Ordering number : EN3150A

SANYO Semiconductors
DATA SHEET

An ON Semiconductor Company

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_{CBO}		(–)60	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)7	A
Collector Current (Pulse)	I_{CP}		(–)12	A
Collector Dissipation	P_C		1.65	W
		Tc=25°C	40	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=0A			(–)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0A			(–)0.1	mA

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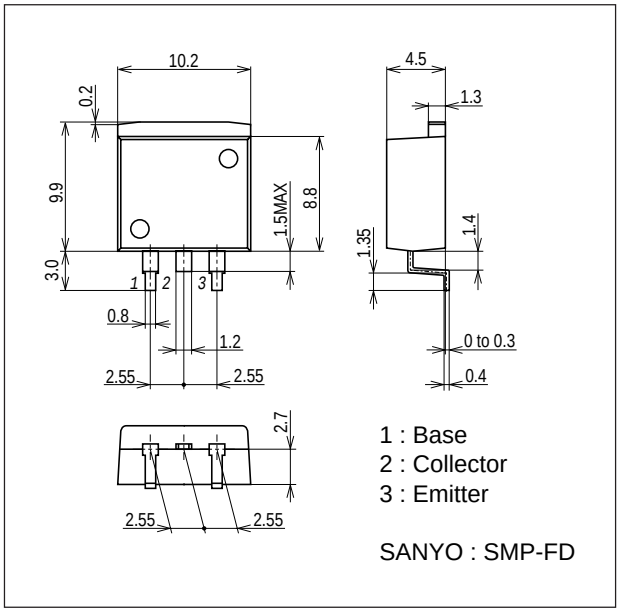
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE}1$	V_{CE}=(-)2V, I_C=(-)1A	70*		280*	
	$h_{FE}2$	V_{CE}=(-)2V, I_C=(-)5A	30			
Gain-Bandwidth Product	f_T	V_{CE}=(-)5V, I_C=(-)1A		10		MHz
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)4A, I_B=(-)0.4A			(-)0.4	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}=∞	(-)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		μs
Storage Time	t_{stg}	See specified Test Circuit.		(0.7)0.9		μs
Fall Time	t_f	See specified Test Circuit.		(0.1)0.3		μs

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

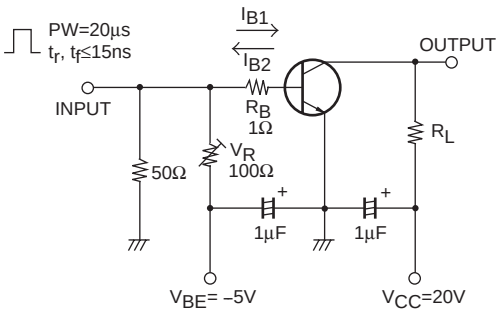
Rank	Q	R	S
h_{FE}	70 to 140	100 to 200	140 to 280

Package Dimensions

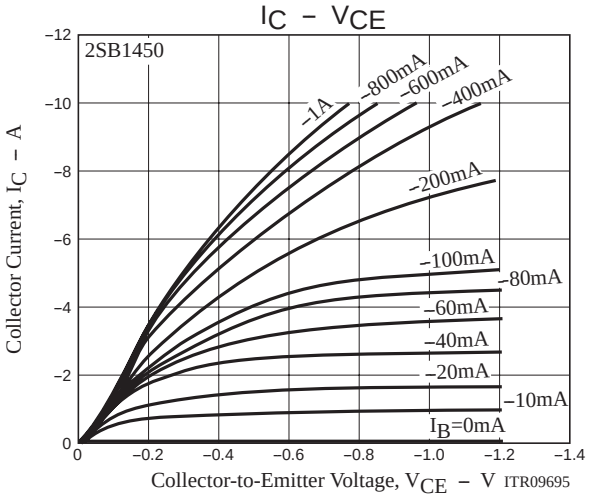
unit : mm (typ)
7001-002

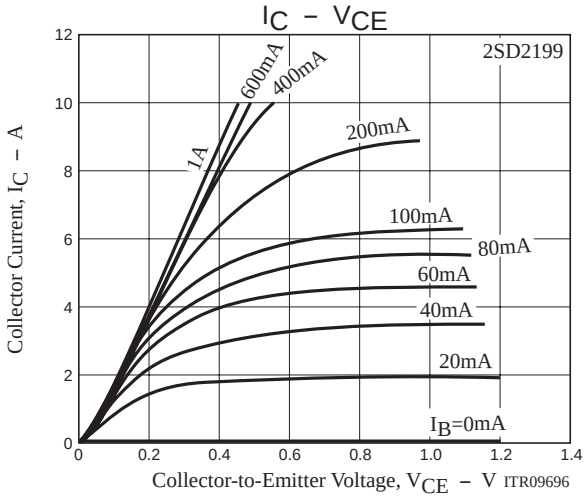


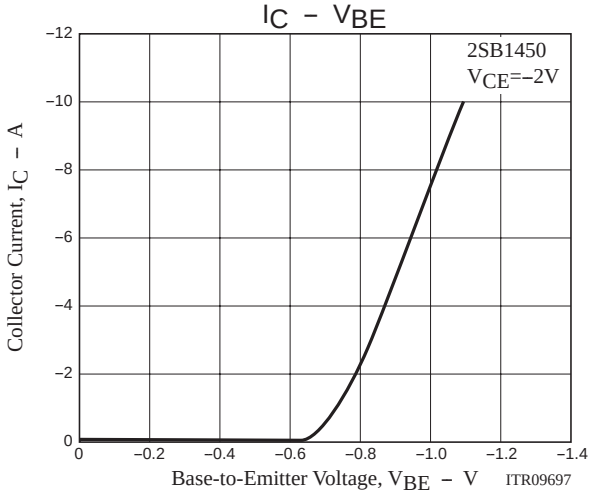
Switching Time Test Circuit

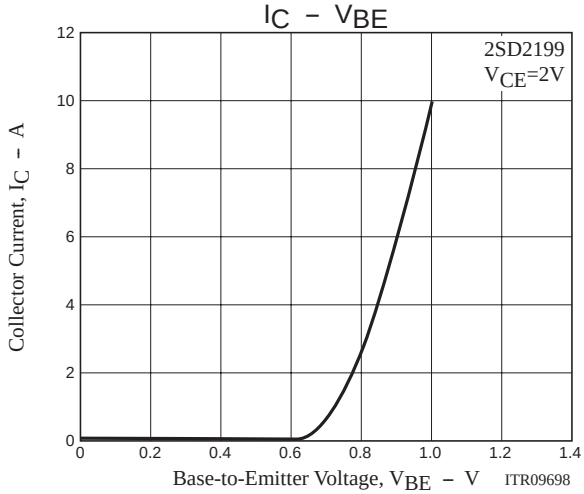


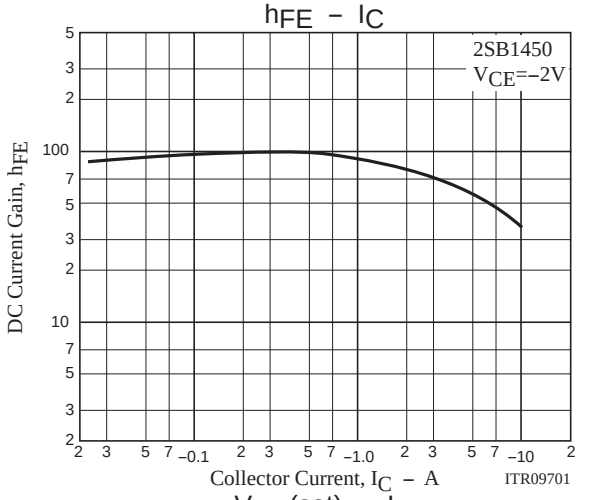
I_C=10I_{B1}= −10I_{B2}=2A
For PNP, the polarity is reversed.

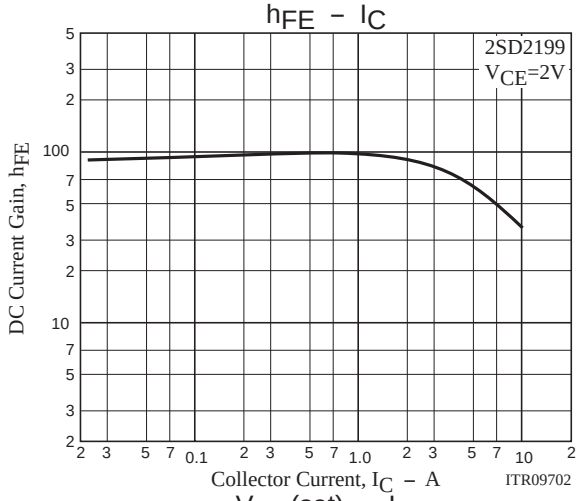


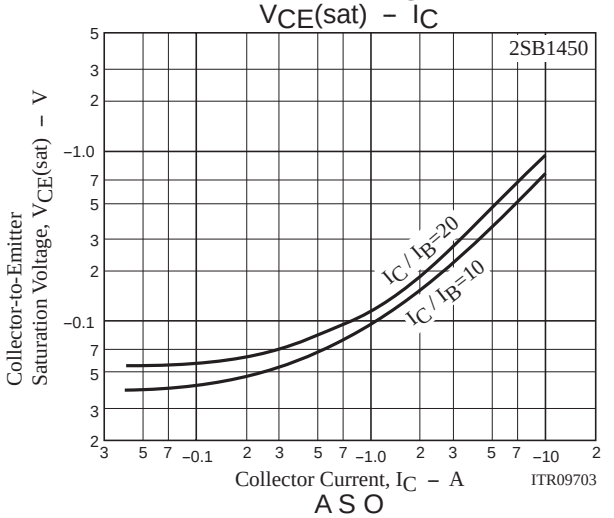


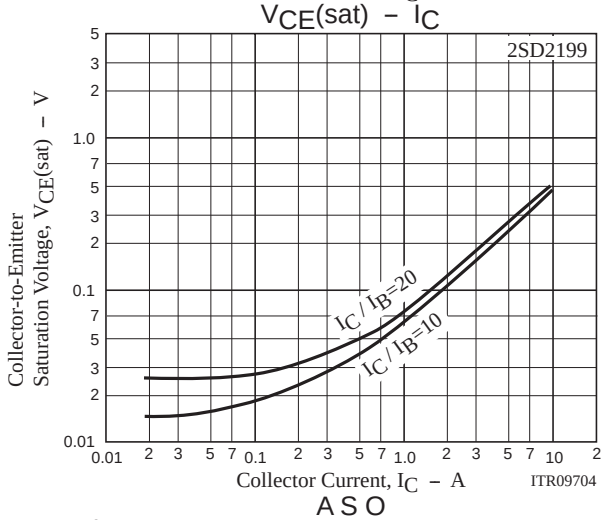

IC – VBE
2SB1450
VCE=–2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR09697

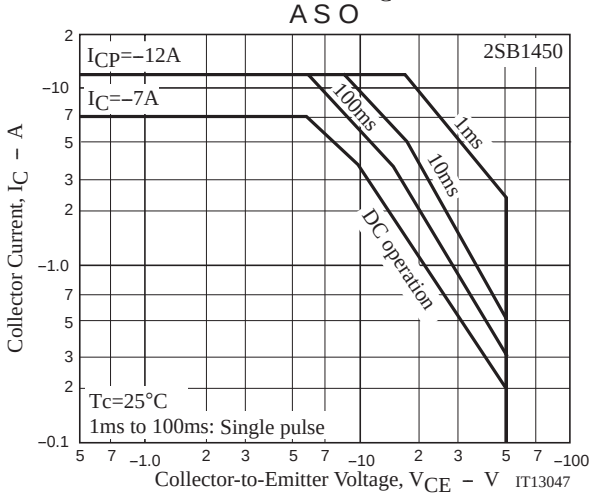

IC – VBE
2SD2199
VCE=2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR09698

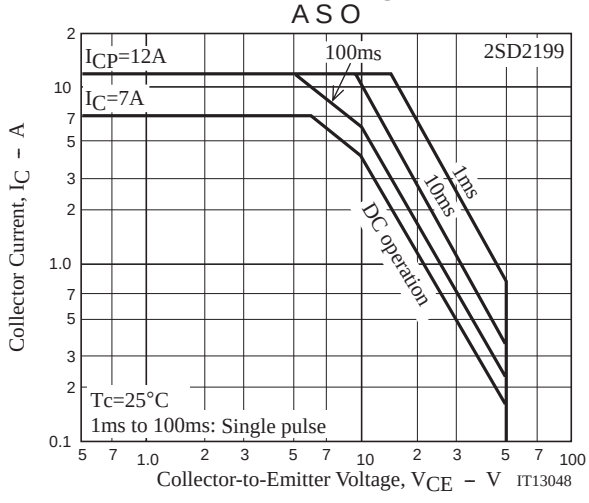

hFE – IC
2SB1450
VCE=–2V
DC Current Gain, hFE
Collector Current, IC – A
ITR09701


hFE – IC
2SD2199
VCE=2V
DC Current Gain, hFE
Collector Current, IC – A
ITR09702


VCE(sat) – IC
2SB1450
IC / IB=20
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR09703


VCE(sat) – IC
2SD2199
IC / IB=20
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR09704


A S O
2SB1450
ICP=–12A
IC=–7A
100ms
1ms
10ms
DC operation
Tc=25°C
1ms to 100ms: Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13047


A S O
2SD2199
ICP=12A
IC=7A
100ms
1ms
10ms
DC operation
Tc=25°C
1ms to 100ms: Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13048