Ordering number:ENN6611

PNP/NPN Epitaxial Planar Silicon Transistors

MCH6103/MCH6203

DC/DC Converter Applications

Applications

· Relay drivers, lamp drivers, motor drivers and strobes.

Features

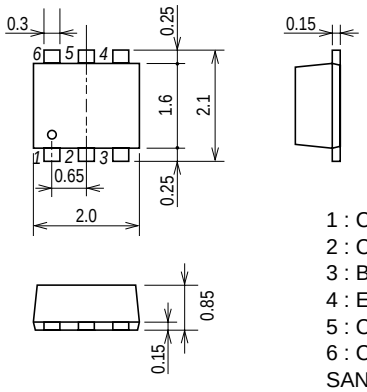
· Adoption of MBIT processes.
· Large current capacitance.
· Low collector-to-emitter saturation voltage.
· High-speed switching.
· Ultrasmall package facilitates miniaturization in end products (mounting height : 0.85mm).
· High allowable power dissipation.

Package Dimensions

unit:mm

2177

[MCH6103/MCH6203]



1 : Collector
2 : Collector
3 : Base
4 : Emitter
5 : Collector
6 : Collector
SANYO : MCPH6

Specifications

( ) : MCH6103

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–50)80	V
Collector-to-Emitter Voltage	V_{CES}		(–50)80	V
	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)1.0	A
Collector Current (Pulse)	I_{CP}		(–)3	A
Base Current	I_B		200	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm^2×0.8mm)	1.0	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–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			(–)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=(–)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)300mA		420		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(9)6		pF

Marking : MCH6103 : AC, MCH6203 : CC

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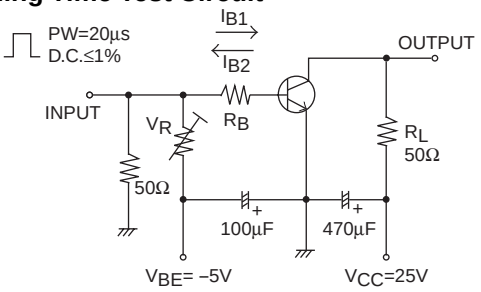
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

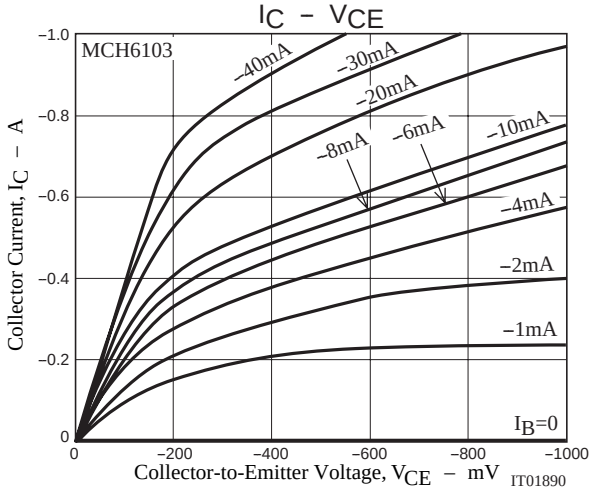
Continued from preceding page.

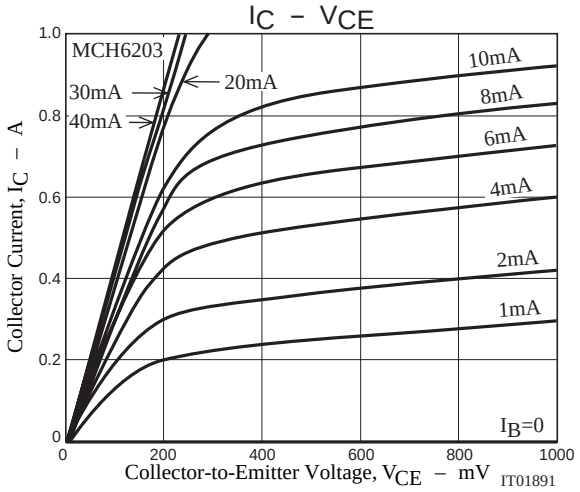
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)500mA, I_B=(–)10mA		(–280)	(–430)	mV
				130	190	mV
		I_C=(–)300mA, I_B=(–)6mA		(–145)	(–220)	mV
				90	135	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)500mA, I_B=(–)10mA		(–)0.81	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–50)			V
			80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=(–)100μA, R_{BE}=0	(–50)			V
			80			V
	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)5			V
Turn-ON Time	t_{on}	See specified test circuit.		(36)38		ns
Storage Time	t_{stg}	See specified test circuit.		(173)		ns
				332		ns
Fall Time	t_f	See specified test circuit.		(28)40		ns

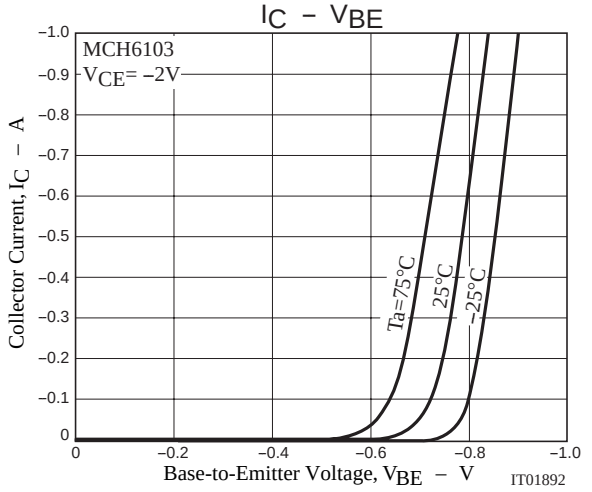
Switching Time Test Circuit

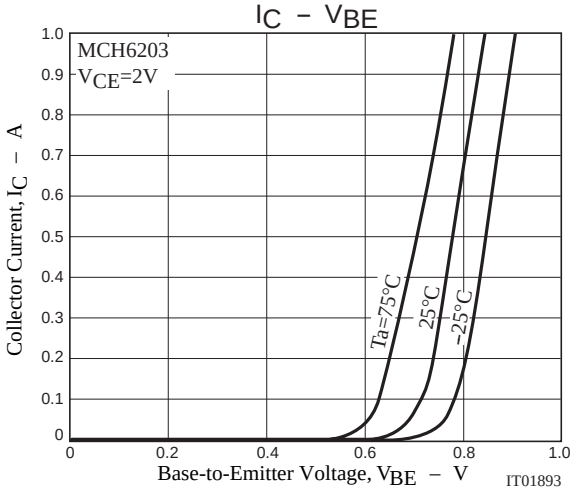


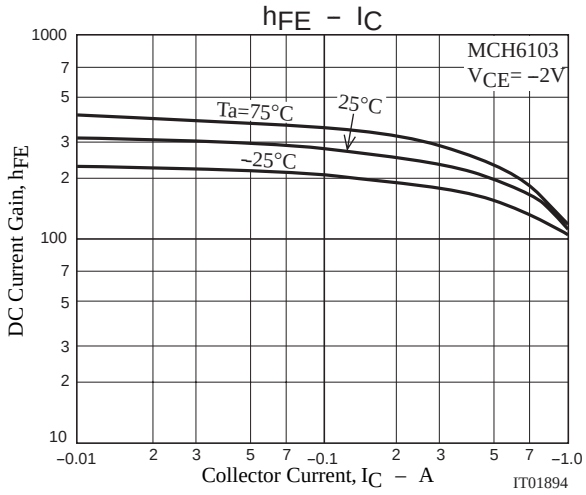
I_C=20I_{B1}= −20I_{B2}=500mA
For PNP, the polarity is reversed.

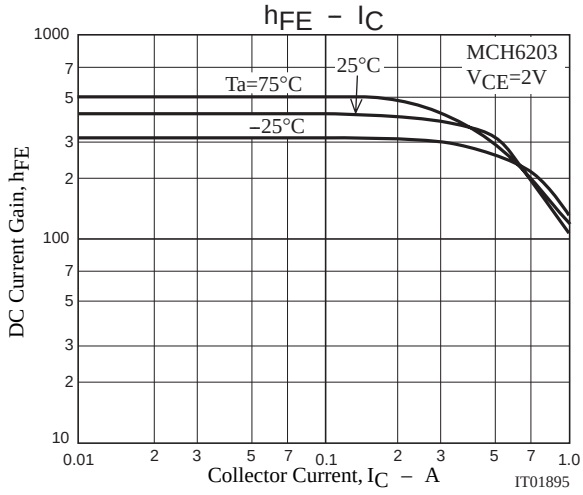


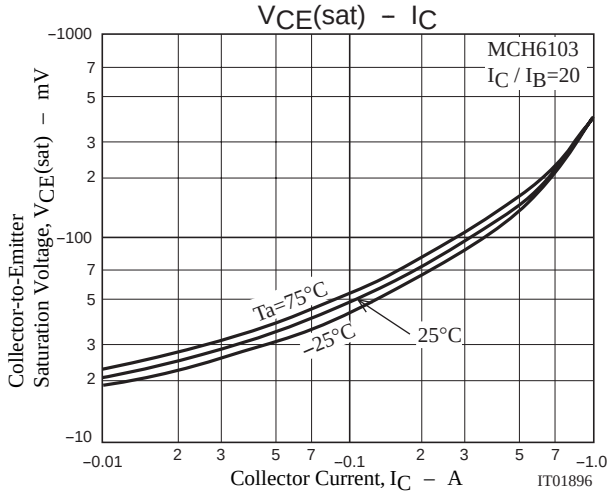


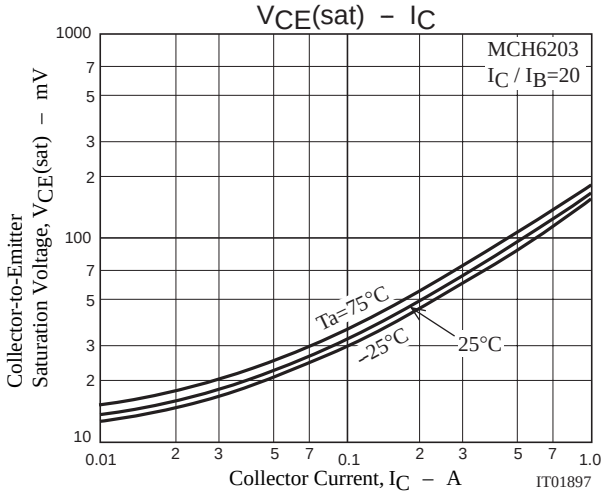


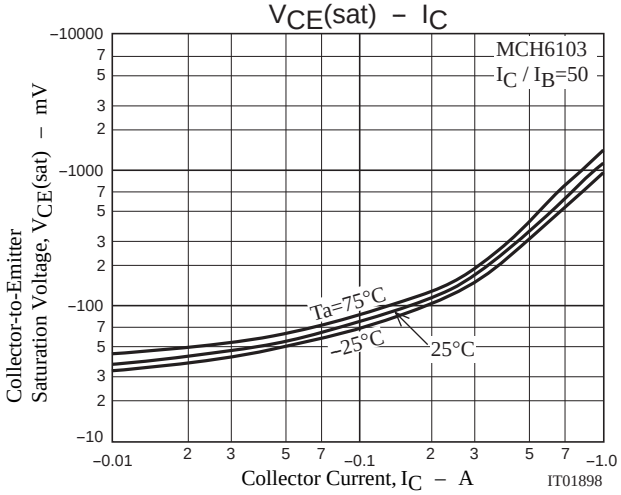


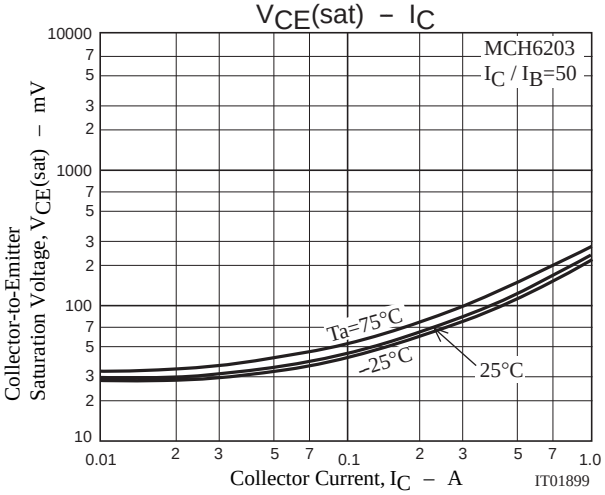

hFE – IC
MCH6103
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01894

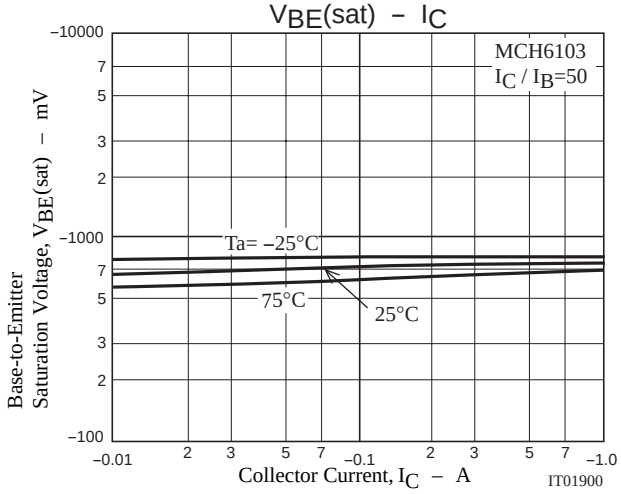

hFE – IC
MCH6203
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01895

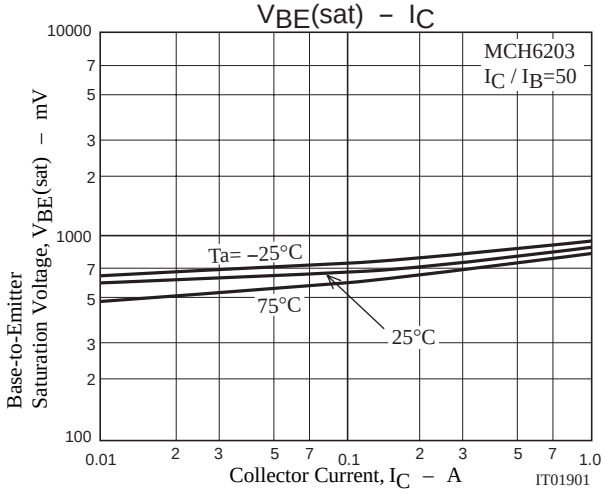

VCE(sat) – IC
MCH6103
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01896


VCE(sat) – IC
MCH6203
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01897

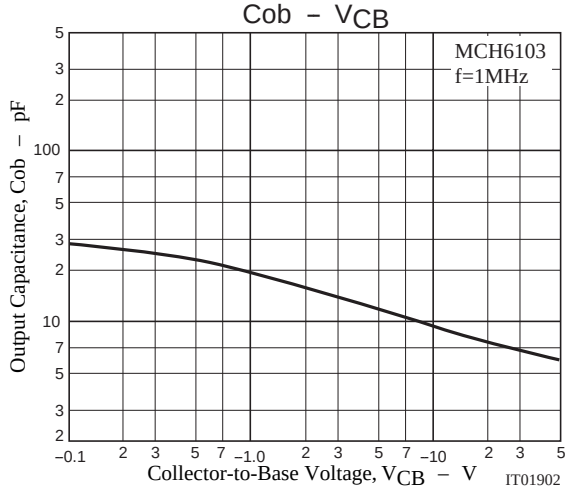

VCE(sat) – IC
MCH6103
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01898


VCE(sat) – IC
MCH6203
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01899

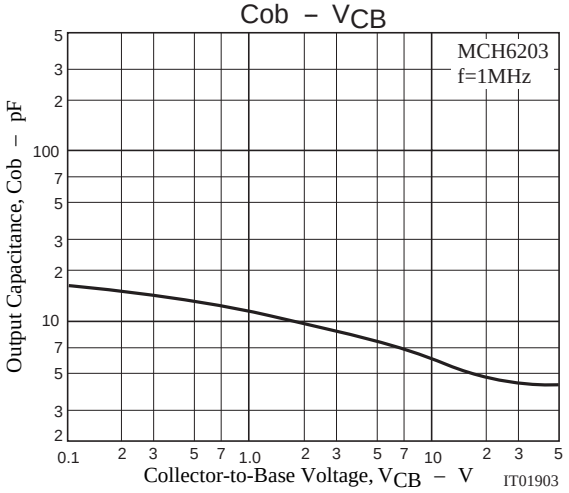

VBE(sat) – IC
MCH6103
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A
IT01900


VBE(sat) – IC
MCH6203
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A
IT01901

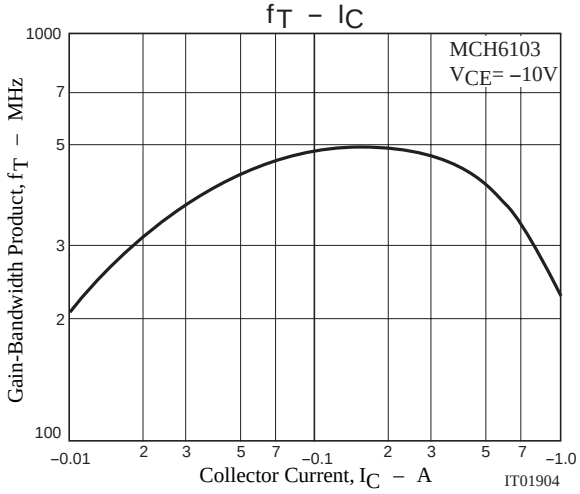
Cob – V_{CB}



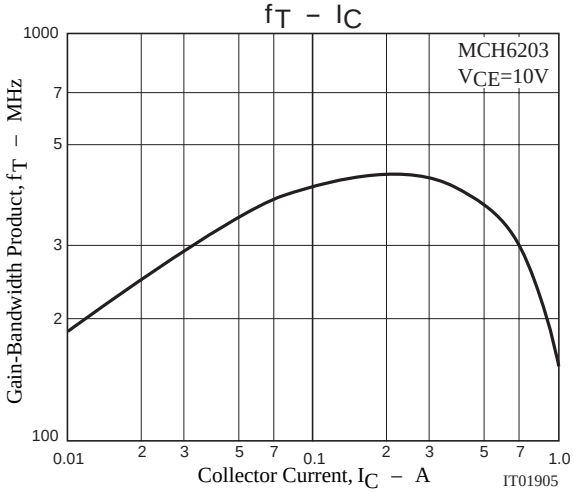
Cob – V_{CB}



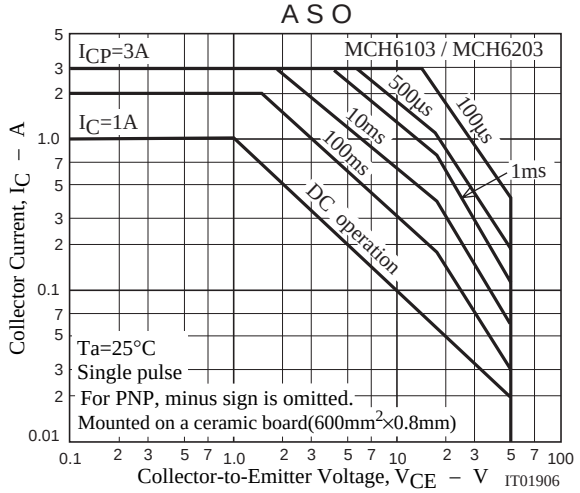
f_T – I_C



f_T – I_C



A S O



P_C – Ta