201
f=1MHz
For PNP, minus sign is omitted.
CPH3101
CPH3201
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V


VCE(sat) – IC
CPH3101/3201
IC=IB=10
For PNP, minus sign is omitted.
CPH3101
CPH3201
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A


ASO
ICP
IC
100μs
500μs
1ms
10ms
100ms
DC operation
CPH3101/3201
Ta=25°C
Single pulse
For PNP, minus sign is omitted.
Mounted on a ceramic board (600mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V


PC – Ta
CPH3101/3201
Mounted on a ceramic board (600mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C