Ordering number : ENN7331

PNP / NPN Epitaxial Planar Silicon Transistors

2SA2099 / 2SC5888

High-Current Switching Applications

Applications

- Relay drivers, lamp drivers, motor drivers.

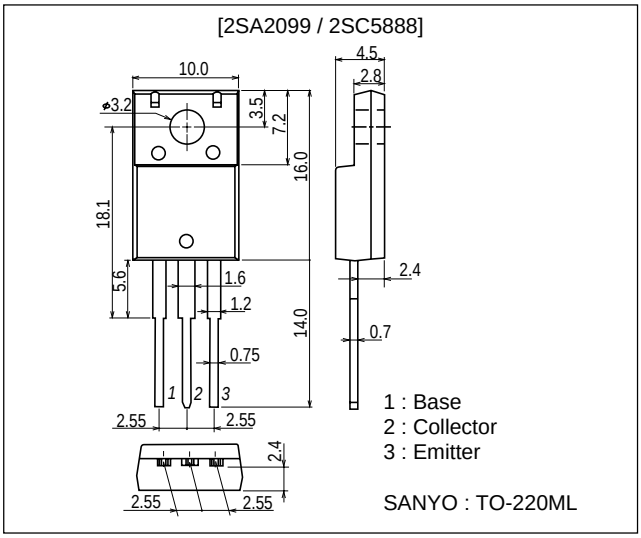
Features

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

Package Dimensions

unit : mm

2041A



Specifications

( ) : 2SA2099

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		(-)10	A
Collector Current (Pulse)	I_{CP}		(-)13	A
Base Current	I_B		(-)2	A
Collector Dissipation	P_C		2	W
		Tc=25°C	25	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

Continued on next page.

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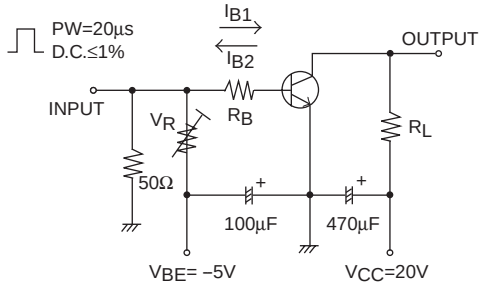
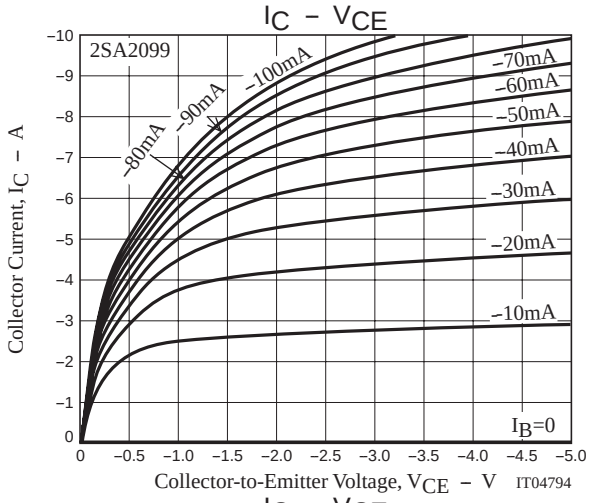
Continued from preceding page.

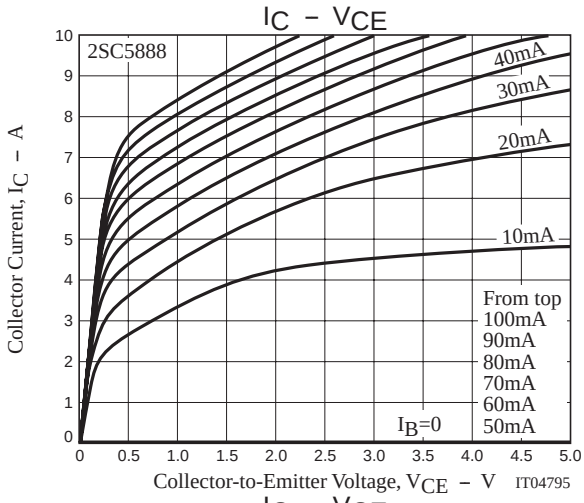
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	h_{FE}	V_{CE}=(-)2V, I_C=(-)1A	200		(560)700	
Gain-Bandwidth Product	f_T	V_{CE}=(-)5V, I_C=(-)1A		(130)200		MHz
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		90(60)		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)5A, I_B=(-)250mA		(-250)180	(-500)360	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(-)5A, I_B=(-)250mA		(-)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.		(70)40		ns
Storage Time	t_{stg}	See specified Test Circuit.		(650)1000		ns
Fall Time	t_f	See specified Test Circuit.		(60)80		ns

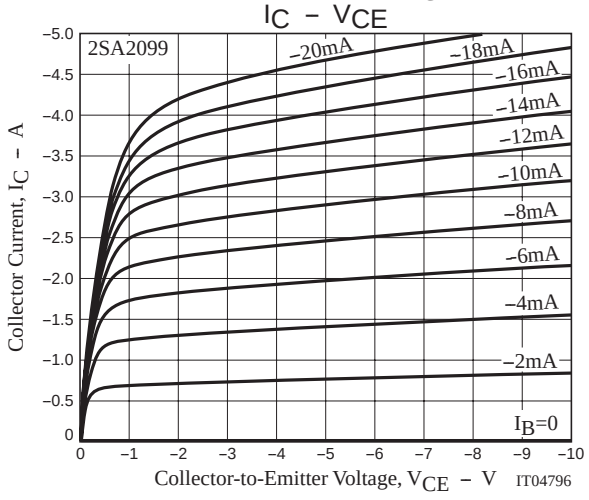
Switching Time Test Circuit

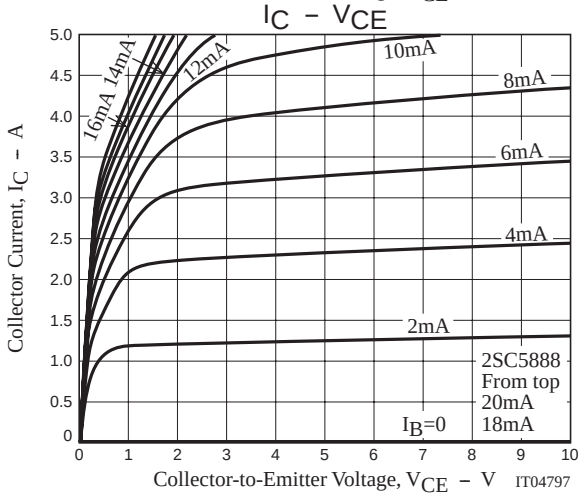


I_C=20I_{B1}= −20I_{B2}=3A
(For PNP, the polarity is reversed.)

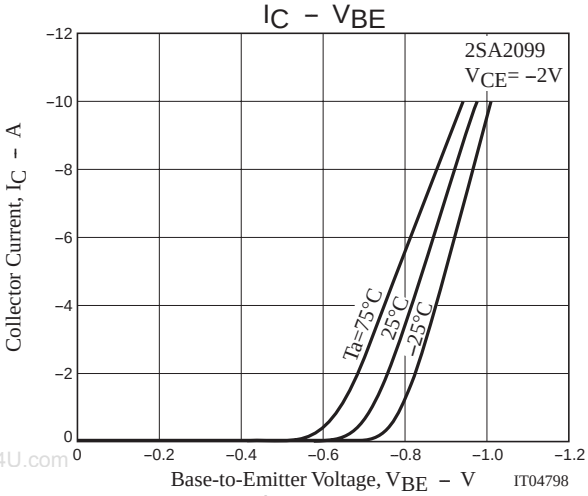




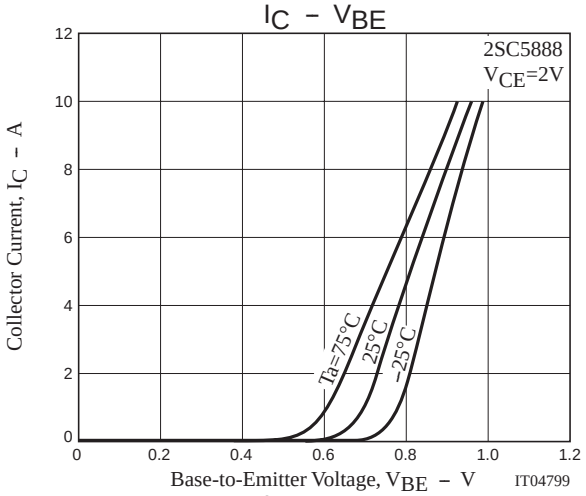




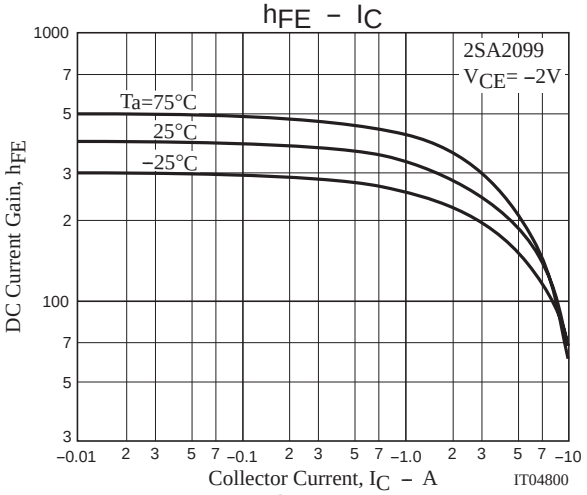
I_C – V_{BE}



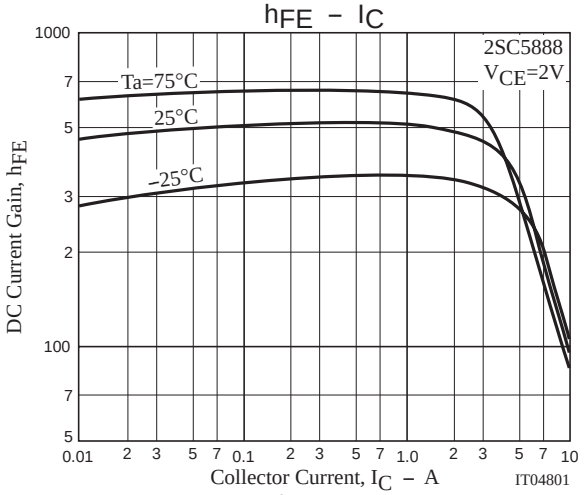
I_C – V_{BE}



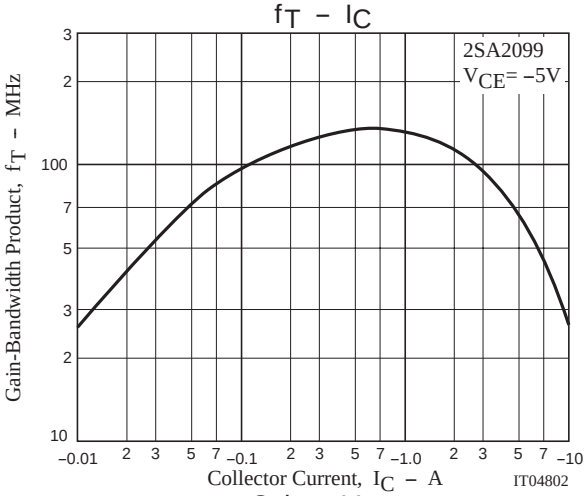
h_{FE} – I_C



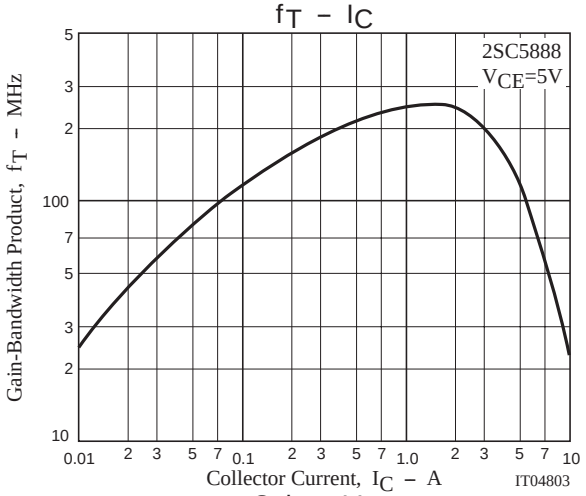
h_{FE} – I_C



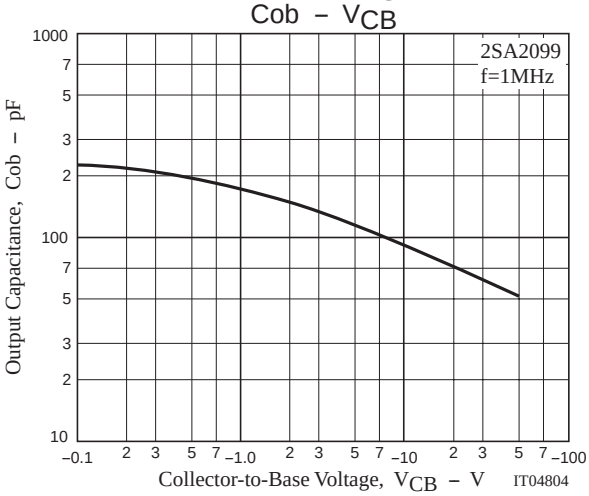
f_T – I_C



f_T – I_C



Cob – V_{CB}



Cob – V_{CB}