Ordering number:EN6004

PNP/NPN Silicon Epitaxial Planar Transistors

CPH3104/3204

DC/DC Converter Applications

Applications

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

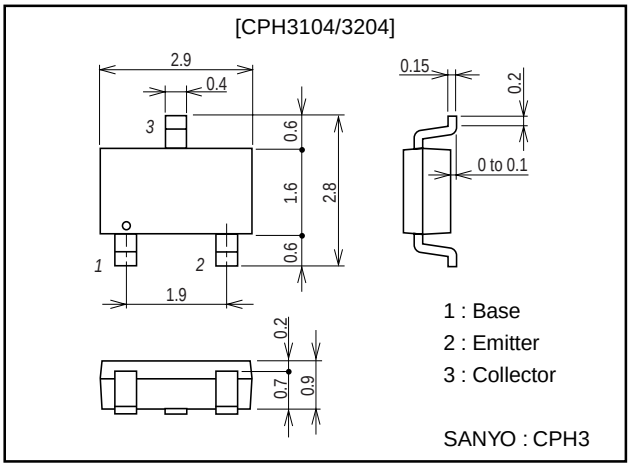
Features

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

Package Dimensions

unit:mm

2150



( ) : CPH3104

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)15	V
Collector-to-Emitter Voltage	V_{CEO}		(–)15	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)1.5	A
Collector Current (Pulse)	I_{CP}		(–)3	A
Base Current	I_B		(–)200	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}=(–)12V, 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=(–)50mA	200		560	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)800mA	80			
Gain-Bandwidth Product	f_T	V_{CE}=(–)2V, I_C=(–)50mA		(300)		MHz
				200		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(15)10		pF

Marking : CPH3104 : AD, CPH3204 : CD

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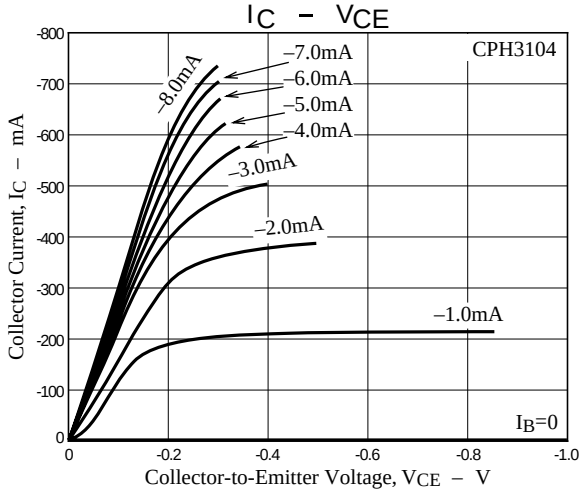
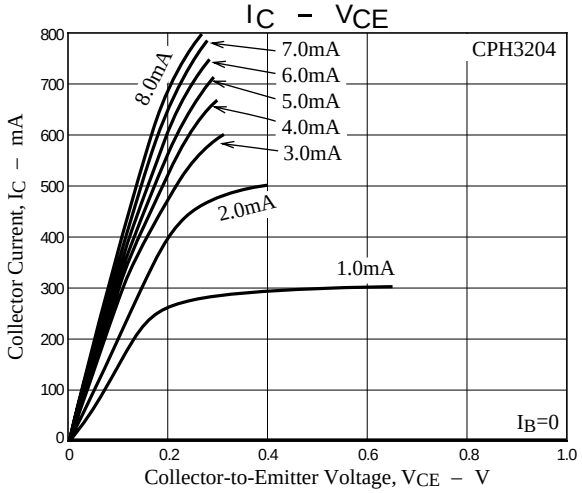
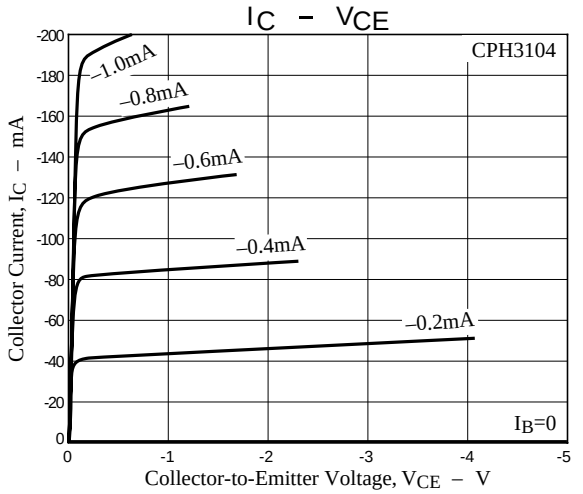
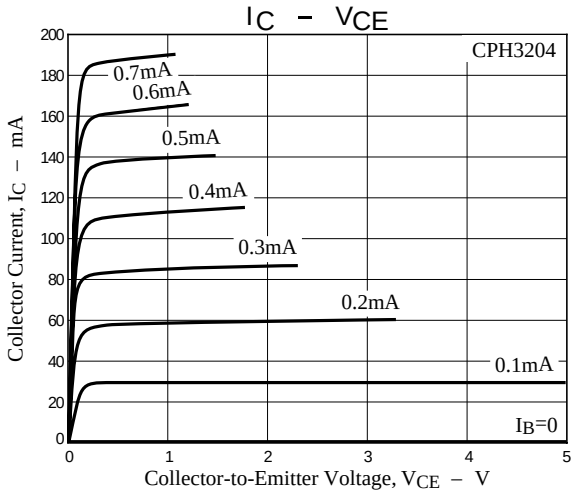
Continued from preceding page.

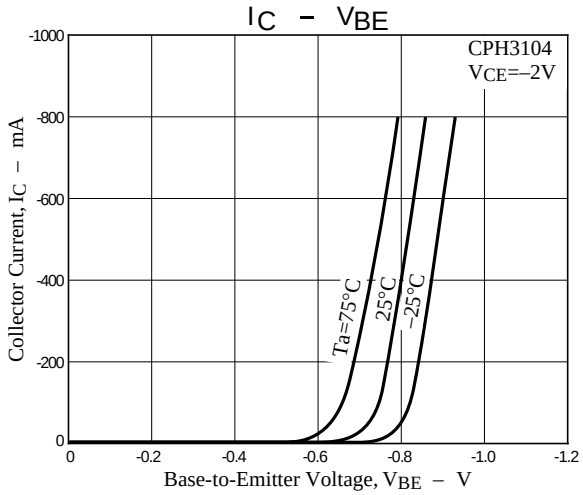
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}1$	I_C=(–)5mA, I_B=(–)0.5mA		(–)10	(–)25	mV
	$V_{CE(sat)}2$	I_C=(–)500mA, I_B=(–)25mA		(–)120	(–)240	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)500mA, I_C=(–)25mA		(–)0.9	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)15			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)15			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_C=(–)10μA, I_C=0	(–)5			V

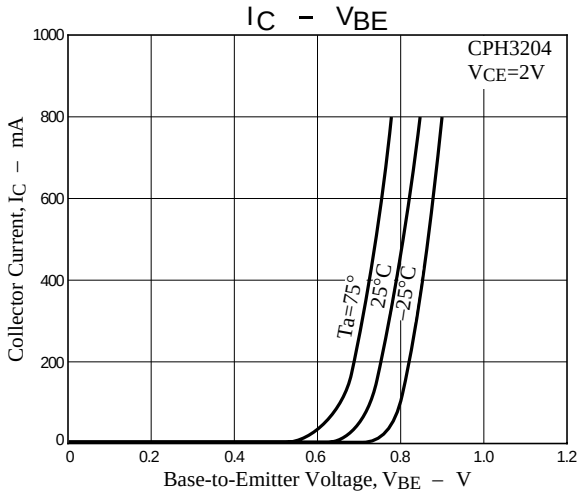


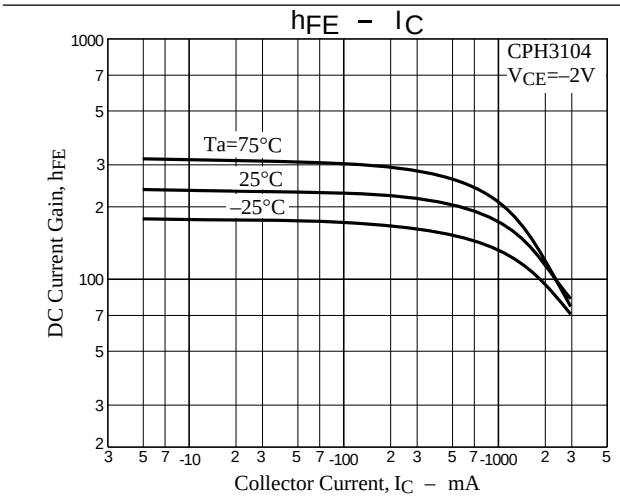


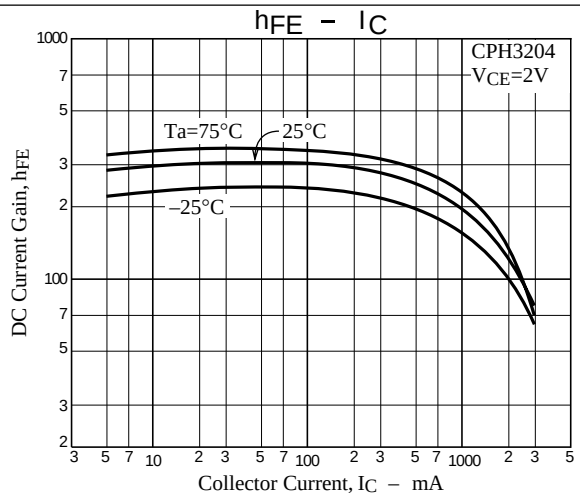


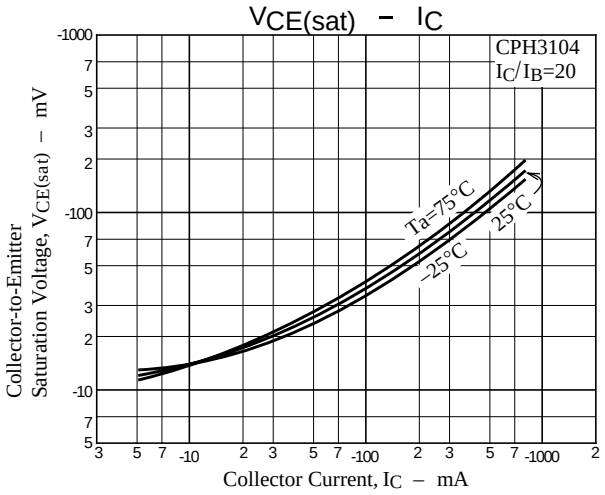


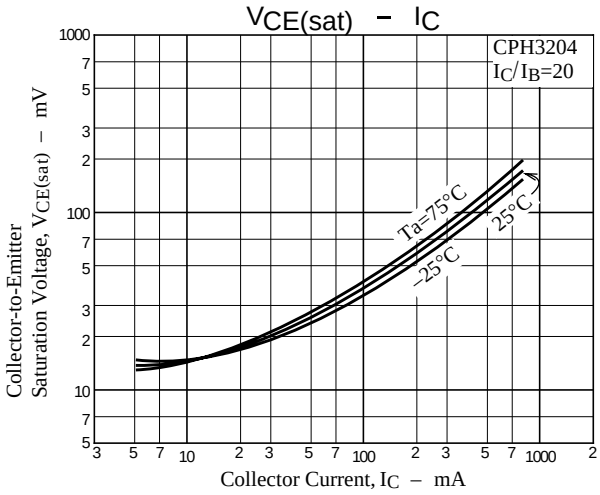


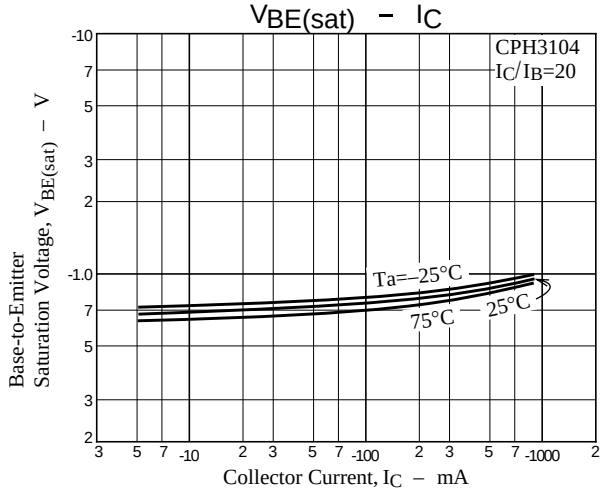


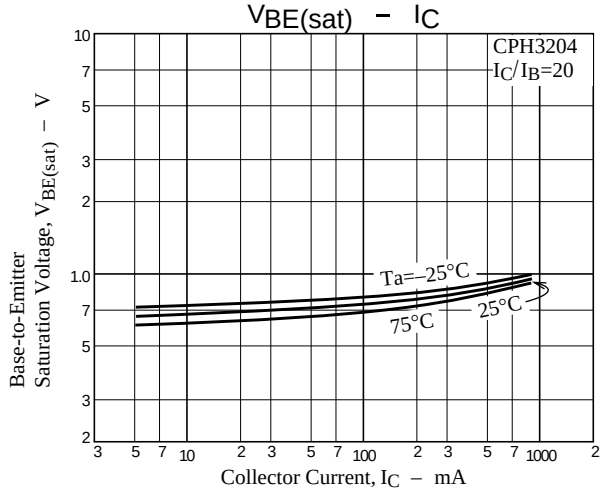

hFE – IC
CPH3104
VCE=–2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – mA

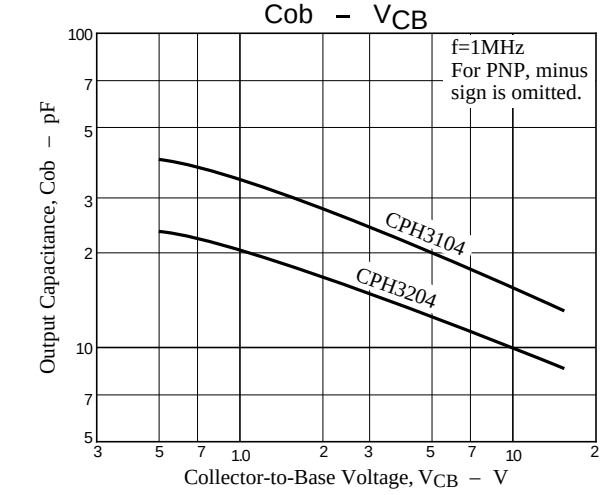

hFE – IC
CPH3204
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – mA

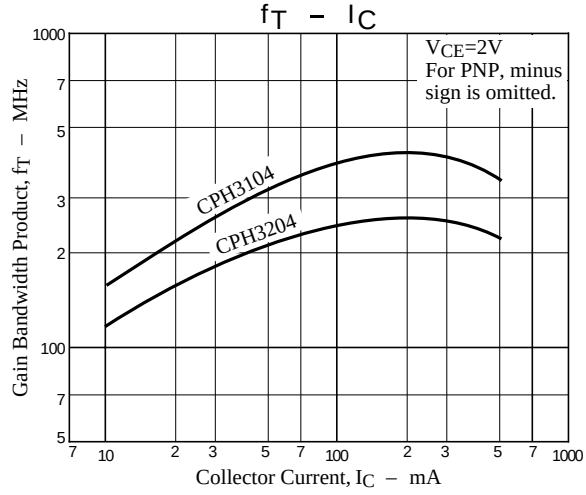

VCE(sat) – IC
CPH3104
IC/IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA


VCE(sat) – IC
CPH3204
IC/IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA


VBE(sat) – IC
CPH3104
IC/IB=20
Ta=–25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – mA


VBE(sat) – IC
CPH3204
IC/IB=20
Ta=–25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – mA


Cob – VCB
f=1MHz
For PNP, minus sign is omitted.
CPH3104
CPH3204
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V


fT – IC
VCE=2V
For PNP, minus sign is omitted.
CPH3104
CPH3204
Gain Bandwidth Product, fT – MHz
Collector Current, IC – mA