



CPH3105/3205

High-Current Switching Applications

Applications

- DC-DC converters relay drivers, lamp drivers, motor drivers, strobes.

Features

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

Specifications

() : CPH3105

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-50)80	V
Collector-to-Emitter Voltage	V_{CES}		(-50)80	V
Collector-to-Emitter Voltage	V_{CEO}		(-50)	V
Emitter-to-Base Voltage	V_{EBO}		(-6)	V
Collector Current	I_C		(-3)	A
Collector Current (Pulse)	I_{CP}		(-6)	A
Base Current	I_B		(-600)	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm ² ×0.8mm)	0.9	W
Junction Temperature	T_J		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB} = (-)40V, I_E = 0$			(-1)	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = (-)4V, I_C = 0$			(-1)	μA
DC Current Gain	h_{FE}	$V_{CE} = (-)2V, I_C = (-)100mA$	200		560	
Gain-Bandwidth Product	f_T	$V_{CE} = (-)10V, I_C = (-)500mA$		(360)		MHz
				380		MHz
Output Capacitance	C_{ob}	$V_{CB} = (-)10V, f = 1MHz$		(24)13		pF

Marking : CPH3105 : AE, CPH3205 : CE

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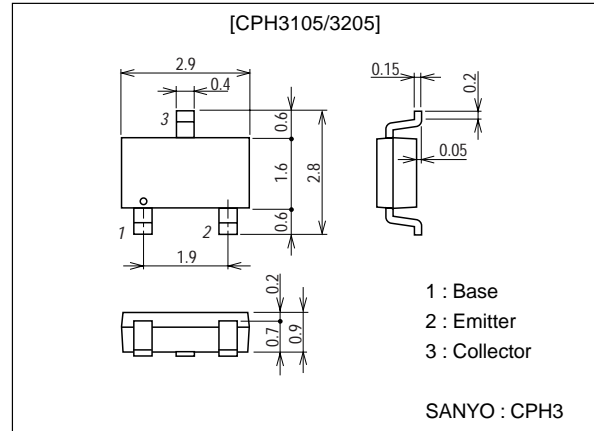
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Package Dimensions

unit:mm

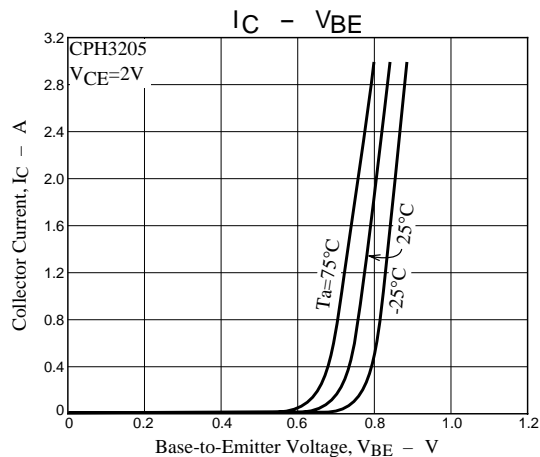
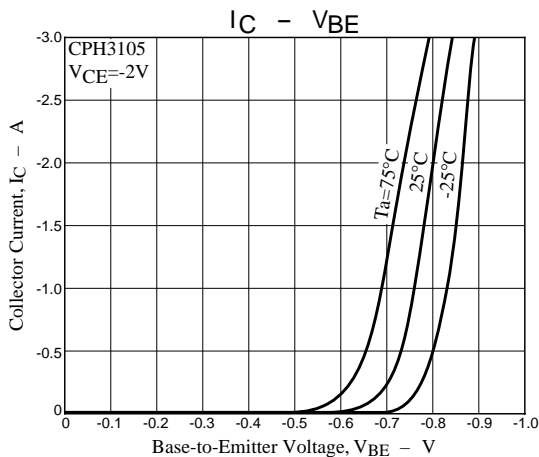
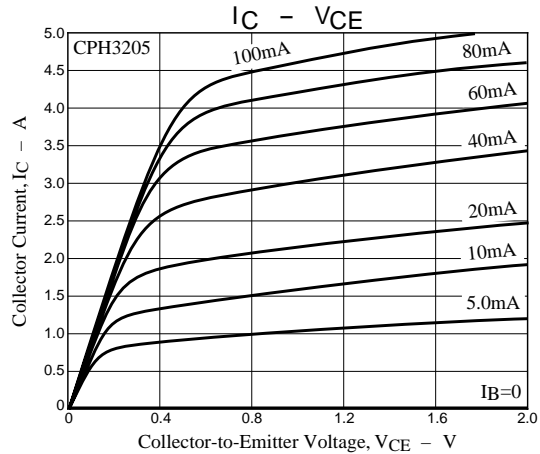
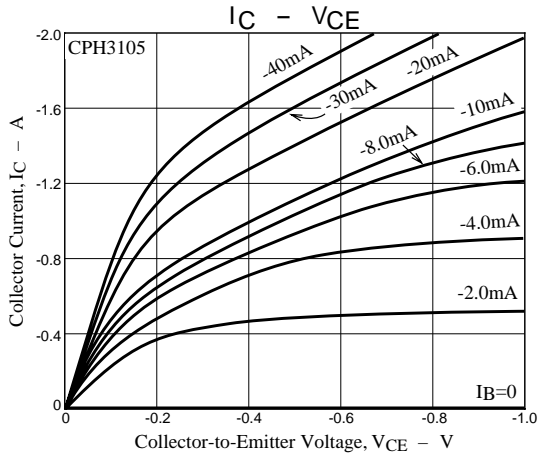
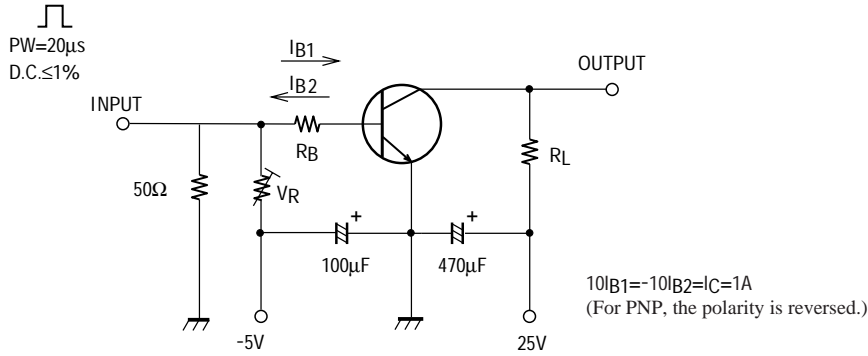
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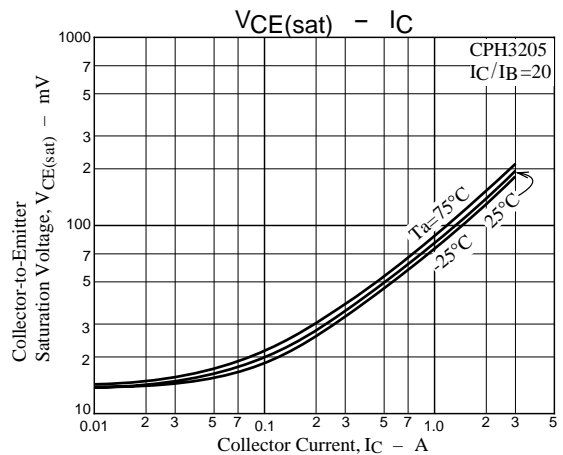
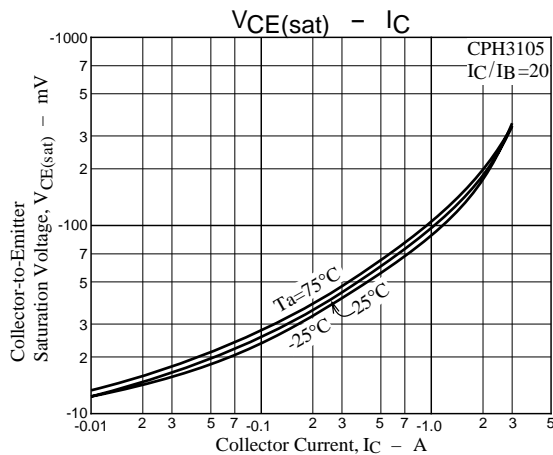
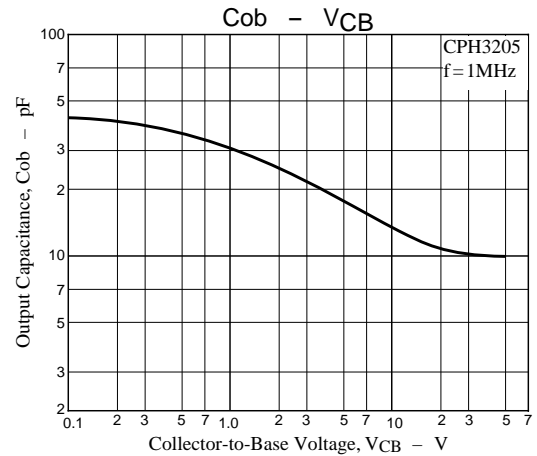
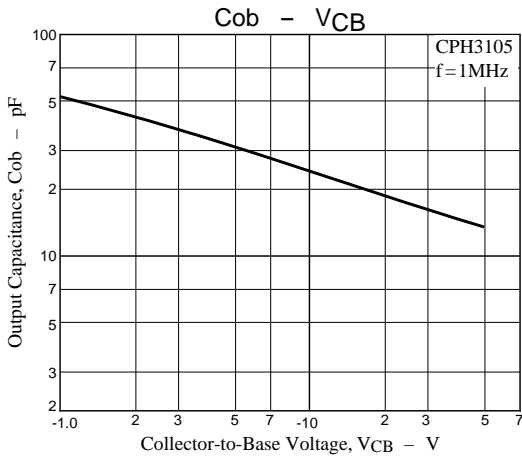
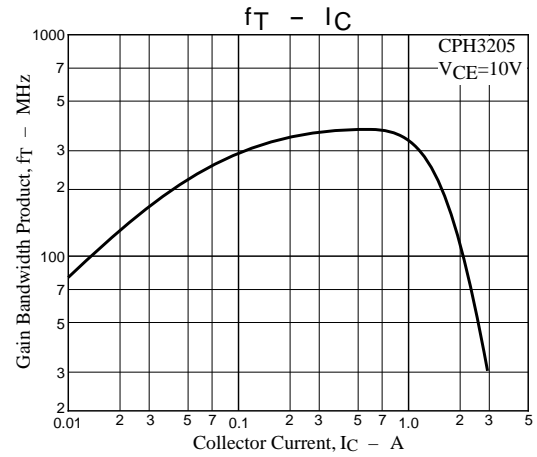
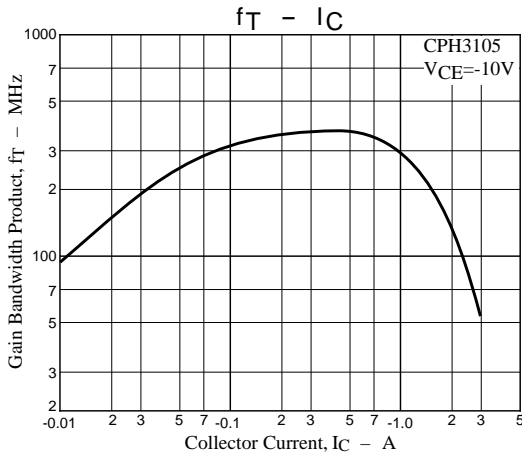
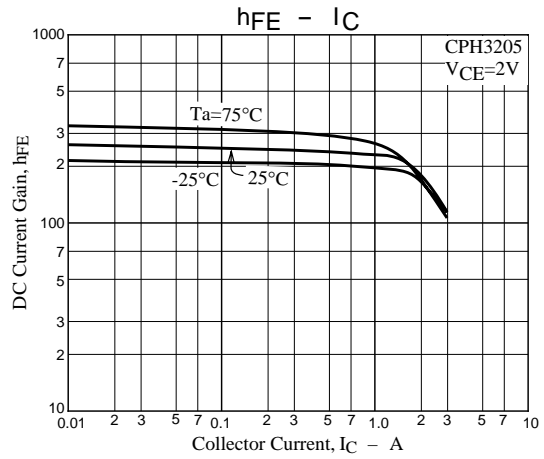
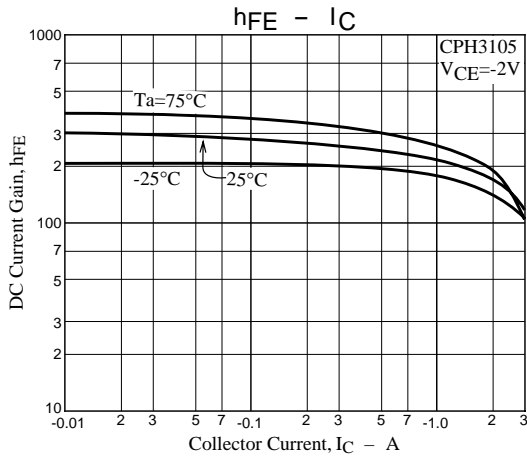
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)1A, I_B=(-)50mA$		(-100)	(-200)	mV
				80	120	mV
	$V_{CE(sat)2}$	$I_C=(-)2A, I_B=(-)100mA$		(-185)	(-500)	mV
				140	210	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2A, I_B=(-)100mA$		(-)0.88	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-50)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=(-)100\mu A, R_{BE}=0$	(-50)			V
			80			V
Collector-to-Base Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-50)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-6)			V
Turn-ON Time	t_{on}	See specified test circuit.		(30)35		ns
Storage Time	t_{stg}	See specified test circuit.		(230)		ns
				300		ns
Turn-OFF Time	t_f	See specified test circuit.		(15)22		ns

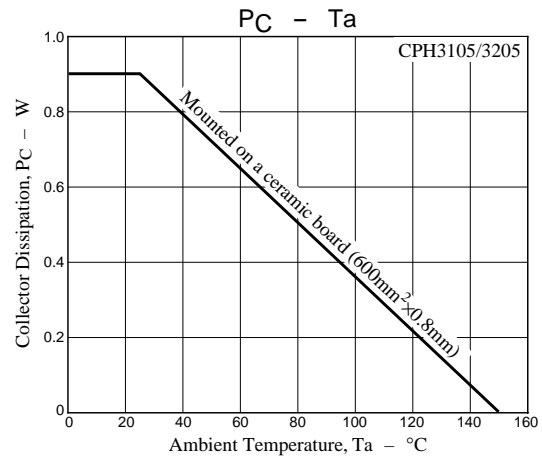
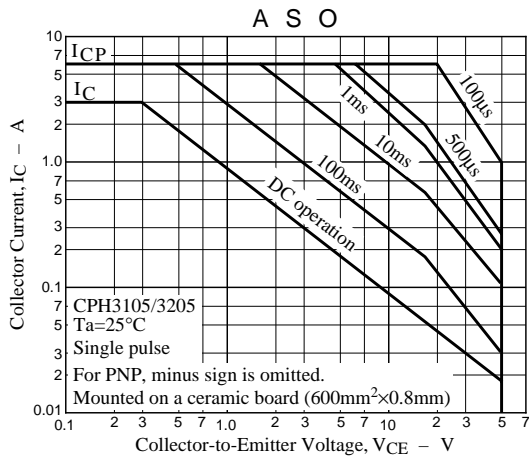
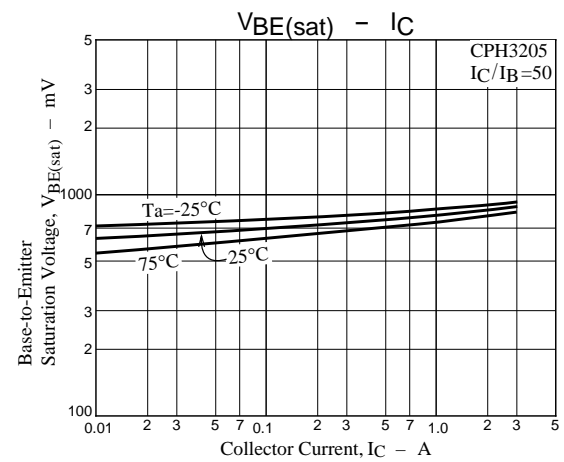
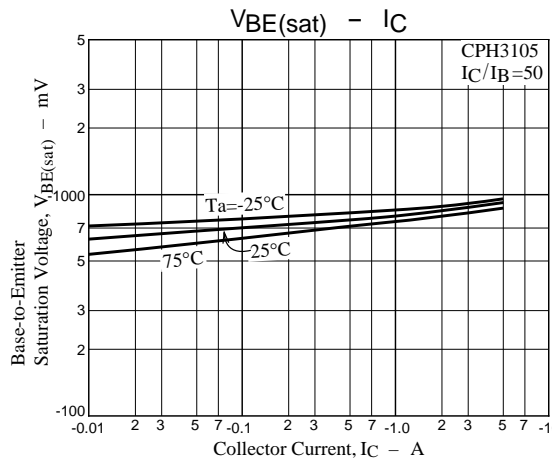
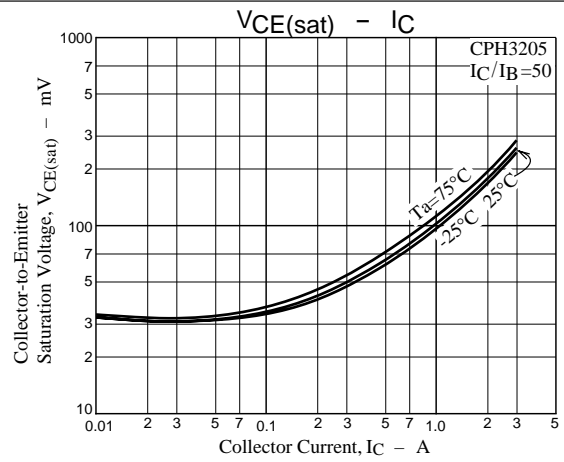
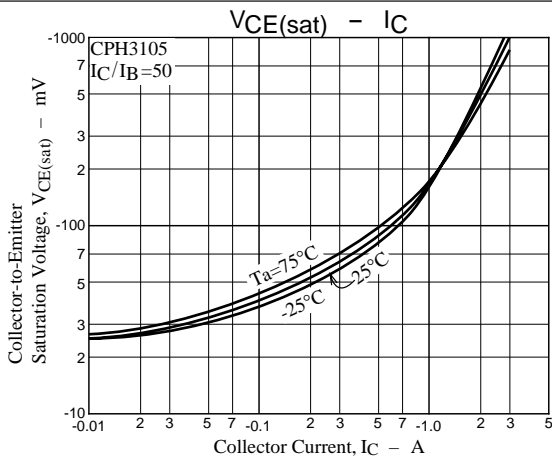
Switching Time Test Circuit



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