



SANYO Semiconductors

## DATA SHEET

# 2SA1507 / 2SC3902

PNP / NPN Epitaxial Planar Silicon Transistors

160V / 1.5A Switching Applications

## Applications

- Color TV audio output, converters, inverters.

## Features

- High breakdown voltage.
- Large current capacity.
- Adoption of FBET and MBIT process.
- The plastic-covered heat sink eliminates the need for an insulator when mounting the 2SA1507/2SC3902.

## Specifications ( ) : 2SA1507

### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-)180	V
Collector-to-Emitter Voltage	VCEO		(-)160	V
Emitter-to-Base Voltage	VEBO		(-)6	V
Collector Current	IC		(-)1.5	A
Collector Current (Pulse)	ICP		(-)2.5	A
Collector Dissipation	PC		1.5	W
		Tc=25°C	10	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	ICBO	V <sub>CB</sub> =(-)120V, I <sub>E</sub> =0A			(-)1.0	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0A			(-)1.0	μA

Continued on next page.

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# 2SA1507 / 2SC3902

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	hFE1	$V_{CE}=(-)5V, I_C=(-)100mA$	100*		400*	
	hFE2	$V_{CE}=(-)5V, I_C=(-)10mA$	90			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)50mA$		120		MHz
Output Capacitance	Cob	$V_{CB}=(-)10V, f=1MHz$		(22)14		pF
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$	$I_C=(-)500mA, I_B=(-)50mA$		(-0.2)0.13	(-0.5)0.45	V
Base-to-Emitter Saturation Voltage	$V_{BE}(sat)$	$I_C=(-)500mA, I_B=(-)50mA$		(-0.85)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-180)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-160)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	(-6)			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		(0.7)0.04		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit.		(0.7)1.2		$\mu s$
Fall Time	$t_f$	See specified Test Circuit.		(0.04)0.08		$\mu s$

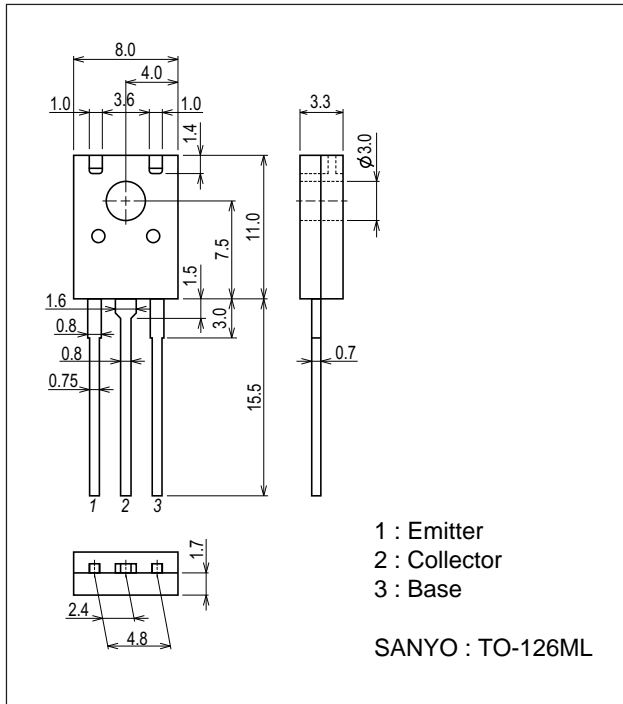
\*: The 2SA1507 / 2SC3902 are classified by 100mA hFE as follows:

Rank	R	S	T
hFE	100 to 200	140 to 280	200 to 400

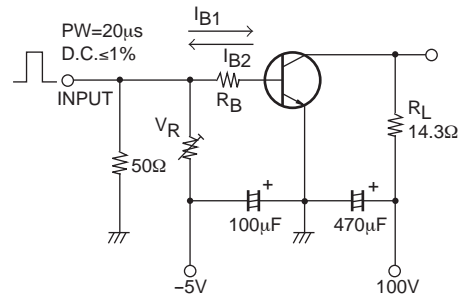
## Package Dimensions

unit : mm (typ)

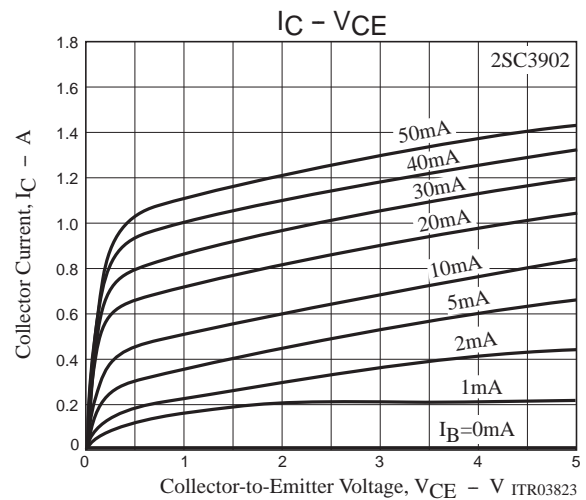
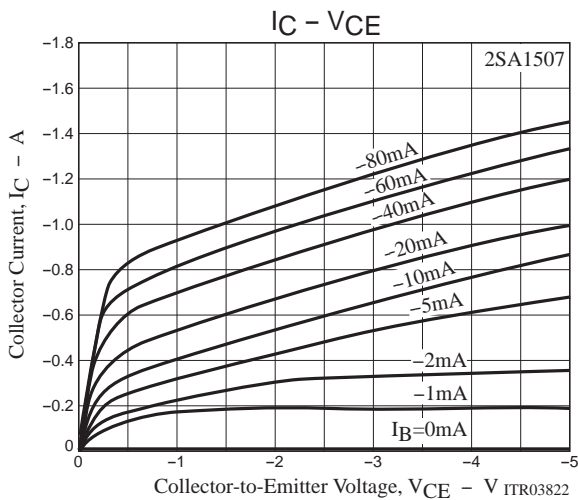
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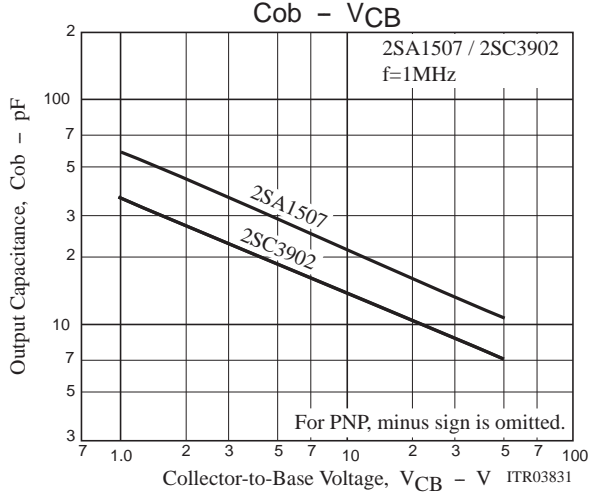
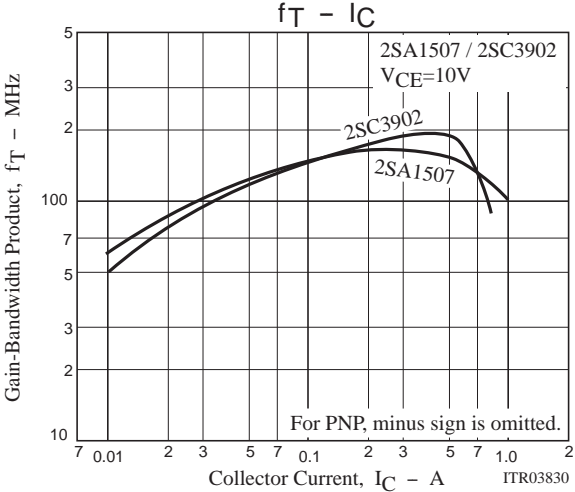
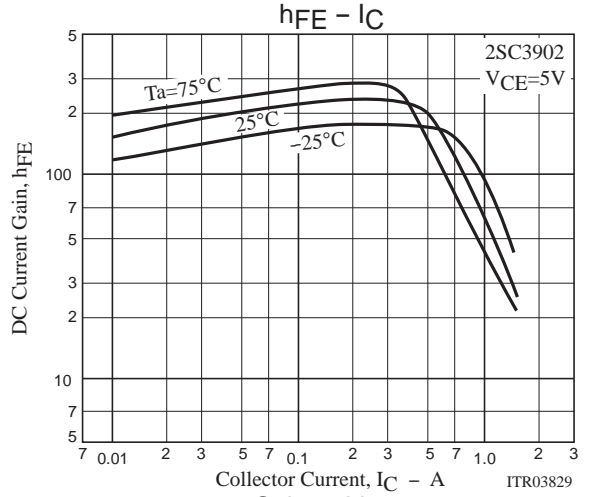
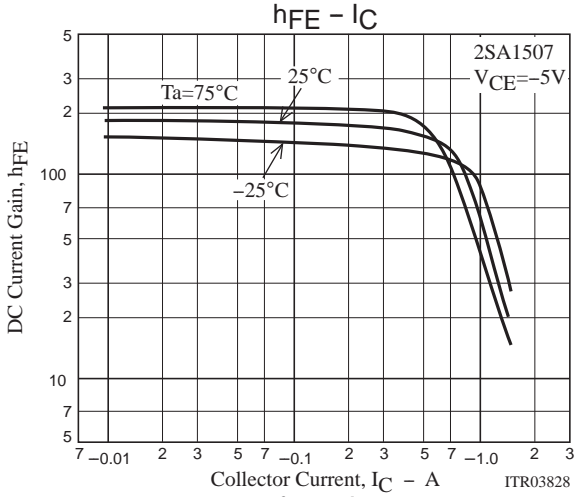
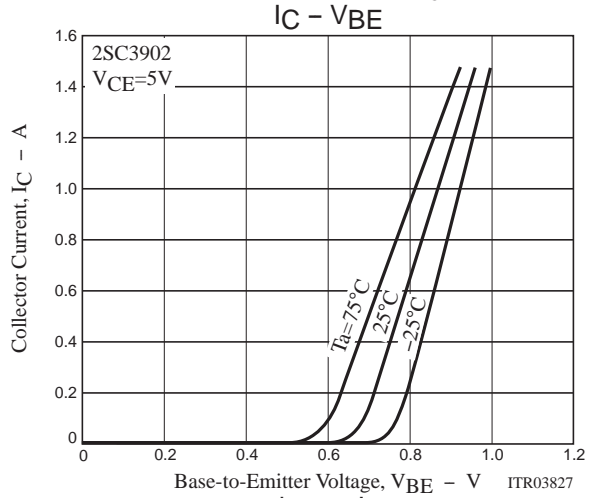
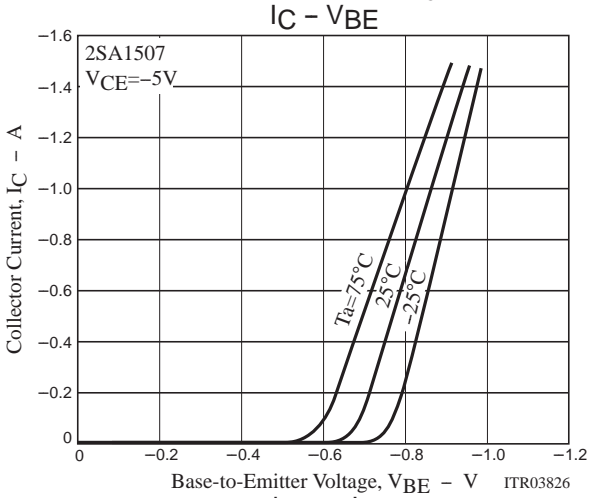
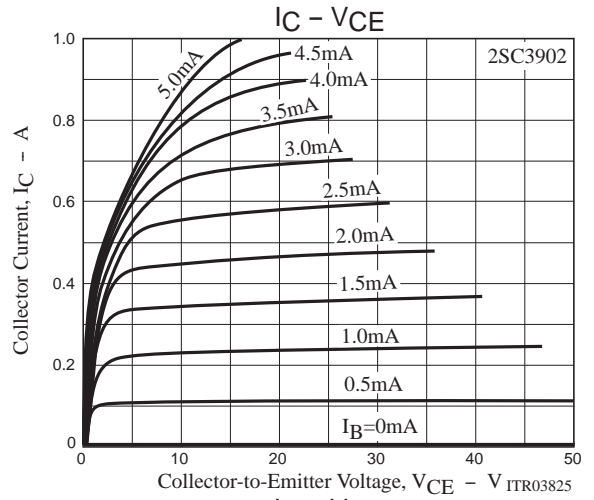
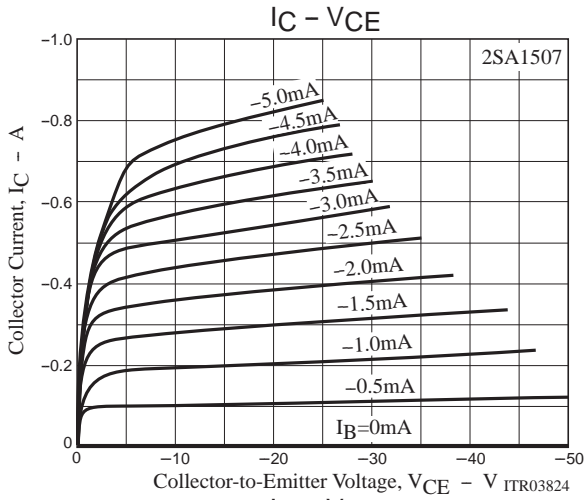
## Switching Time Test Circuit



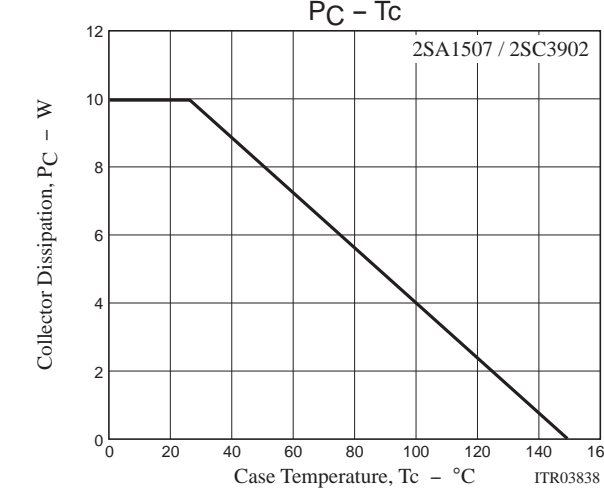
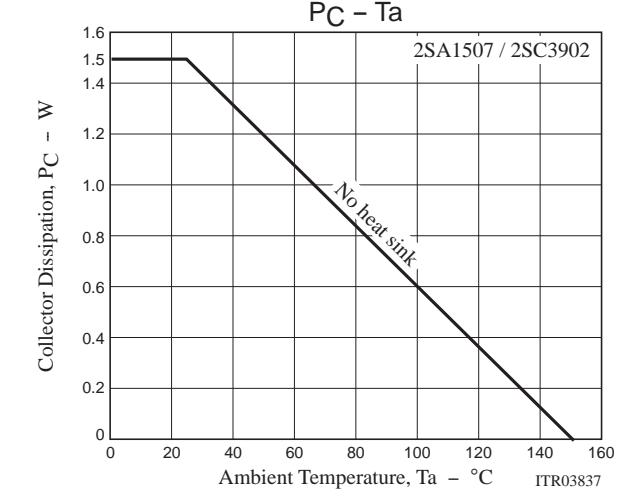
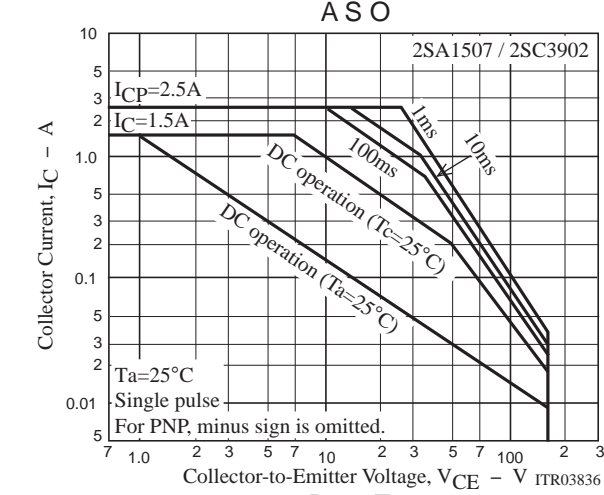
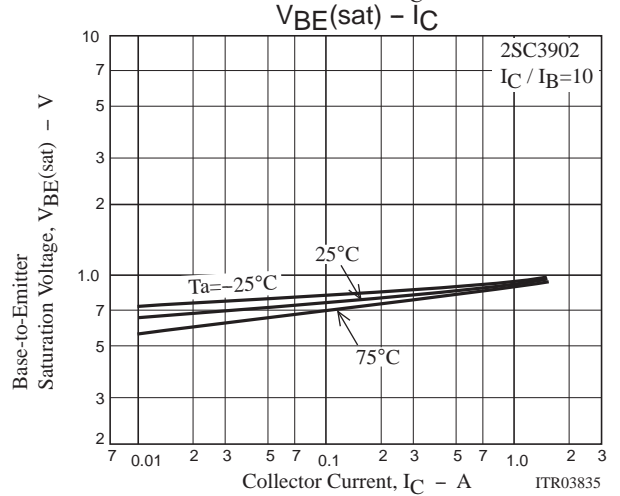
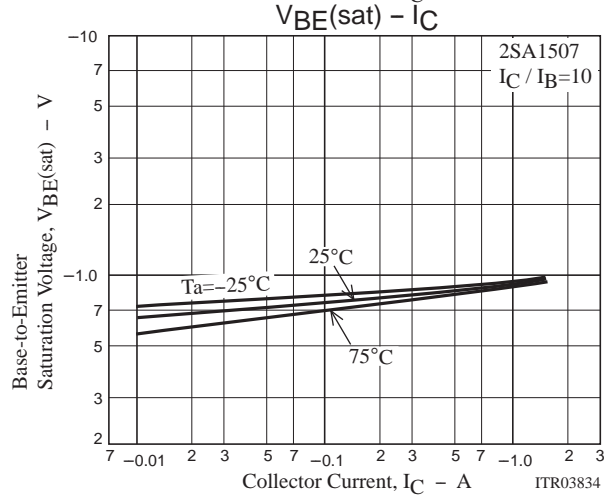
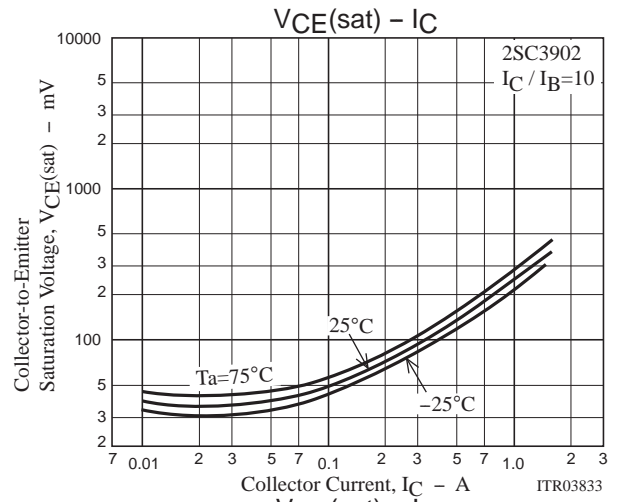
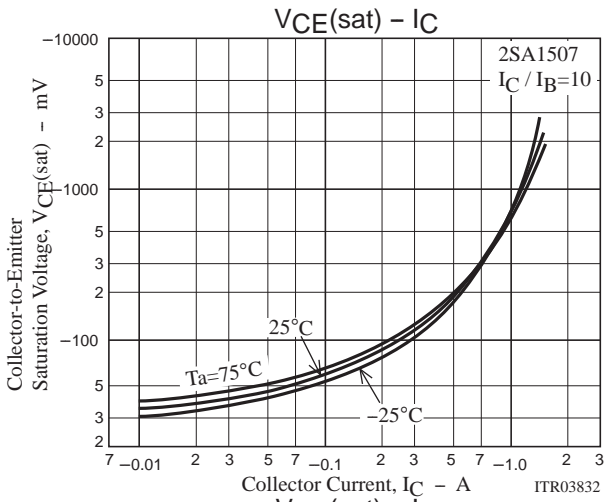
$I_C=10I_{B1}=-10I_{B2}=0.7A$   
(For PNP, the polarity is reversed.)



2SA1507 / 2SC3902



# 2SA1507 / 2SC3902



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