



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 $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-)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 (600mm ² X0.8m)	0.9	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=-100\text{V}, I_E=0$			(-)100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0$			(-)100	nA
DC Current Gain	h_{FE}	$V_{CE}=-5\text{V}, I_C=-100\text{mA}$	140		400	
Gain-Bandwidth Product	f_T	$V_{CE}=-10\text{V}, I_C=-100\text{mA}$		120		MHz
Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}, f=1\text{MHz}$		(13)8.5		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-400\text{mA}, I_B=-40\text{mA}$		(-0.2)0.1	(-0.6)0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-400\text{mA}, I_B=-40\text{mA}$		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	(-)120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	(-)100			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	(-)6			V

Marking CPH3140 : BB
CPH3240 : DL

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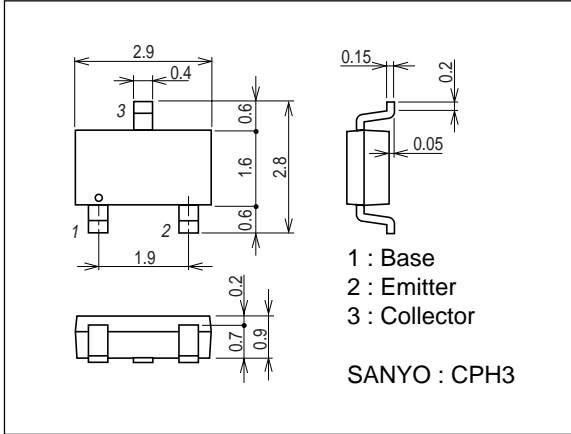
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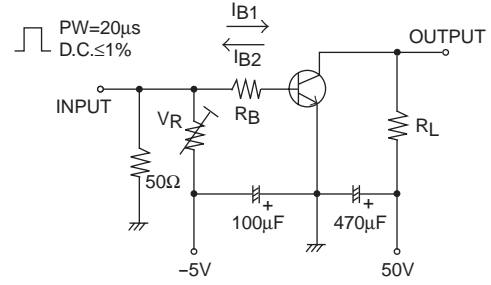
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Time	t_{on}	See specified test circuit.		(80)80		ns
Storage Time	t_{stg}	See specified test circuit.		(700)850		ns
Fall Time	t_f	See specified test circuit.		(40)50		ns

Package Dimensions

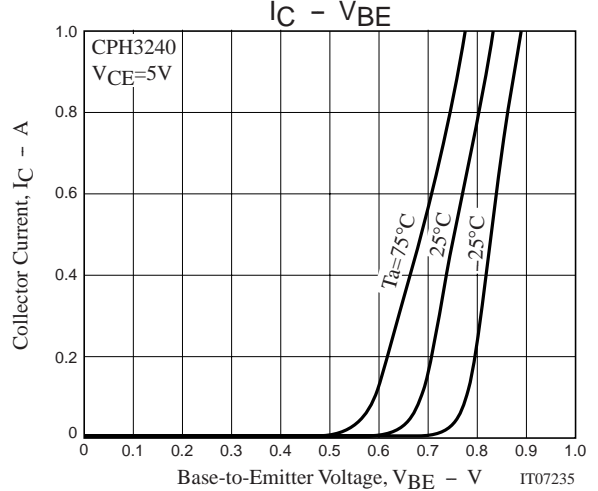
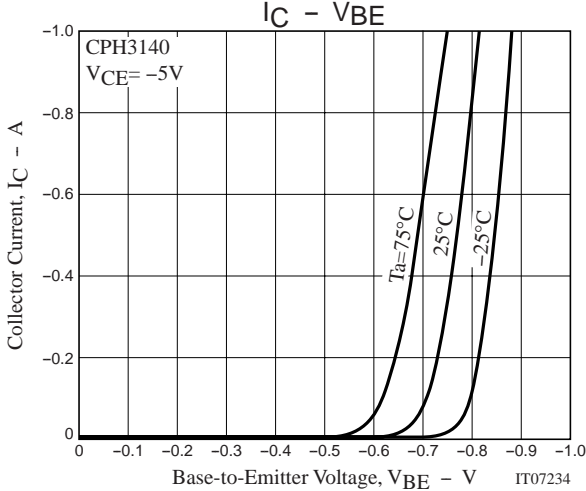
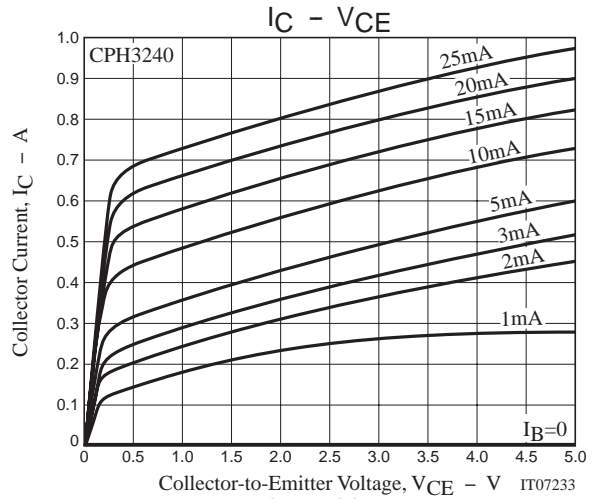
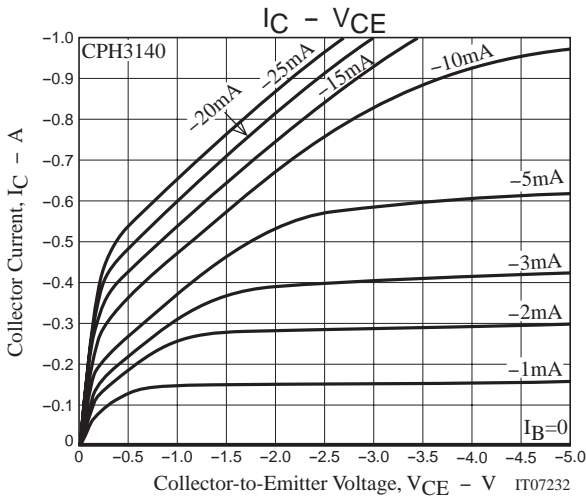
unit : mm
2150A



Switching Time Test Circuit

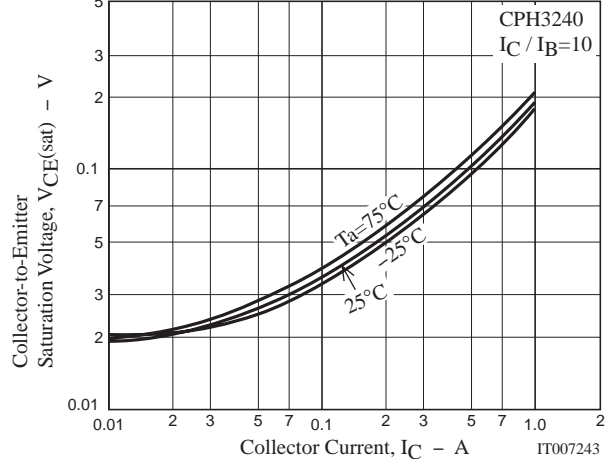
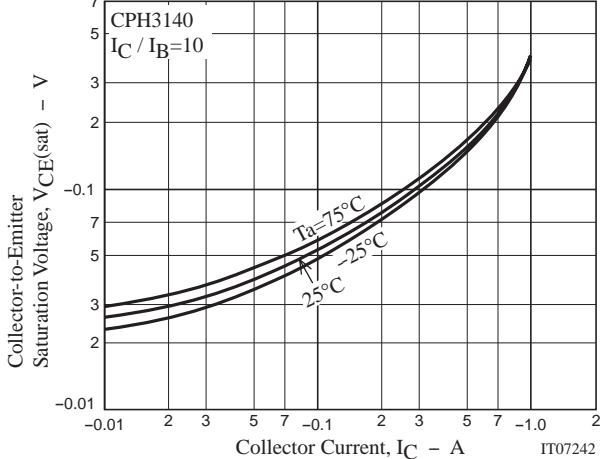
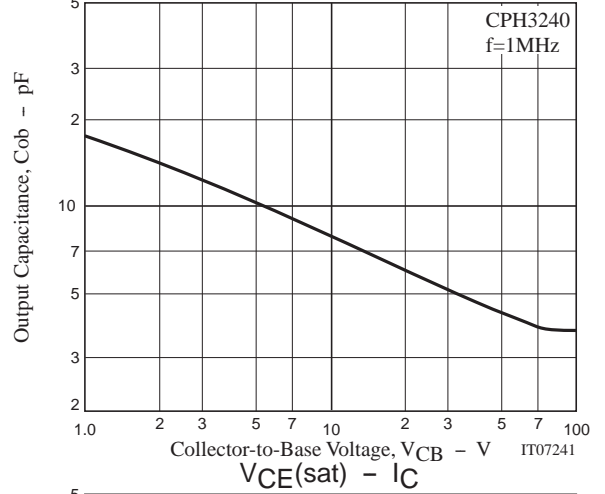
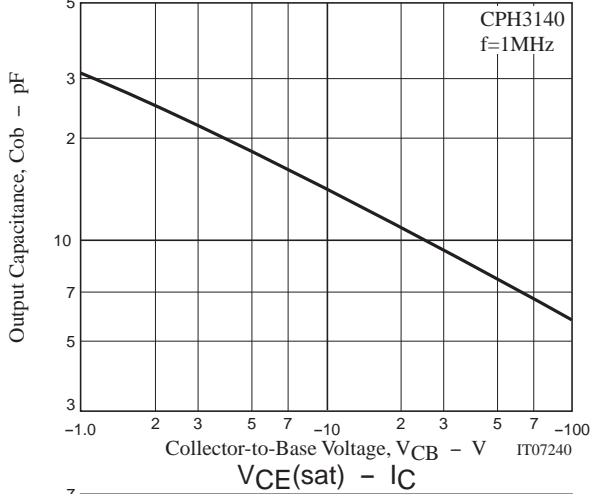
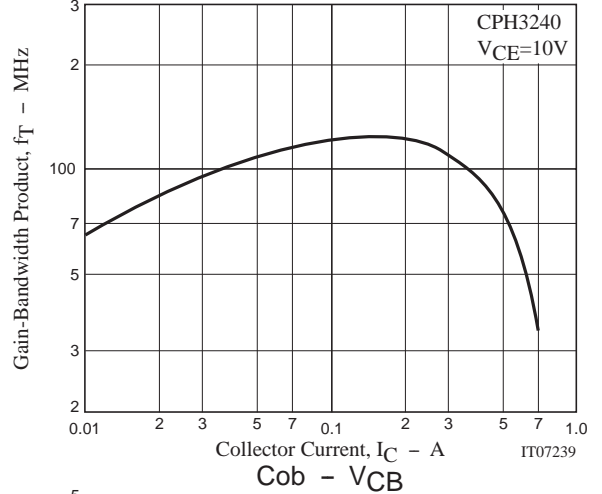
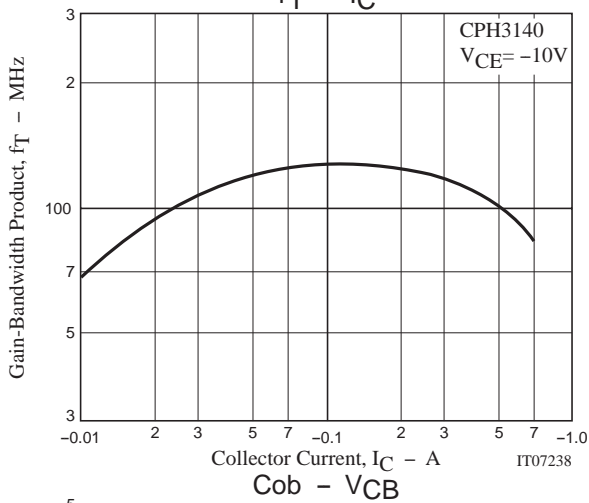
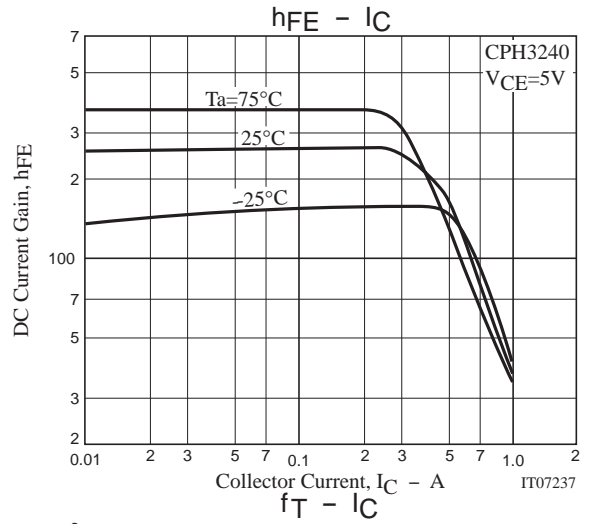
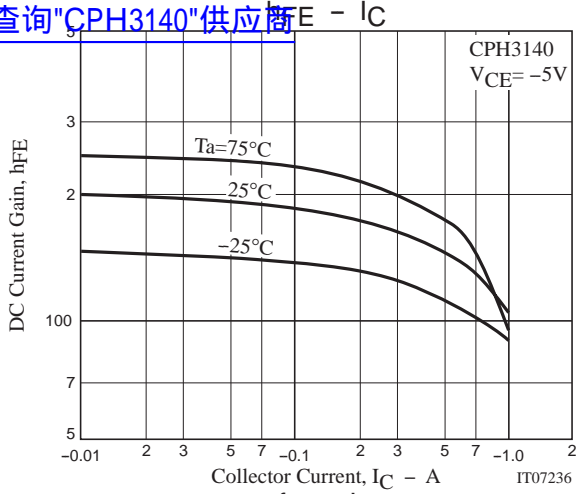


$I_C = 10I_{B1} = -10I_{B2} = 400mA$
(For PNP, the polarity is reversed)



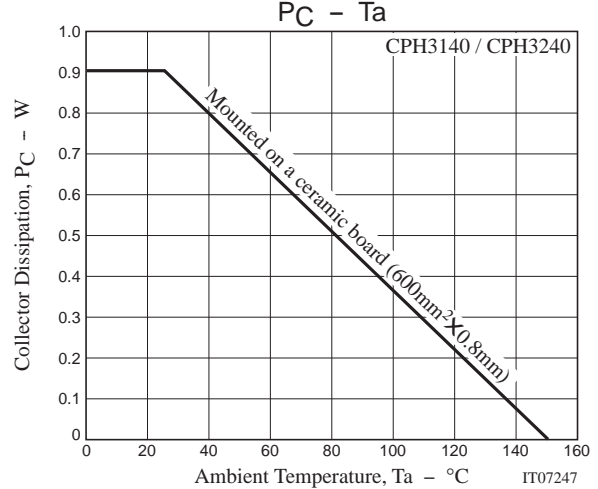
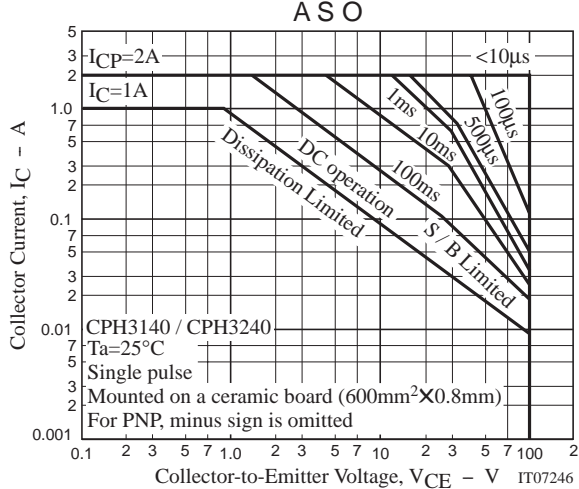
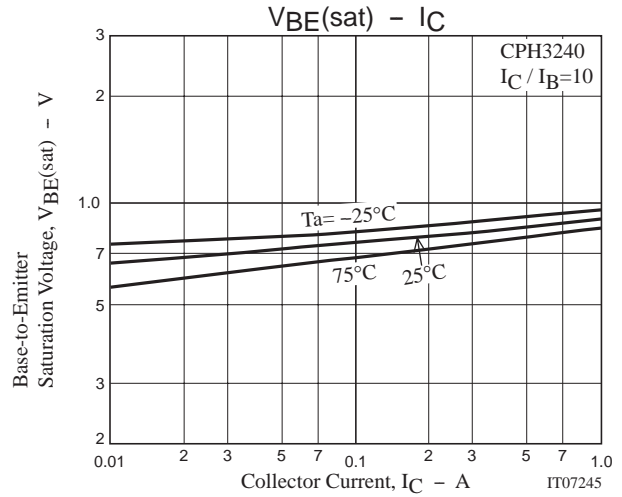
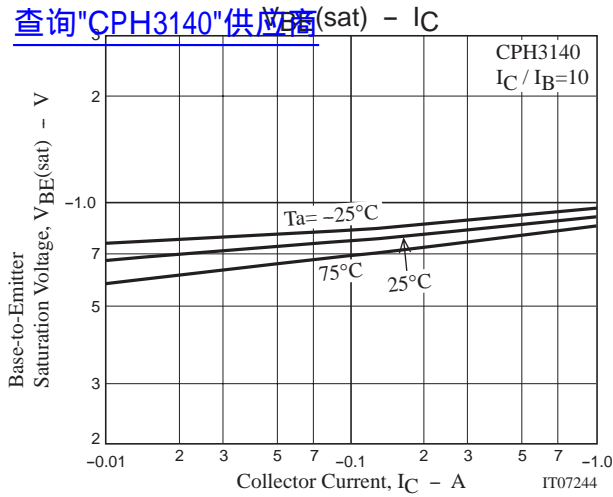
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