Ordering number : ENN6915

PNP / NPN Epitaxial Planar Silicon Transistors

2SA2044 / 2SC5710

DC / DC Converter Applications

Applications

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

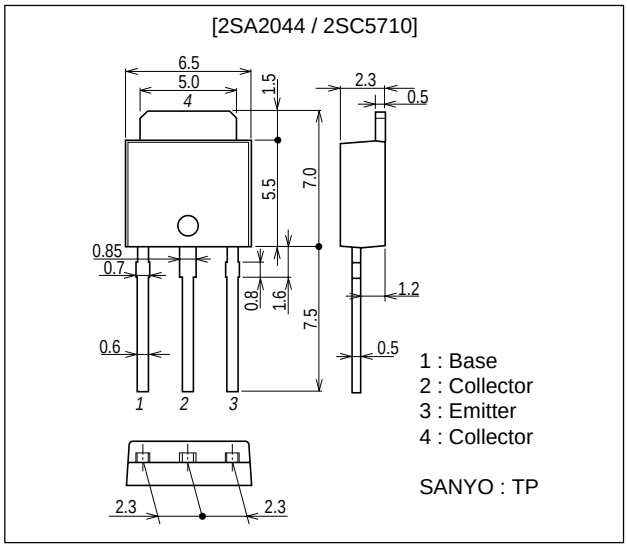
Features

- Adoption of FBET and MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- High allowable power dissipation.

Package Dimensions

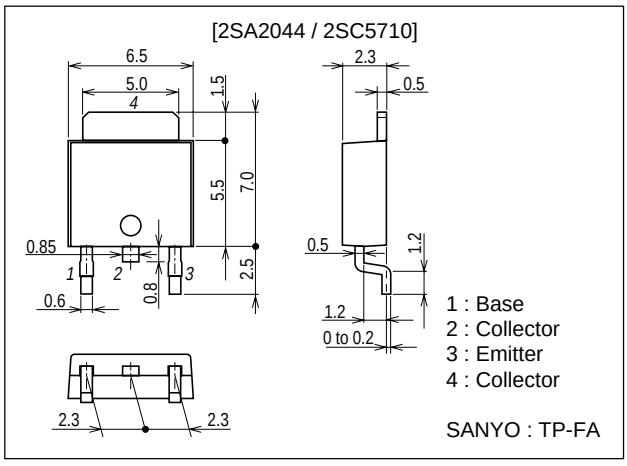
unit : mm

2045B



unit : mm

2044B



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■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

SANYO Electric Co.,Ltd. Semiconductor Company

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Specifications

( ) : 2SA2044

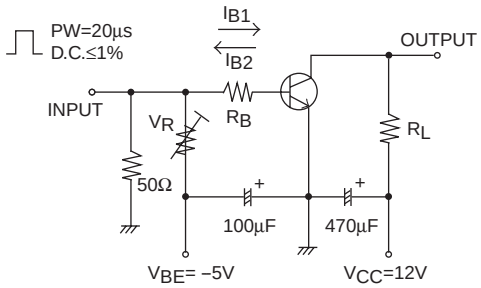
Absolute Maximum Ratings at Ta=25°C

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}		(-)6	V
Collector Current	I_C		(-)9	A
Collector Current (Pulse)	I_{CP}		(-)12	A
Base Current	I_B		(-)1.2	A
Collector Dissipation	P_C		1	W
		Tc=25°C	15	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°C

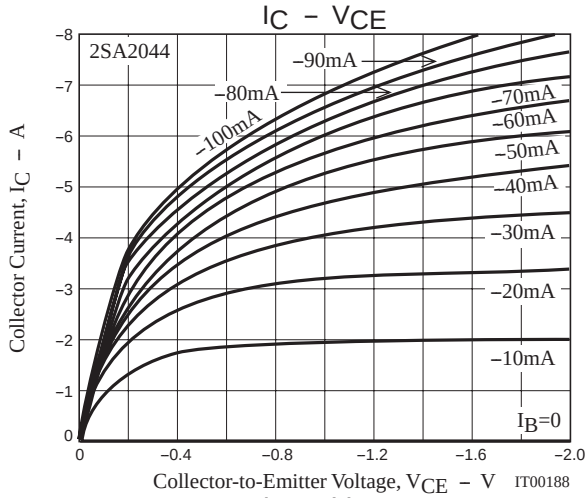
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(-)30V, I_E=0			(-)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(-)4V, I_C=0			(-)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(-)2V, I_C=(-)500mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(-)10V, I_C=(-)500mA		(290)320		MHz
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(52)40		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)4A, I_B=(-)200mA		(-200)180	(-340)270	mV
		I_C=(-)2.5A, I_B=(-)50mA		(-170)130	(-290)195	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(-)2.5A, I_B=(-)50mA		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(-)10μA, I_E=0	(-30)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(-)1mA, R_{BE}=∞	(-)30			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(-)10μA, I_C=0	(-)6			V
Turn-On Time	t_{on}	See specified test circuit.		30		ns
Storage Time	t_{stg}	See specified test circuit.		(190)320		ns
Fall Time	t_f	See specified test circuit.		15		ns

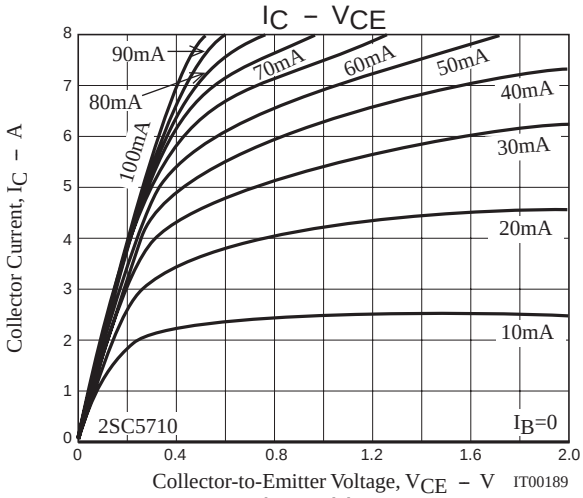
Swicthing Time Test Circuit

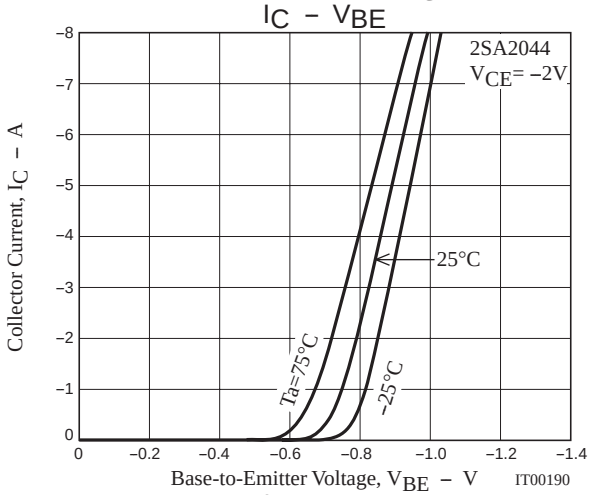


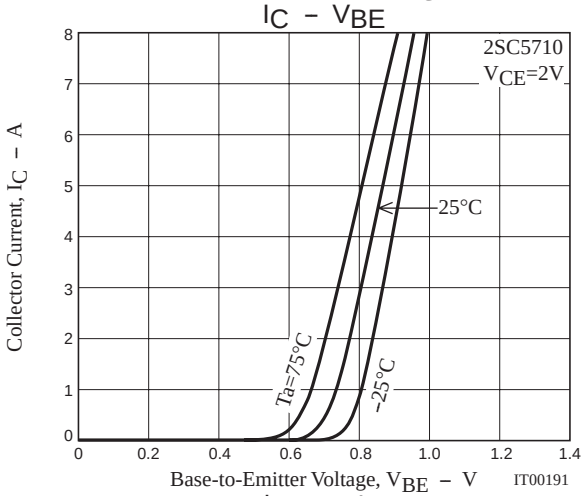
I_C=20I_{B1}= −20I_{B2}=2.5A

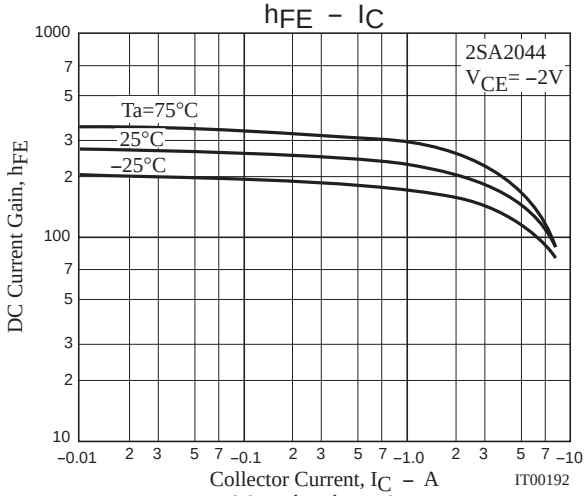
For PNP, the polarity is reversed.

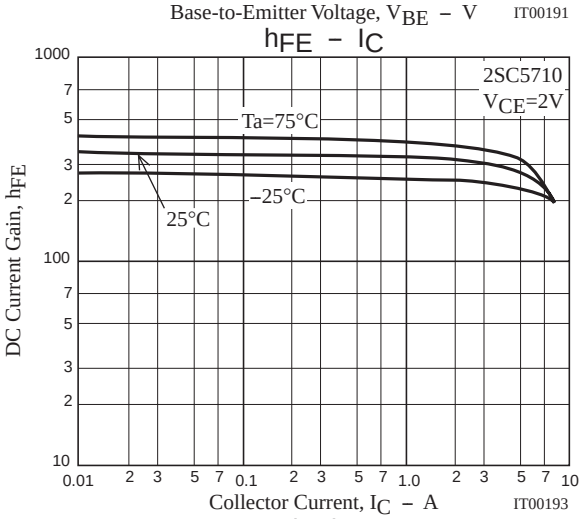

IC – VCE
2SA2044
–90mA
–80mA
–100mA
–70mA
–60mA
–50mA
–40mA
–30mA
–20mA
–10mA
IB=0
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT00188

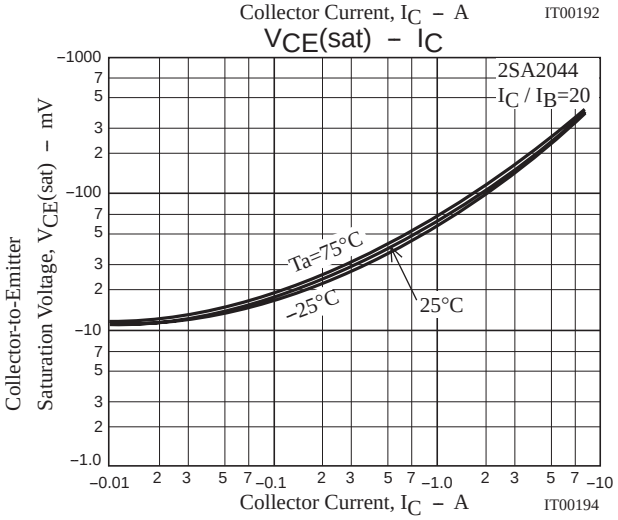

IC – VCE
90mA
80mA
100mA
70mA
60mA
50mA
40mA
30mA
20mA
10mA
2SC5710
IB=0
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT00189

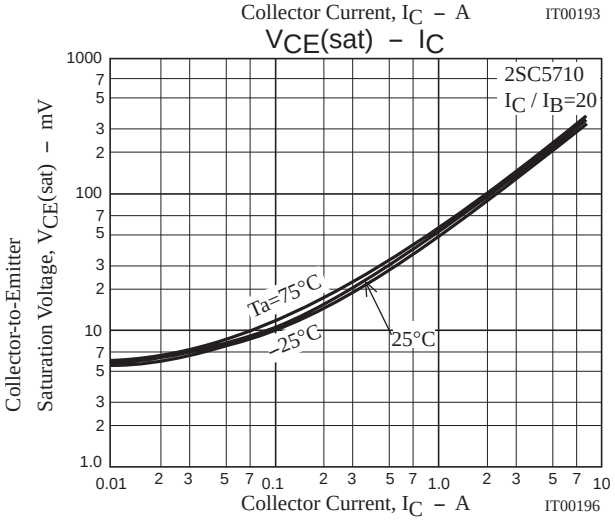

IC – VBE
2SA2044
VCE= –2V
25°C
Ta=75°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT00190

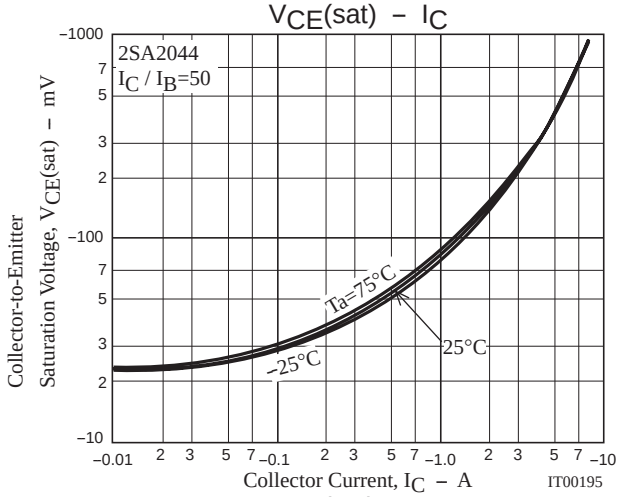

IC – VBE
2SC5710
VCE=2V
25°C
Ta=75°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT00191

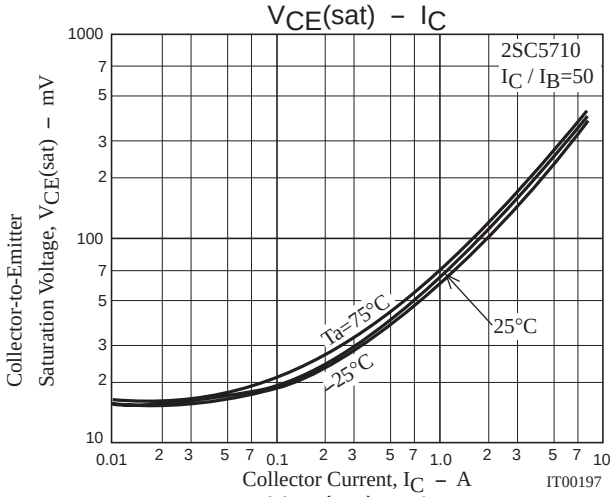

hFE – IC
2SA2044
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT00192

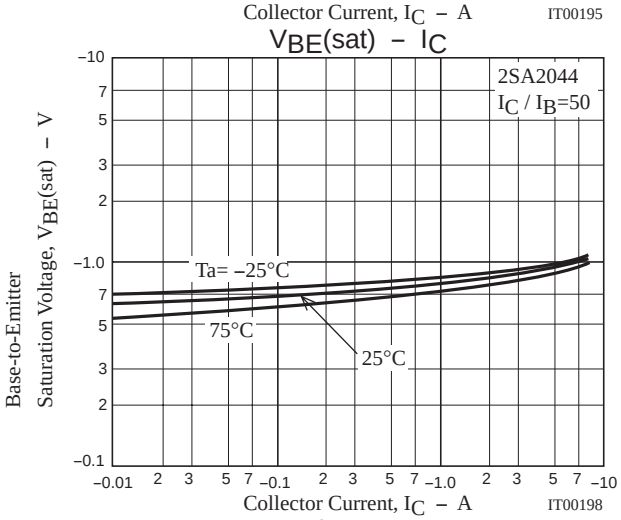

hFE – IC
2SC5710
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT00193

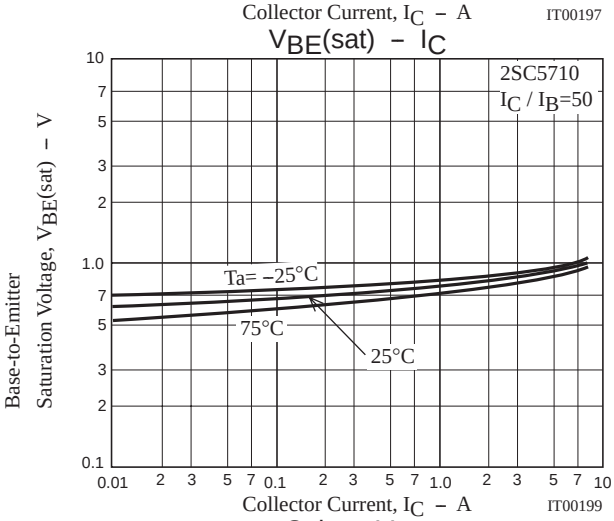

VCE(sat) – IC
2SA2044
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT00194

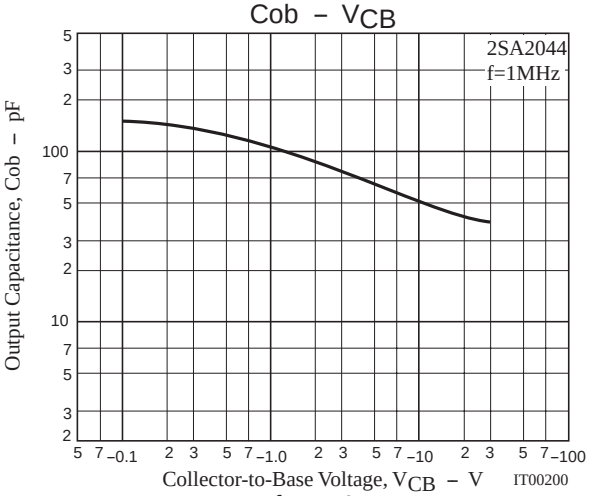

VCE(sat) – IC
2SC5710
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT00196

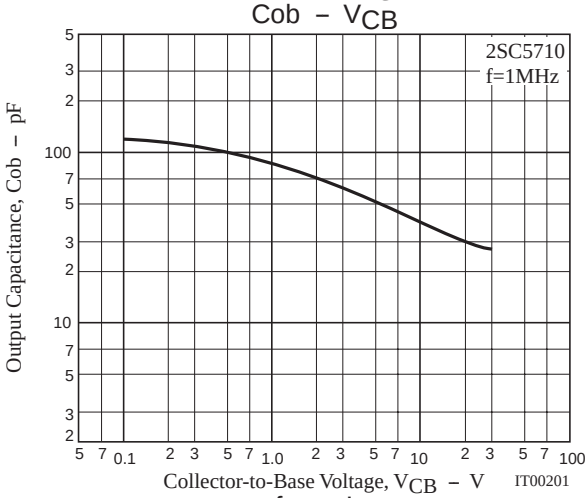

VCE(sat) – IC
2SA2044
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT00195

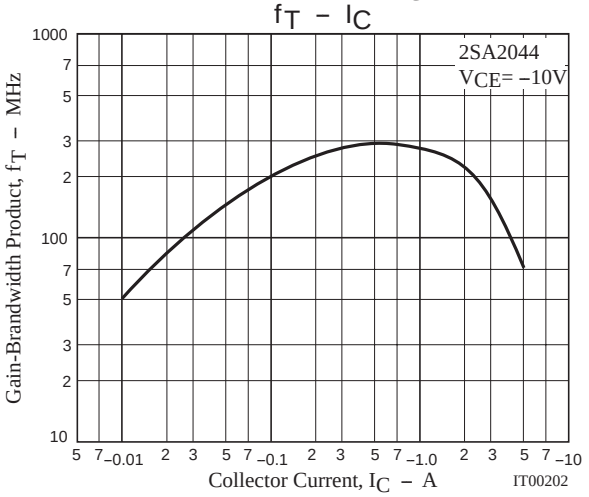

VCE(sat) – IC
2SC5710
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT00197

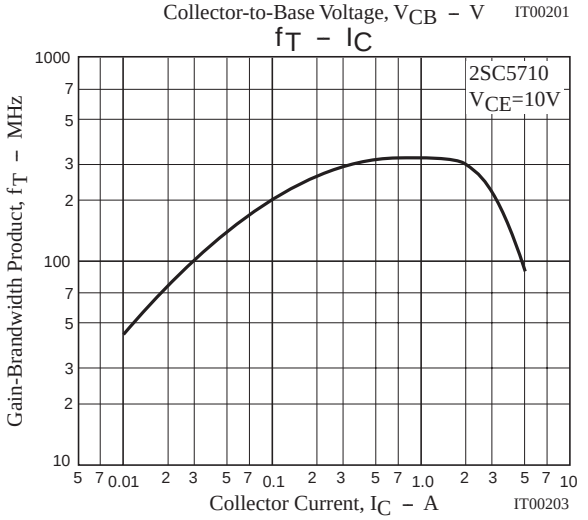

VBE(sat) – IC
2SA2044
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT00198

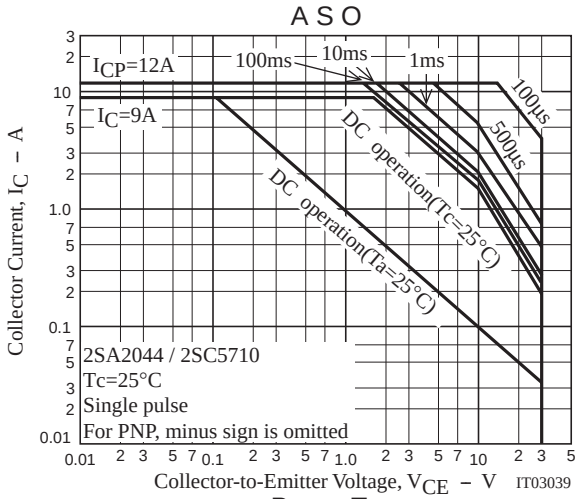

VBE(sat) – IC
2SC5710
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT00199

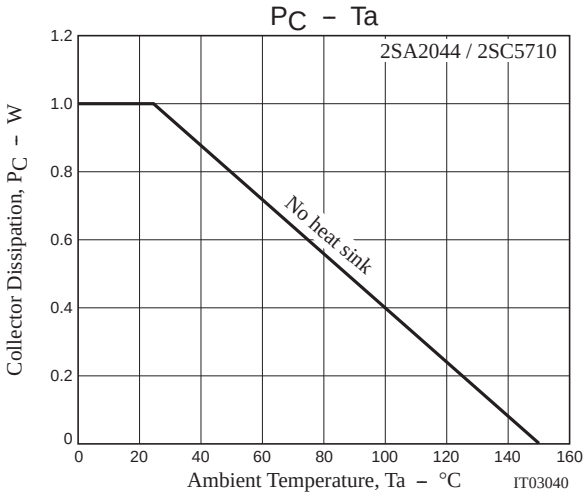

Cob – VCB
2SA2044
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT00200

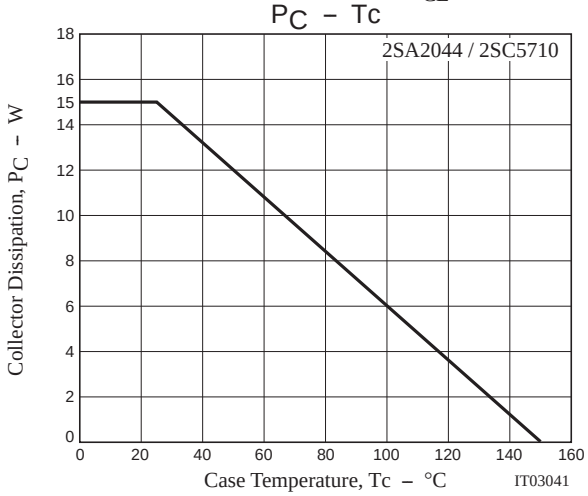

Cob – VCB
2SC5710
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT00201


fT – IC
2SA2044
VCE= –10V
Gain-Brandwidth Product, fT – MHz
Collector Current, IC – A
IT00202


fT – IC
2SC5710
VCE=10V
Gain-Brandwidth Product, fT – MHz
Collector Current, IC – A
IT00203







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