Ordering number:EN3151

PNP/NPN Epitaxial Planar Silicon Transistors

2SB1451/2SD2200

80V/5A Switching Applications

Features

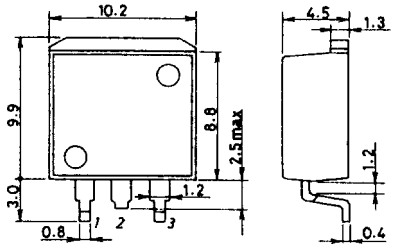
- Surface mount type device making the following possible.
  - -Reduction in the number of manufacturing processes for 2SB1451/2SD2200-applied equipment.
  - -High density surface mount applications.
  - -Small size of 2SB1451/2SD2200-applied equipment.
- Low collector-to-emitter saturation voltage.
- Large current capacity.

Package Dimensions

unit:mm

2069B

[2SB1451/2SD2200]



1 : Base
2 : Collector
3 : Emitter
SANYO : SMP-FD

( ) : 2SB1451

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)90	V
Collector-to-Emitter Voltage	V_{CEO}		(–)80	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}=(–)80V, I_E=0			(–)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)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		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)3A, I_B=(–)0.3A			0.4	V
					(–0.5)	V

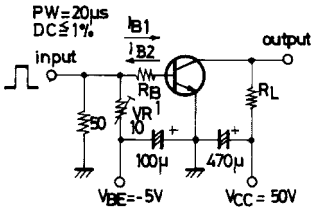
* : The 2SB14512SD2200 are classified by 1A h_{FE} as follows :

70	Q	140	100	R	200	140	S	280

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0	(–)90			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)80			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)1mA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified test circuit.		(0.2)		μs
				0.1		μs
Storage Time	t_{stg}	See specified test circuit.		(0.7)		μs
				1.2		μs
Fall Time	t_f	See specified test circuit.		(0.2)		μs
				0.4		μs

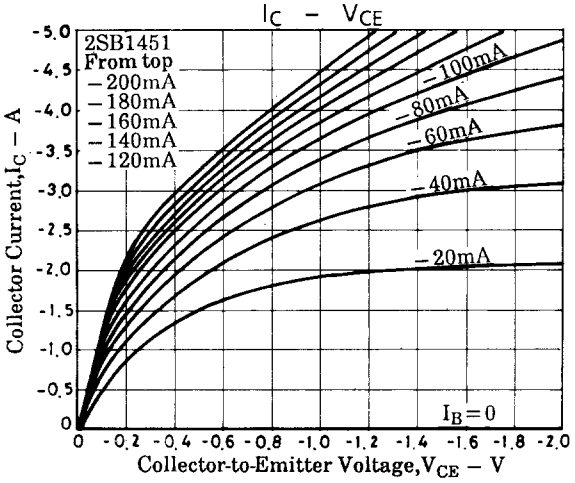
Switching Time Test Circuit

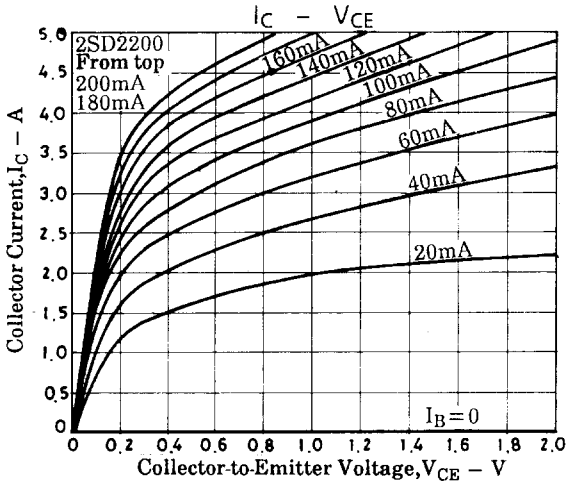


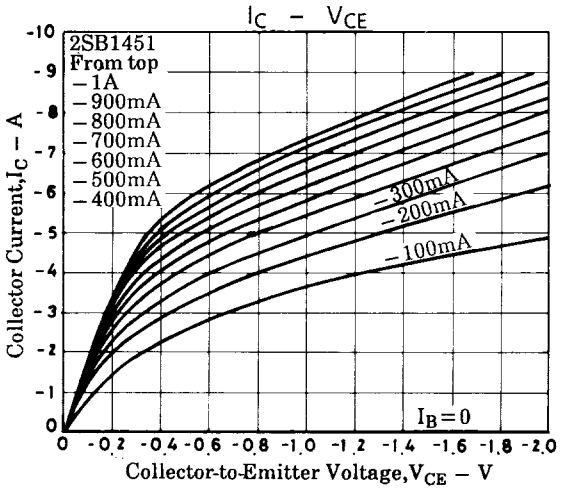
$10\ I_{B1} = -10\ I_{B2} = I_C = 2A$

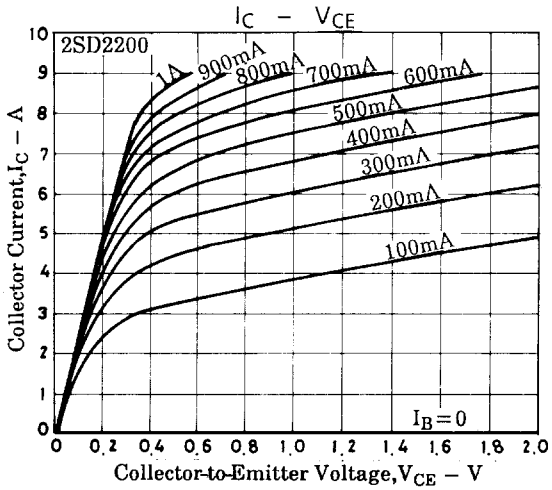
For PNP, the polarity is reversed.

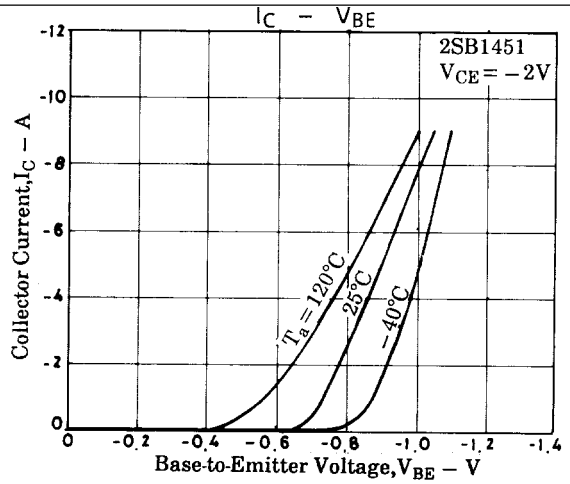
Unit (resistance : Ω, capacitance : F)

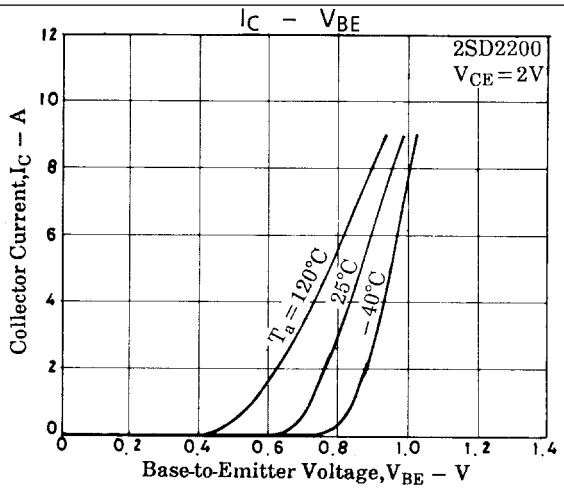


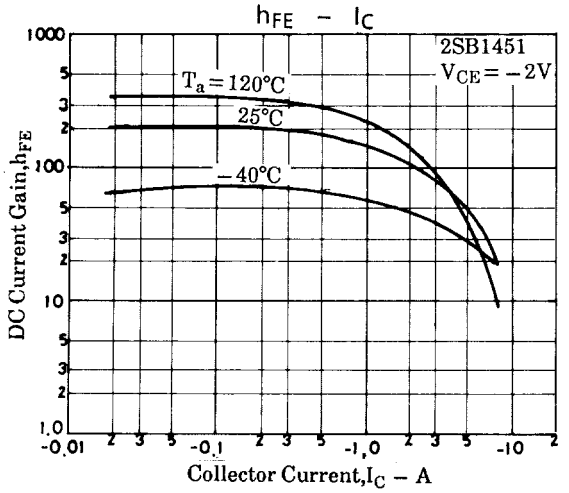


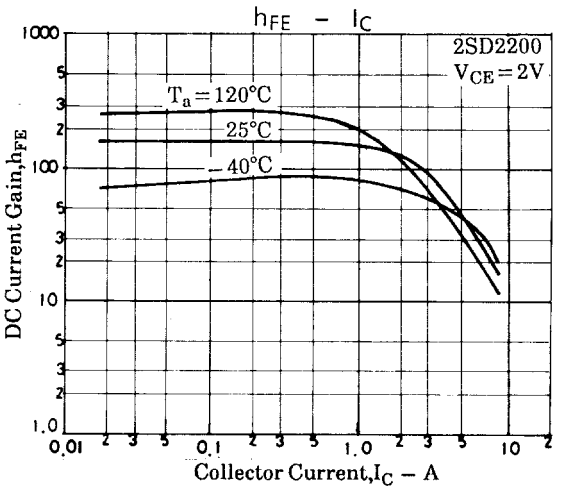


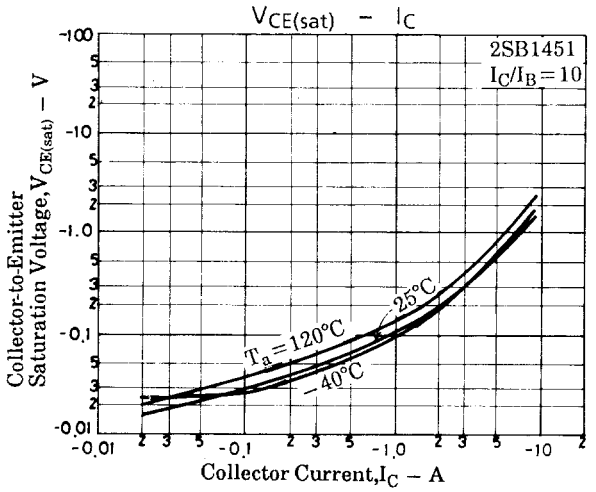


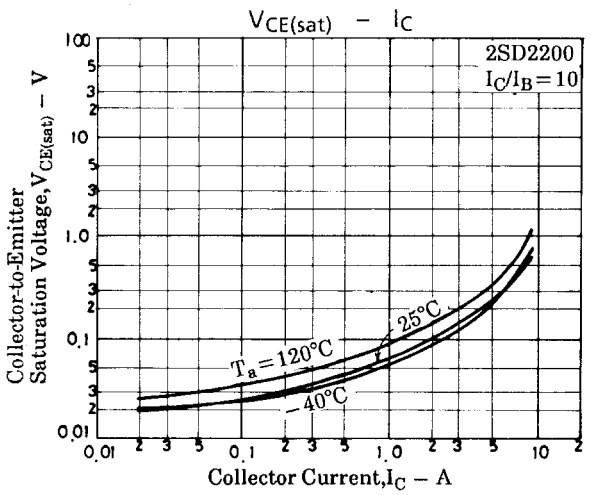

I_C – V_{BE}
2SB1451
V_{CE} = –2V
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V
T_a = 120°C
25°C
–40°C

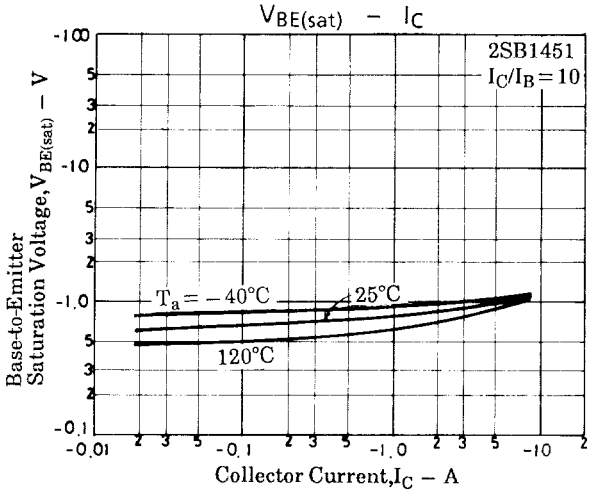

I_C – V_{BE}
2SD2200
V_{CE} = 2V
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V
T_a = 120°C
25°C
–40°C

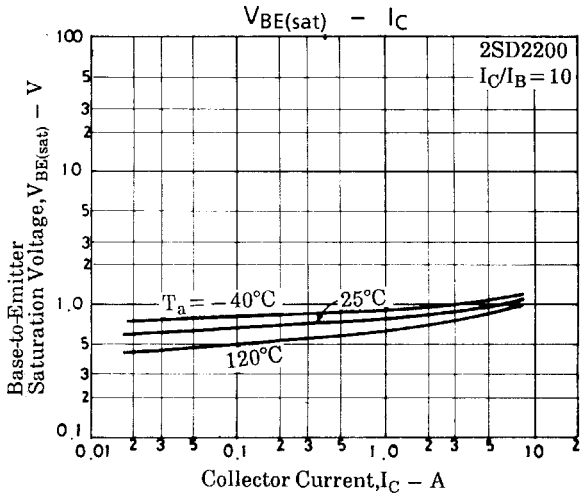

h_{FE} – I_C
2SB1451
V_{CE} = –2V
DC Current Gain, h_{FE}
Collector Current, I_C – A
T_a = 120°C
25°C
–40°C


h_{FE} – I_C
2SD2200
V_{CE} = 2V
DC Current Gain, h_{FE}
Collector Current, I_C – A
T_a = 120°C
25°C
–40°C


$V_{CE(sat)}$ – I_C
2SB1451
I_C/I_B = 10
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – V
Collector Current, I_C – A
T_a = 120°C
25°C
–40°C


$V_{CE(sat)}$ – I_C
2SD2200
I_C/I_B = 10
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – V
Collector Current, I_C – A
T_a = 120°C
25°C
–40°C


$V_{BE(sat)}$ – I_C
2SB1451
I_C/I_B = 10
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – A
T_a = –40°C
25°C
120°C


$V_{BE(sat)}$ – I_C
2SD2200
I_C/I_B = 10
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – A
T_a = –40°C
25°C
120°C