Ordering number:ENN5810

PNP/~~NPN~~ Epitaxial Planar Silicon Transistors

CPH6102/~~CPH6202~~

High-Current Switching Applications

Applications

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

Features

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

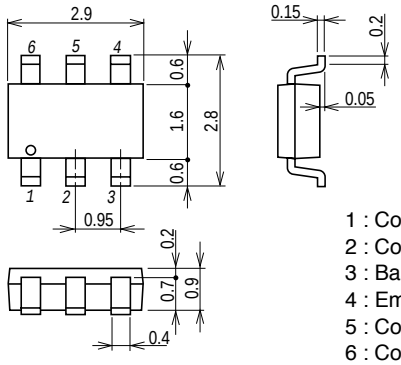
( ) : CPH6102

Package Dimensions

unit:mm

2146A

[CPH6102/~~6202~~]



1 : Collector
2 : Collector
3 : Base
4 : Emitter
5 : Collector
6 : Collector
SANYO : CPH6

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	Mounted on a ceramic board (600mm²×0.8mm)	1.3	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}=(–)50V, I_E=0			(–)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)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)~~8.5~~		pF

Continued on next page.

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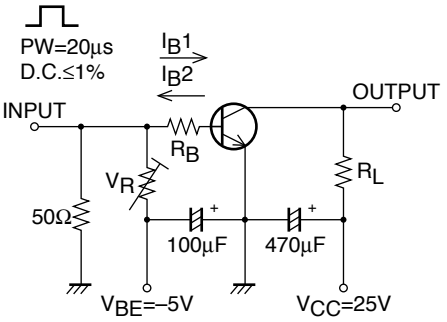
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

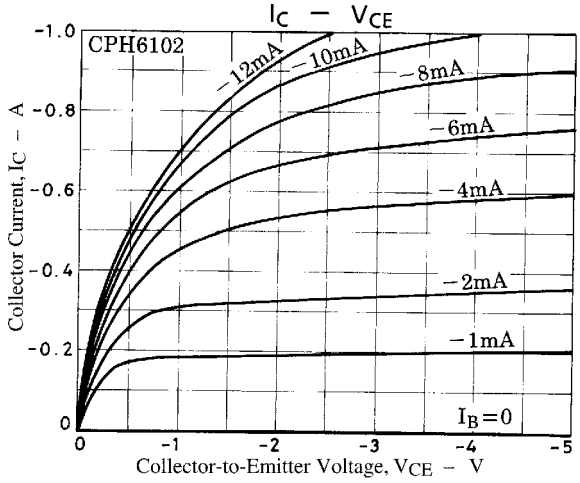
Continued from preceding page.

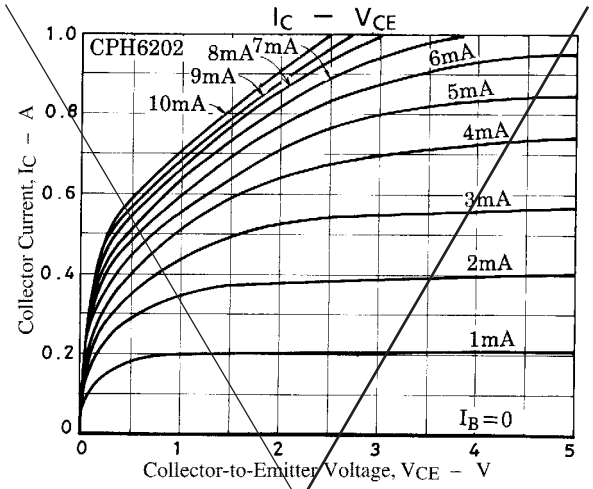
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)500mA, I_B=(–)50mA		(–180)	(–500)	mV
				~~120~~	~~300~~	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)500mA, I_B=(–)50mA		(–)0.9	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)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=0	(–)5			V
Turn-ON Time	t_{on}	See specified test circuit.		~~40~~(40)		ns
Storage Time	t_{stg}	See specified test circuit.		~~350~~		ns
				(300)		ns
Fall Time	t_f	See specified test circuit.		~~30~~(30)		ns

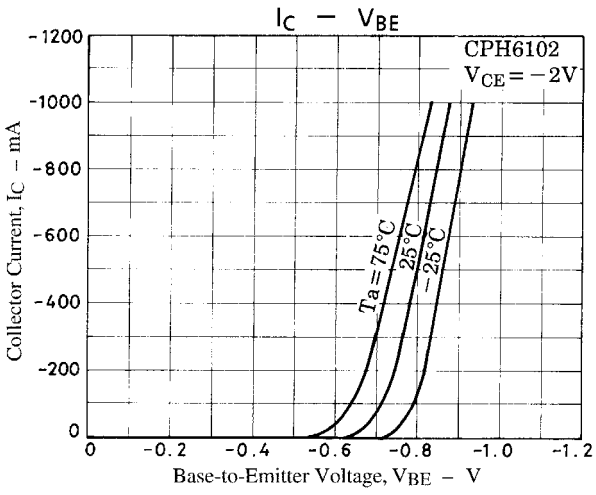
Switching Time Test Circuit

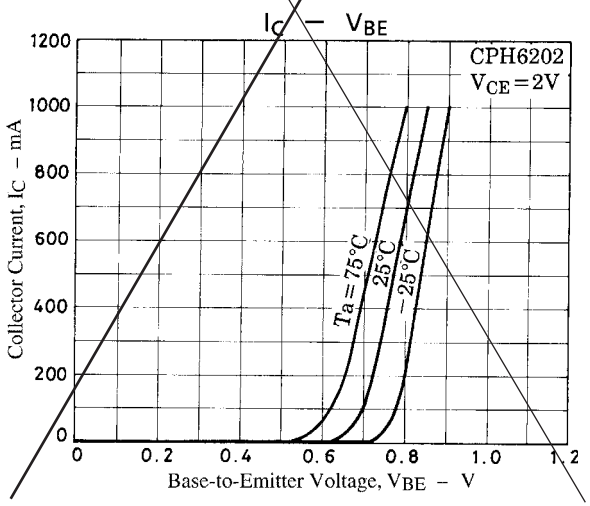


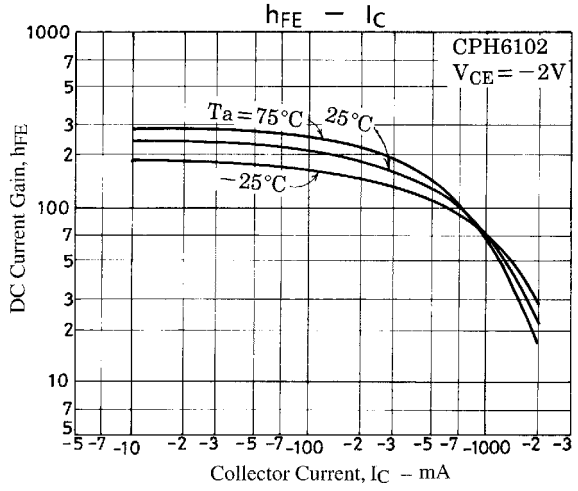
$10I_{B1}=-10I_{B2}=I_C=500mA$
(For PNP, the polarity is reversed.)

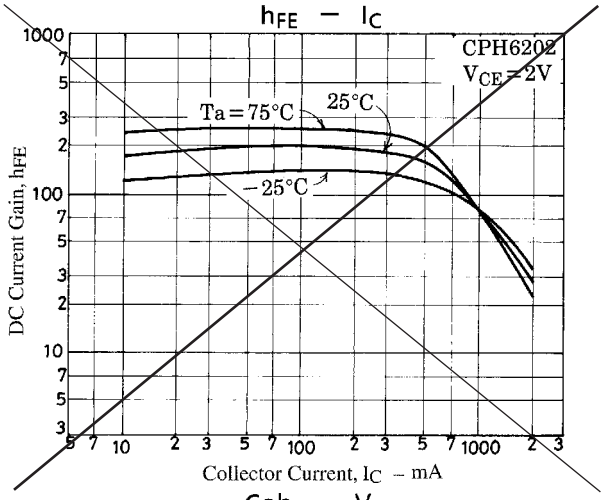


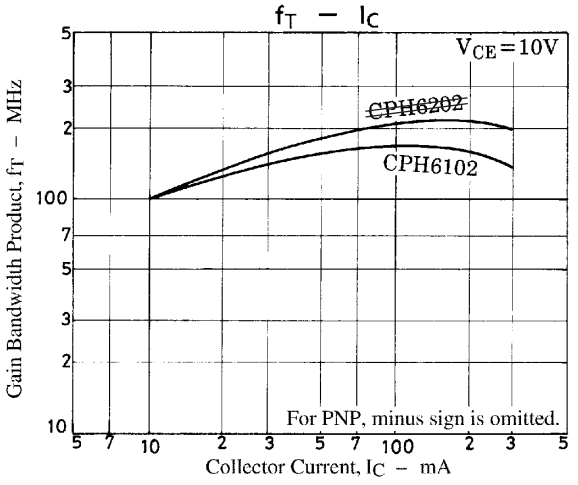


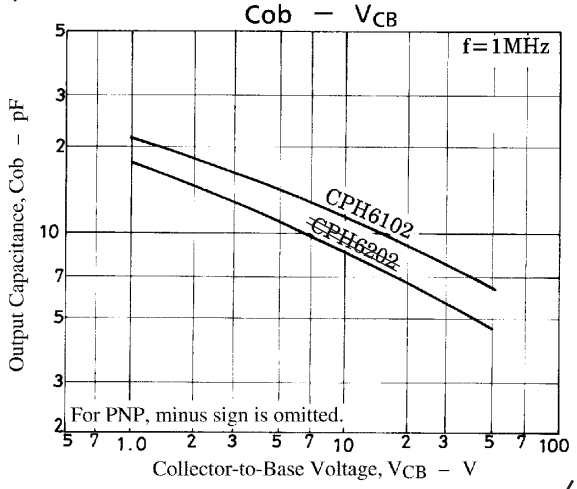


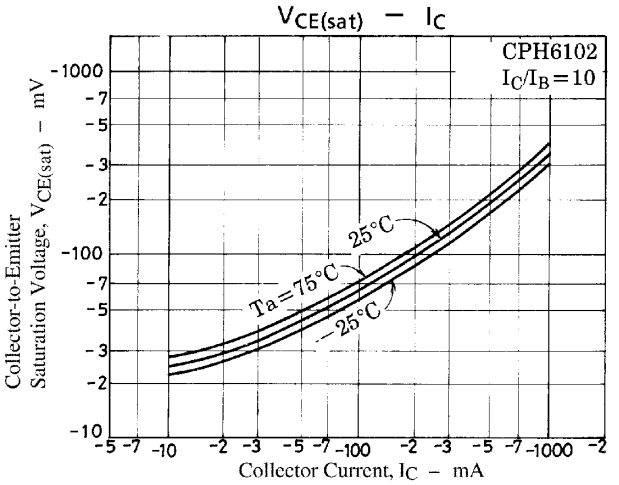


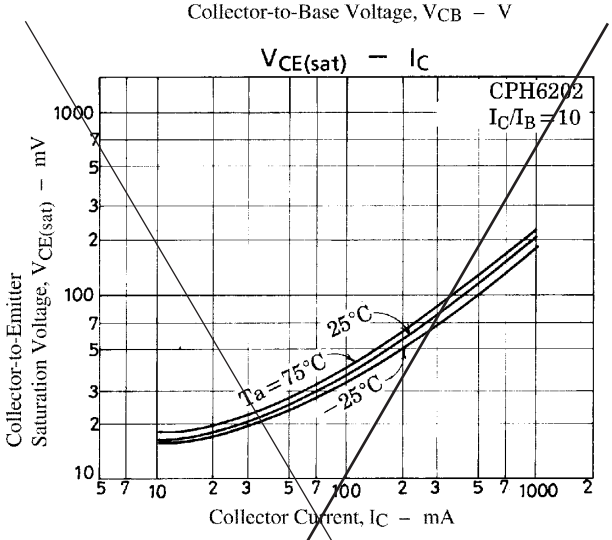

hFE – IC
CPH6102
VCE=–2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – mA

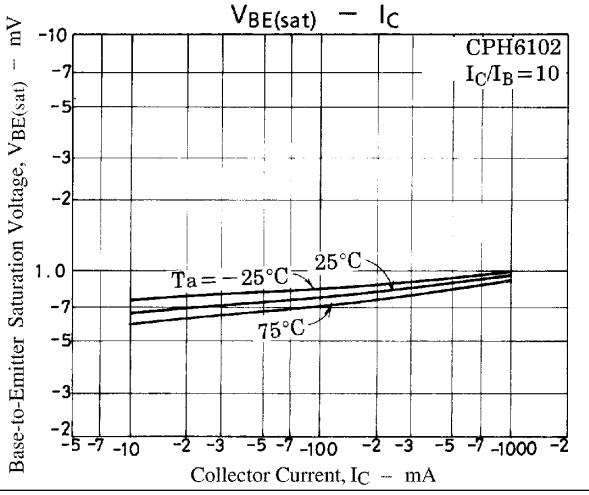

hFE – IC
CPH6202
VCE=–2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – mA

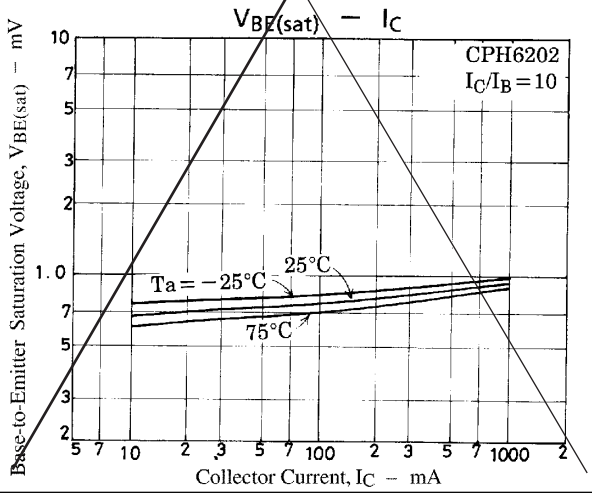

fT – IC
VCE=10V
~~CPH6202~~
CPH6102
For PNP, minus sign is omitted.
Gain Bandwidth Product, fT – MHz
Collector Current, IC – mA


Cob – VCB
f=1MHz
CPH6102
~~CPH6202~~
For PNP, minus sign is omitted.
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V


VCE(sat) – IC
CPH6102
IC/IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA


VCE(sat) – IC
CPH6202
IC/IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA


VBE(sat) – IC
CPH6102
IC/IB=10
Ta=–25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – mA


VBE(sat) – IC
CPH6202
IC/IB=10
Ta=–25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – mA