Ordering number:ENN6147A

PNP/NPN Silicon Epitaxial Planar Transistors

CPH3112/CPH3212

DC/DC Converter Applications

Applications

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

Features

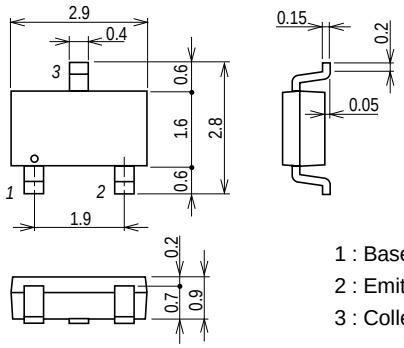
· Adoption of MBIT processes.
· High current capacitance.
· Low collector-to-emitter saturation voltage.
· Ultrasmall-sized package permitting applied sets to be made small and slim (0.9mm).
· High allowable power dissipation.

Package Dimensions

unit:mm

2150A

[CPH3112/3212]



1 : Base
2 : Emitter
3 : Collector

SANYO : CPH3

( ) : CPH3112

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–50)80	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)5	A
Collector Current (Pulse)	I_{CP}		(–)7	A
Base Current	I_B		(–)1.2	A
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}=(–)40V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(–)2V, I_C=(–)500mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)500mA		(250)		MHz
				330		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(50)26		pF

Marking : CPH3112 : AM, CPH3212 : CM

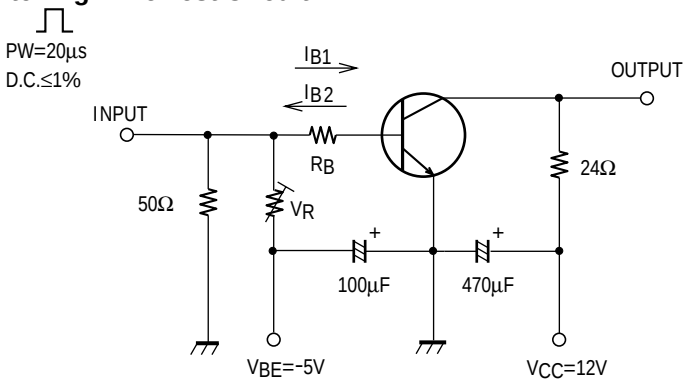
Continued on next page.

SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

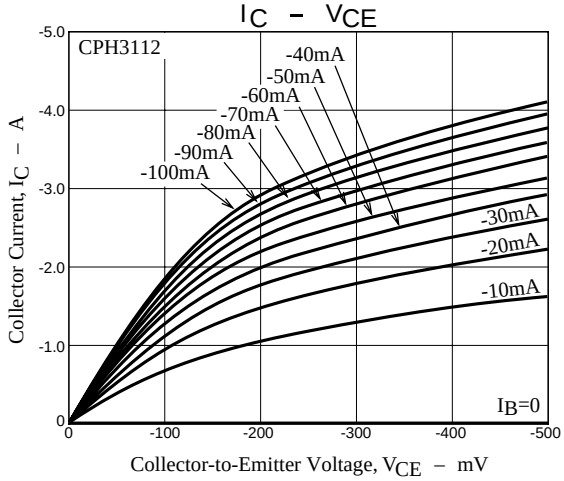
Continued from preceding page.

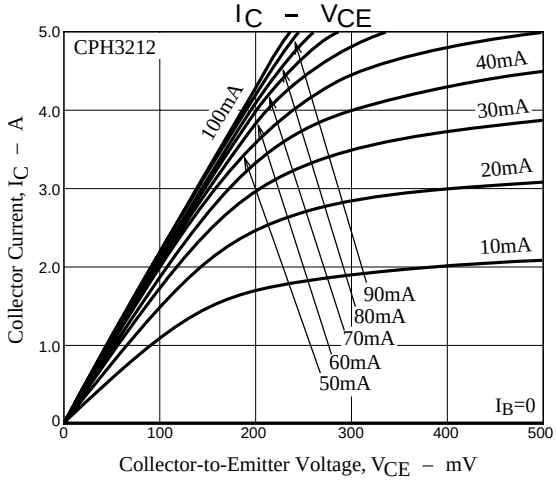
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)2A, I_B=(–)40mA		(–225)	(–450)	mV
				100	150	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)2A, I_B=(–)40mA		(–)0.80	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–50)			V
			80			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_C=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified test circuit.		(39)32		ns
Storage Time	t_{stg}	See specified test circuit.		(225)		ns
				420		ns
Turn-OFF Time	t_f	See specified test circuit.		(25)28		ns

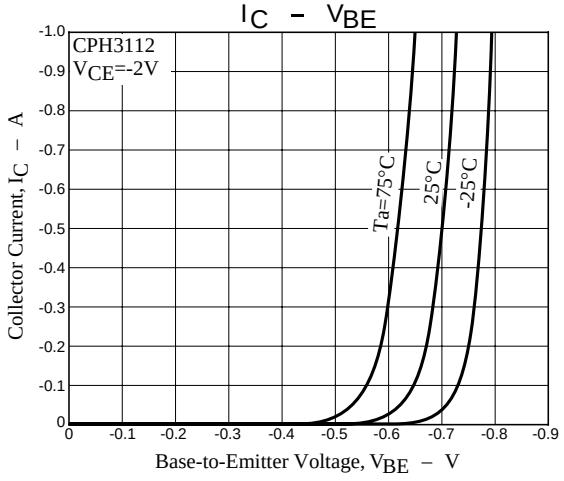
Switching Time Test Circuit

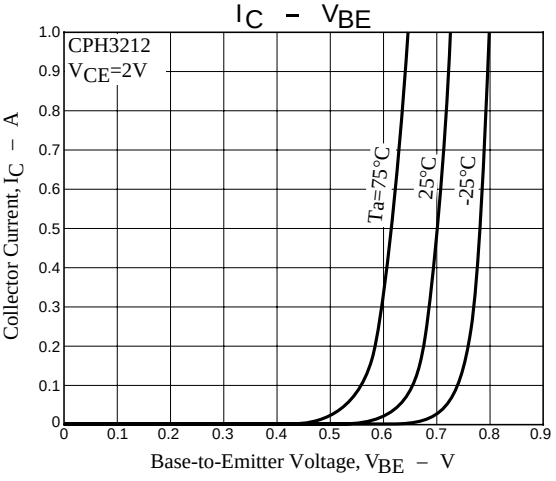


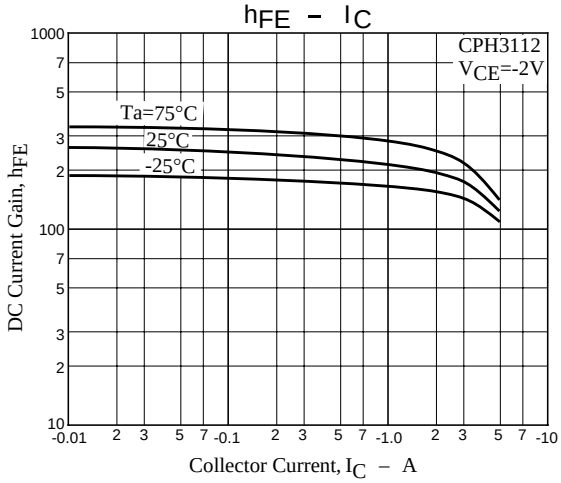
$20I_{B1}=-20I_{B2}=I_C=2.5A$
(For PNP, the polarity is reversed.)

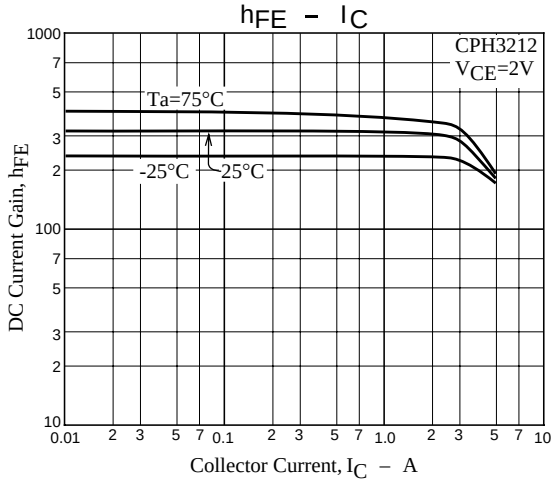


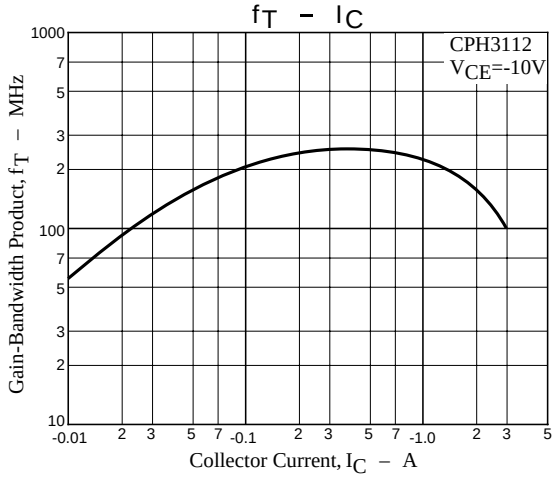


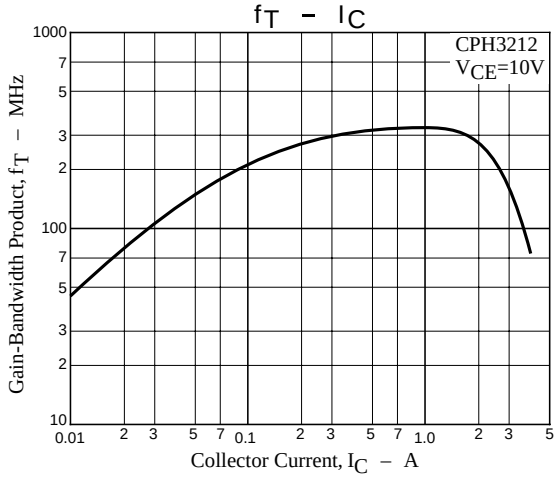


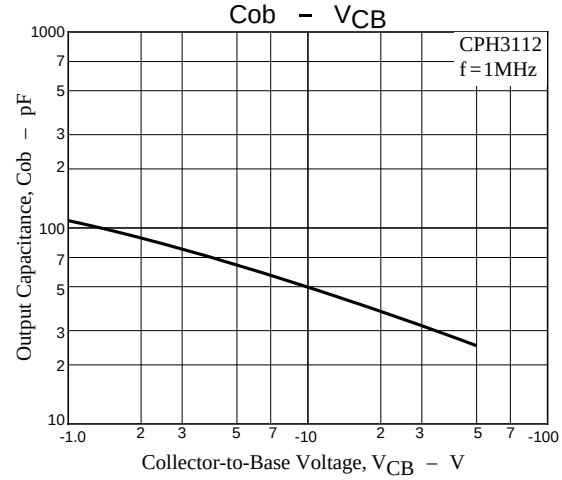


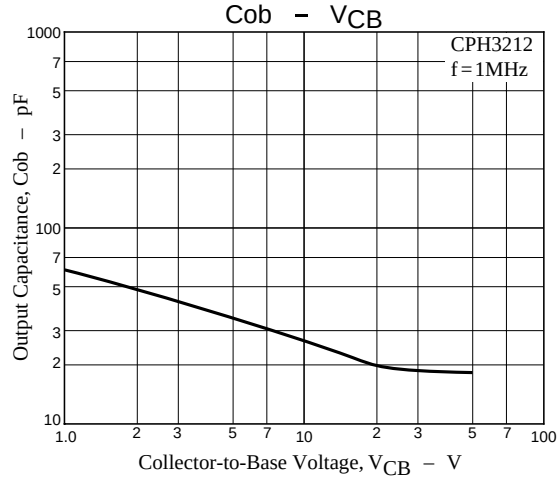

hFE – IC
CPH3112
VCE=-2V
Ta=75°C
25°C
-25°C
DC Current Gain, hFE
Collector Current, IC – A

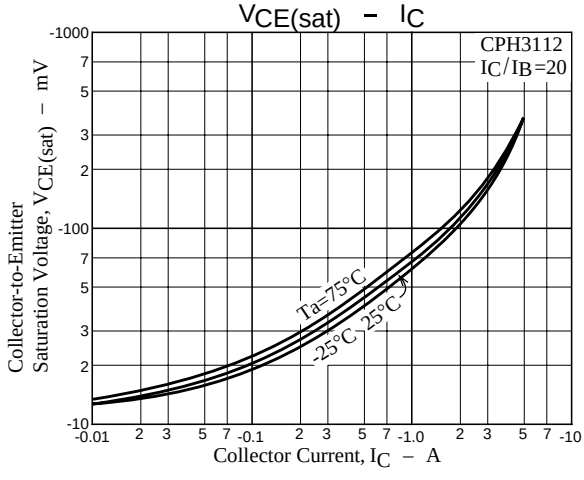

hFE – IC
CPH3212
VCE=2V
Ta=75°C
-25°C
25°C
DC Current Gain, hFE
Collector Current, IC – A

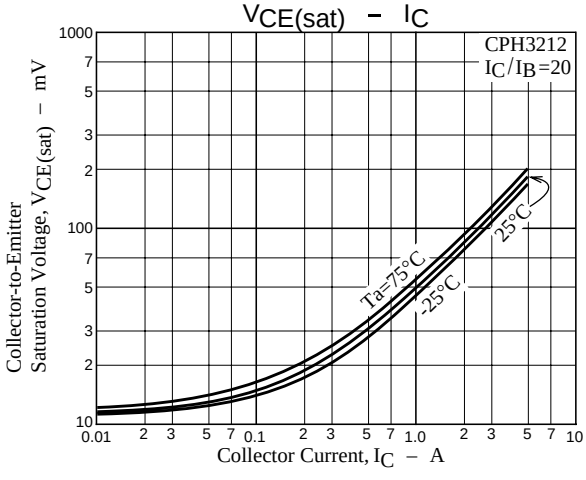

fT – IC
CPH3112
VCE=-10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A

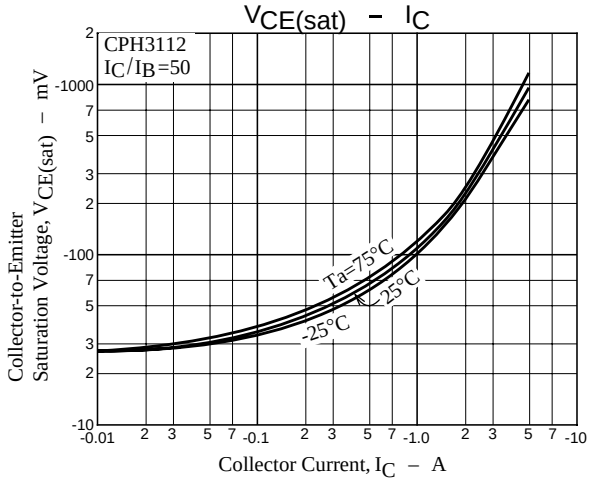

fT – IC
CPH3212
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A

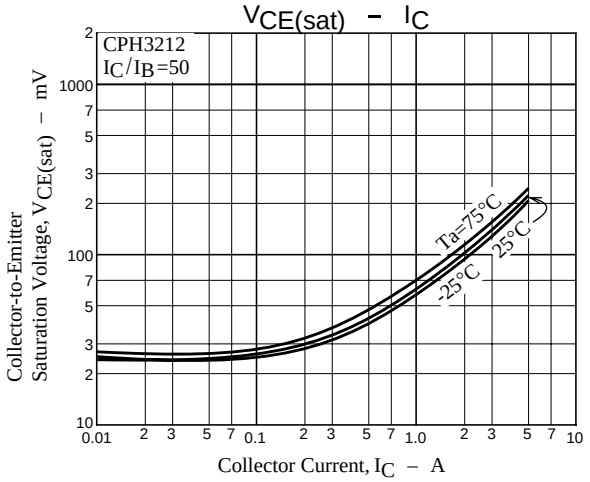

Cob – VCB
CPH3112
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V

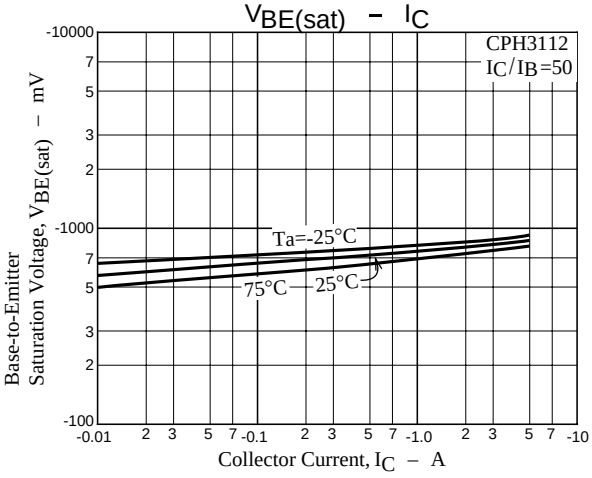

Cob – VCB
CPH3212
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V

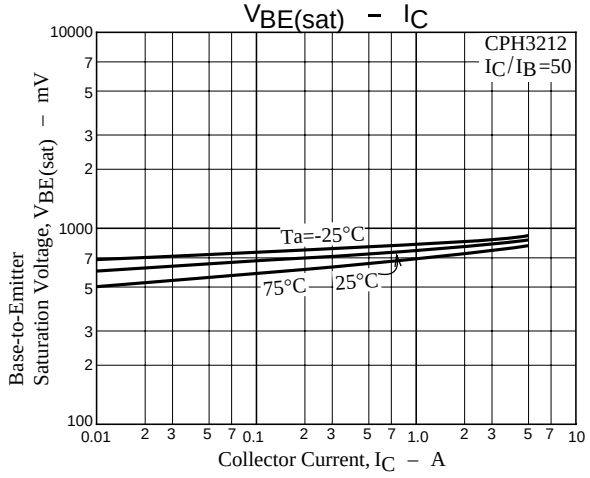

VCE(sat) – IC
CPH3112
IC/IB=20
Ta=75°C
-25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A

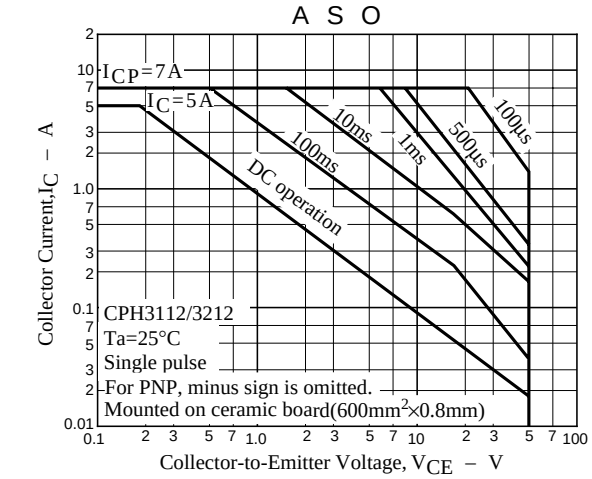

VCE(sat) – IC
CPH3212
IC/IB=20
Ta=75°C
-25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A

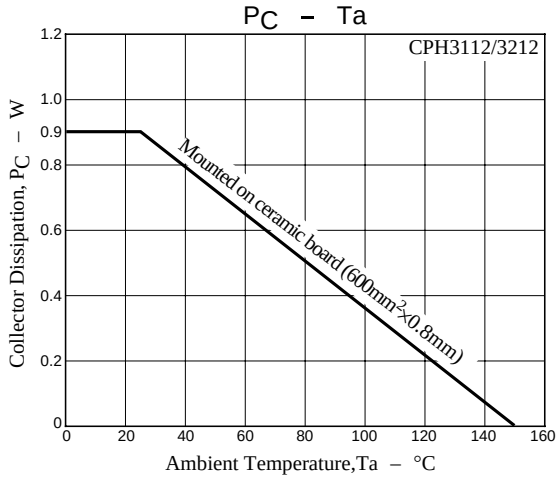

VCE(sat) – IC
CPH3112
IC/IB=50
Ta=75°C
25°C
-25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A


VCE(sat) – IC
CPH3212
IC/IB=50
Ta=75°C
25°C
-25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A


VBE(sat) – IC
CPH3112
IC/IB=50
Ta=-25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A


VBE(sat) – IC
CPH3212
IC/IB=50
Ta=-25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A


A S O
ICP=7A
IC=5A
100µs
500µs
1ms
10ms
100ms
DC operation
CPH3112/3212
Ta=25°C
Single pulse
For PNP, minus sign is omitted.
Mounted on ceramic board(600mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V


PC – Ta
CPH3112/3212
Mounted on ceramic board (600mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C