Ordering number : ENN7495

PNP / NPN Epitaxial Planar Silicon Transistors

2SA2098 / 2SC5887

High-Current Switching Applications

Applications

- Relay drivers, lamp drivers, motor drivers.

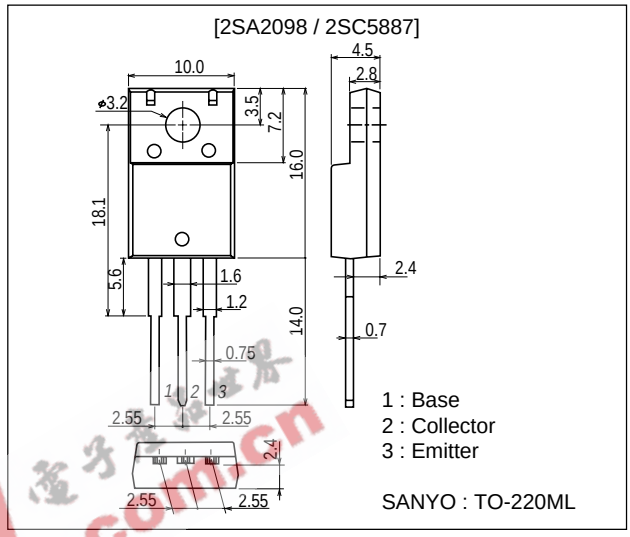
Features

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

Package Dimensions

unit : mm

2041A



Specifications

( ) : 2SA2098

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		(-)15	A
Collector Current (Pulse)	I_{CP}		(-)20	A
Base Current	I_B		(-)3	A
Collector Dissipation	P_C		2	W
		Tc=25°C	30	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	180		(400)560	
Gain-Bandwidth Product	f_T	V_{CE}=(-)10V, I_C=(-)1A		(200)300		MHz

Continued on next page.

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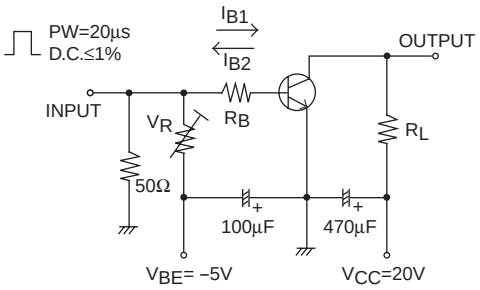
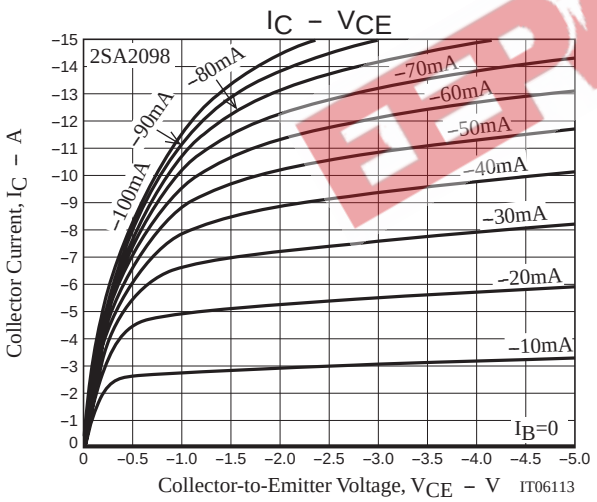
Continued from preceding page.

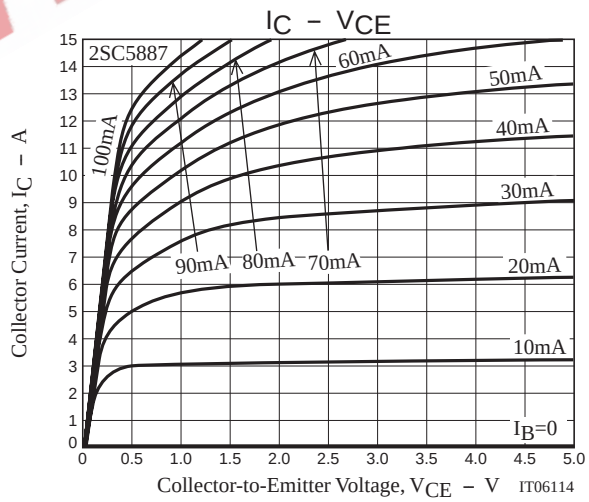
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(200)100		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)7A, I_B=(-)350mA		(-200)160	(-500)400	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(-)7A, I_B=(-)350mA		(-)0.94	(-)1.4	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_d(on)	See specified Test Circuit.		(80)50		ns
Storage Time	t_{stg}	See specified Test Circuit.		(400)700		ns
Fall Time	t_f	See specified Test Circuit.		(30)40		ns

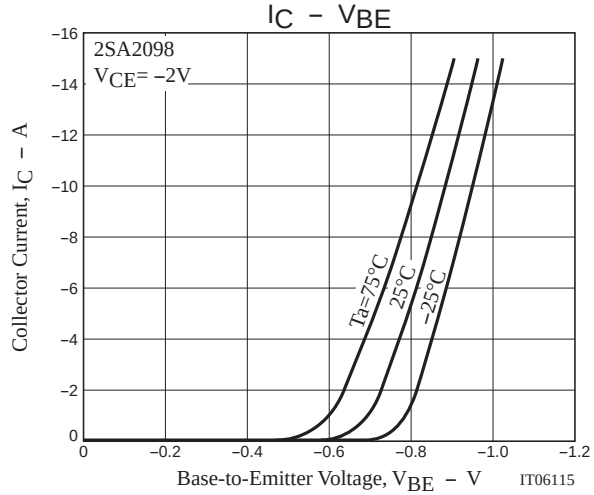
Switching Time Test Circuit

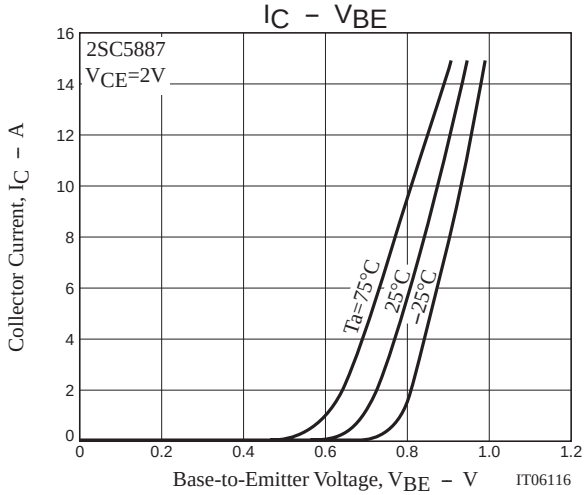


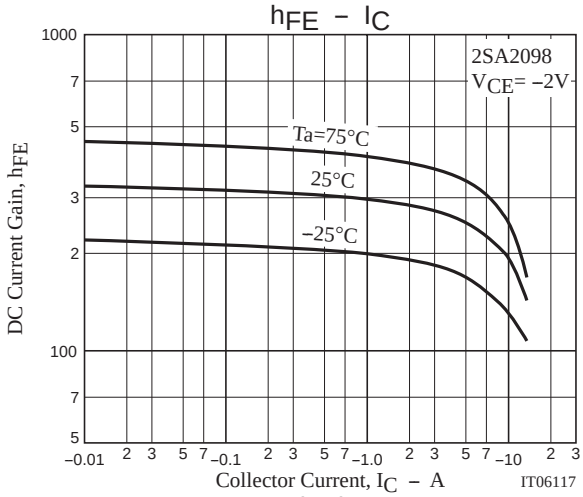
I_C=20I_{B1}= −20I_{B2}=5A
(For PNP, minus sign is omitted.)

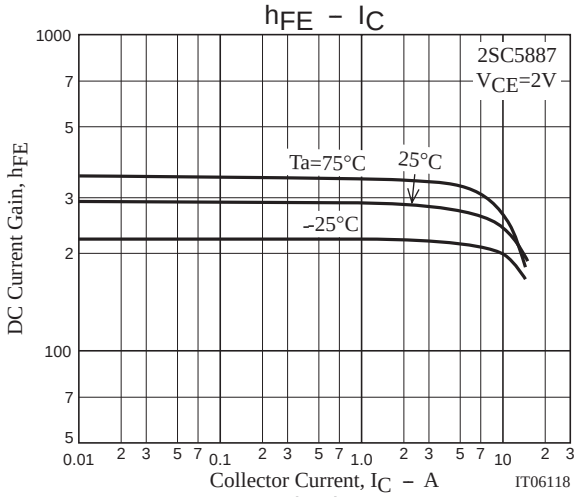


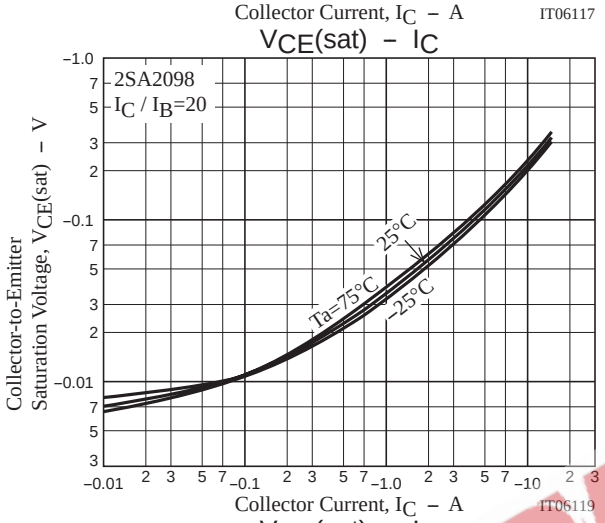


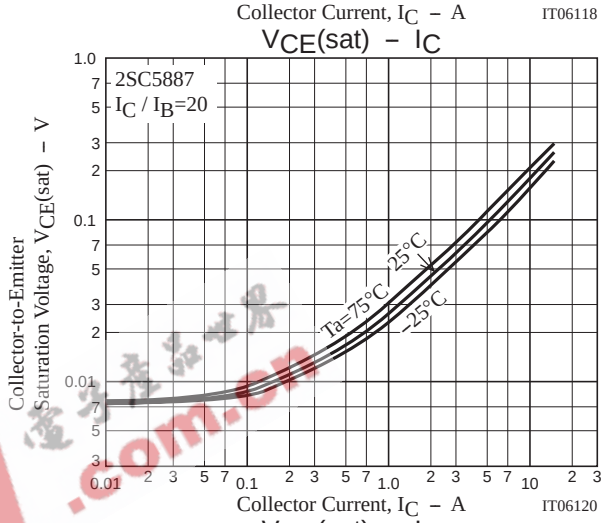


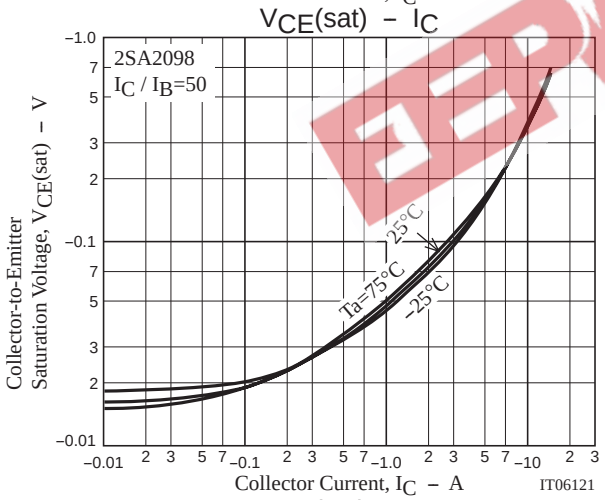


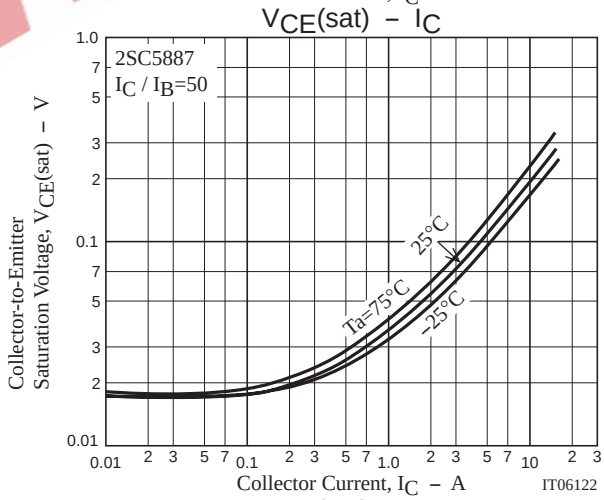

hFE – IC
2SA2098
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT06117

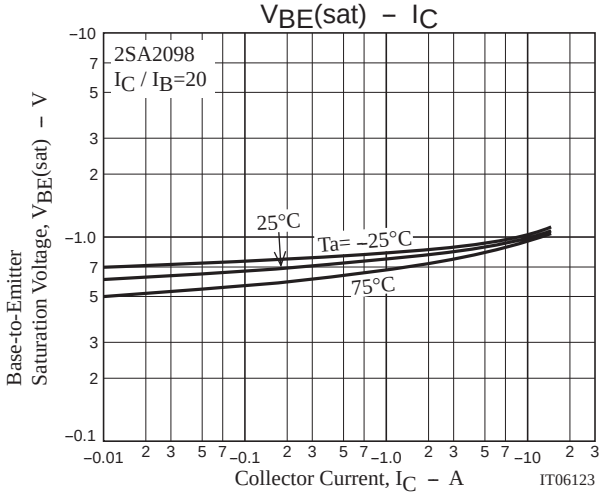

hFE – IC
2SC5887
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT06118

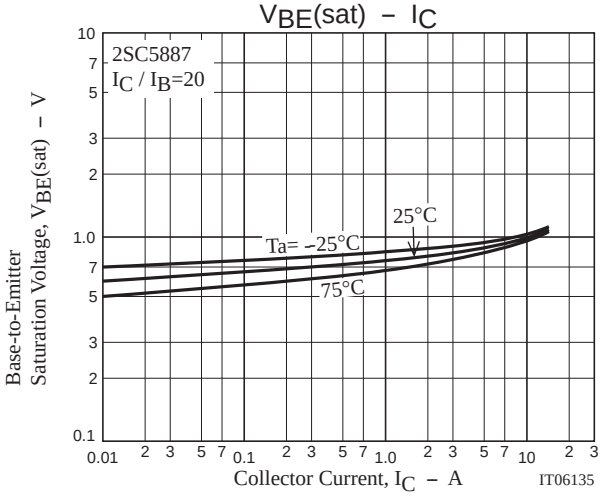

VCE(sat) – IC
2SA2098
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06119


VCE(sat) – IC
2SC5887
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06120

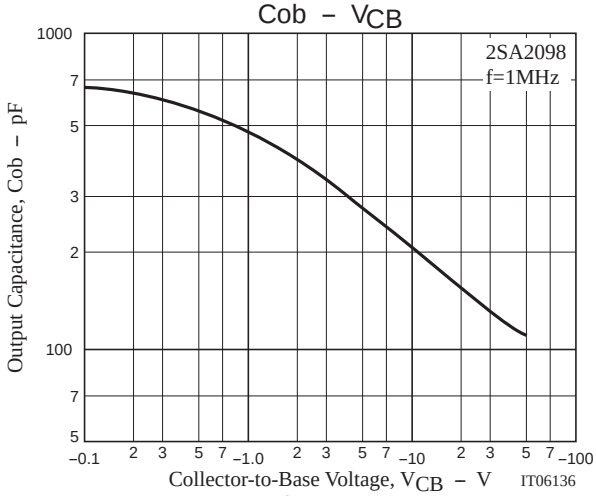

VCE(sat) – IC
2SA2098
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06121


VCE(sat) – IC
2SC5887
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT06122

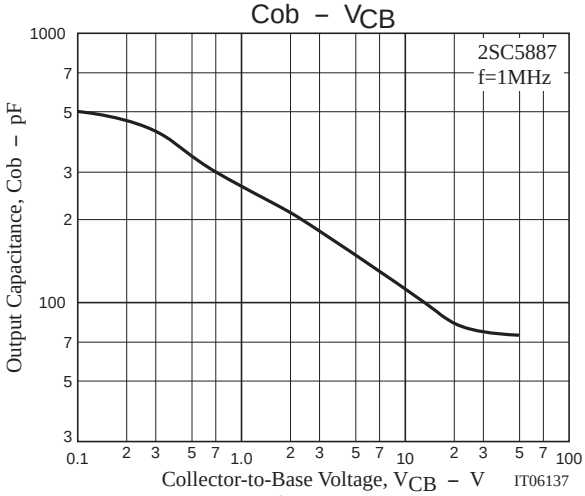

VBE(sat) – IC
2SA2098
IC / IB=20
25°C
Ta= –25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT06123


VBE(sat) – IC
2SC5887
IC / IB=20
25°C
Ta= –25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT06135

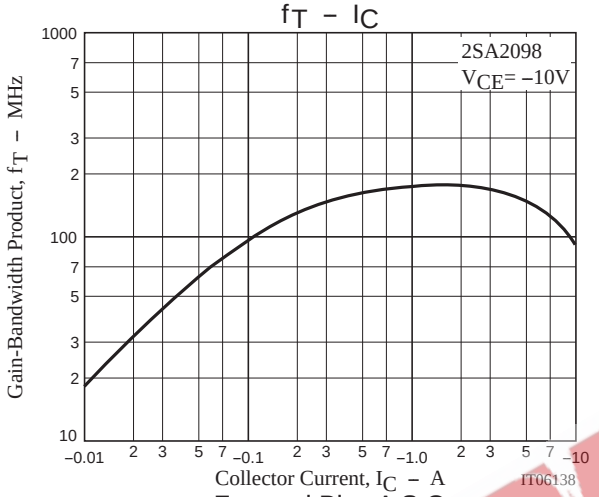
Cob – V_{CB}



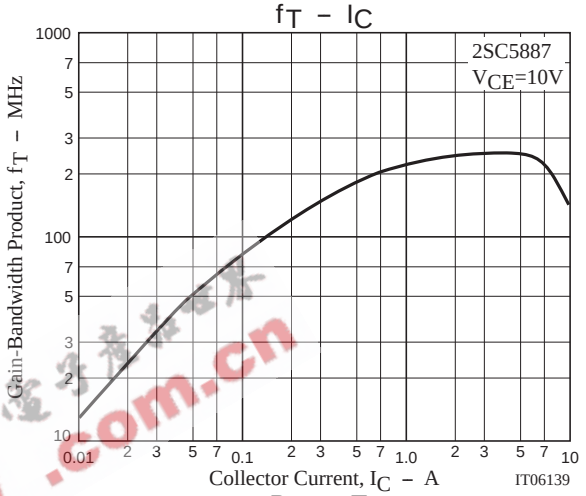
Cob – V_{CB}



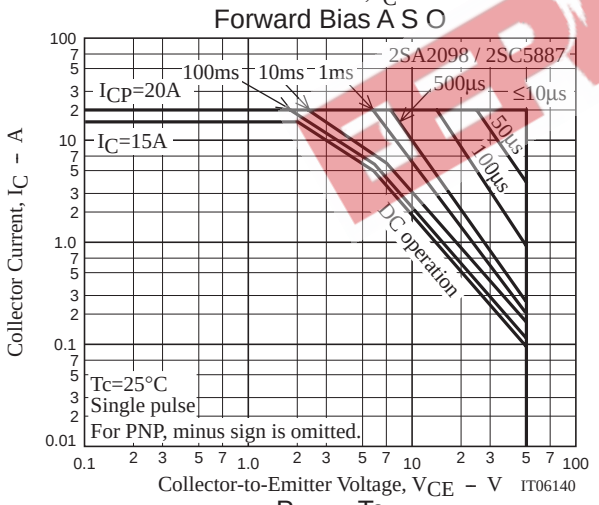
f_T – I_C



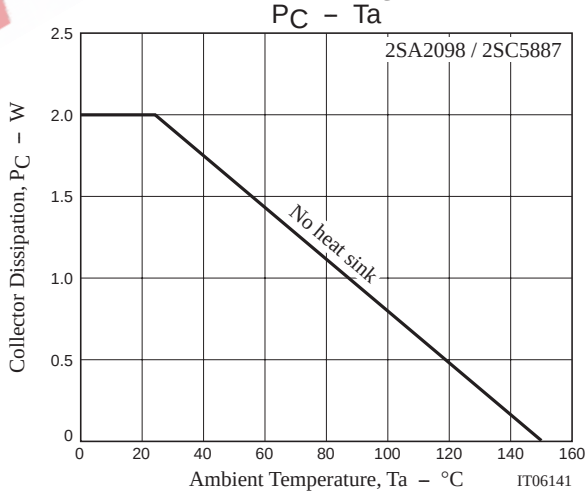
f_T – I_C



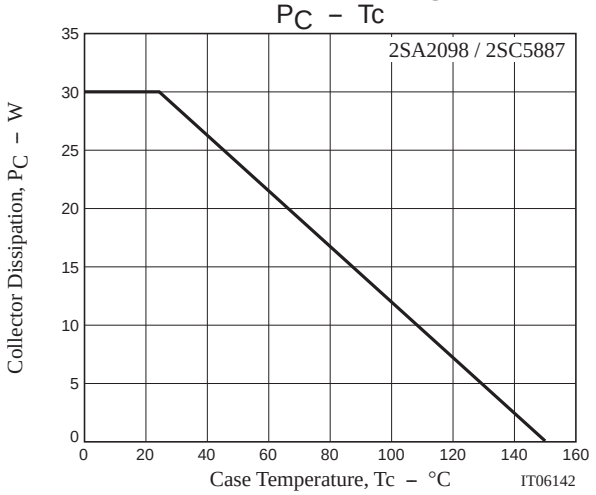
Forward Bias A S O



P_C – Ta



P_C – Tc



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