Ordering number : ENN8165

SANYO Semiconductors
DATA SHEET

CPH3144 / CPH3244 — PNP / NPN Epitaxial Planar Silicon Transistors
DC / DC Converter Applications

Applications

- Relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of MBIT process.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.9mm).
- High allowable power dissipation.

Specifications ( ) : CPH3144

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		(-)2	A
Collector Current (Pulse)	I_{CP}		(-)5	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}=(-)30V, 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=(-)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(-)10V, I_C=(-)300mA		(440)400		MHz
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(17)12		pF

Marking : CPH3144 : BD, CPH3244 : DP

Continued on next page.

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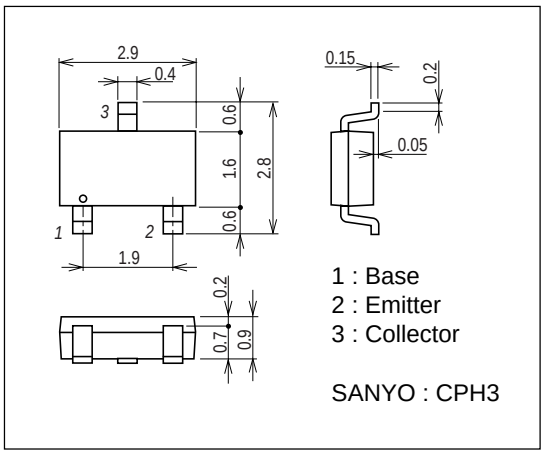
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)1.5A, I_B=(–)75mA		(–170)160	(–260)240	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)1.5A, I_B=(–)75mA		(–)0.94	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–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=0	(–)5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		(45)40		ns
Storage Time	t_{stg}	See specified Test Circuit.		(200)350		ns
Fall Time	t_f	See specified Test Circuit.		(23)30		ns

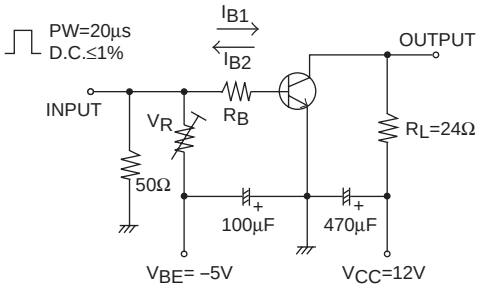
Package Dimensions

unit : mm

2150A

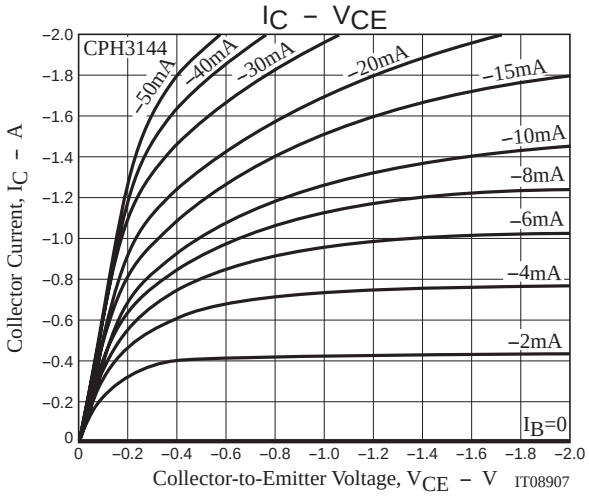


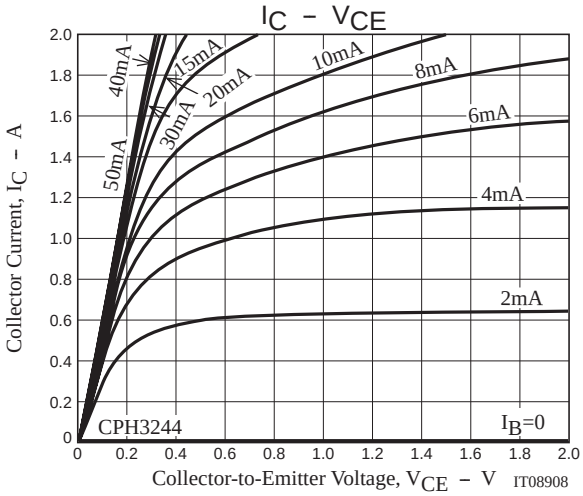
Switching Time Test Circuit

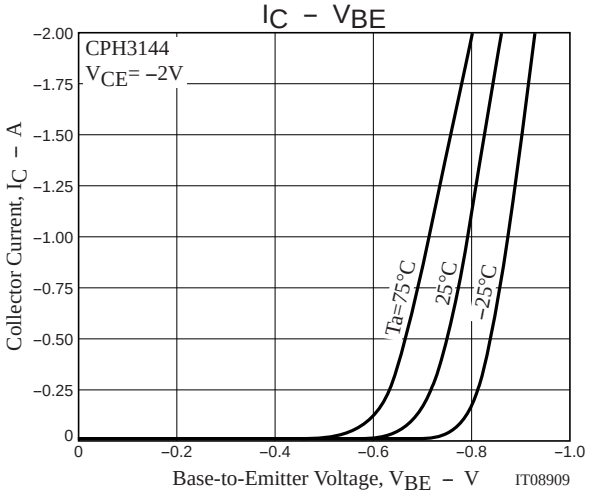


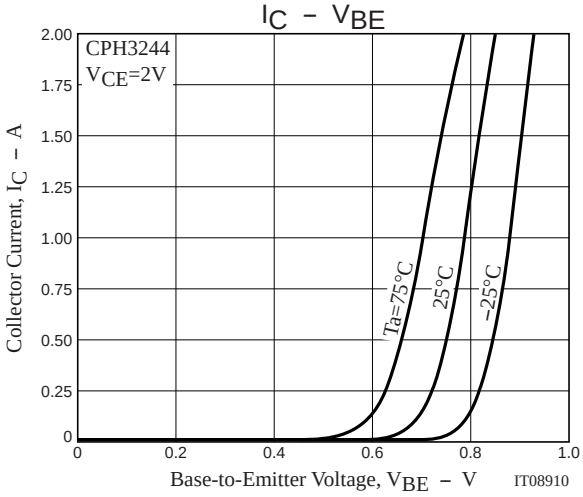
I_C=20I_{B1}= –20I_{B2}=500mA

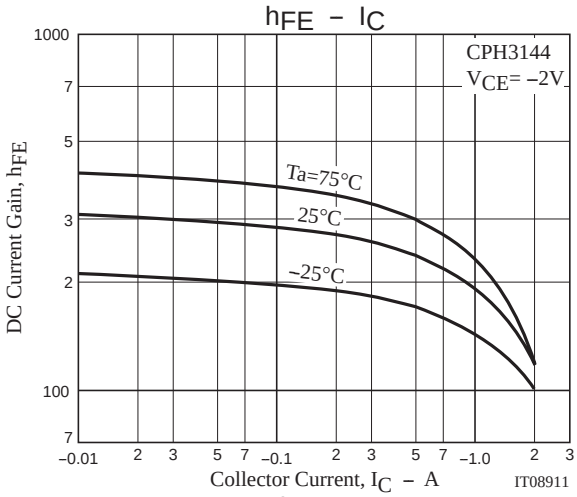
For PNP, the polarity is reversed.

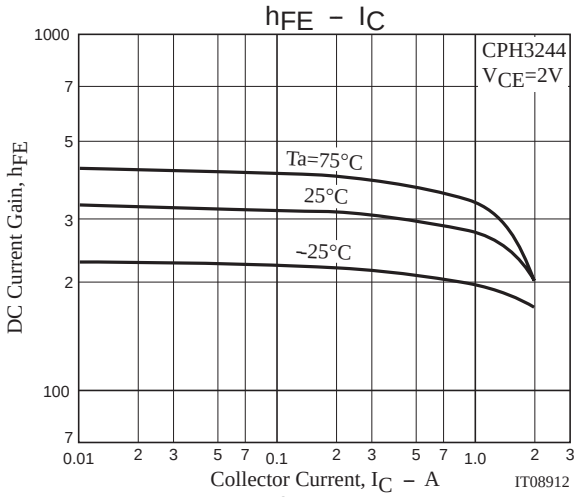


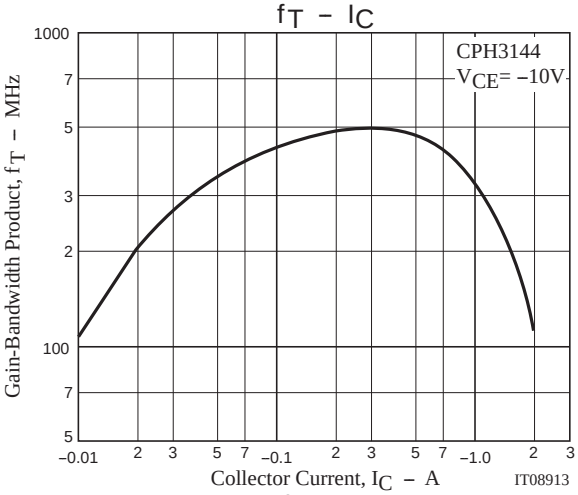


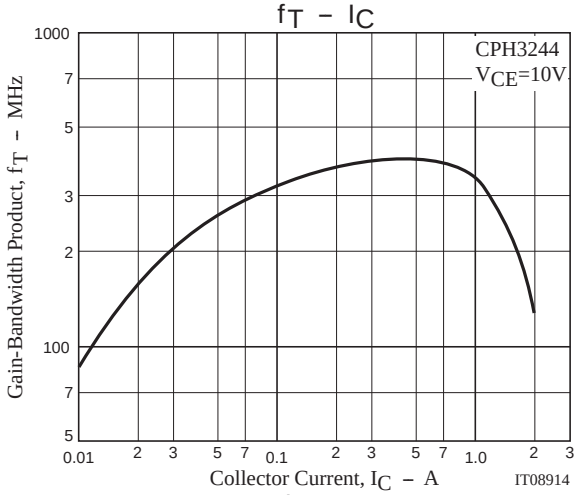


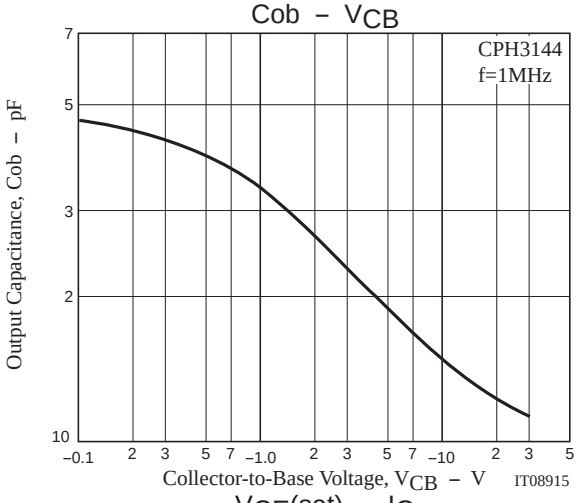


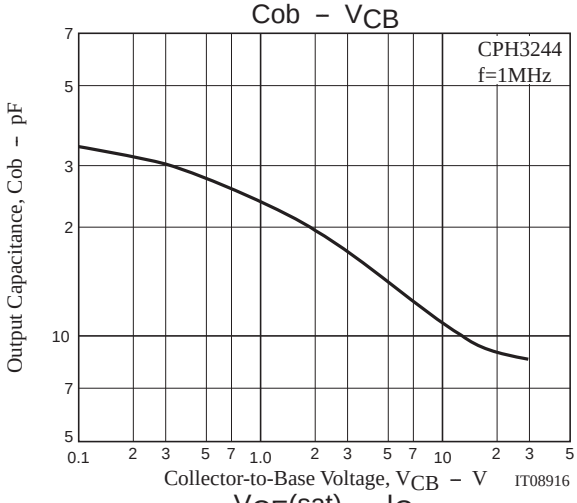

hFE – IC
CPH3144
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT08911

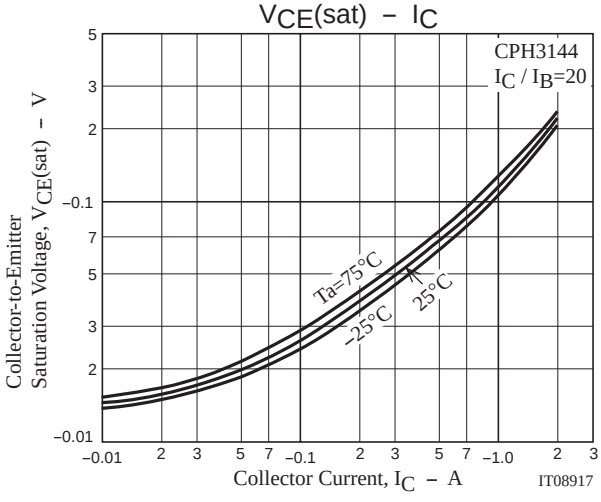

hFE – IC
CPH3244
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT08912

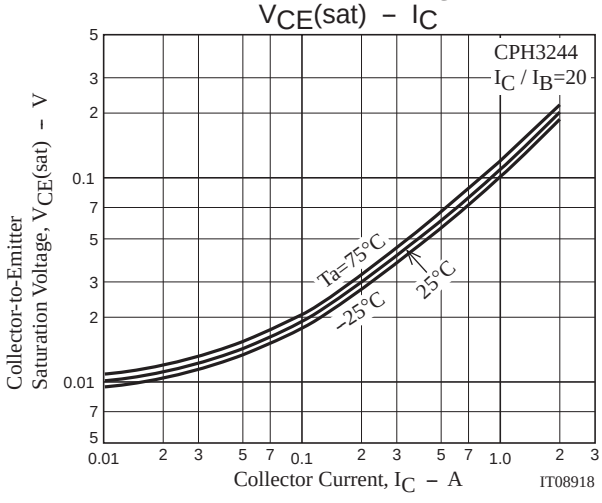

fT – IC
CPH3144
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08913

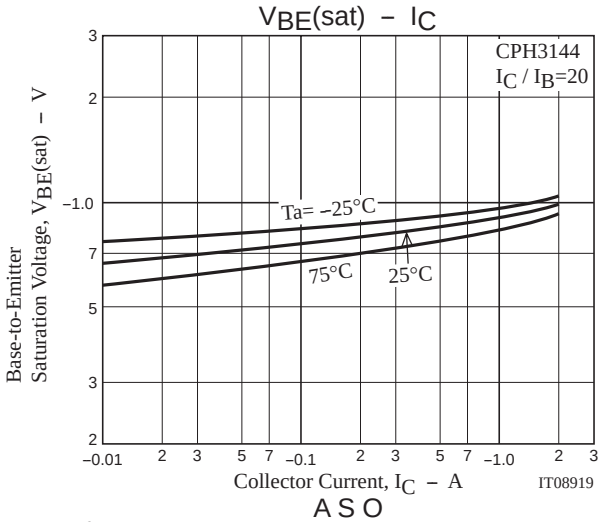

fT – IC
CPH3244
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08914

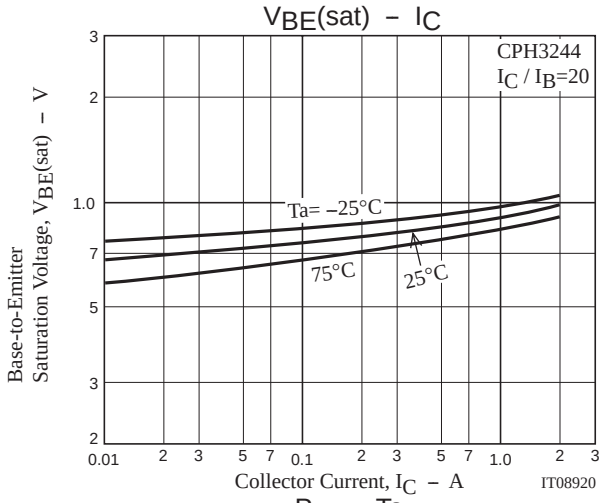

Cob – VCB
CPH3144
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT08915

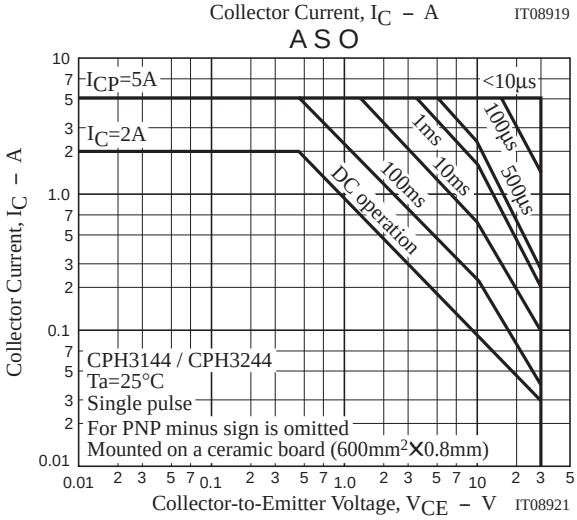

Cob – VCB
CPH3244
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT08916

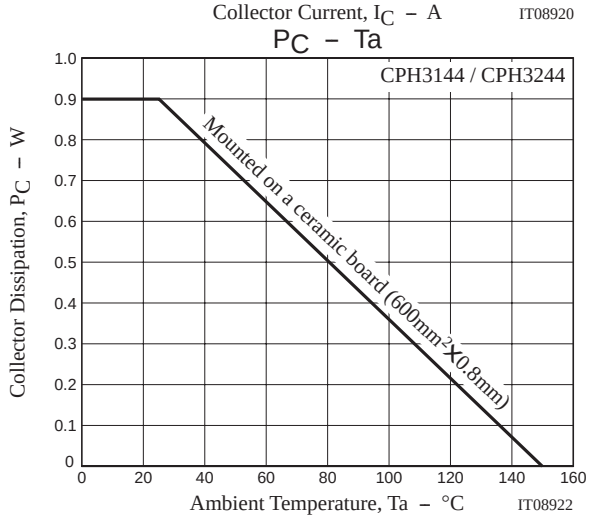

VCE(sat) – IC
CPH3144
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08917


VCE(sat) – IC
CPH3244
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08918









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