



SANYO Semiconductors

## DATA SHEET

# 2SB1450 / 2SD2199

PNP / NPN Epitaxial Planar Silicon Transistors

50V/7A Switching Applications

## Features

- Surface mount type device making the following possible.
  - Reduction in the number of manufacturing processes for 2SB1450/2SD2199-applied equipment.
  - High density surface mount applications.
  - Small size of 2SB1450/2SD2199-applied equipment.
- Low collector-to-emitter saturation voltage.
- Highly resistant to breakdown because of wide ASO.

## Specifications ( ) : 2SB1450

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-)60	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-)50	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)6	V
Collector Current	I <sub>C</sub>		(-)7	A
Collector Current (Pulse)	I <sub>CP</sub>		(-)12	A
Collector Dissipation	P <sub>C</sub>		1.65	W
		T <sub>c</sub> =25°C	40	W
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =(-)40V, I <sub>E</sub> =0A			(-)0.1	mA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0A			(-)0.1	mA

Continued on next page.

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**SANYO Semiconductor Co., Ltd.**

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# 2SB1450 / 2SD2199

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE1}$	$V_{CE}=(-)2V, I_C=(-)1A$	70*		280*	
	$h_{FE2}$	$V_{CE}=(-)2V, I_C=(-)5A$	30			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)5V, I_C=(-)1A$		10		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)4A, I_B=(-)0.4A$			(-)0.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)1mA, I_E=0A$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)1mA, I_C=0A$	(-)6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		0.2		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit.		(0.7)0.9		$\mu s$
Fall Time	$t_f$	See specified Test Circuit.		(0.1)0.3		$\mu s$

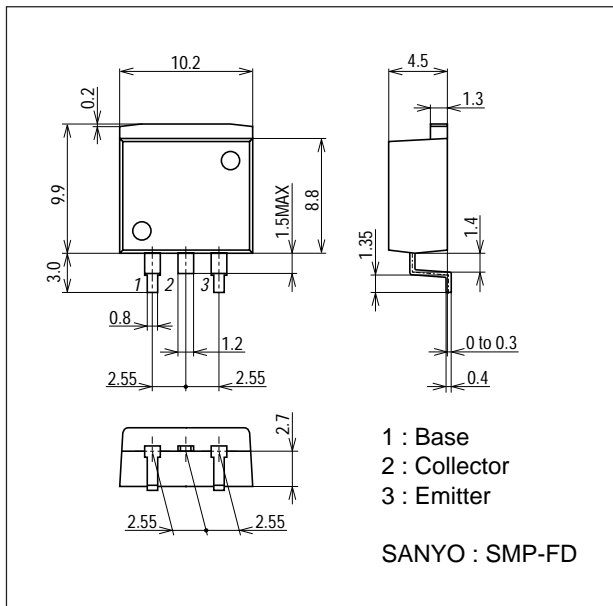
\* : The 2SBB1450 / 2SD2199 are classified by 1A  $h_{FE}$  as follows :

Rank	Q	R	S
$h_{FE}$	70 to 140	100 to 200	140 to 280

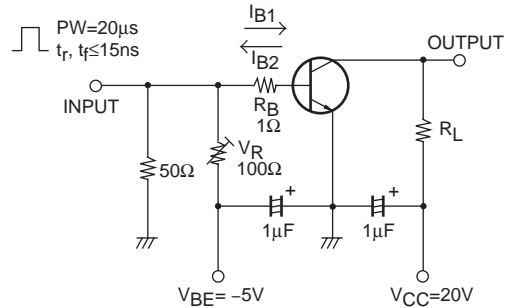
## Package Dimensions

unit : mm (typ)

7001-002

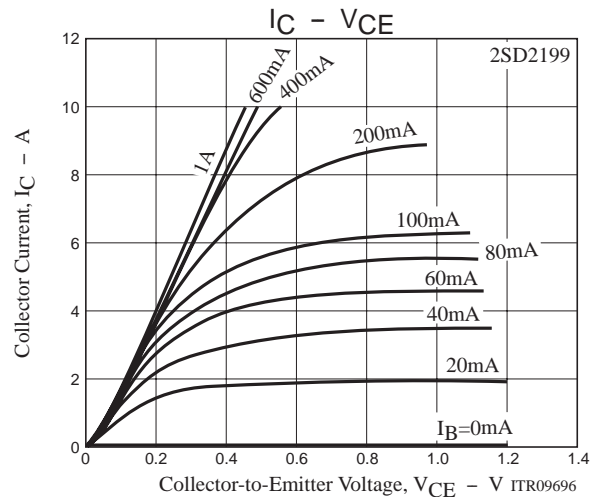
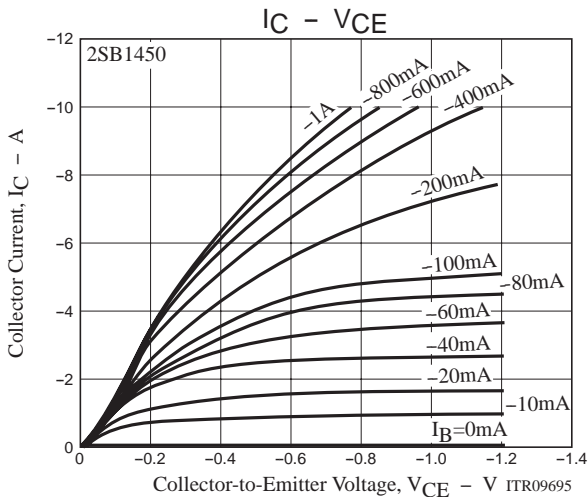


## Switching Time Test Circuit

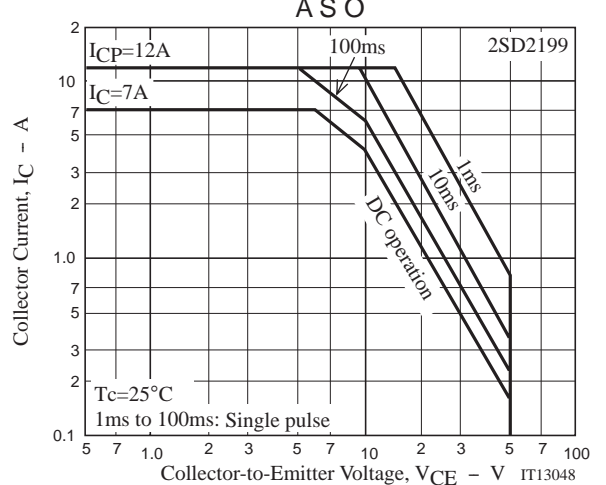
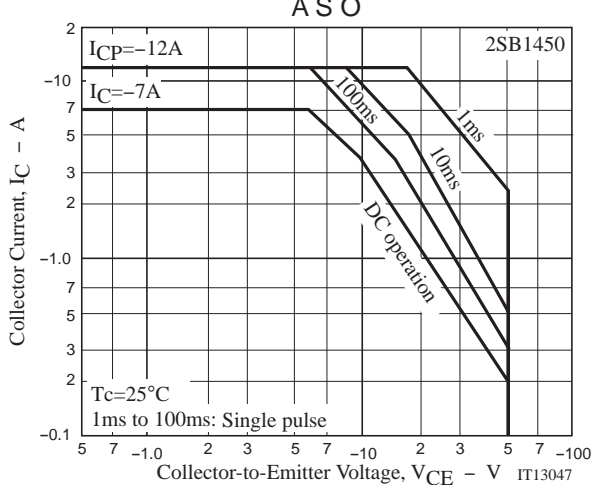
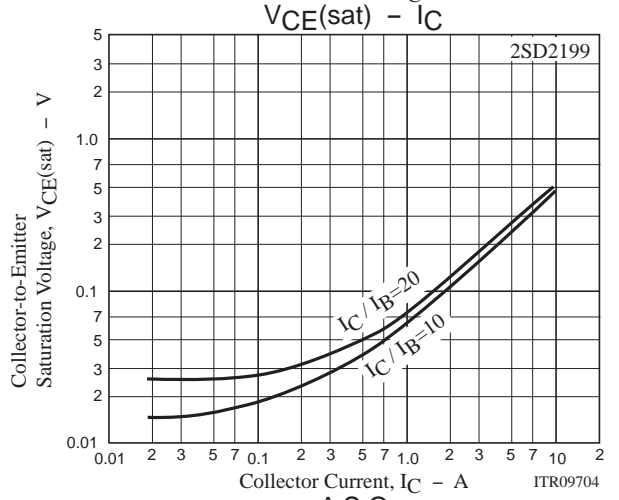
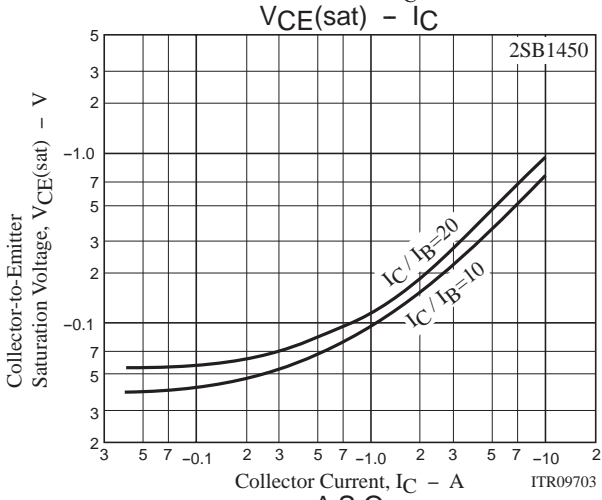
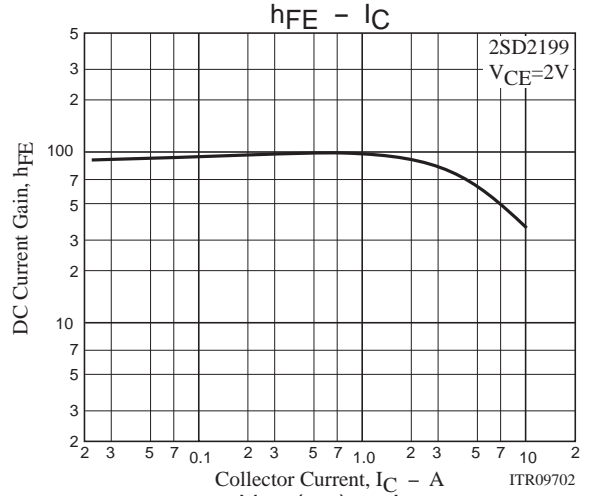
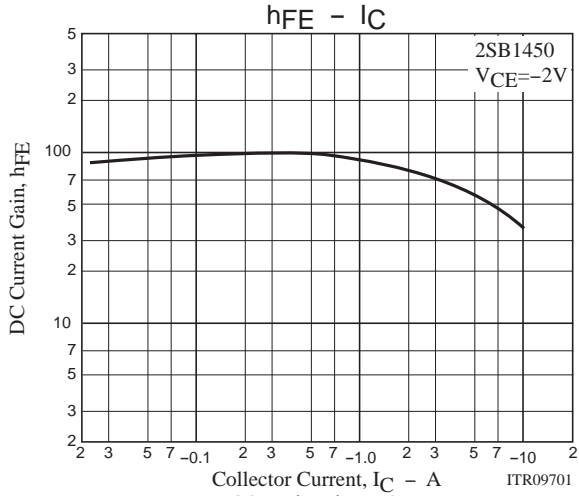
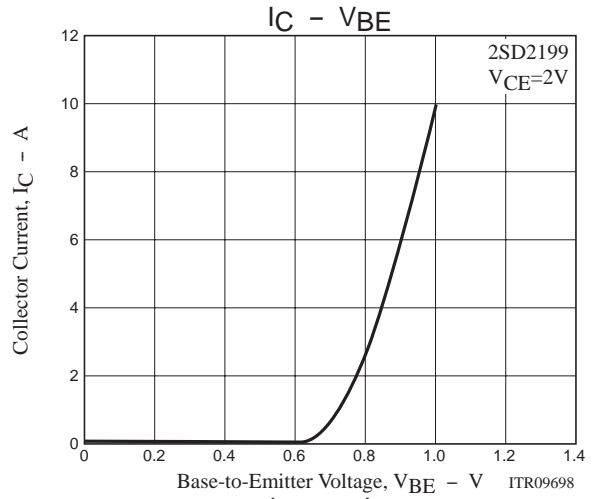
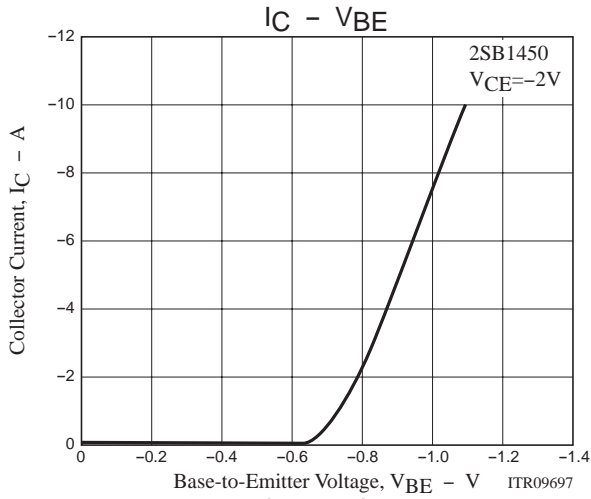


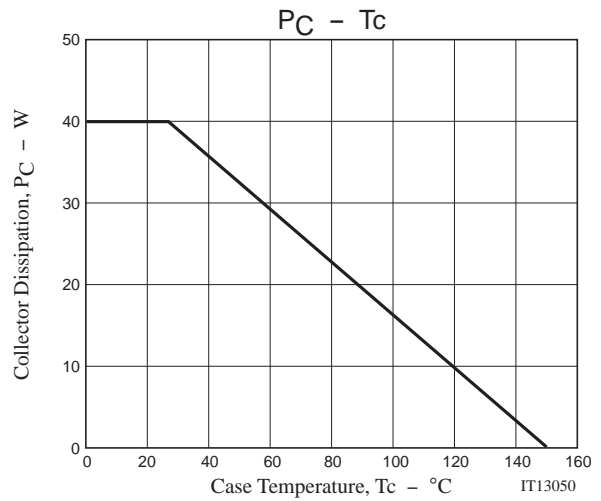
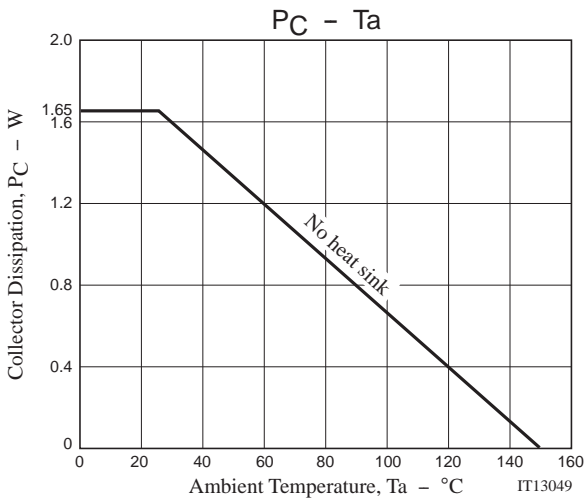
$$I_C = 10I_{B1} = -10I_{B2} = 2A$$

For PNP, the polarity is reversed.



2SB1450 / 2SD2199





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