



SANYO Semiconductors

## DATA SHEET

# CPH3116 / CPH3216

PNP / NPN Epitaxial Planar Silicon Transistors

## DC / DC Converter Applications

## Applications

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

## Features

- Adoption of MBIT processes.
- Large 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.

( ) : CPH3116

## Specifications

### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-50)80	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		(-50)80	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-)50	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)5	V
Collector Current	I <sub>C</sub>		(-)1.0	A
Collector Current (Pulse)	I <sub>CP</sub>		(-)3	A
Base Current	I <sub>B</sub>		(-)200	mA
Collector Dissipation	P <sub>C</sub>	Mounted on a ceramic board (600mm <sup>2</sup> ×0.8mm)	0.9	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =(-)40V, I <sub>E</sub> =0			(-)0.1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0			(-)0.1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)100mA	200		560	

Marking : CPH3116 : AR, CPH3216 : CR

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# CPH3116 / CPH3216

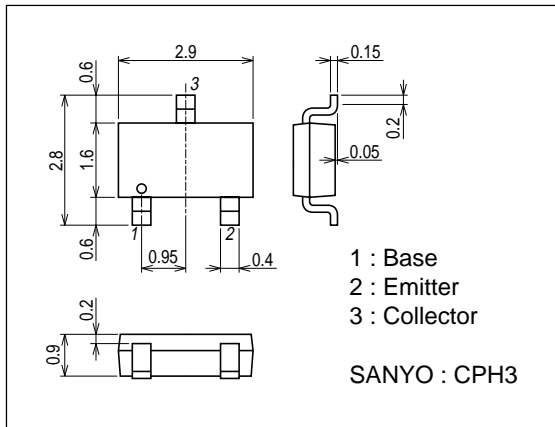
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)300mA$		420		MHz
Output Capacitance	Cob	$V_{CB}=(-)10V, f=1MHz$		(9)6		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)500mA, I_B=(-)10mA$		(-280)	(-430)	mV
	$V_{CE(sat)2}$	$I_C=(-)300mA, I_B=(-)6mA$		130	190	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)500mA, I_B=(-)10mA$		(-145)	(-220)	mV
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$		90	135	mV
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=(-)100\mu A, R_{BE}=0$		(-0.81)	(-1.2)	V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$		(-50)		V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$		(-5)		V
Turn-ON Time	$t_{on}$	See specified test circuit.		35		ns
Storage Time	$t_{stg}$	See specified test circuit.		(170)		ns
				330		ns
Fall Time	$t_f$	See specified test circuit.		(30)40		ns

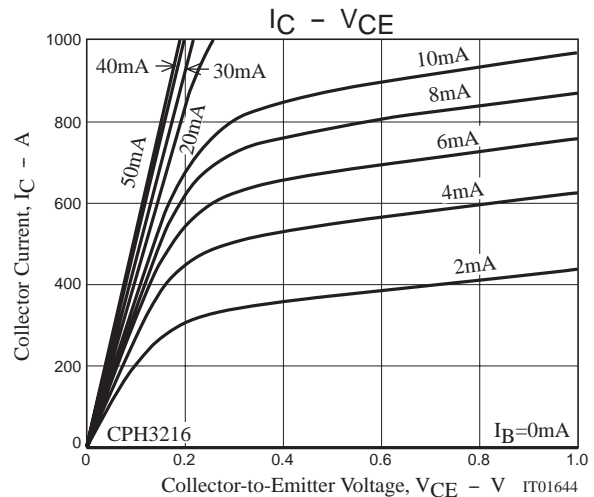
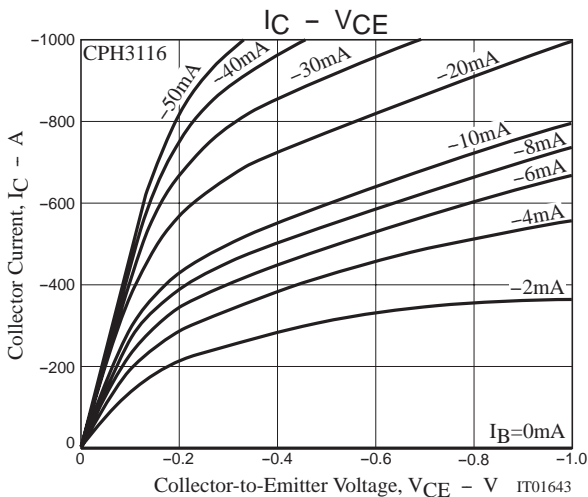
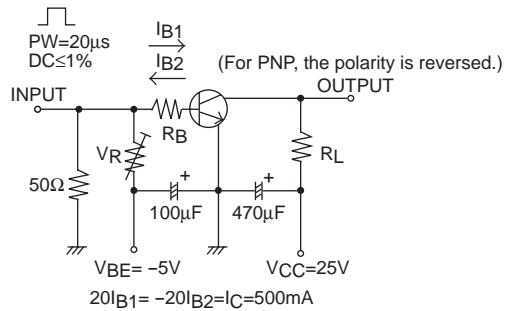
## Package Dimensions

unit : mm (typ)

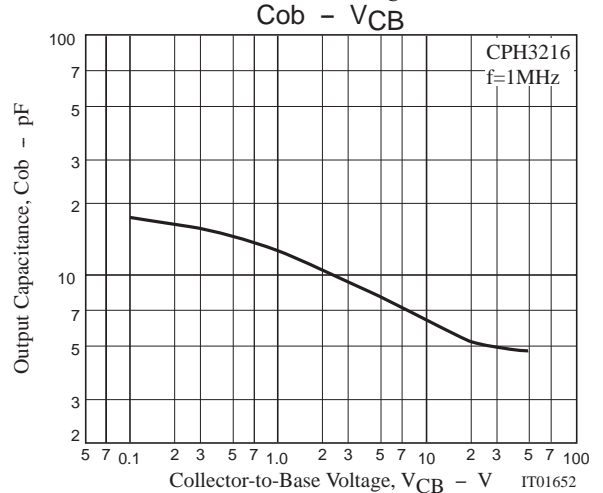
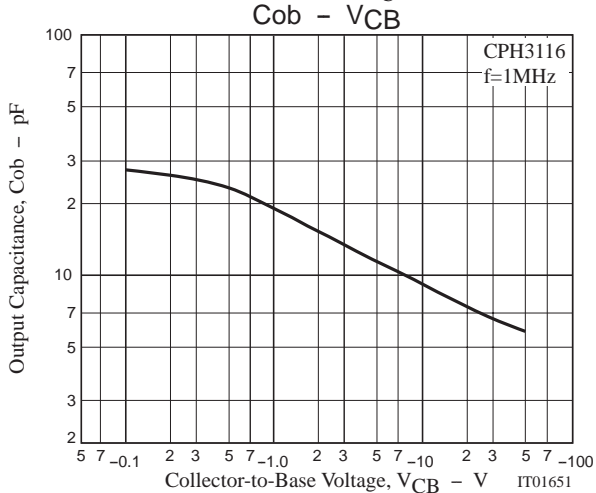
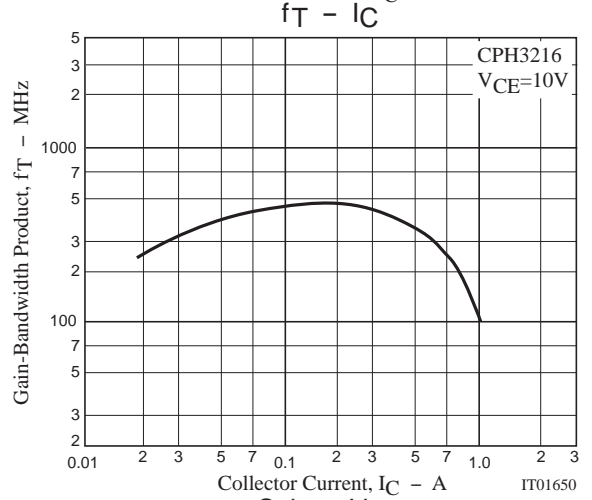
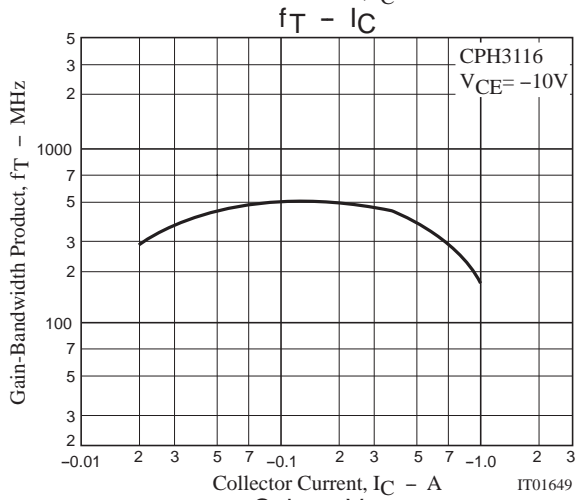
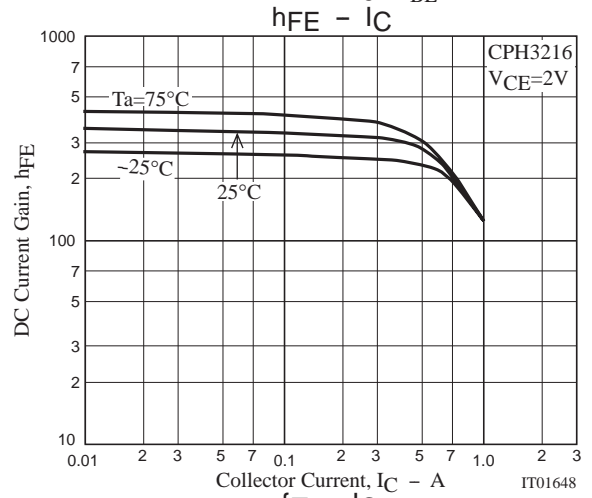
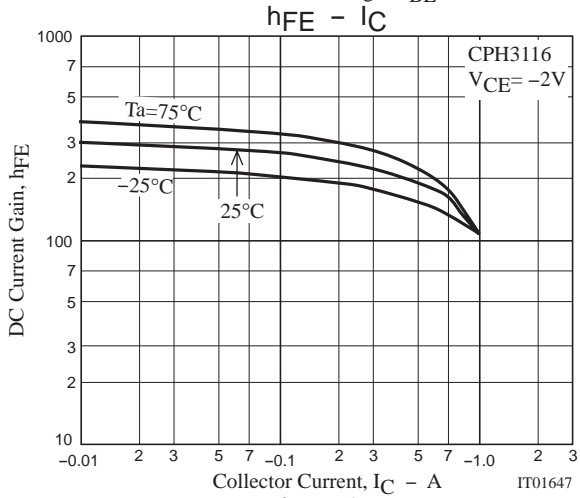
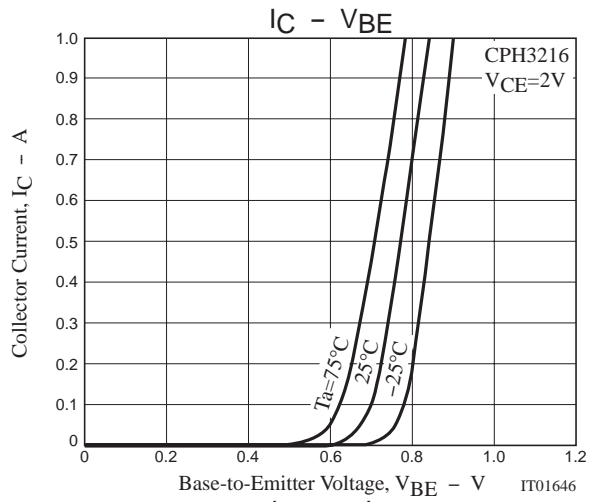
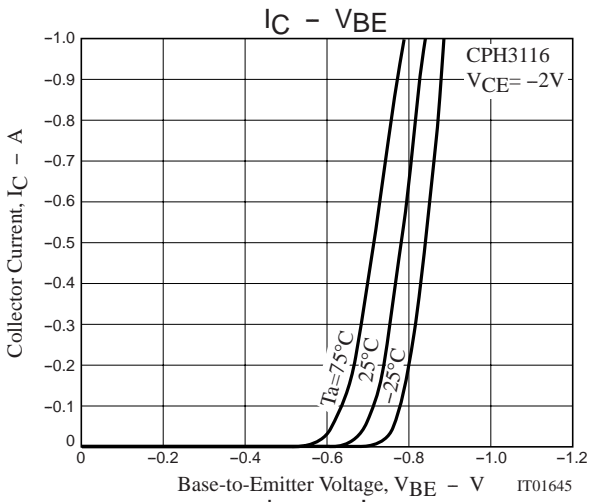
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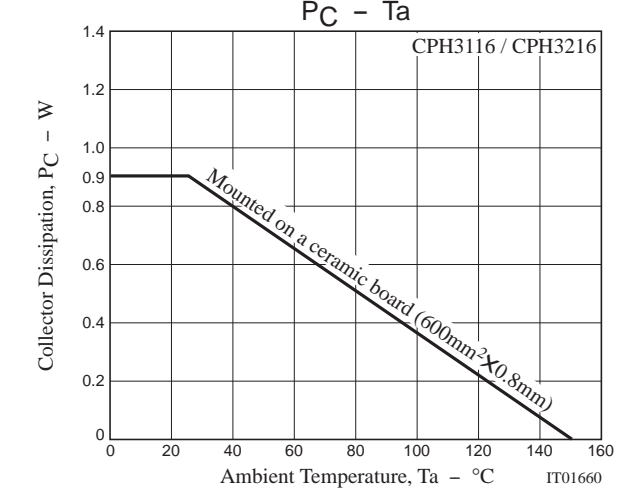
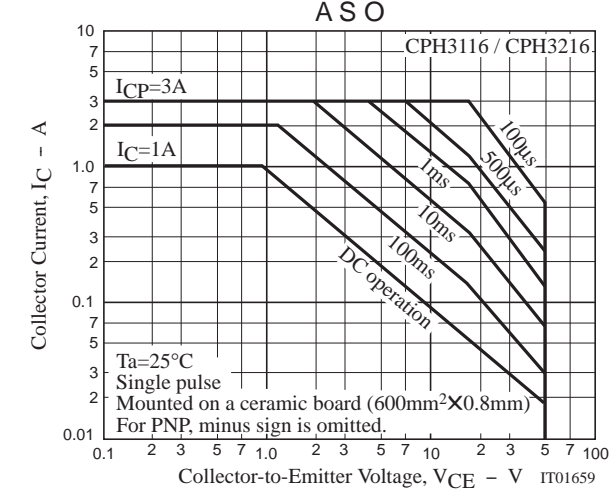
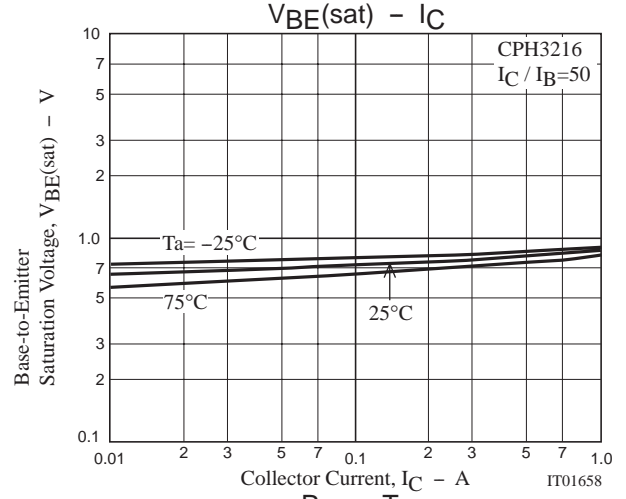
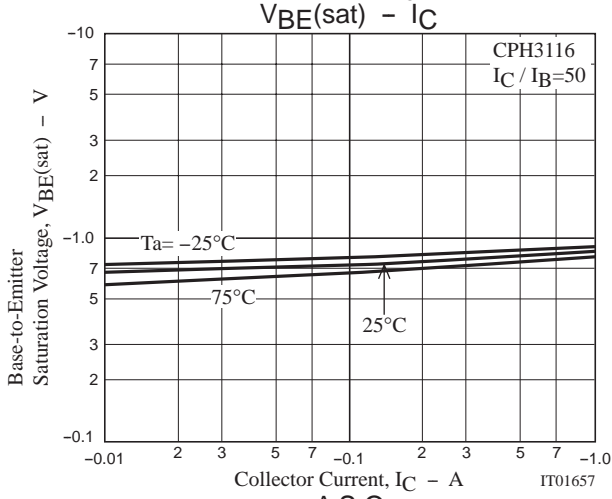
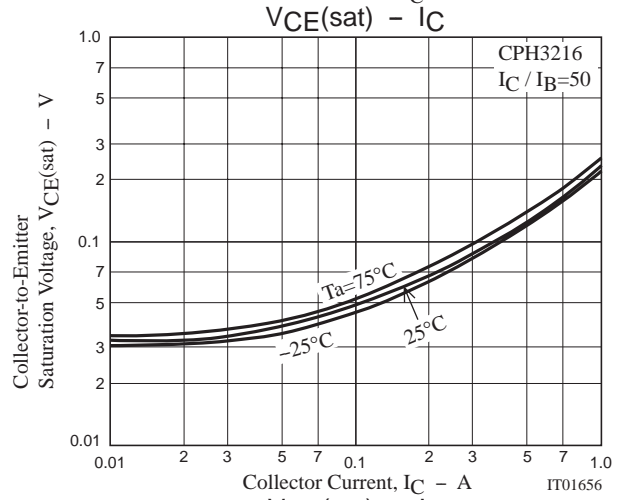
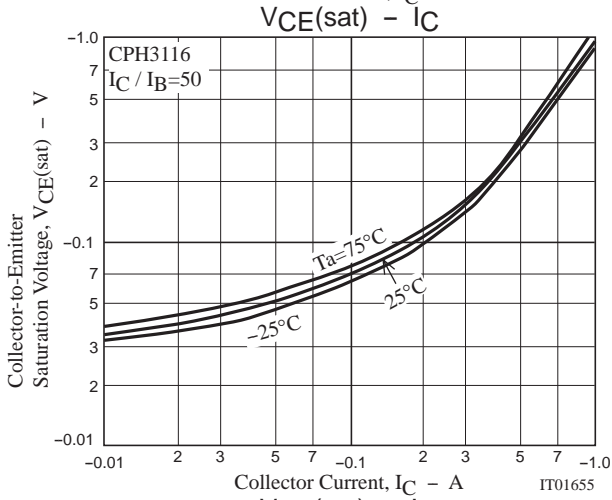
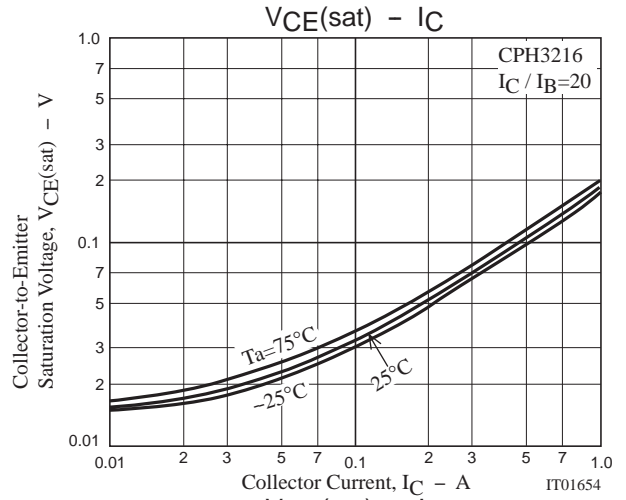
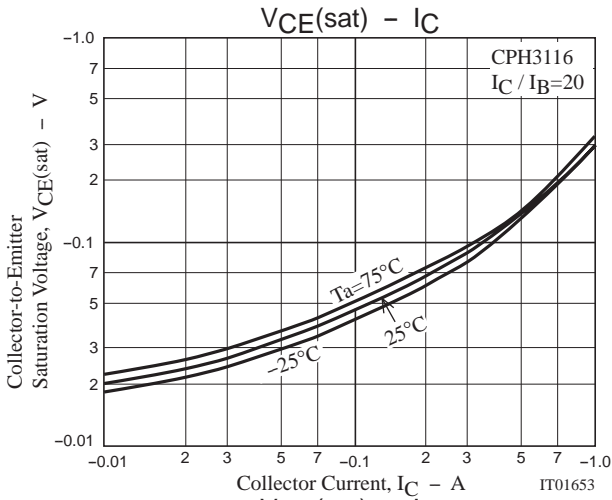
## Switching Time Test Circuit



CPH3116 / CPH3216



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