Ordering number : EN3149A

SANYO Semiconductors

DATA SHEET

PNP / NPN Epitaxial Planar Silicon Transistors

2SB1449 / 2SD2198 — High-Current Switching Applications

Features

- Surface mount type device making the following possible.
  - Reduction in the number of manufacturing processes for 2SB1449/2SD2198-applied equipment.
  - High density surface mount applications.
  - Small size of 2SB1449/2SD2198-applied equipment.
- Low collector-to-emitter saturation voltage.

Specifications ( ) : 2SB1449

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		(–)5	A
Collector Current (Pulse)	I_{CP}		(–)9	A
Collector Dissipation	P_C		1.65	W
		Tc=25°C	30	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
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)1A	70*		280*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)3A	30			
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)1A		30		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(160)100		pF

Continued on next page.

* : The 2SBB1449 / 2SD2198 are classified by 1A h_{FE} as follows :

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

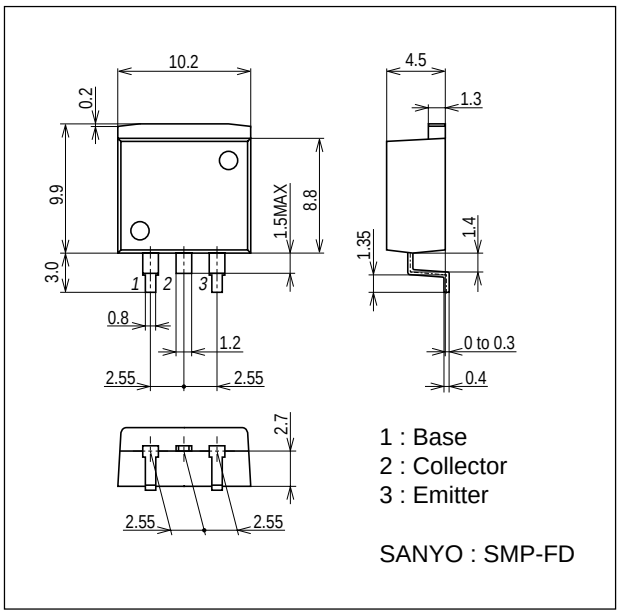
SANYO Semiconductor Co., Ltd.
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Continued from preceding page.

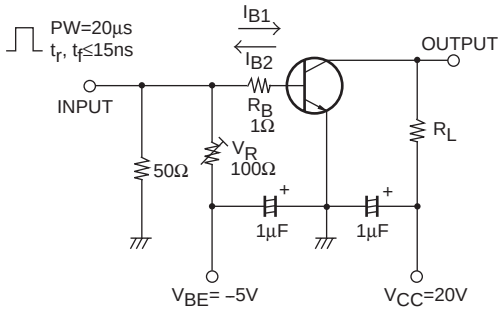
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$	I_C=(–)3A, I_B=(–)0.3A			(–)0.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0A	(–)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			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.		0.1		μs
Storage Time	t_{stg}	See specified Test Circuit.		(0.7)1.4		μs
Fall Time	t_f	See specified Test Circuit.		0.2		μs

Package Dimensions

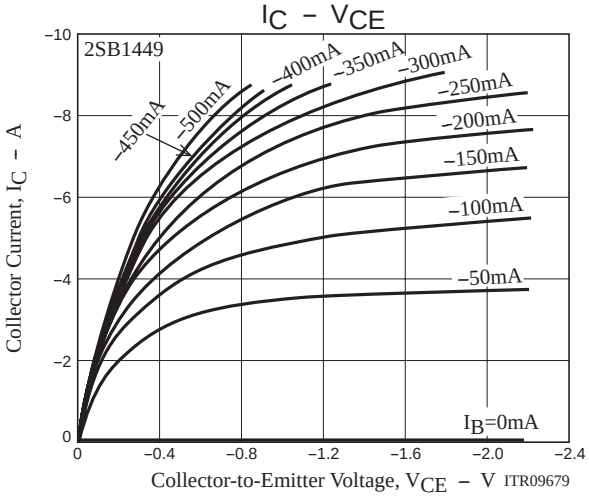
unit : mm (typ)
7001-002

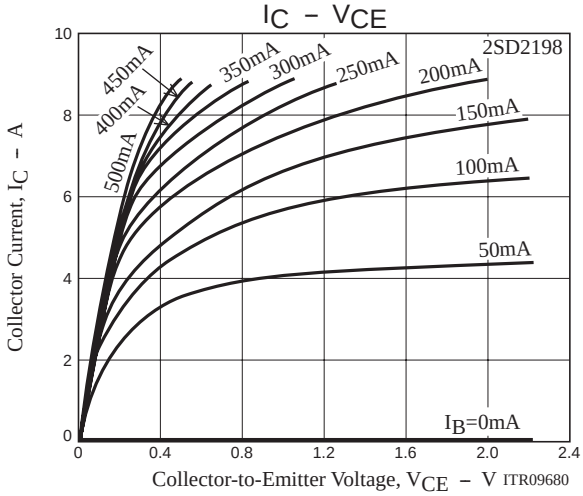


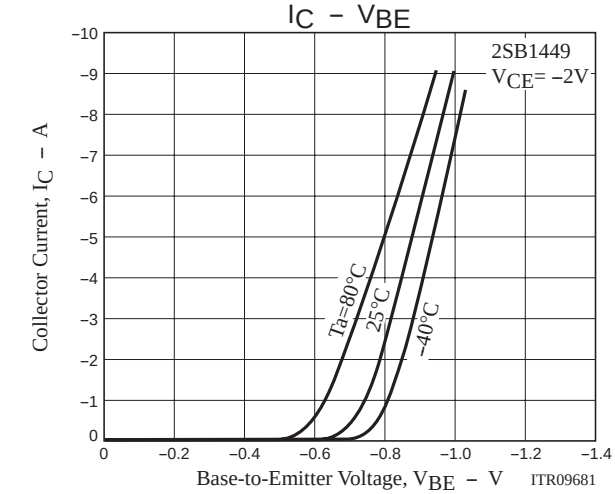
Switching Time Test Circuit

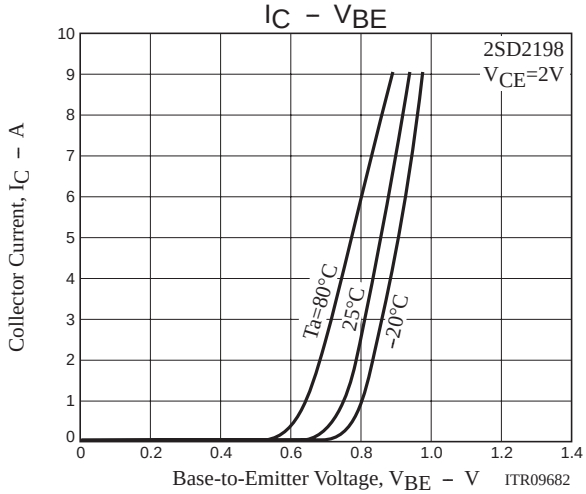


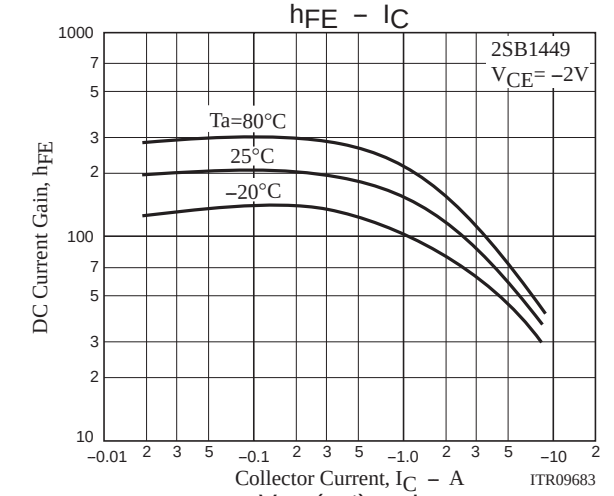
$10I_{B1}$= –$10I_{B2}$=I_C=2A
For PNP, the polarity is reversed.

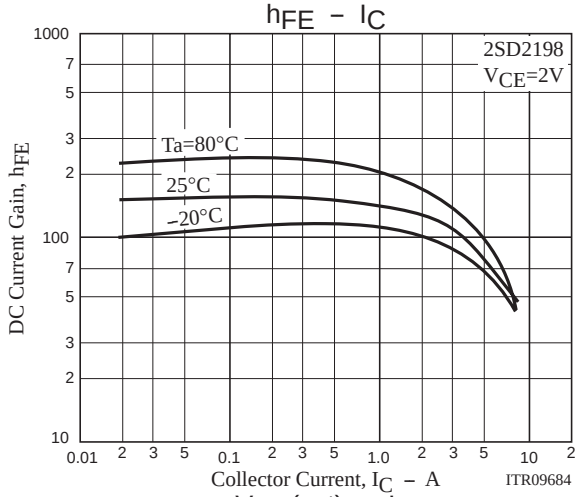


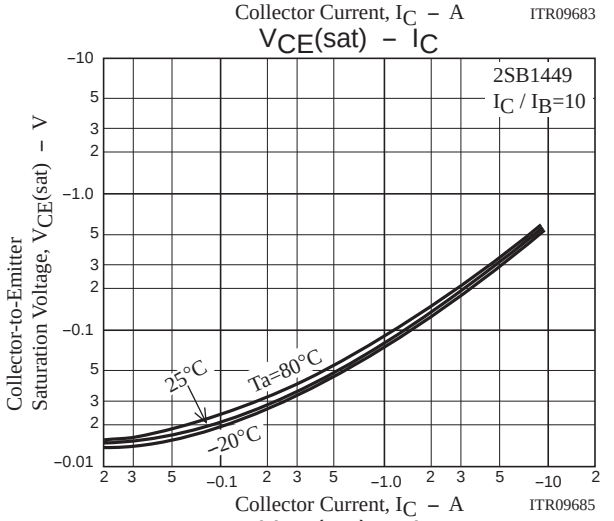


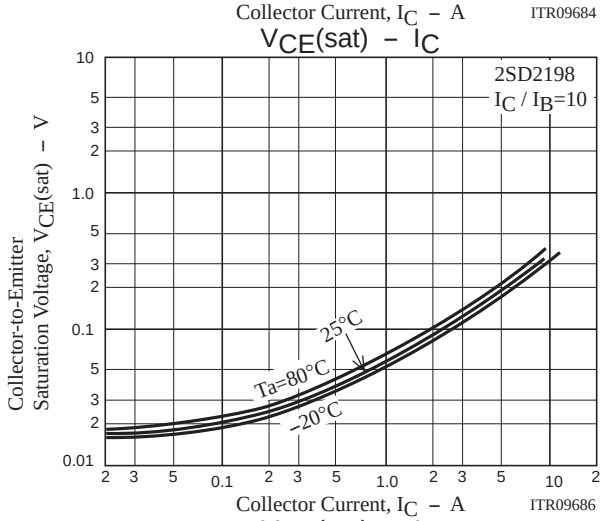

IC – VBE
2SB1449
VCE= –2V
Ta=80°C
25°C
–40°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR09681

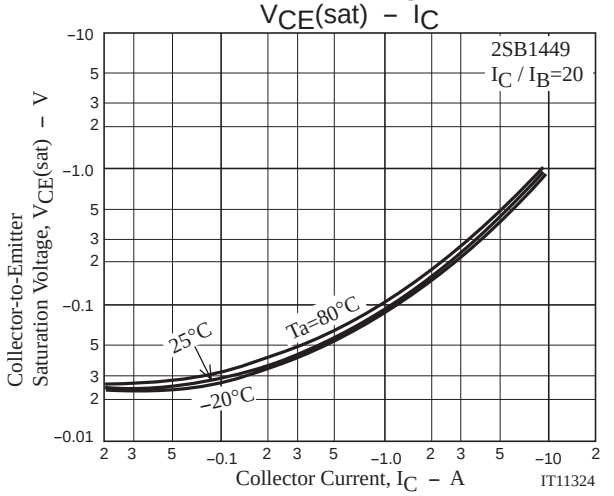

IC – VBE
2SD2198
VCE=2V
Ta=80°C
25°C
–20°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR09682

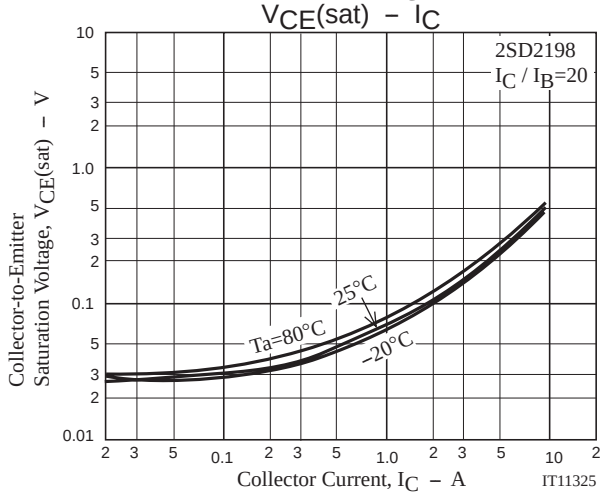

hFE – IC
2SB1449
VCE= –2V
Ta=80°C
25°C
–20°C
DC Current Gain, hFE
Collector Current, IC – A
ITR09683

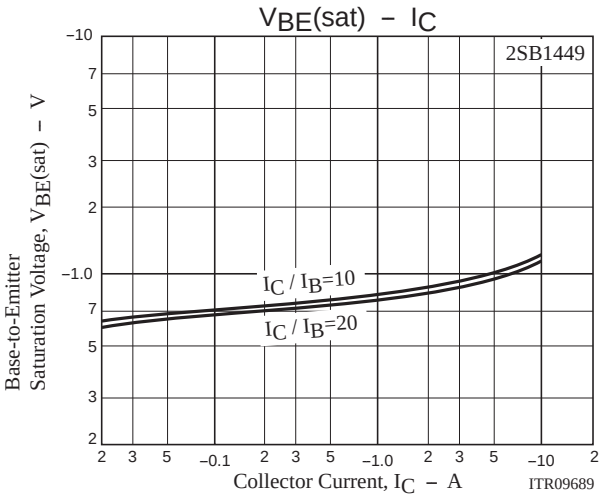

hFE – IC
2SD2198
VCE=2V
Ta=80°C
25°C
–20°C
DC Current Gain, hFE
Collector Current, IC – A
ITR09684

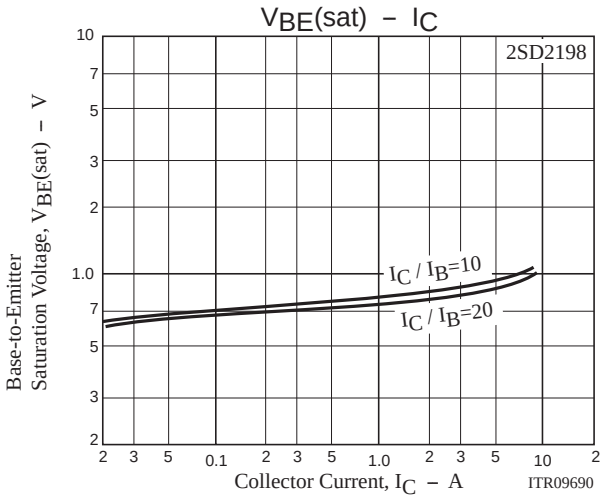

VCE(sat) – IC
2SB1449
IC / IB=10
25°C
Ta=80°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR09685

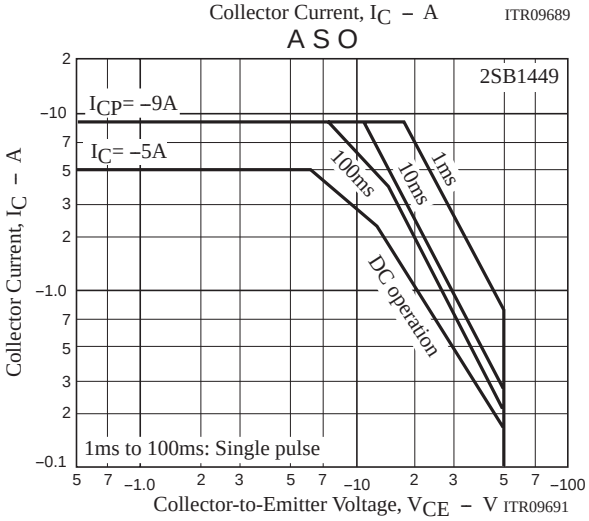

VCE(sat) – IC
2SD2198
IC / IB=10
25°C
Ta=80°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR09686

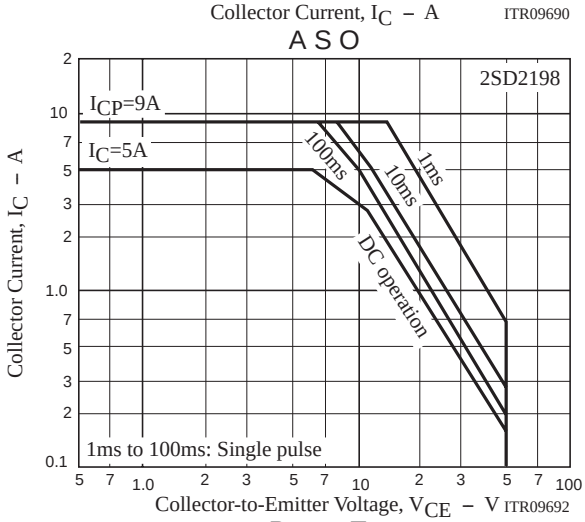

VCE(sat) – IC
2SB1449
IC / IB=20
25°C
Ta=80°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11324

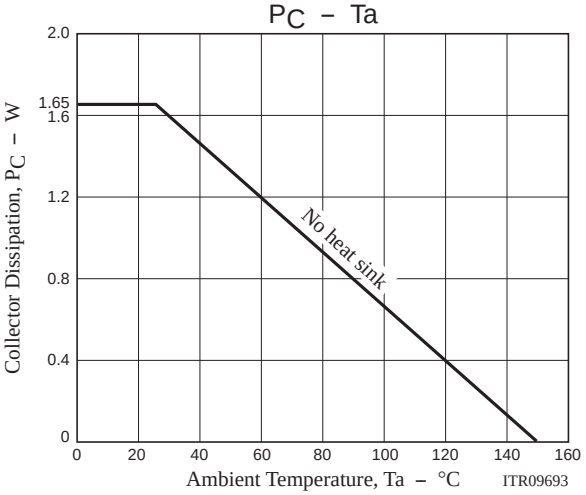

VCE(sat) – IC
2SD2198
IC / IB=20
25°C
Ta=80°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11325

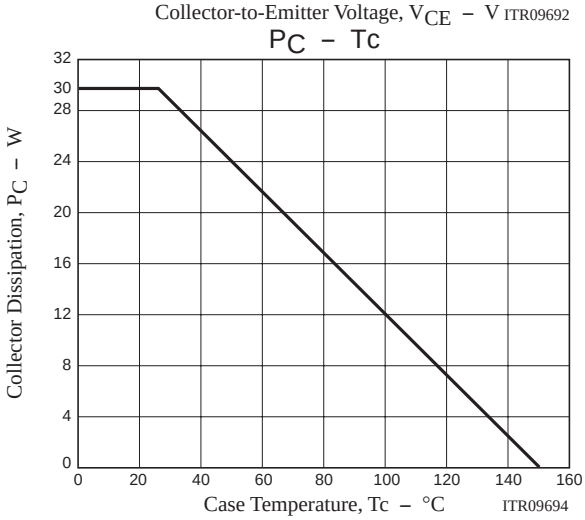

VBE(sat) – IC
2SB1449
IC / IB=10
IC / IB=20
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR09689


VBE(sat) – IC
2SD2198
IC / IB=10
IC / IB=20
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR09690


A S O
2SB1449
ICP= –9A
IC= –5A
100ms
10ms
1ms
DC operation
1ms to 100ms: Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR09691


A S O
2SD2198
ICP=9A
IC=5A
100ms
10ms
1ms
DC operation
1ms to 100ms: Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR09692


PC – Ta
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
ITR09693


PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – °C
ITR09694