Ordering number:EN778E

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1207/2SC2909

High-Voltage Switching
AF 60W Predriver Applications

Features

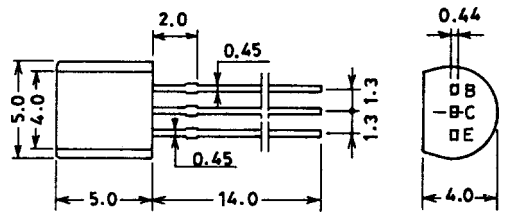
- Adoption of FBET process.
- High breakdown voltage.
- Excellent linearity of h_{FE} and small C_{ob}.
- Fast switching speed.

Package Dimensions

unit:mm

2003A

[2SA1207/2SC2909]



JEDEC:TO-92 B:Base
EIAJ:SC-43 C:Collector
SANYO:NP E:Emitter

( ) : 2SA1207

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)180	V
Collector-to-Emitter Voltage	V_{CEO}		(–)160	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)70	mA
Collector Current (Pulse)	I_{CP}		(–)140	mA
Collector Dissipation	P_C		600	mW
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

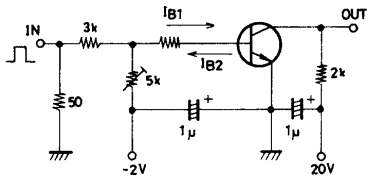
Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)80V, 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}=(–)5V, I_C=(–)10mA	100*		400*	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)10mA		150		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(2.5)2.0		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)30mA, I_B=(–)3mA		0.08 (–0.14)	0.3 (–0.4)	V
Turn-ON Time	t_{on}	See specified Test Circuit		0.1		μs
Fall Time	t_f	See specified Test Circuit		0.2		μs
Storage Time	t_{stg}	See specified Test Circuit		1.0		μs

* : The 2SA1207/2SC2909 are classified by 10mA h_{FE} as follows :

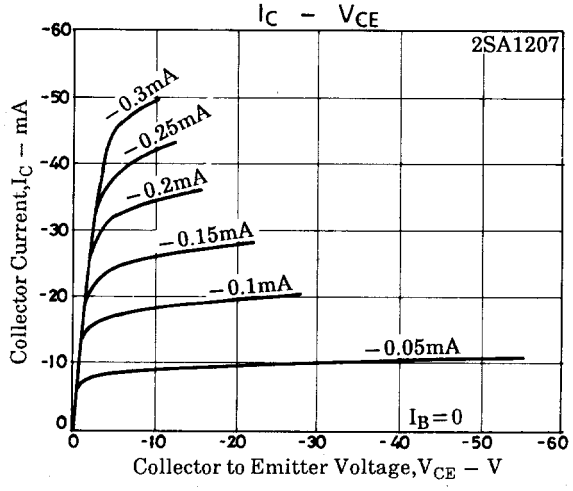
100	R	200	140	S	280	200	T	400

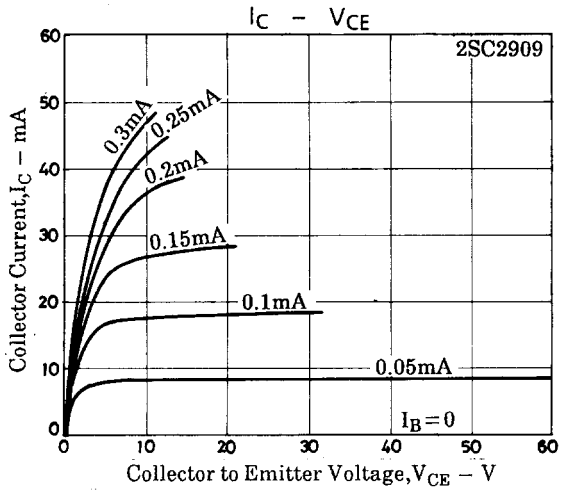
Switching Time Test Circuit

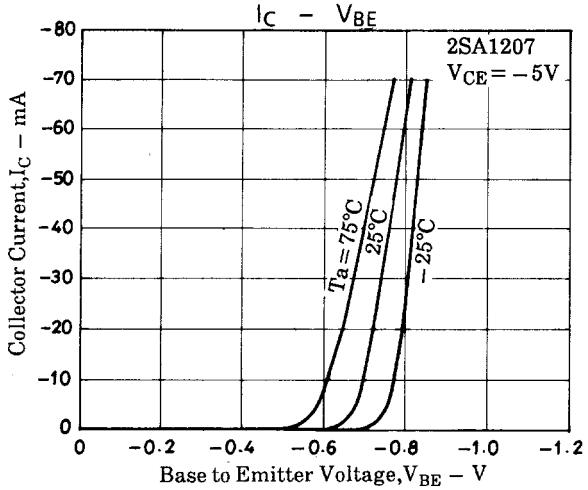


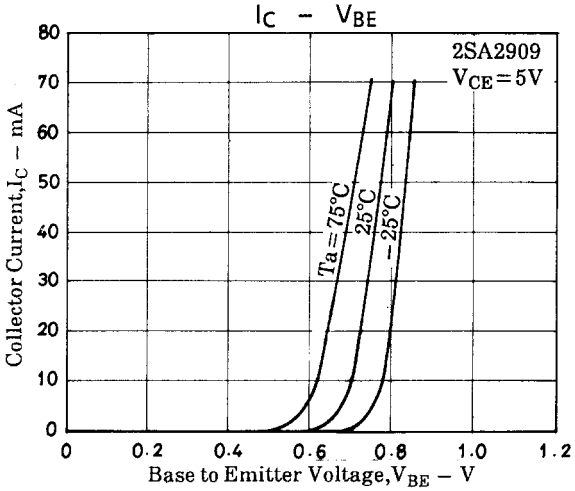
I_C=10I_{B1}=–10I_{B2}=10mA (For PNP, the polarity is reversed)

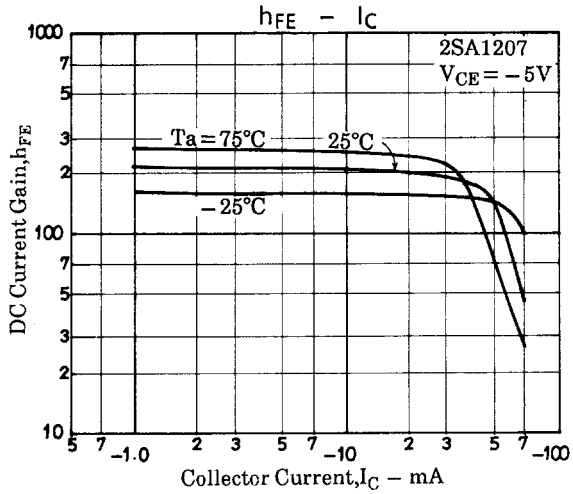
Unit (resistance : Ω, capacitance : F)

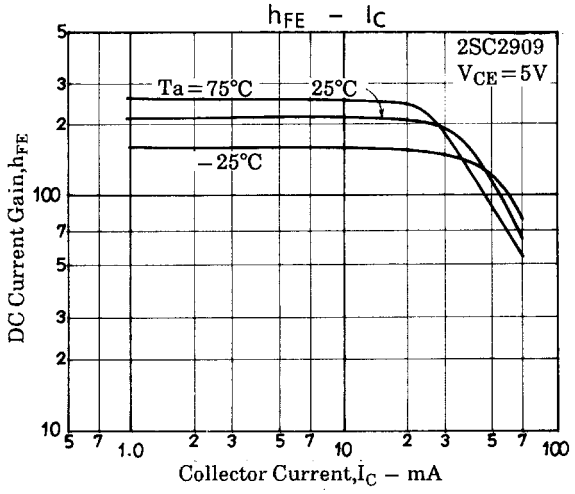

I_C – V_{CE}
2SA1207
−0.3mA
−0.25mA
−0.2mA
−0.15mA
−0.1mA
−0.05mA
I_B=0
Collector Current,I_C – mA
Collector to Emitter Voltage,V_{CE} – V

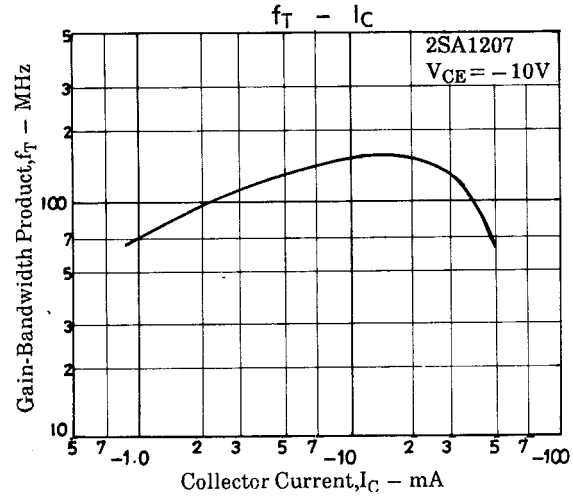

I_C – V_{CE}
2SC2909
0.3mA
0.25mA
0.2mA
0.15mA
0.1mA
0.05mA
I_B=0
Collector Current,I_C – mA
Collector to Emitter Voltage,V_{CE} – V

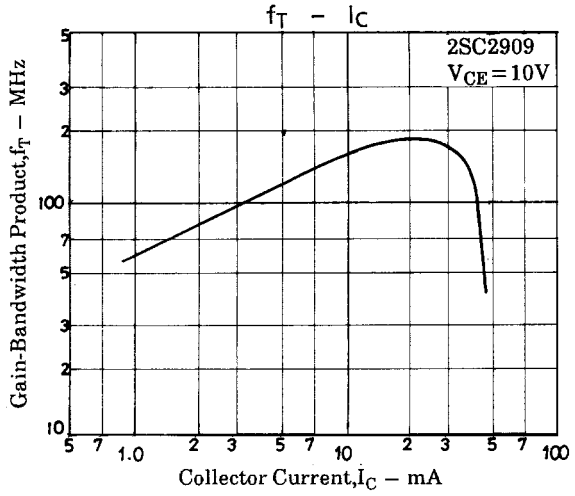

I_C – V_{BE}
2SA1207
V_{CE}=−5V
Ta=75°C
25°C
−25°C
Collector Current,I_C – mA
Base to Emitter Voltage,V_{BE} – V

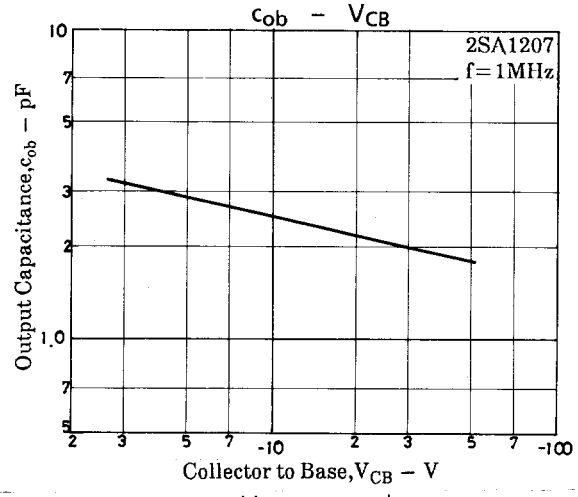

I_C – V_{BE}
2SA2909
V_{CE}=5V
Ta=75°C
25°C
−25°C
Collector Current,I_C – mA
Base to Emitter Voltage,V_{BE} – V

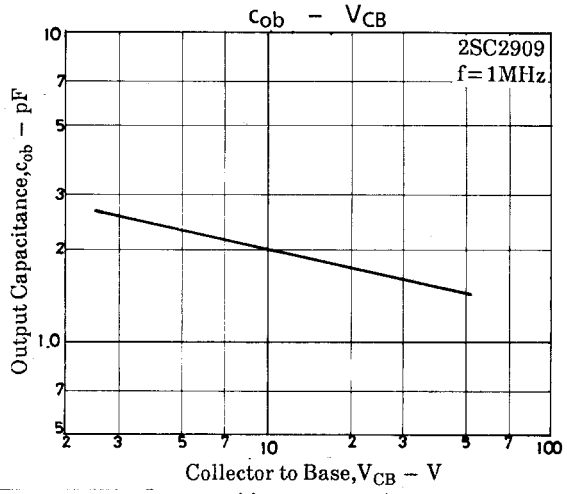

h_{FE} – I_C
2SA1207
V_{CE}=−5V
Ta=75°C
25°C
−25°C
DC Current Gain,h_{FE}
Collector Current,I_C – mA

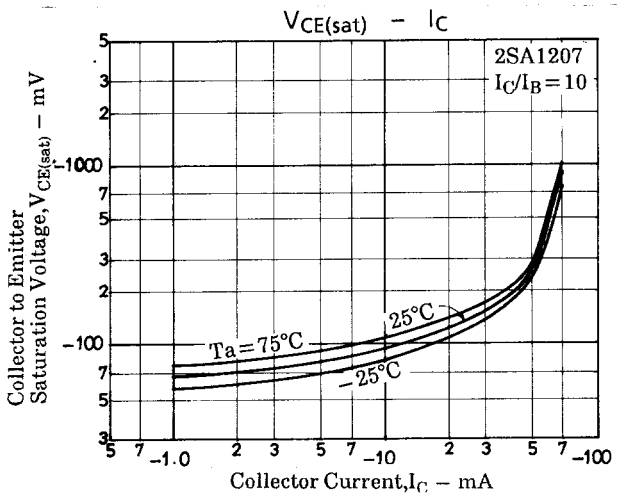

h_{FE} – I_C
2SC2909
V_{CE}=5V
Ta=75°C
25°C
−25°C
DC Current Gain,h_{FE}
Collector Current,I_C – mA

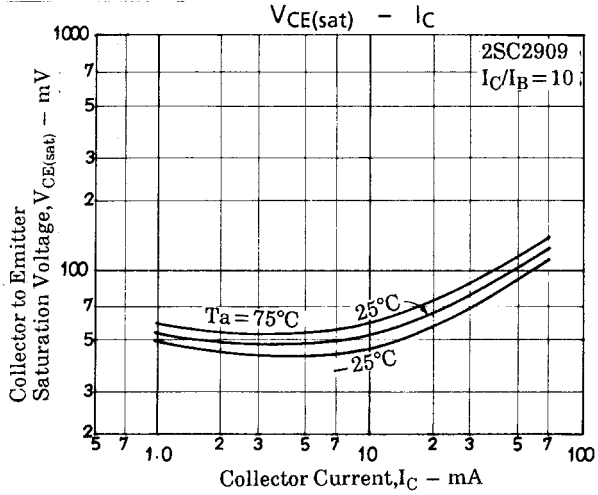

f_T – I_C
2SA1207
V_{CE}=−10V
Gain-Bandwidth Product,f_T – MHz
Collector Current,I_C – mA

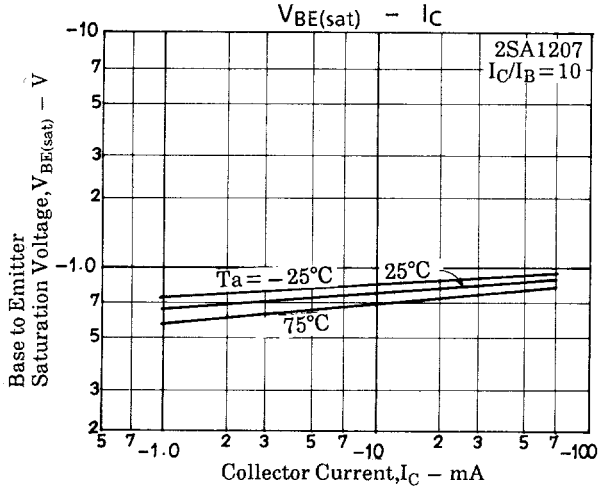

f_T – I_C
2SC2909
V_{CE}=10V
Gain-Bandwidth Product,f_T – MHz
Collector Current,I_C – mA

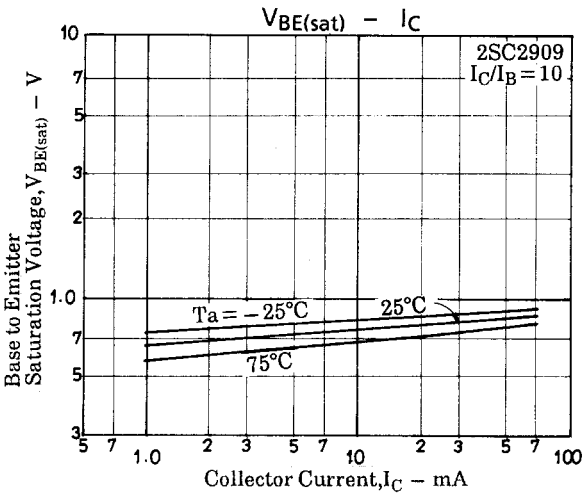

Cob – VCB
2SA1207
f=1MHz
Output Capacitance,Cob – pF
Collector to Base,VCB – V

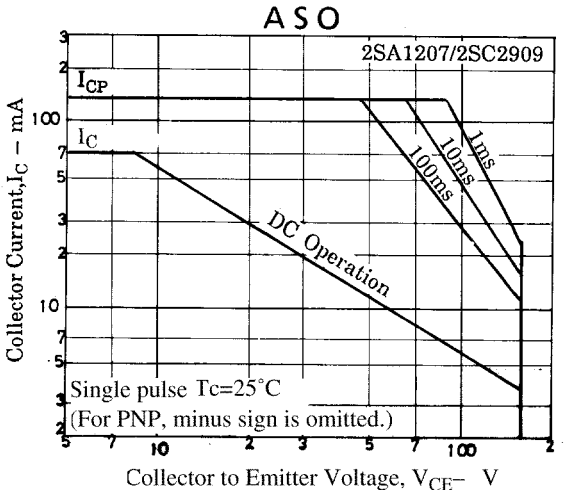

Cob – VCB
2SC2909
f=1MHz
Output Capacitance,Cob – pF
Collector to Base,VCB – V

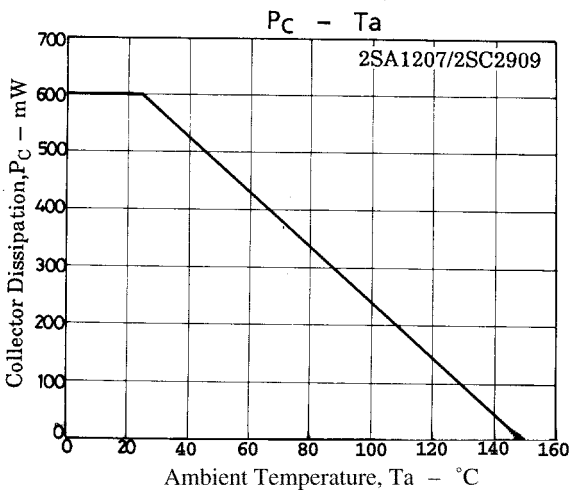

VCE(sat) – IC
2SA1207
IC/IB=10
Collector to Emitter Saturation Voltage,VCE(sat) – mV
Ta=75°C
25°C
–25°C
Collector Current,IC – mA


VCE(sat) – IC
2SC2909
IC/IB=10
Collector to Emitter Saturation Voltage,VCE(sat) – mV
Ta=75°C
25°C
–25°C
Collector Current,IC – mA


VBE(sat) – IC
2SA1207
IC/IB=10
Base to Emitter Saturation Voltage,VBE(sat) – V
Ta=–25°C
25°C
75°C
Collector Current,IC – mA


VBE(sat) – IC
2SC2909
IC/IB=10
Base to Emitter Saturation Voltage,VBE(sat) – V
Ta=–25°C
25°C
75°C
Collector Current,IC – mA


ASO
2SA1207/2SC2909
ICP
IC
1ms
10ms
100ms
DC Operation
Single pulse Tc=25°C
(For PNP, minus sign is omitted.)
Collector Current,IC – mA
Collector to Emitter Voltage, VCE– V


PC – Ta
2SA1207/2SC2909
Collector Dissipation,PC – mW
Ambient Temperature, Ta – °C