Ordering number : ENN7906

PNP / NPN Epitaxial Planar Silicon Transistors

2SA2117 / 2SC5934

High Current Switching Applications

Applications

- Relay drivers, lamp drivers, motor drivers.

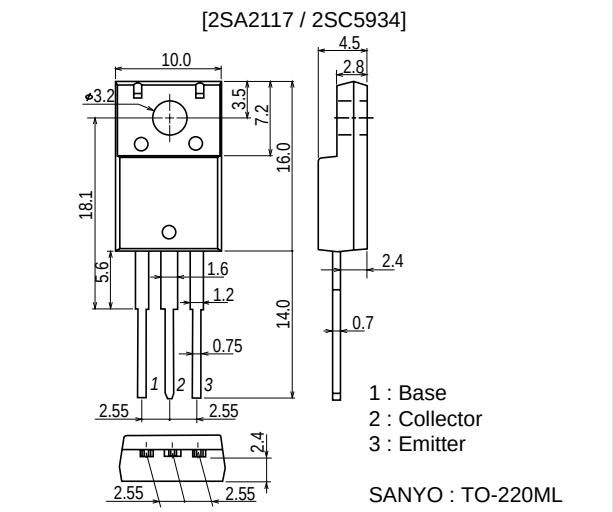
Features

- Adoption of MBIT process.
- High-speed switching.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.

Package Dimensions

unit : mm

2041A



Specifications

( ) : 2SA2117

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-50)60	V
Collector-to-Emitter Voltage	V_{CEO}		(-)50	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)5	A
Collector Current (Pulse)	I_{CP}		(-)8	A
Base Current	I_B		(-)1	A
Collector Dissipation	P_C		2	W
		Tc=25°C	18	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			(-)10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(-)4V, I_C=0			(-)10	μA
DC Current Gain	h_{FE}	V_{CE}=(-)2V, I_C=(-)1A	200		(560)700	
Gain-Bandwidth Product	f_T	V_{CE}=(-)5V, I_C=(-)1A		(130)200		MHz

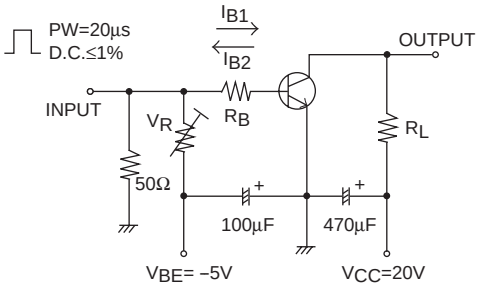
Continued on next page.

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

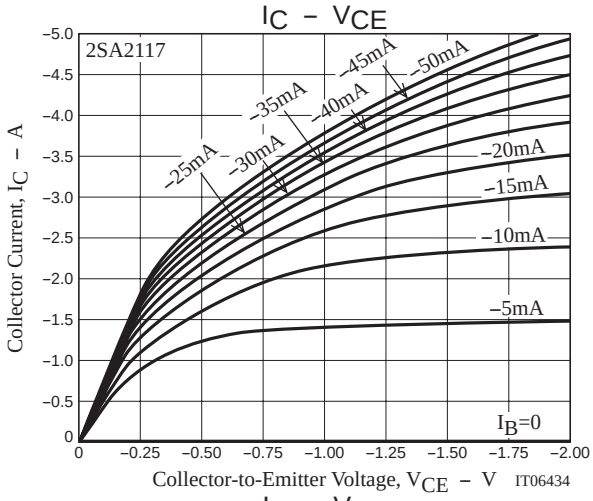
Continued from preceding page.

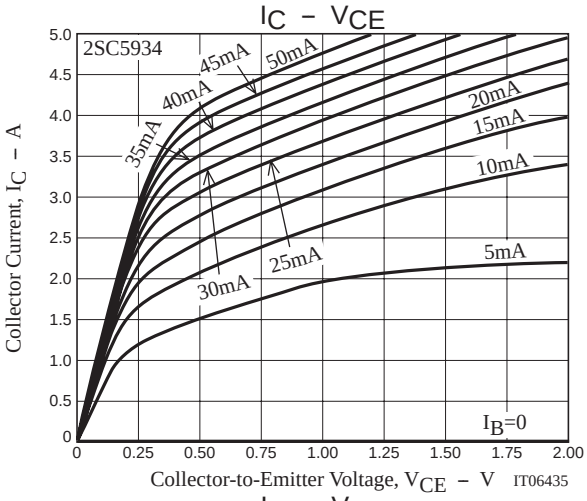
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(55)35		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)2.5A, I_B=(-)125mA		(-280)180	(-560)360	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(-)2.5A, I_B=(-)125mA		(-)0.93	(-)1.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(-)100μA, I_E=0	(-50)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(-)1mA, R_{BE}=∞	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(-)100μA, I_C=0	(-)6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		150		ns
Strage Time	t_{stg}	See specified Test Circuit.		1000		ns
Fall Time	t_f	See specified Test Circuit.		50		ns

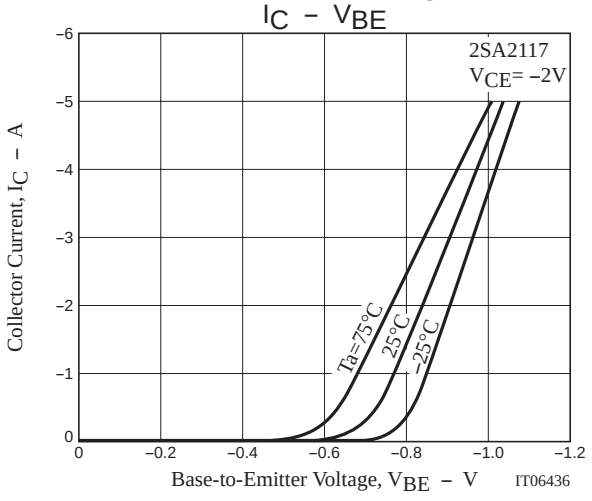
Switching Time Test Circuit

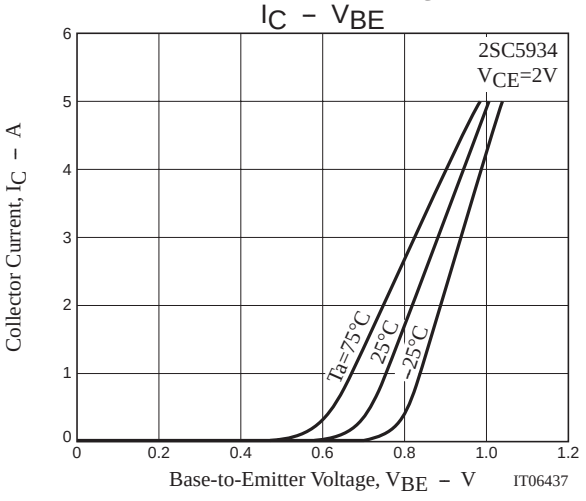


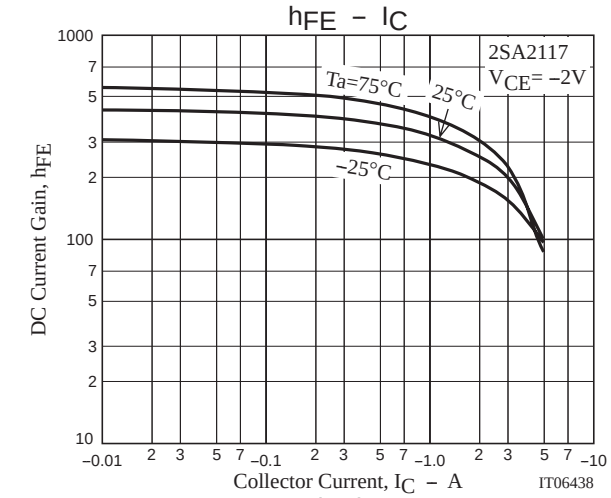
I_C=20I_{B1}= −20I_{B2}=1A
(For PNP, minus sign is omitted.)

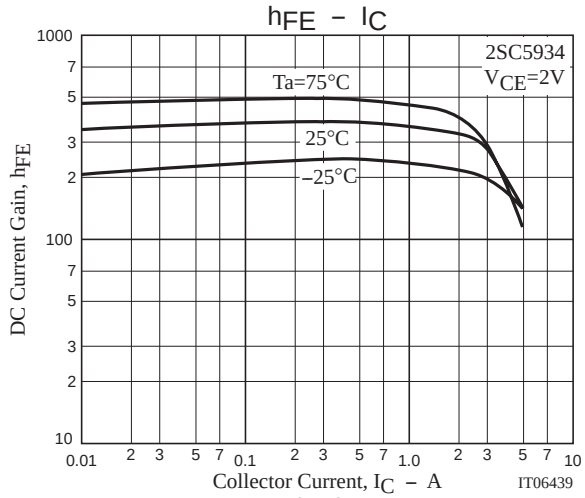


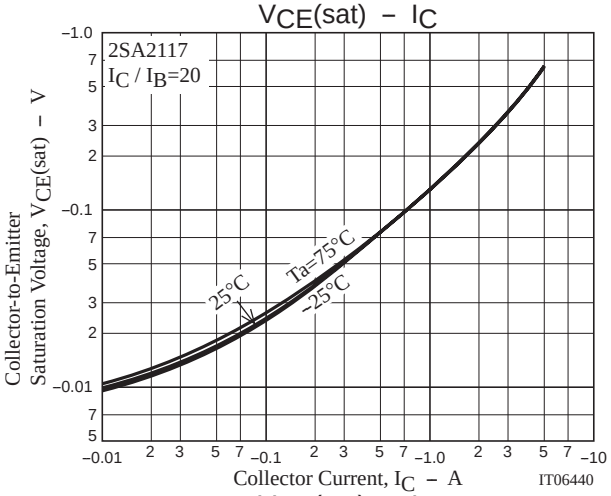


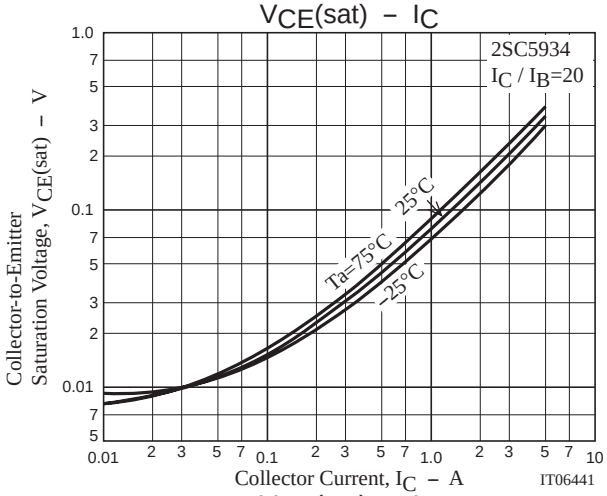


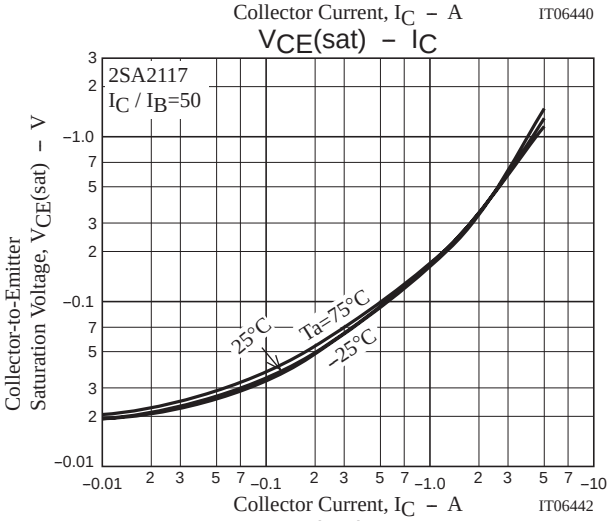


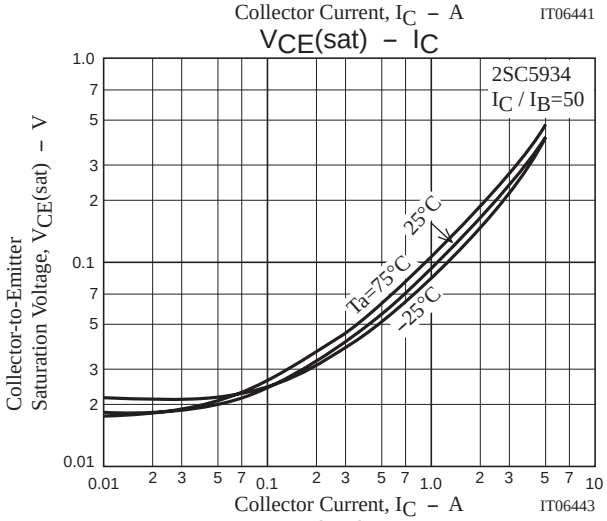

hFE – IC
2SA2117
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT06438

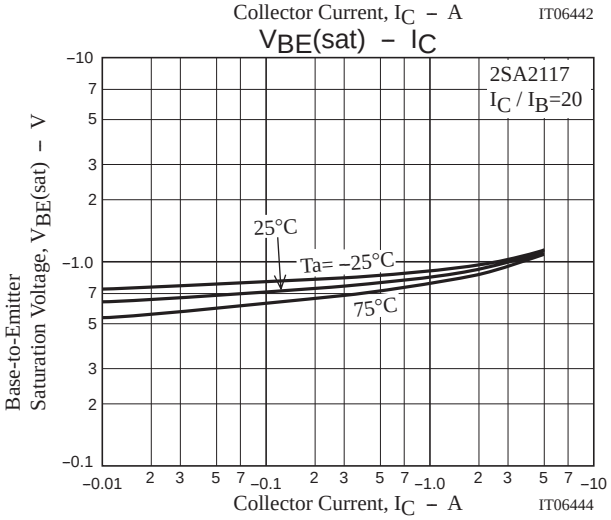

hFE – IC
2SC5934
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT06439

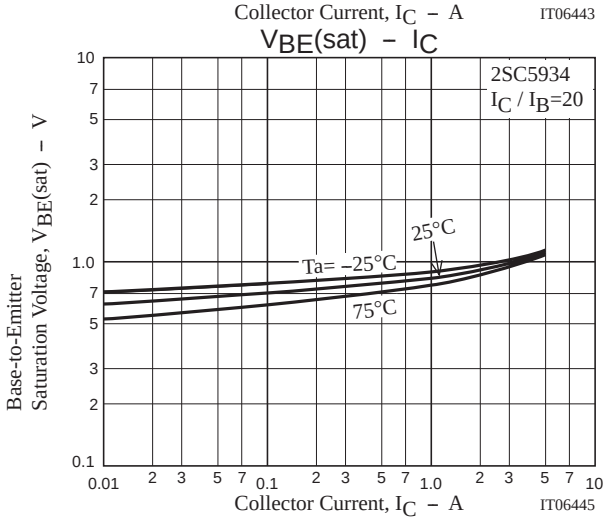

VCE(sat) – IC
2SA2117
IC / IB=20
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06440


VCE(sat) – IC
2SC5934
IC / IB=20
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06441

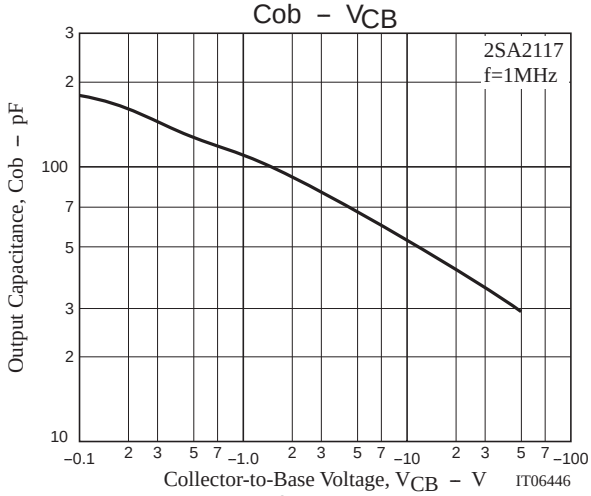

VCE(sat) – IC
2SA2117
IC / IB=50
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06442


VCE(sat) – IC
2SC5934
IC / IB=50
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06443

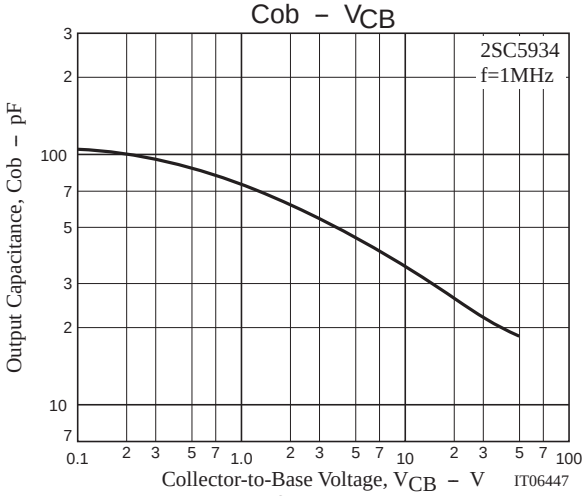

VBE(sat) – IC
2SA2117
IC / IB=20
25°C
Ta= –25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT06444


VBE(sat) – IC
2SC5934
IC / IB=20
25°C
Ta= –25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT06445

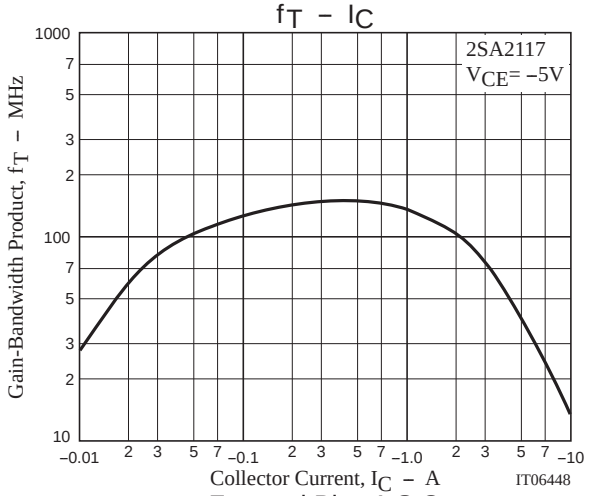
Cob – V_{CB}



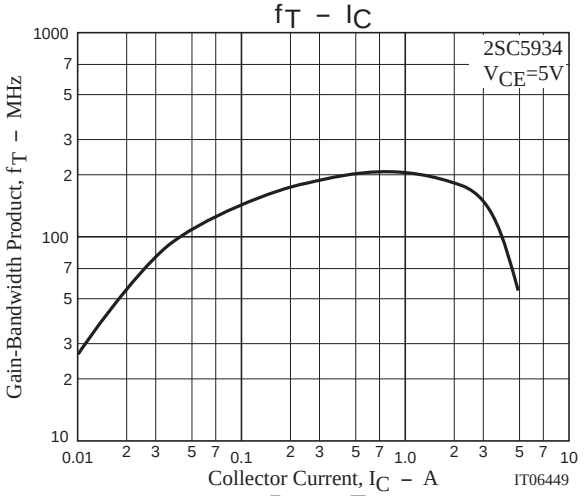
Cob – V_{CB}



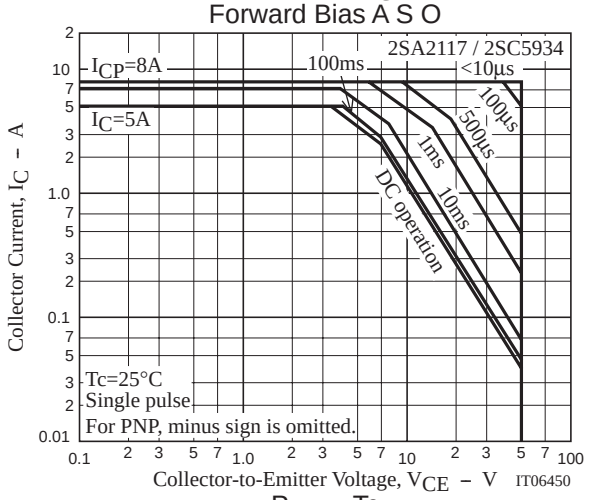
f_T – I_C



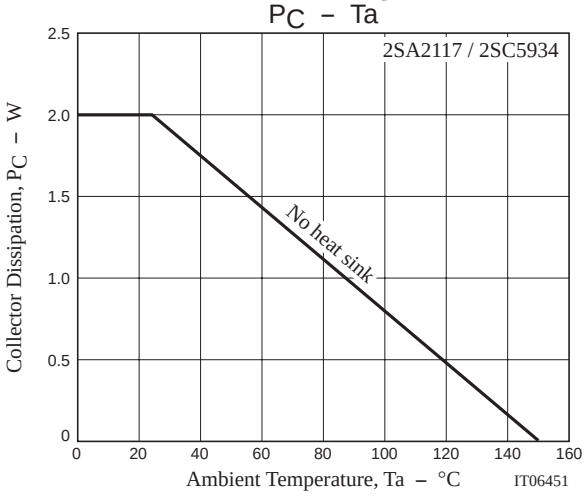
f_T – I_C



Forward Bias A S O



P_C – Ta



P_C – Tc