

MCH3109 / MCH3209**DC / DC Converter Applications****Applications**

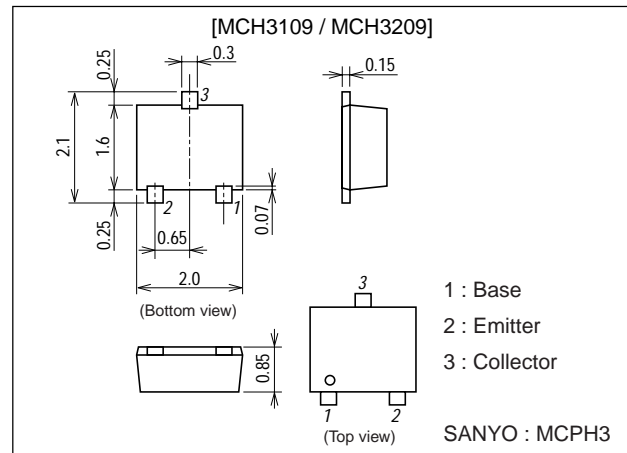
- Relay drivers, lamp drivers, motor drivers, strobes.

Features

- Adoption of MBIT processes.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package facilitates miniaturization in end products (0.85mm).
- High allowable power dissipation.

Package Dimensions

unit : mm
2194A

**Specifications** () : MCH3109**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)	V
Emitter-to-Base Voltage	V_{EBO}		(-5)	V
Collector Current	I_C		(-3)	A
Collector Current (Pulse)	I_{CP}		(-5)	A
Base Current	I_B		(-600)	mA
Collector Dissipation	P_C	Mounted on a ceramic board(600mm ² X0.8mm)	0.8	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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = (-)4V, I_C = 0$			(-)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)450		MHz
Output Capacitance	C_{ob}	$V_{CB} = (-)10V, f = 1MHz$		(25)20		pF

Marking : MCH3109 : AJ / MCH3209 : CJ

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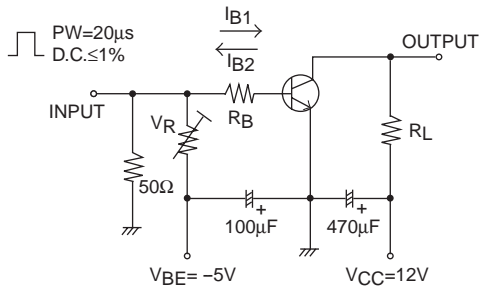
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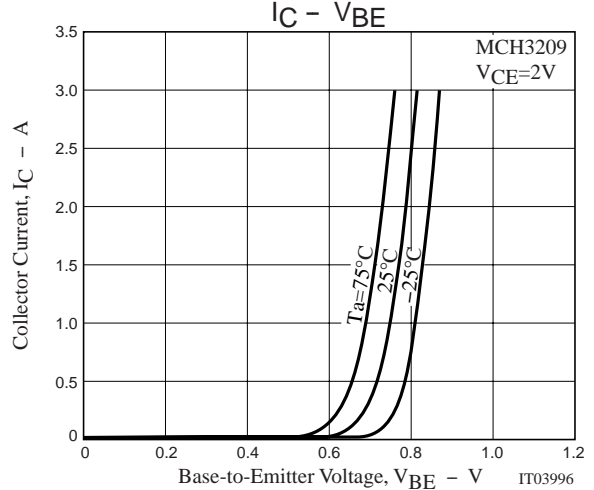
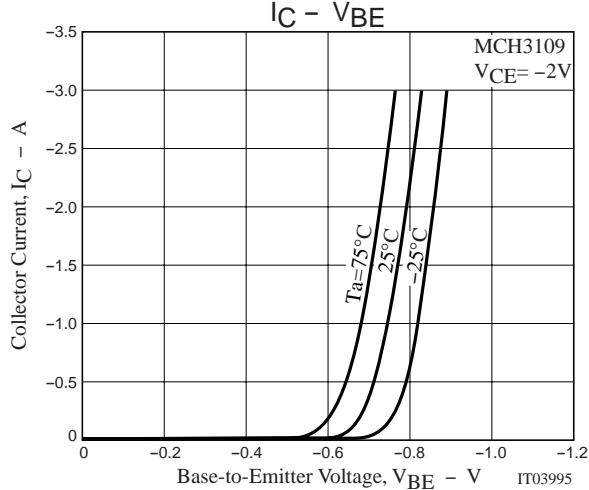
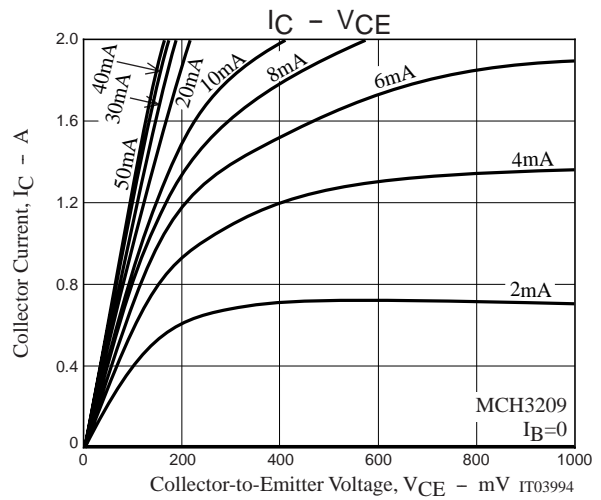
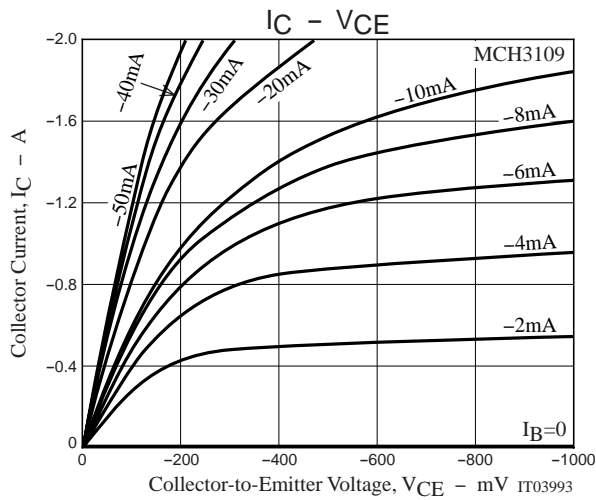
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)1.5A, I_B=(-)30mA$		(-155)	(-230)	mV
	$V_{CE(sat)2}$	$I_C=(-)1.5A, I_B=(-)750mA$		120	180	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1.5A, I_B=(-)30mA$		(-)0.83	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-30)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)300		ns
Fall Time	t_f	See specified Test Circuit.		(25)15		ns

Switching Time Test Circuit

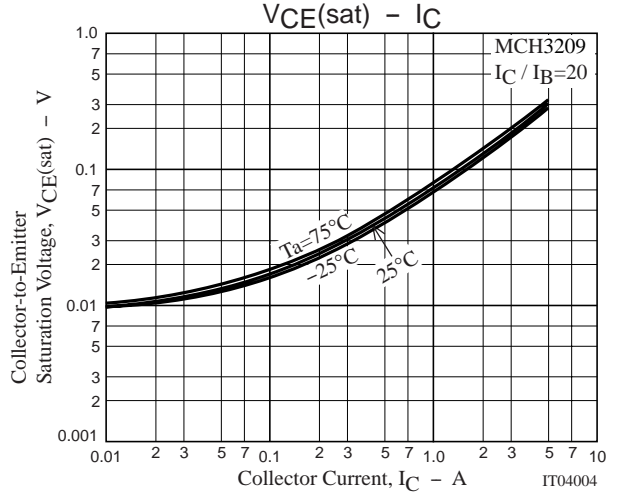
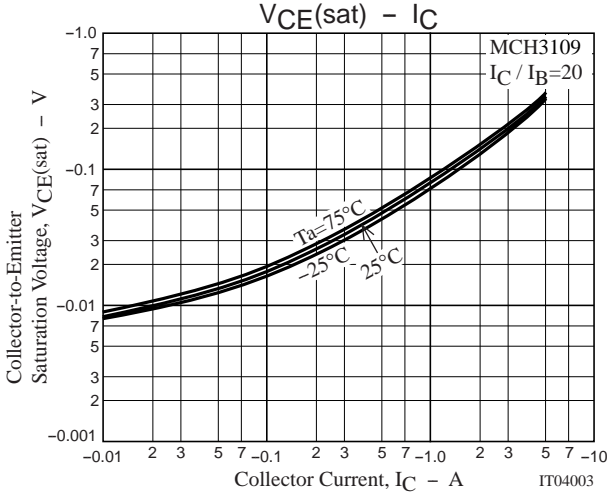
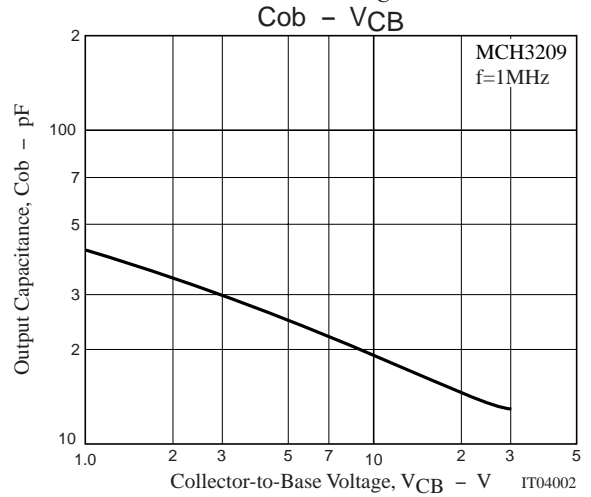
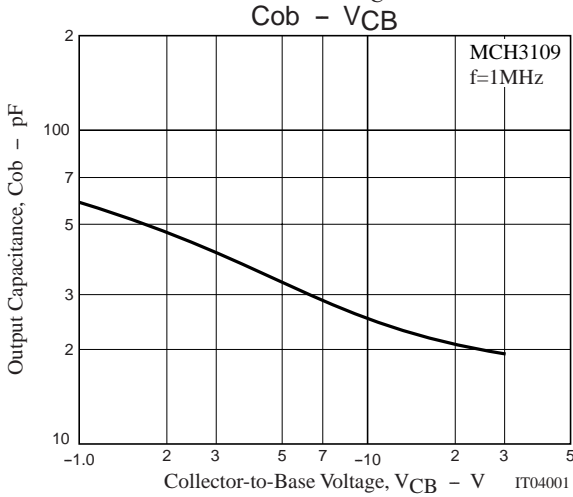
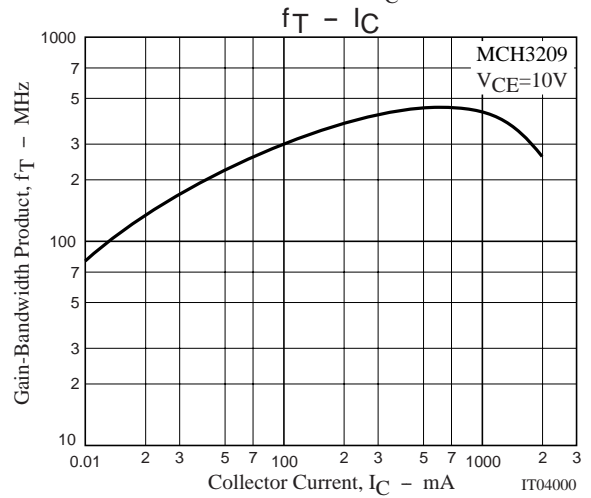
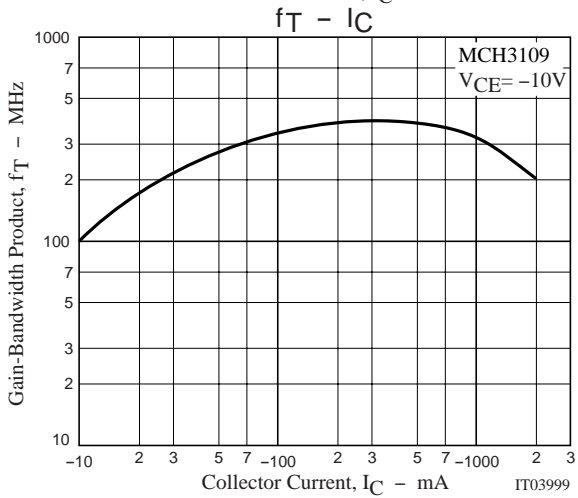
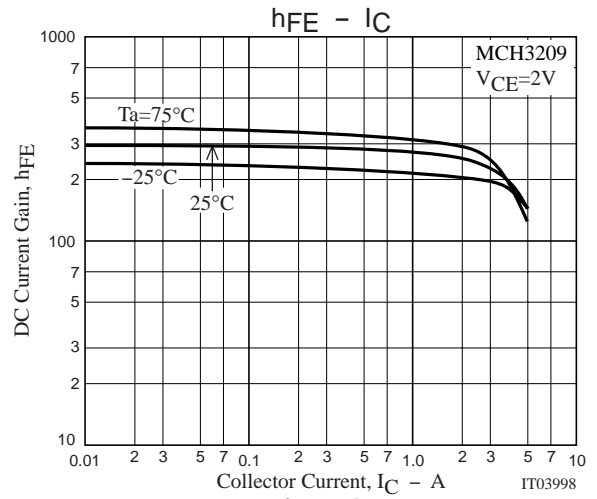
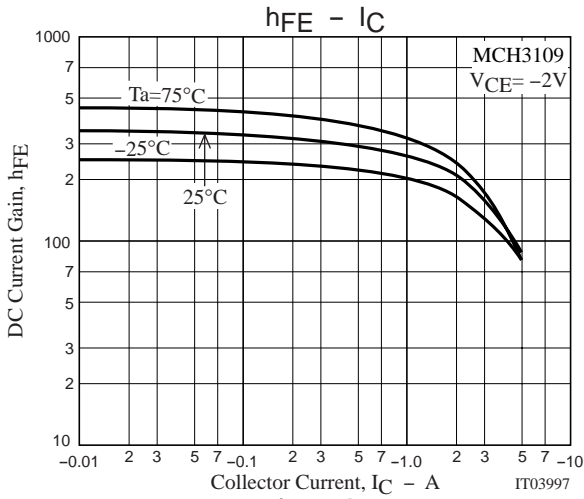


$$I_C = 20I_{B1} = -20I_{B2} = 500mA$$

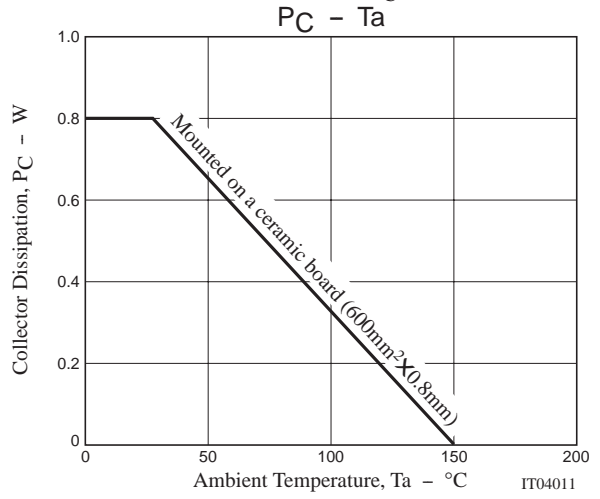
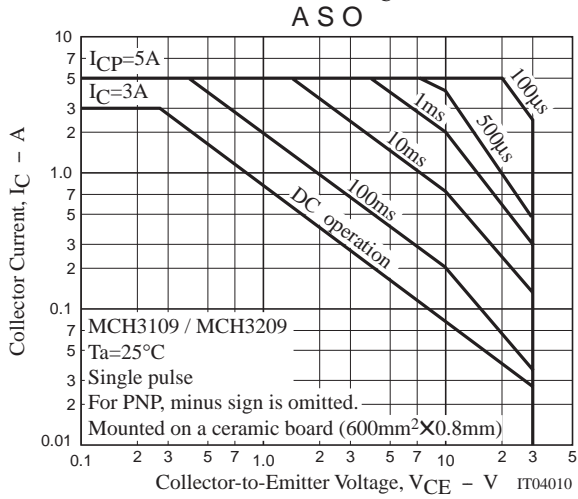
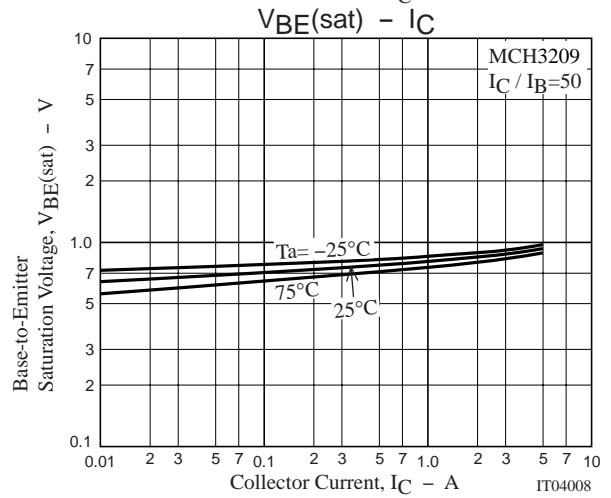
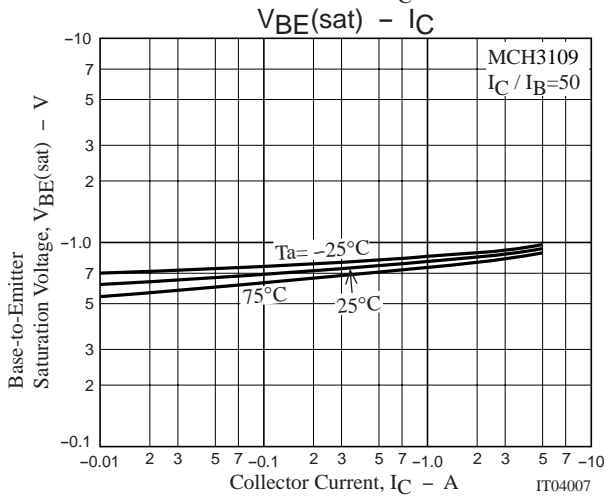
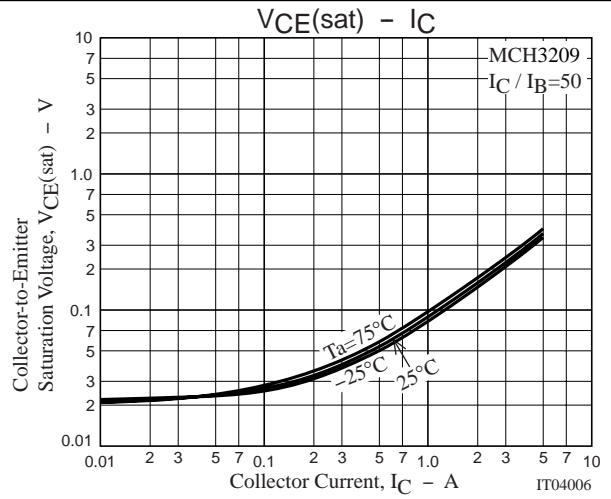
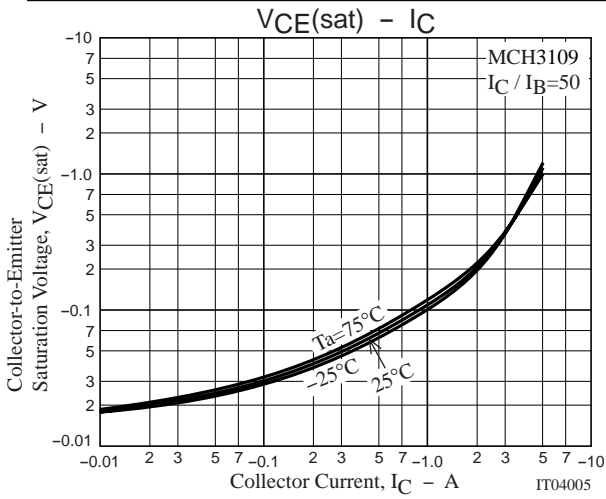
(For PNP, the polarity is reversed.)



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