Ordering number : ENN7907

SANYO Semiconductors
DATA SHEET

CPH3140 / CPH3240 — High-Voltage Switching Applications

PNP / NPN Epitaxial Planar Silicon Transistors

Features

- Adoption of FBET, MBIT processes.
- High breakdown voltage and large current capacity.
- High-speed switching.
- Ultrasmall size making it easy to provide high-density, small-sized hybrid ICs.

( ) : CPH3140

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-)120	V
Collector-to-Emitter Voltage	V_{CEO}		(-)100	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)1	A
Collector Current (Pulse)	I_{CP}		(-)2	A
Collector Dissipation	P_C	Mounted on a ceramic board (600mm²×0.8m)	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}=(-)100V, I_E=0			(-)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(-)4V, I_C=0			(-)100	nA
DC Current Gain	h_{FE}	V_{CE}=(-)5V, I_C=(-)100mA	140		400	
Gain-Bandwidth Product	f_T	V_{CE}=(-)10V, I_C=(-)100mA		120		MHz
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(13)8.5		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)400mA, I_B=(-)40mA		(-0.2)0.1	(-0.6)0.4	V
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(-)400mA, I_B=(-)40mA		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(-)10μA, I_E=0	(-)120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(-)1mA, R_{BE}=∞	(-)100			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(-)10μA, I_C=0	(-)6			V

Marking CPH3140 : BB
CPH3240 : DL

Continued on next page.

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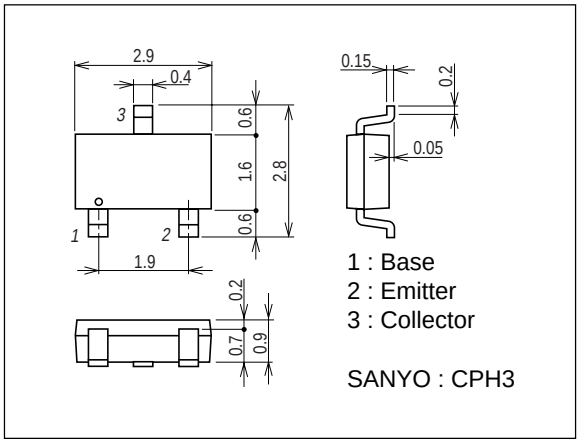
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Time	t_{on}	See specified test circuit.		(80)80		ns
Storage Time	t_{stg}	See specified test circuit.		(700)850		ns
Fall Time	t_f	See specified test circuit.		(40)50		ns

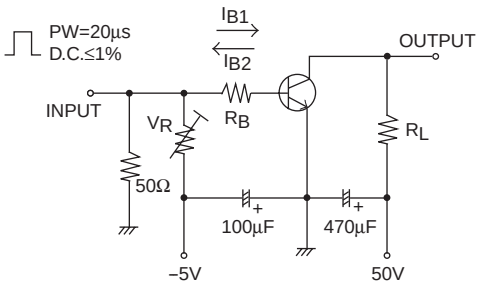
Package Dimensions

unit : mm

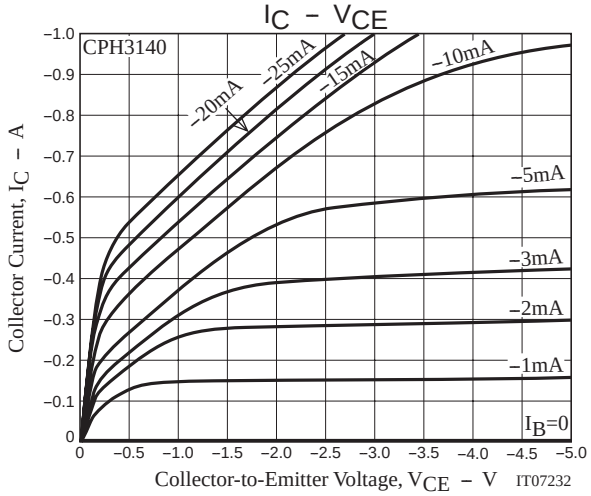
2150A

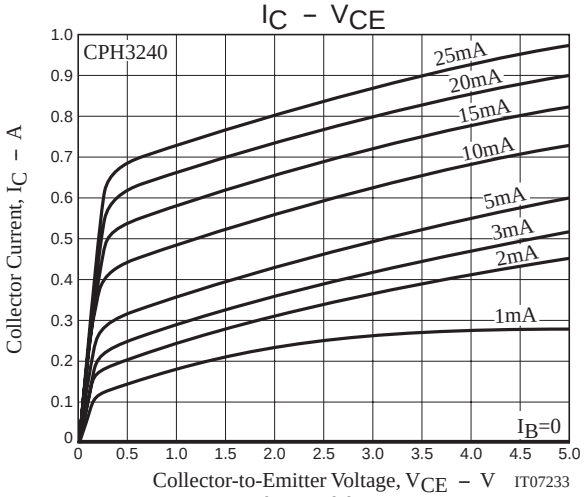


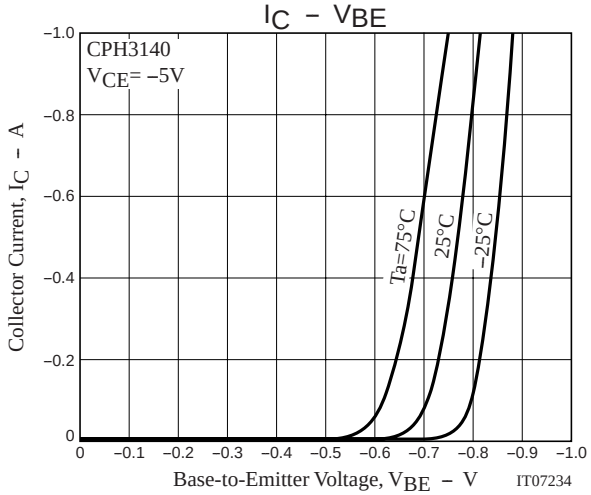
Switching Time Test Circuit

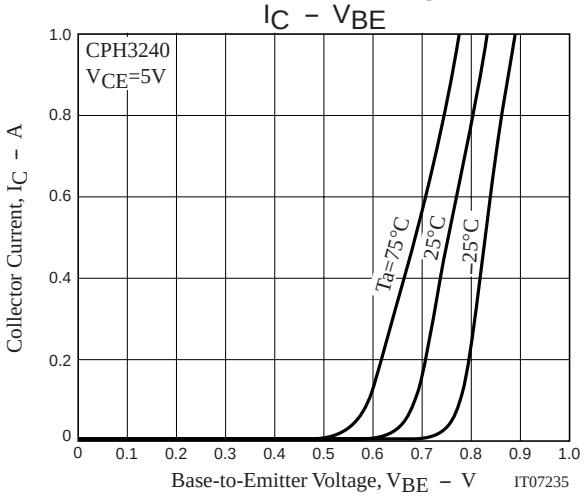


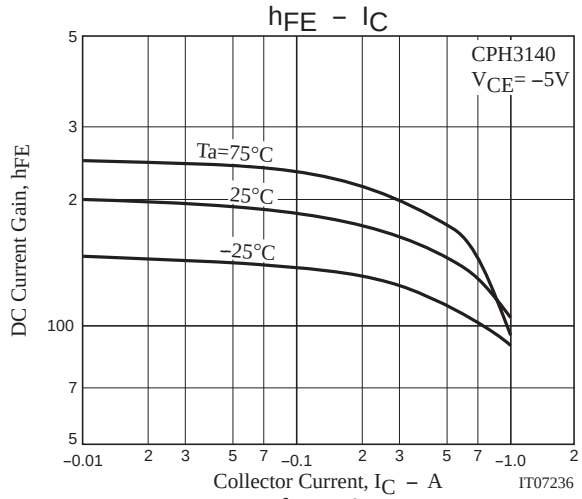
I_C=10I_{B1}= –10I_{B2}=400mA
(For PNP, the polarity is reversed)

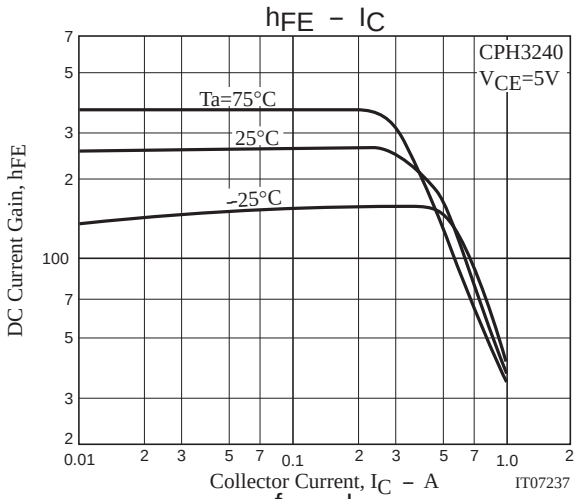


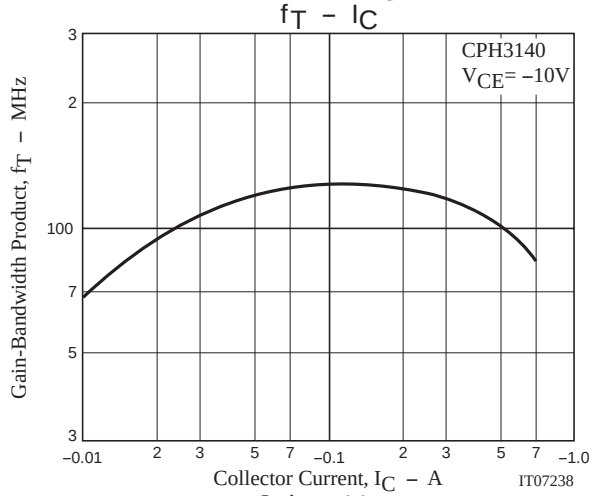


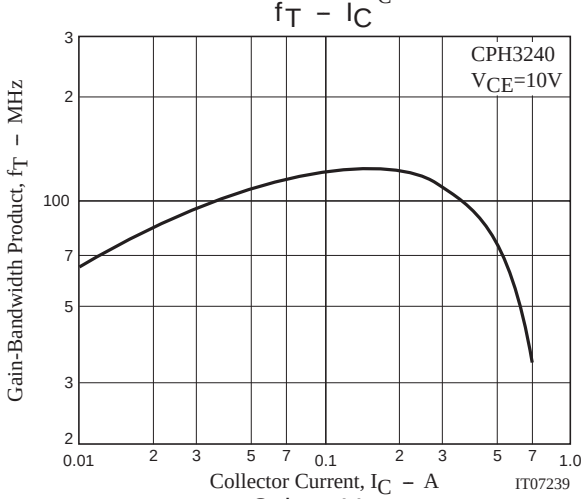


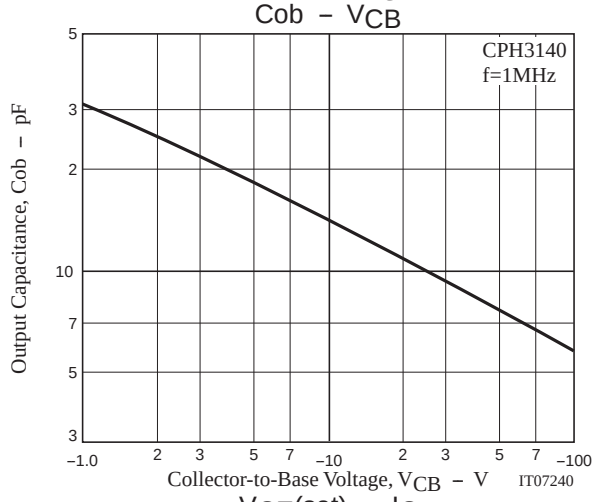


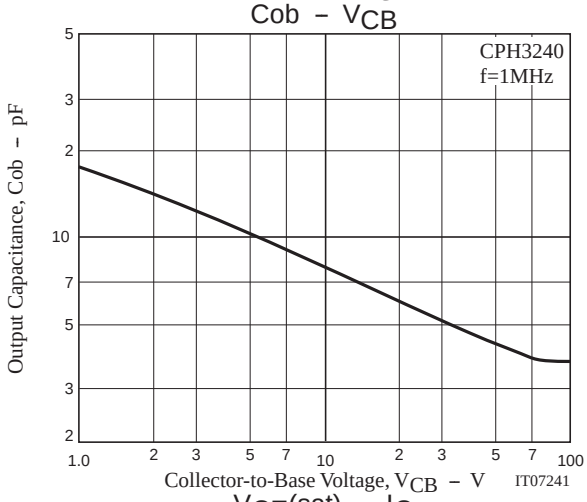

hFE – IC
CPH3140
VCE= –5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT07236

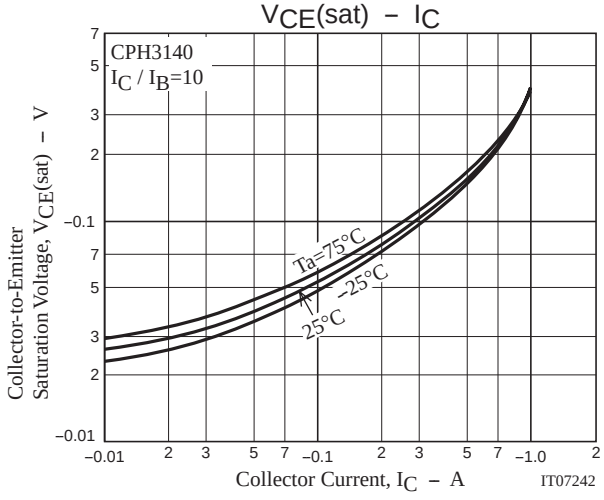

hFE – IC
CPH3240
VCE=5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT07237

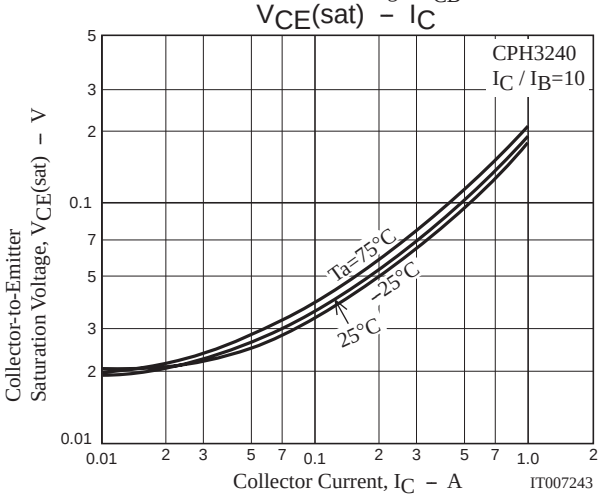

fT – IC
CPH3140
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT07238

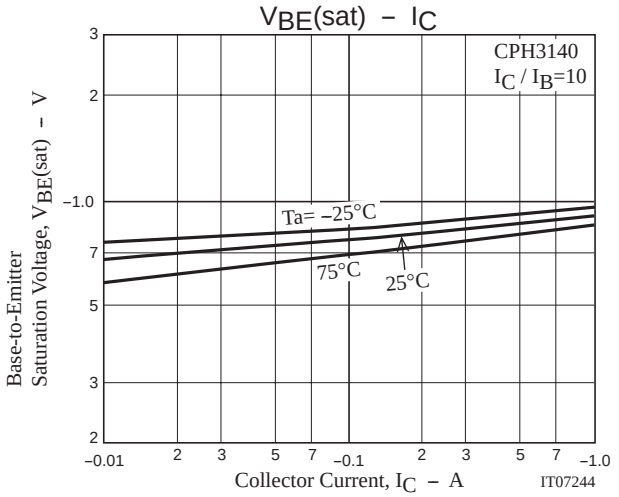

fT – IC
CPH3240
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT07239

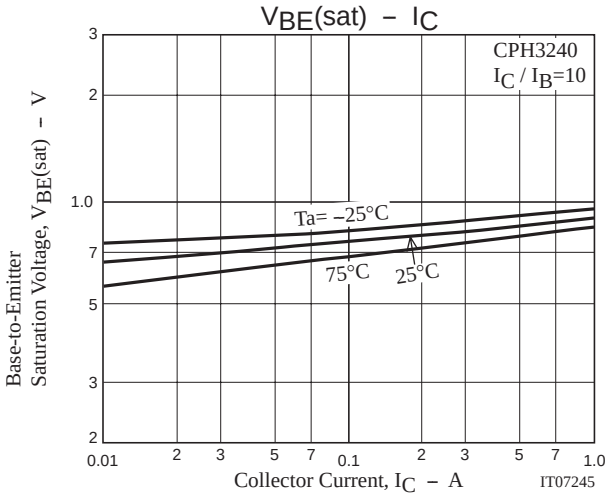

Cob – VCB
CPH3140
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT07240

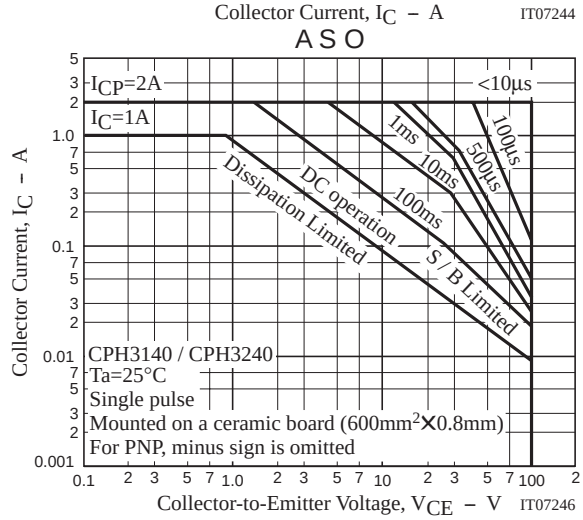

Cob – VCB
CPH3240
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT07241

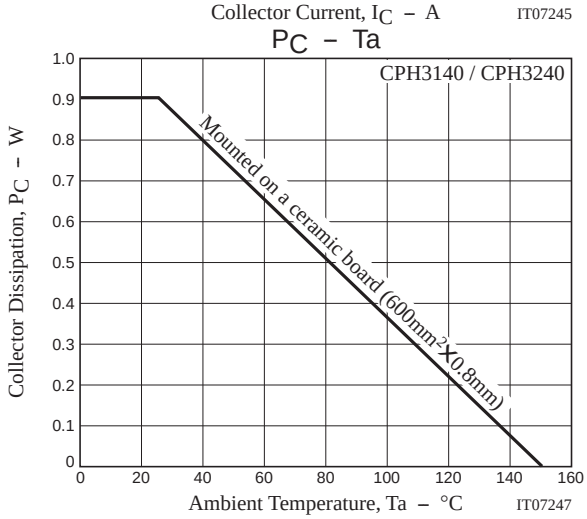

VCE(sat) – IC
CPH3140
IC / IB=10
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT07242


VCE(sat) – IC
CPH3240
IC / IB=10
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT007243









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