

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

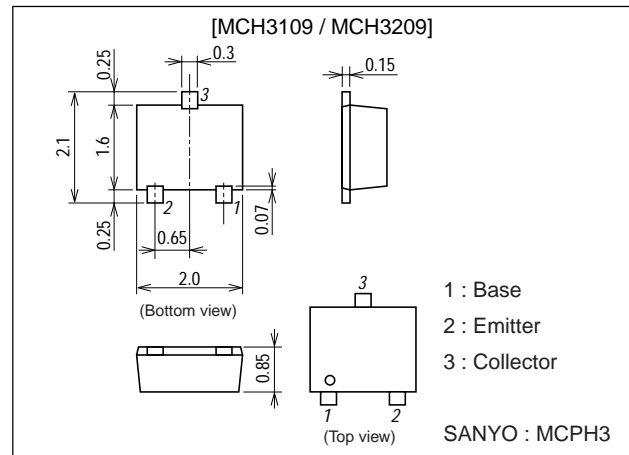
- Relay drivers, lamp drivers, motor drivers, strobes.

**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 <sup>2</sup> 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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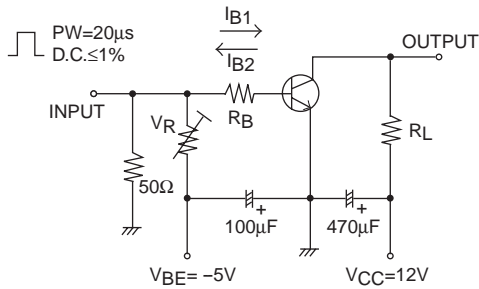
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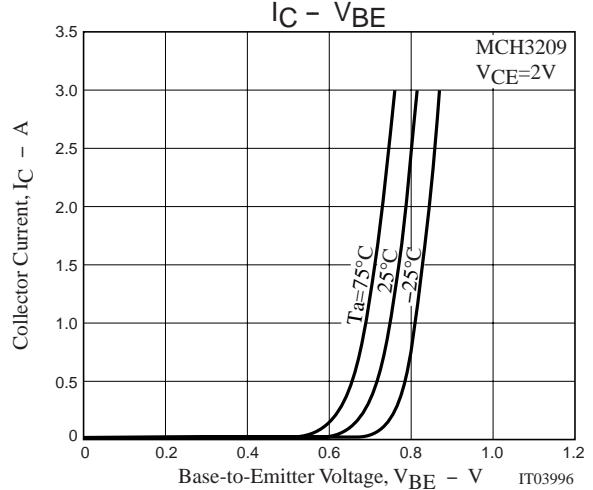
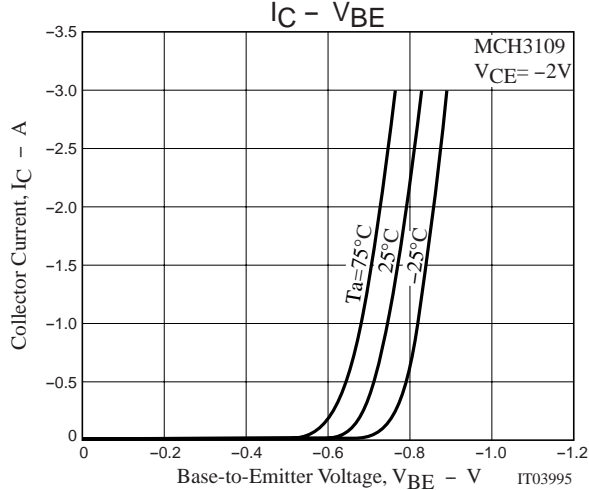
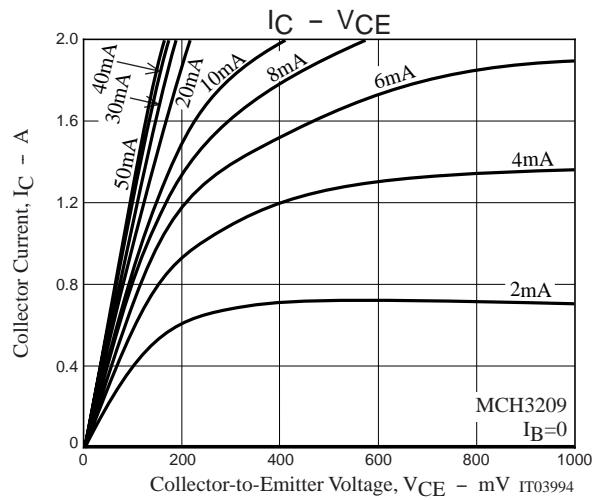
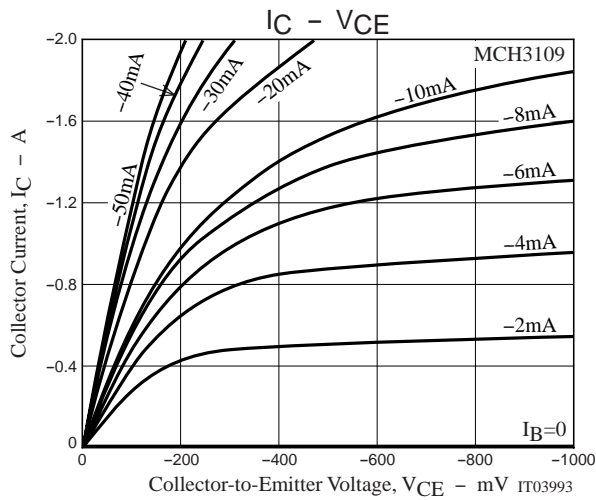
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C = (-)1.5A, I_B = (-)30mA$		(-155)	(-230)	mV
	$V_{CE(sat)2}$	$I_C = (-)1.5A, I_B = (-)750mA$		120	180	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)1.5A, I_B = (-)30mA$		(-)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

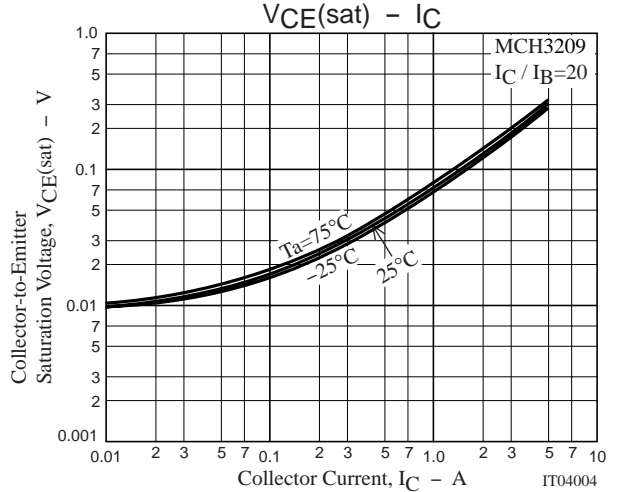
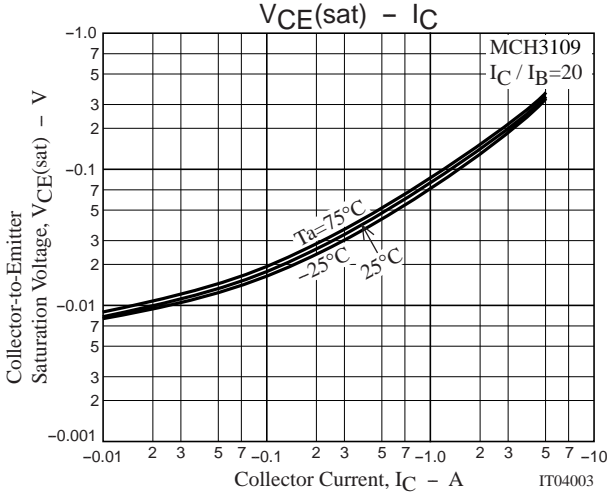
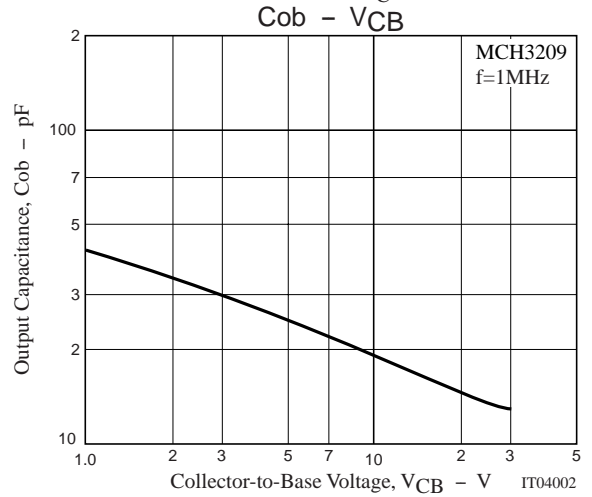
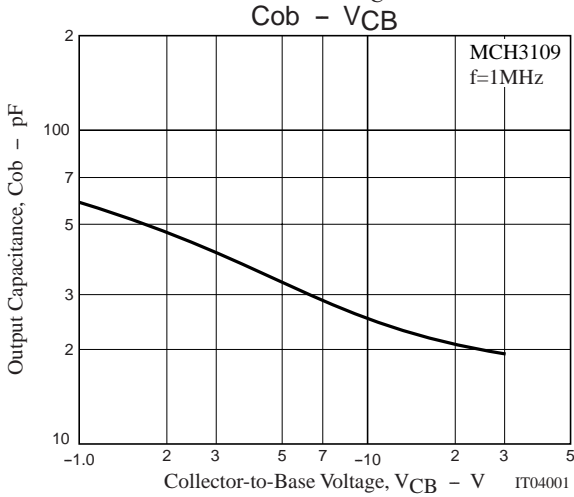
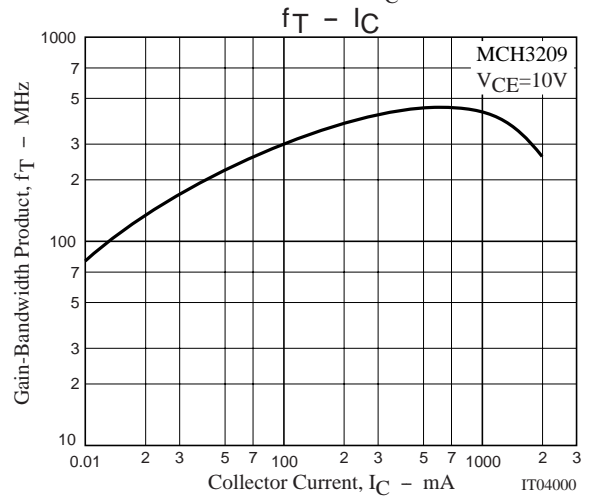
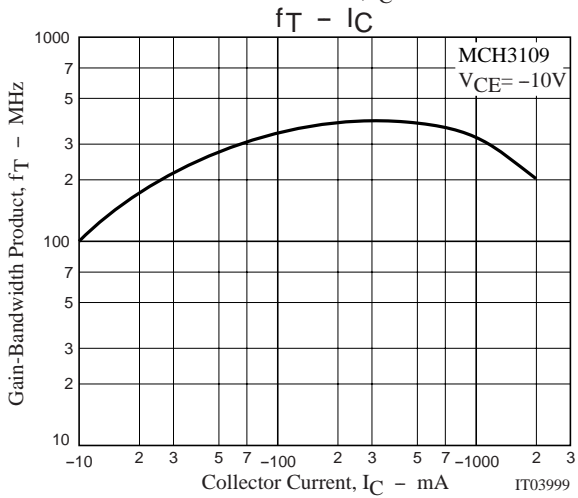
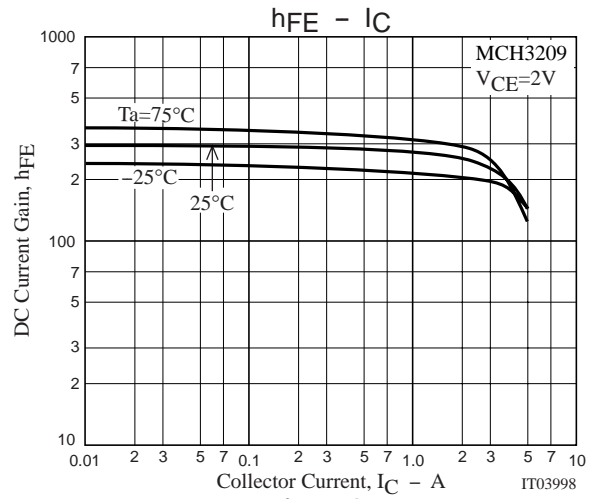
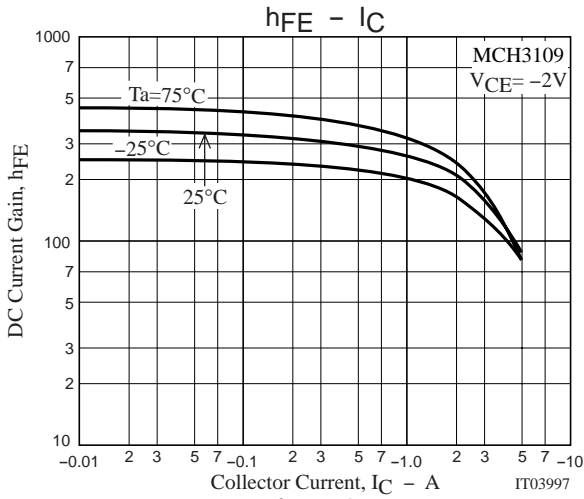


$$I_C = 20I_{B1} = -20I_{B2} = 500mA$$

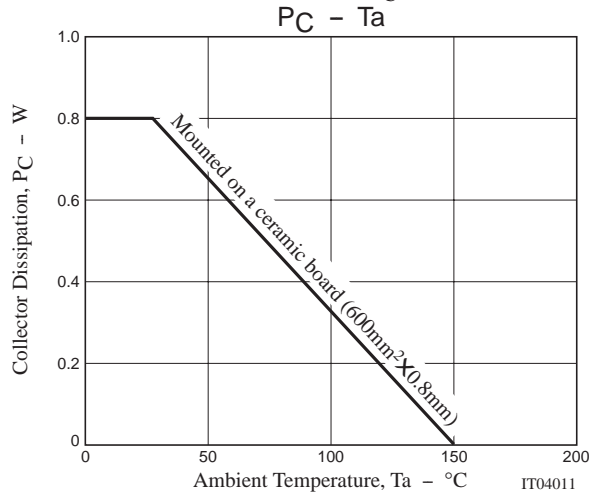
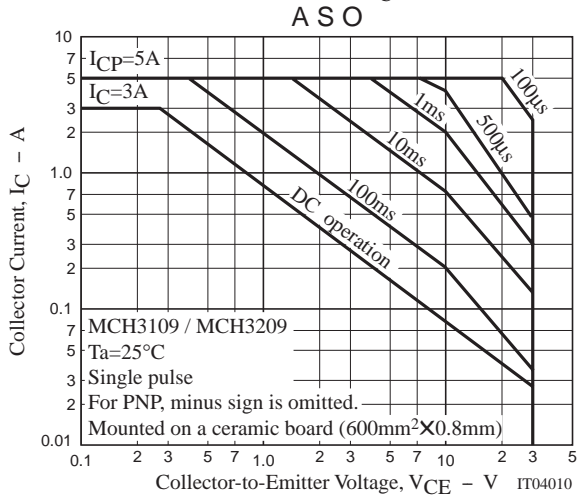
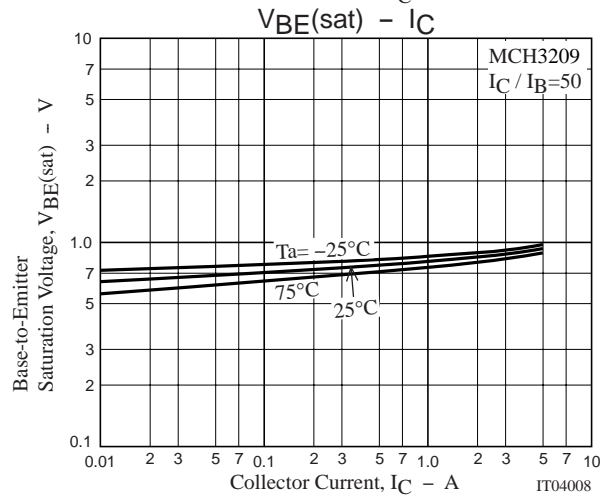
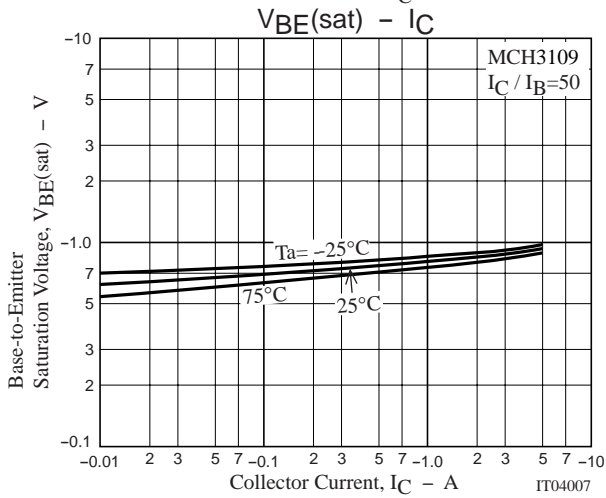
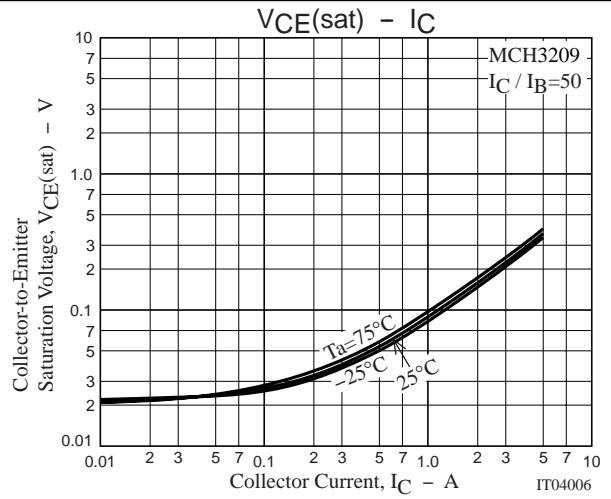
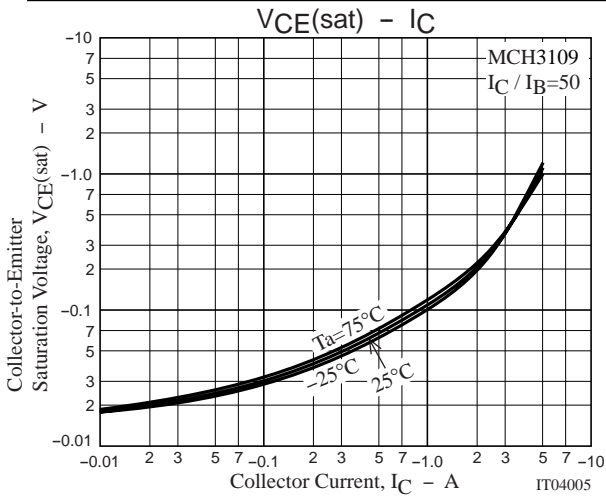
(For PNP, the polarity is reversed.)



# MCH3109 / MCH3209



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