



# CPH3109/CPH3209

## DC/DC Converter Applications

### Applications

- Relay drivers, lamp drivers, motor drivers, strobes.

### 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.

### Specifications

( ) : CPH3109

#### 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)30	V
Emitter-to-Base Voltage	$V_{EBO}$		(-5)5	V
Collector Current	$I_C$		(-3)3	A
Collector Current (Pulse)	$I_{CP}$		(-5)5	A
Base Current	$I_B$		(-600)600	mA
Collector Dissipation	$P_C$	Mounted on a ceramic board (600mm <sup>2</sup> ×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	$I_{CBO}$	$V_{CB}=(-)30V, I_E=0$			(-0.1)0.1	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0$			(-0.1)0.1	μA
DC Current Gain	$h_{FE}$	$V_{CE}=(-)2V, I_C=(-)500mA$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)500mA$		(380)		MHz
				450		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(25)20		pF

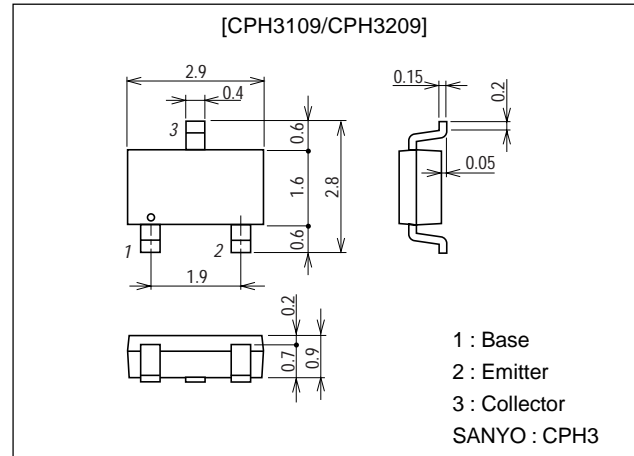
Marking : CPH3109 : AJ, CPH3209 : CJ

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### Package Dimensions

unit:mm

2150A



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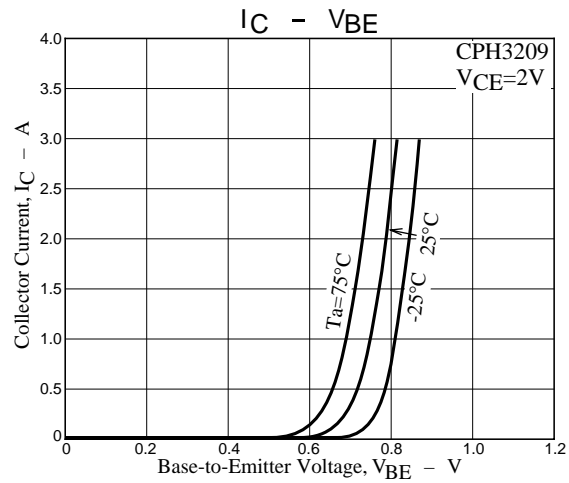
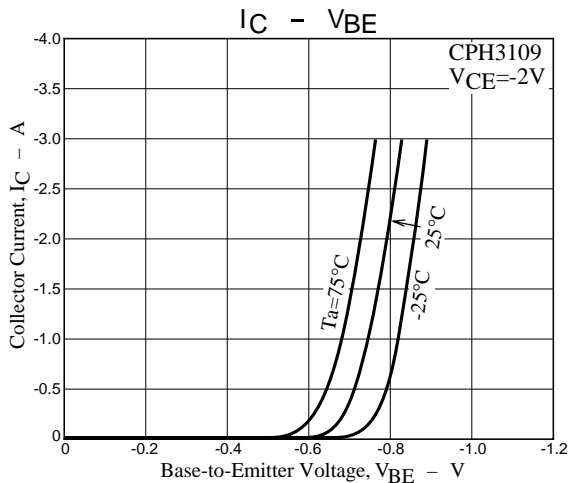
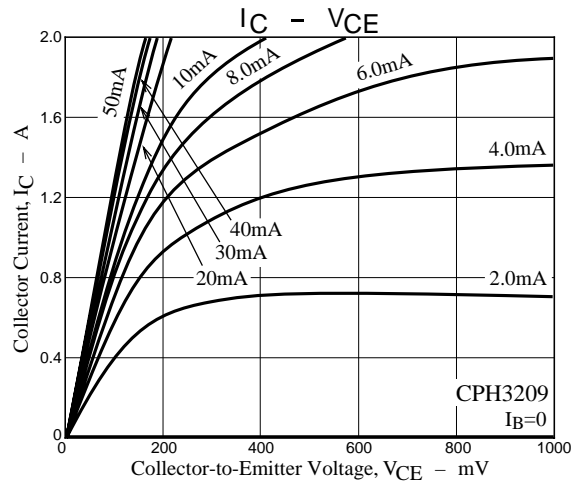
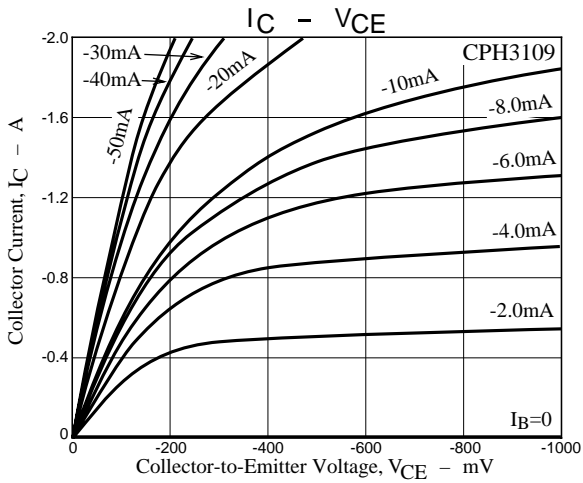
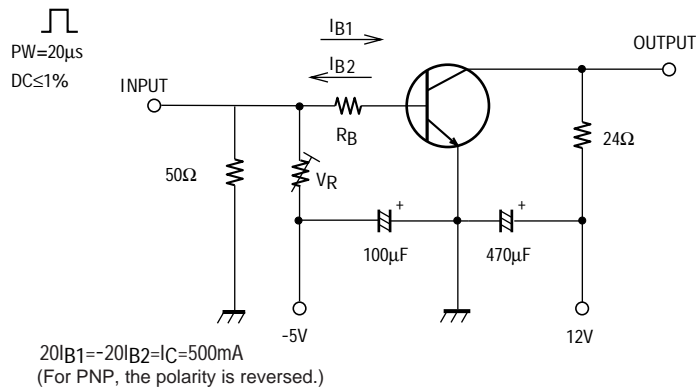
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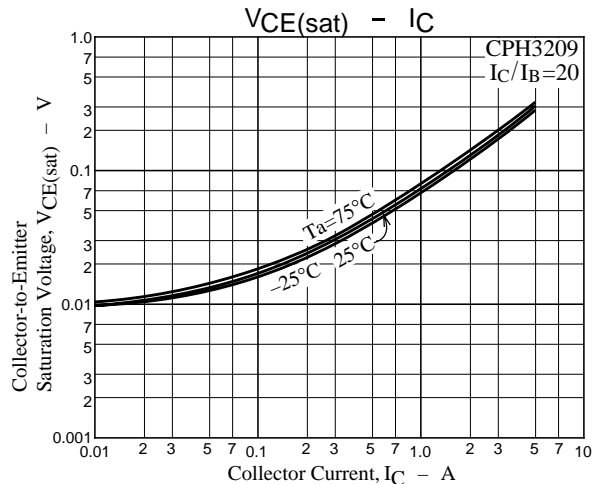
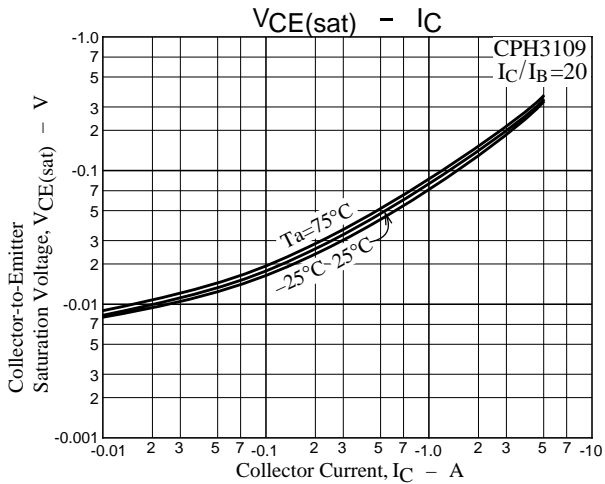
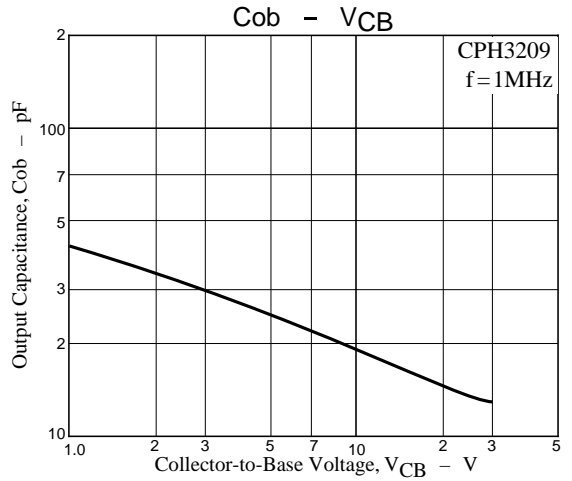
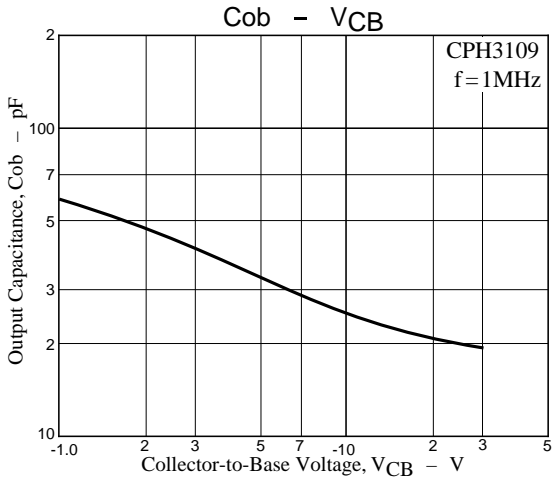
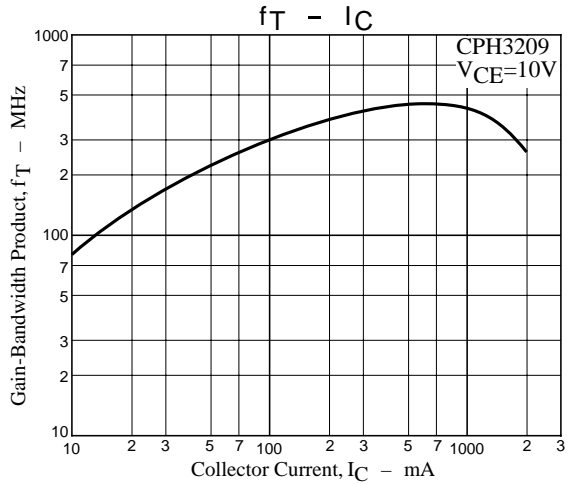
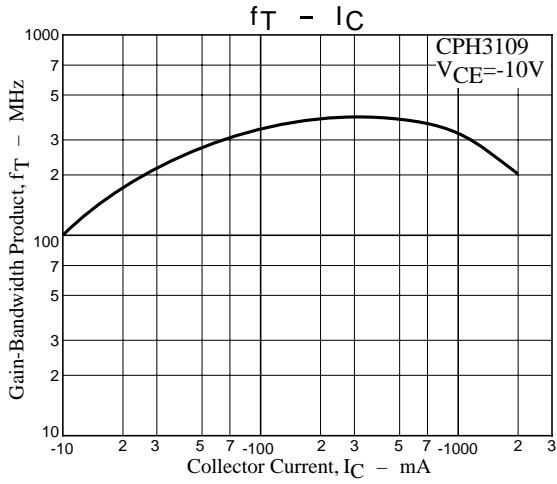
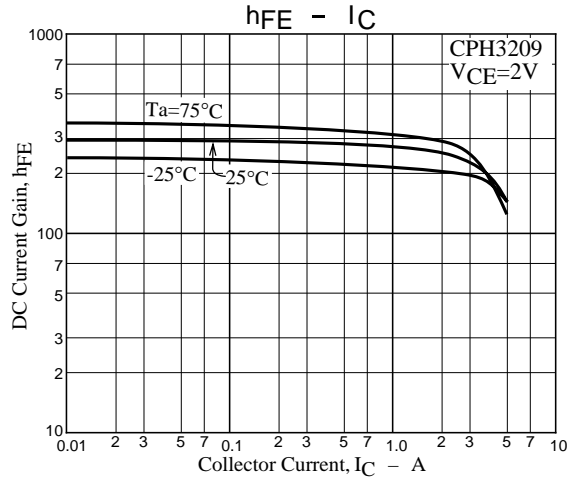
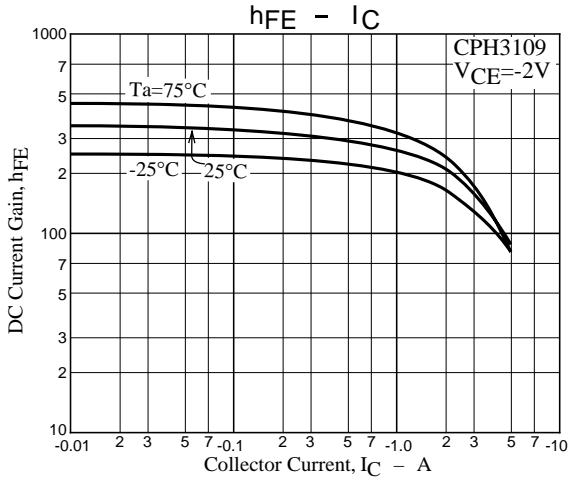
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)1.5A, I_B=(-)30mA$		(-155)	(-230)	mV
	$V_{CE(sat)2}$	$I_C=(-)1.5A, I_B=(-)75mA$		(-)105	(-)155	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1.5A, I_B=(-)30mA$		(-)0.83	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$		(-30)		V
				40		V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$		(-)30		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.		(50)30		ns
Storage Time	$t_{stg}$	See specified test circuit.		(270)		ns
				300		ns
Fall Time	$t_f$	See specified test circuit.		(25)15		ns

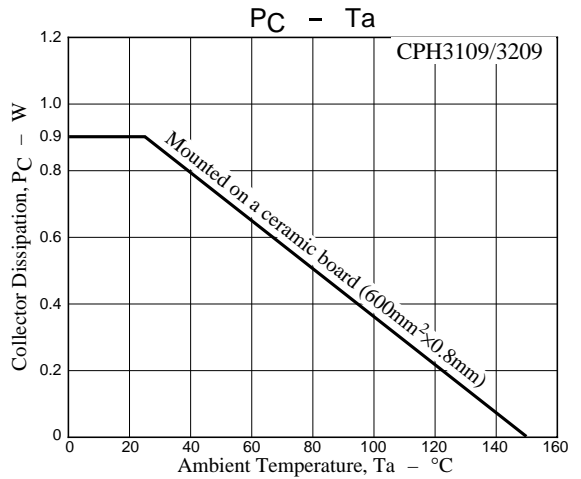
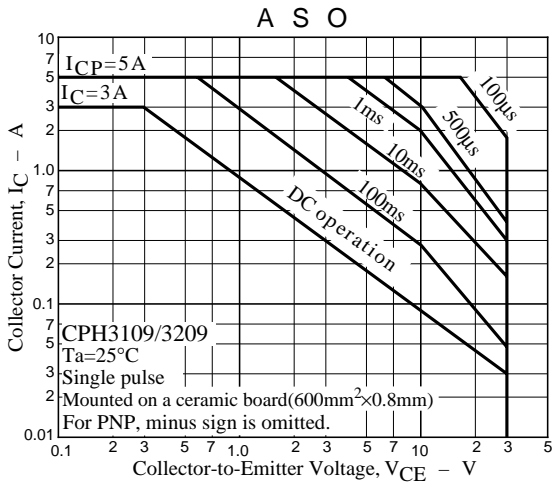
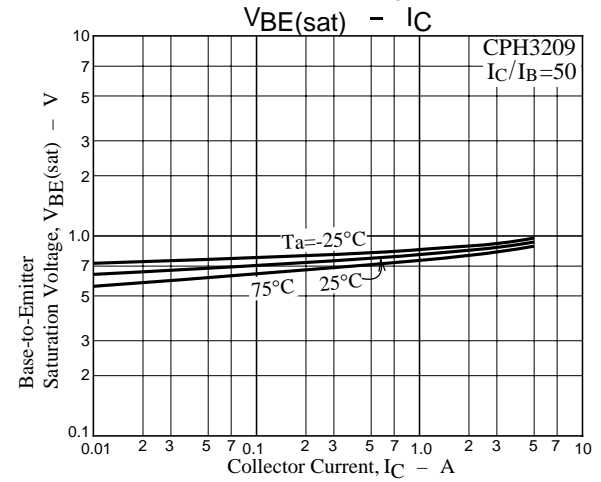
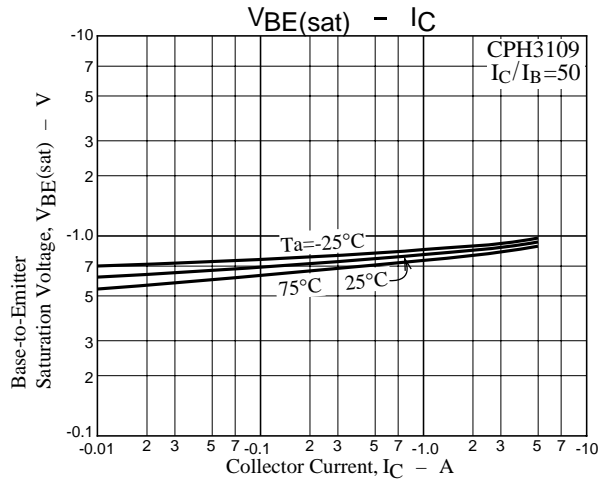
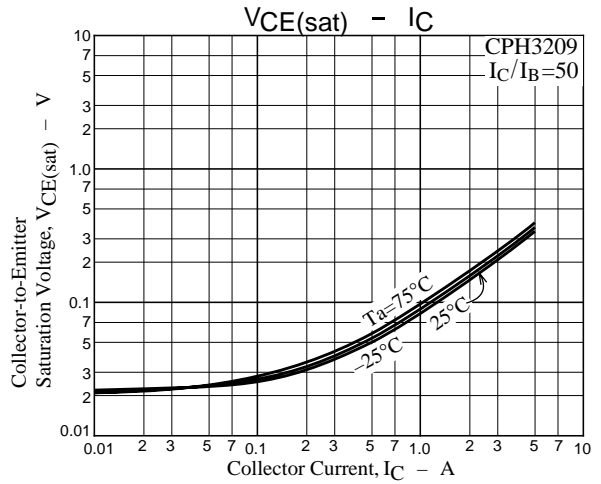
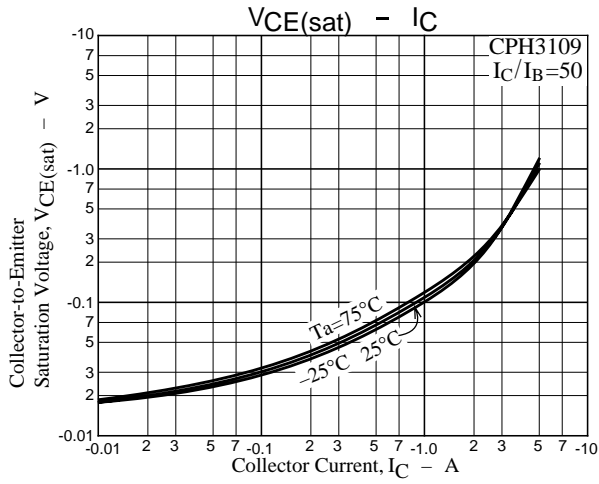
## Switching Time Test Circuit



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