



MCH3105 / MCH3205

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.
- Ultraminiature package facilitates miniaturization in end products (mounting height : 0.85mm).
- High allowable power dissipation.

Specifications () : MCH3105

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)	0.8	W
Junction Temperature	T_J		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

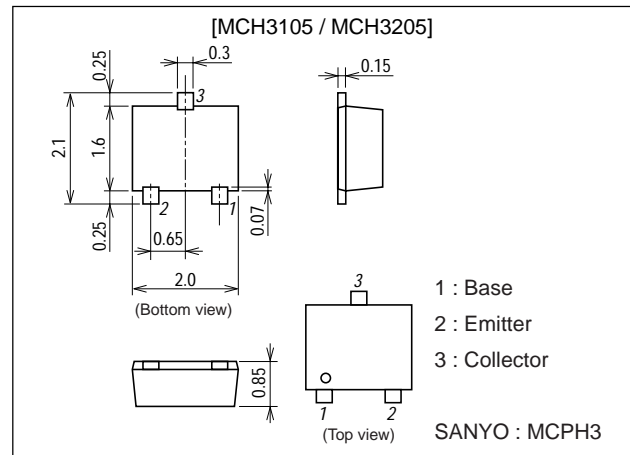
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CB0}	$V_{CB} = (-)40V, I_E = 0$			(-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)380		MHz
Output Capacitance	C_{ob}	$V_{CB} = (-)10V, f = 1MHz$		(24)13		pF

Marking : MCH3105 : AE / MCH3205 : CE

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Package Dimensions

unit : mm
2194A

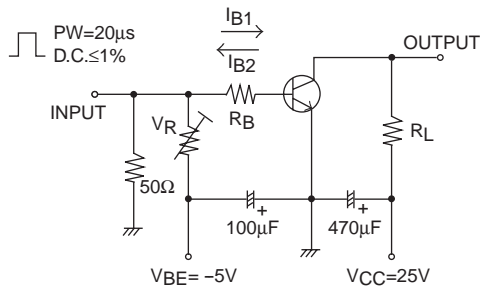
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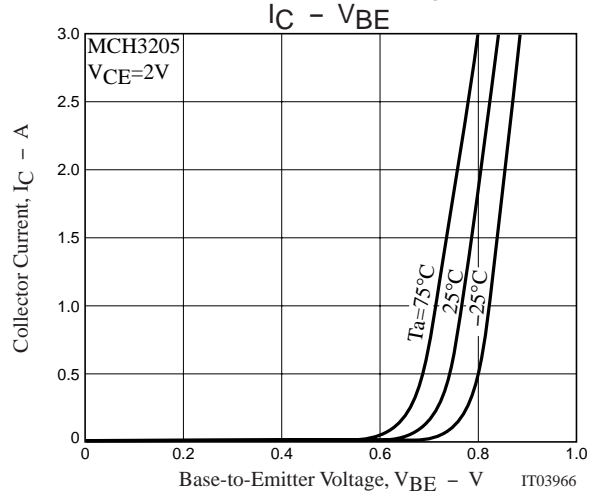
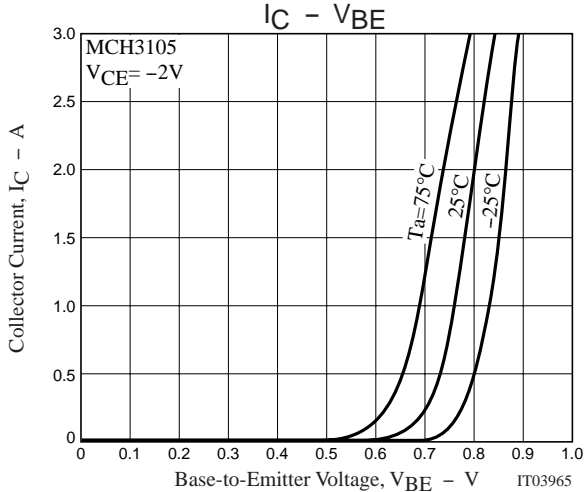
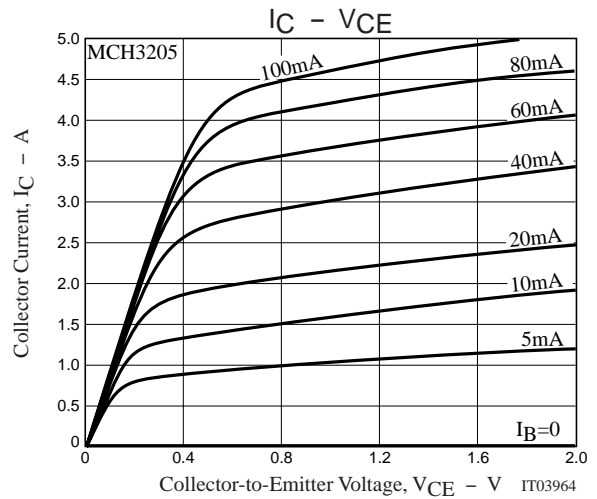
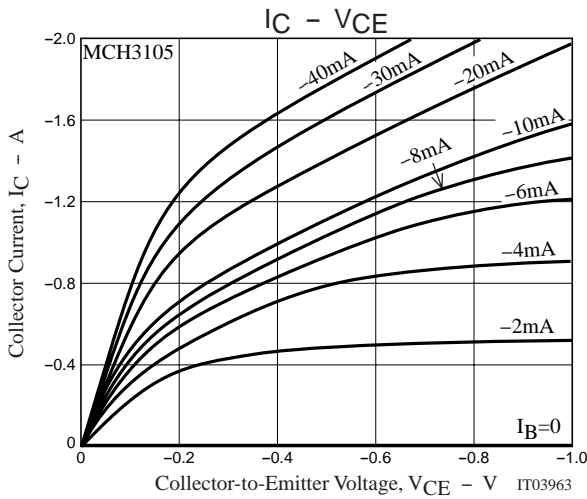
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)1A, I_B=(-)50mA$		(-100)	(-200)	mV
	$V_{CE(sat)2}$	$I_C=(-)2A, I_B=(-)100mA$		80	120	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2A, I_B=(-)100mA$		(-)0.88	(-)1.2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

Switching Time Test Circuit

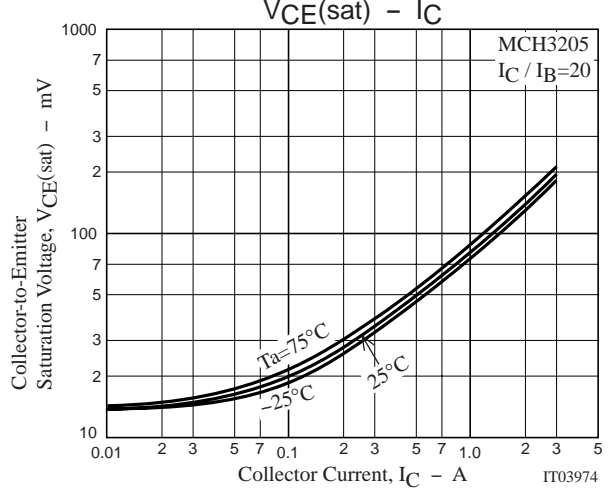
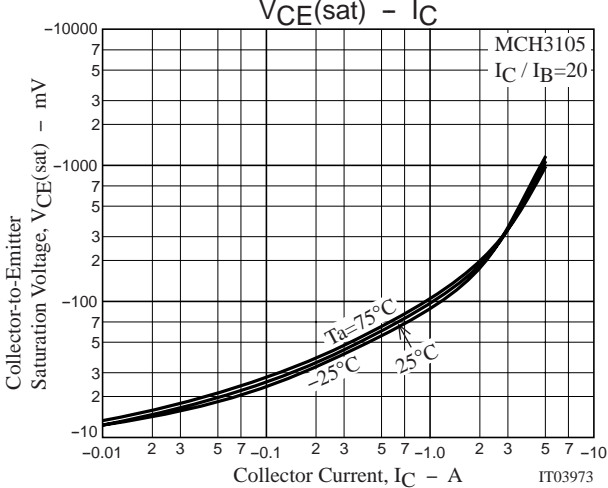
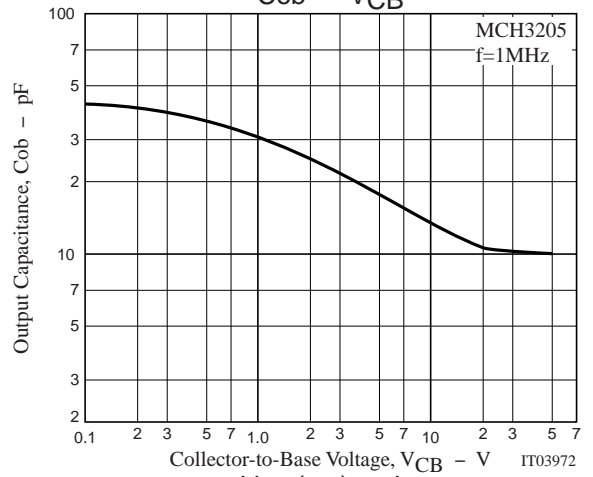
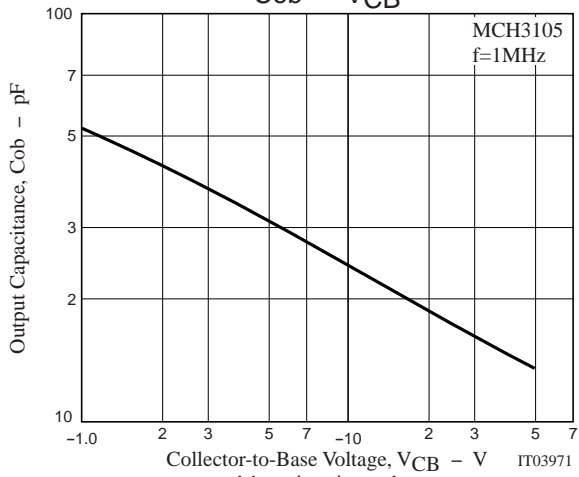
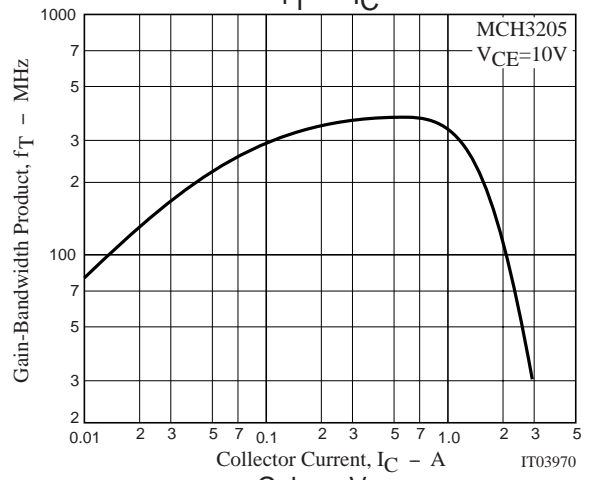
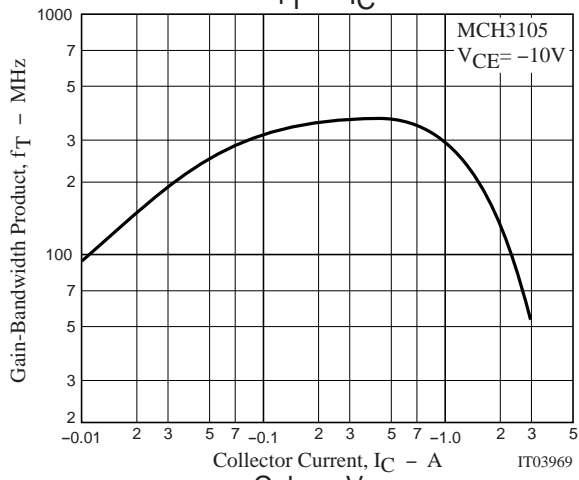
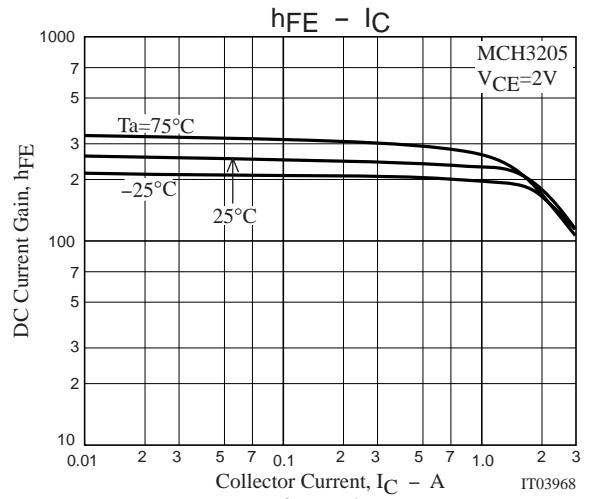
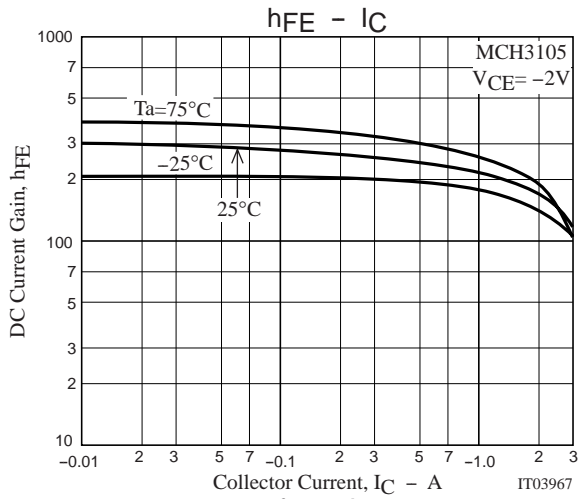


$$I_C = 10I_{B1} = -10I_{B2} = 1A$$

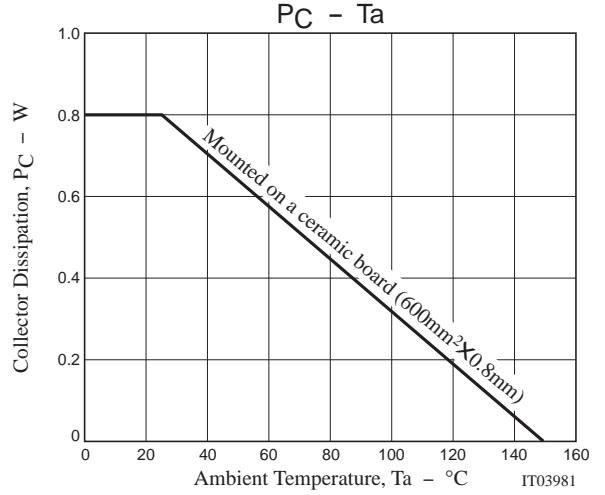
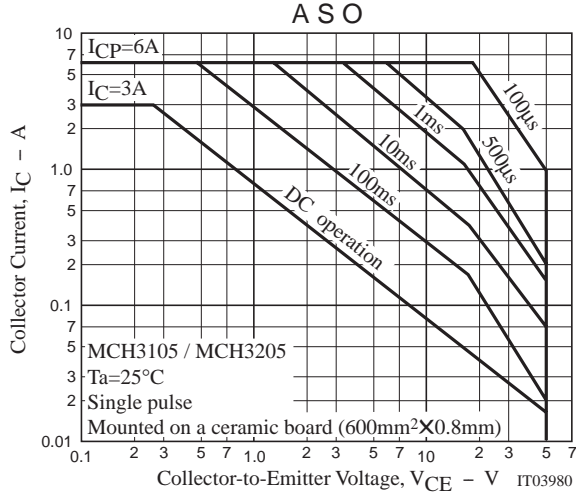
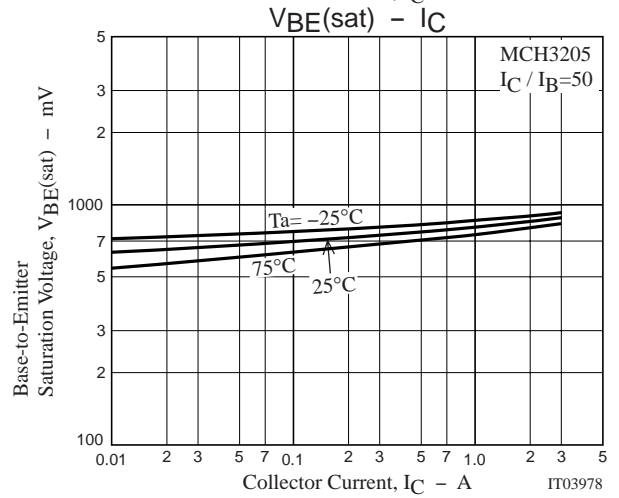
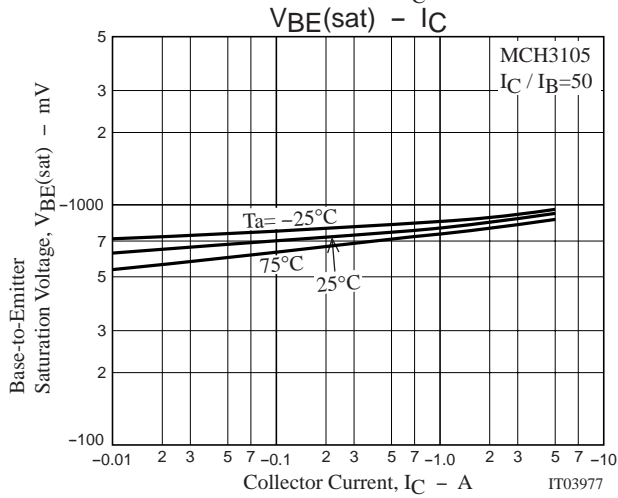
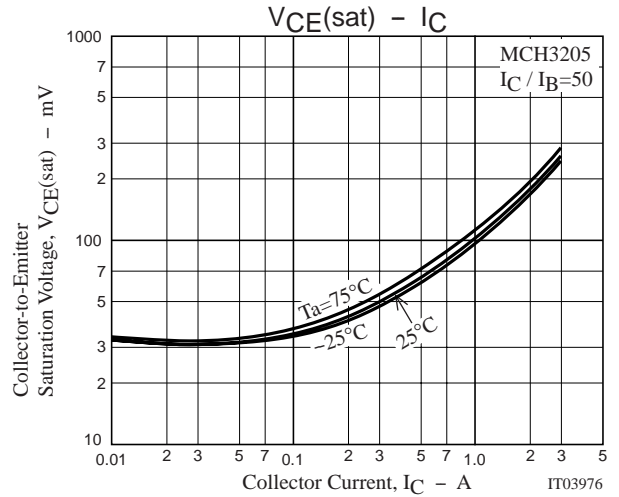
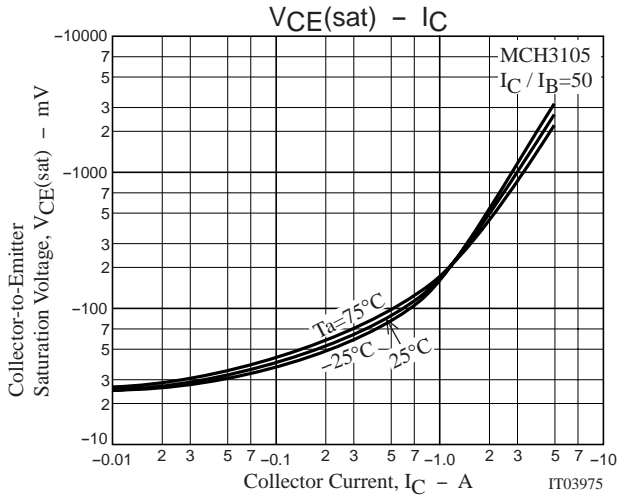
(For PNP, the polarity is reversed.)



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