Ordering number: EN3151

SANYO

No.3151

2SB1451/2SD2200

PNP/NPN Epitaxial Planar Silicon Transistors

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

( ) : 2SB1451

Absolute Maximum Ratings at Ta = 25°C

			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

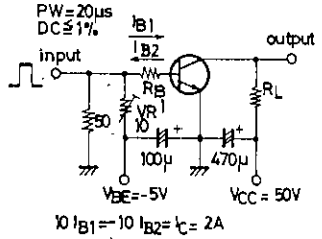
Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
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
C-E Saturation Voltage	$V_{CE(sat)}$	I_C = (−)3A, I_B = (−)0.3A			0.4 (−0.5)	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C = (−)1mA, I_E = 0	(−)90			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C = (−)1mA, R_{BE} = ∞	(−)80			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E = (−)1mA, I_C = 0	(−)6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		(0.2)0.1		μs
Storage Time	t_{stg}	〃		(0.7)1.2		μs
Fall Time	t_f	〃		(0.2)0.4		μs

※ : The 2SB1451/2SD2200 are classified by 1A h_{FE} as follows:.

70 Q 140	100 R 200	140 S 280

Switching Time Test Circuit



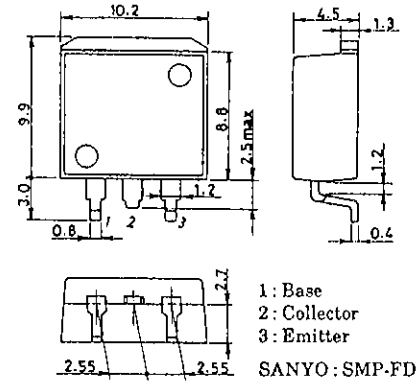
10 I_{B1} = −10 I_{B2} = I_C = 2A

For PNP, the polarity is reversed.

Unit (Resistance : Ω, Capacitance : F)

Package Dimensions 2069B

(unit : mm)



1 : Base
2 : Collector
3 : Emitter

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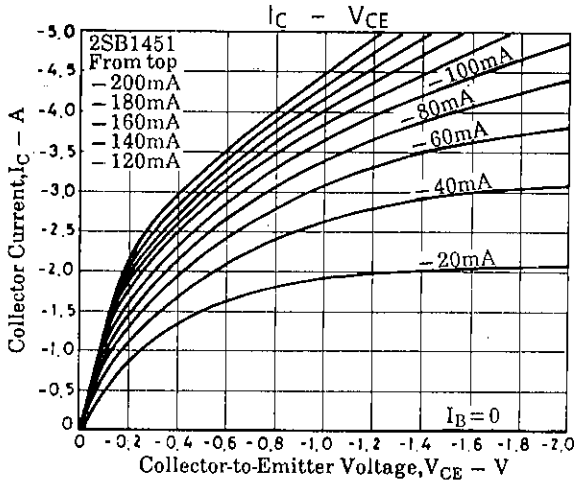
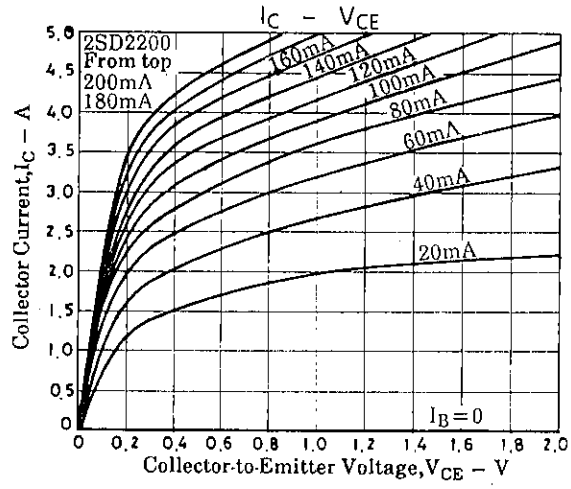
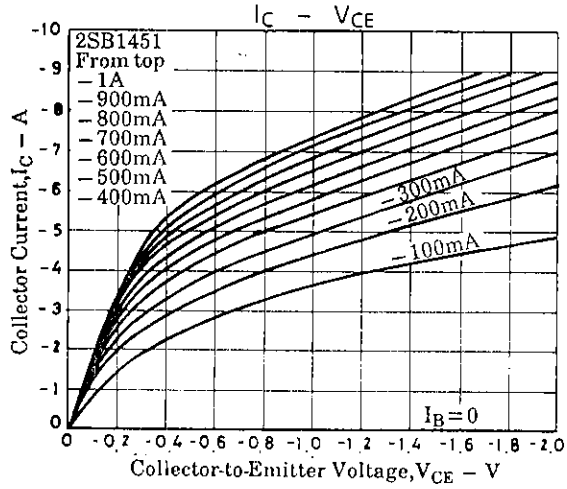
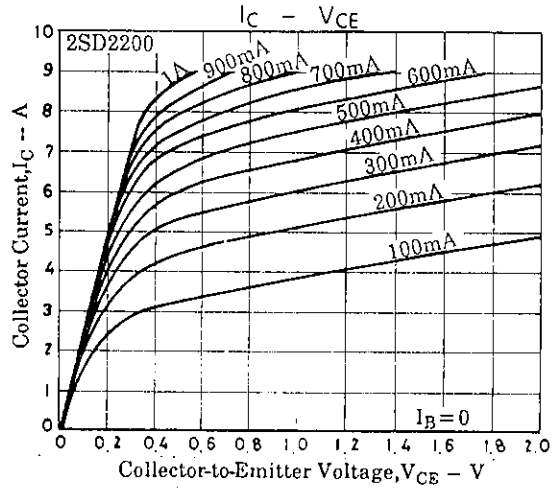
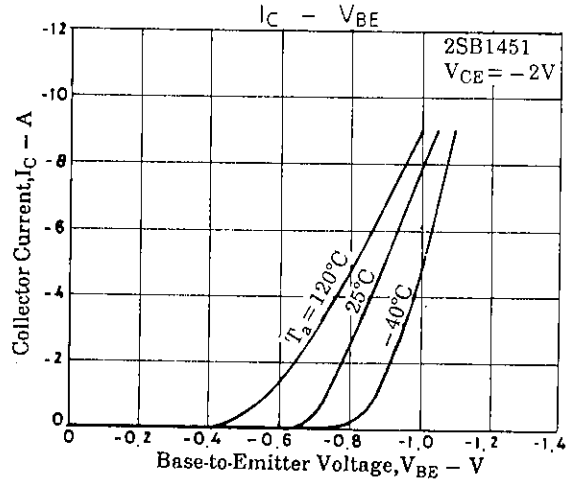
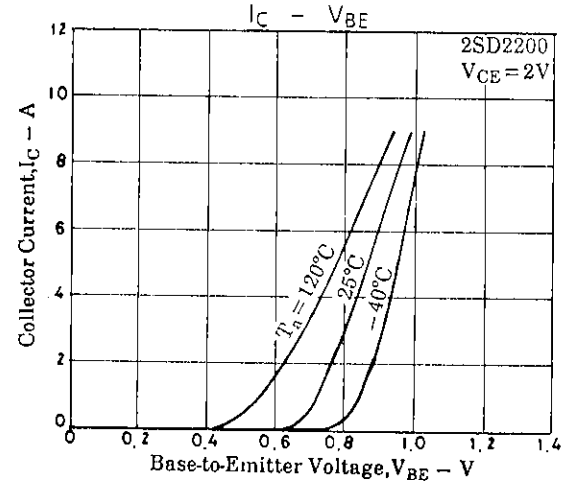

I_C – V_{CE}
2SB1451
From top
–200mA
–180mA
–160mA
–140mA
–120mA
–100mA
–80mA
–60mA
–40mA
–20mA
I_B=0
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V

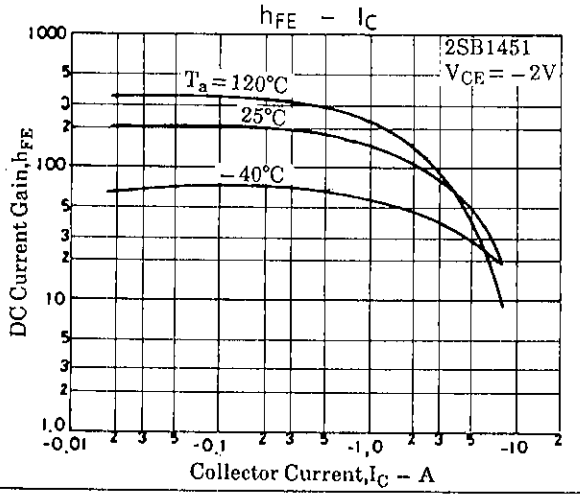

I_C – V_{CE}
2SD2200
From top
200mA
180mA
160mA
140mA
120mA
100mA
80mA
60mA
40mA
20mA
I_B=0
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V

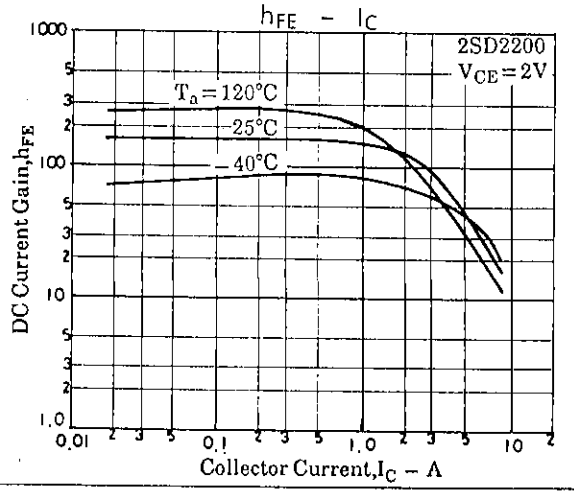

I_C – V_{CE}
2SB1451
From top
–1A
–900mA
–800mA
–700mA
–600mA
–500mA
–400mA
–300mA
–200mA
–100mA
I_B=0
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V


I_C – V_{CE}
2SD2200
1A
900mA
800mA
700mA
600mA
500mA
400mA
300mA
200mA
100mA
I_B=0
Collector Current, I_C – A
Collector-to-Emitter Voltage, V_{CE} – V

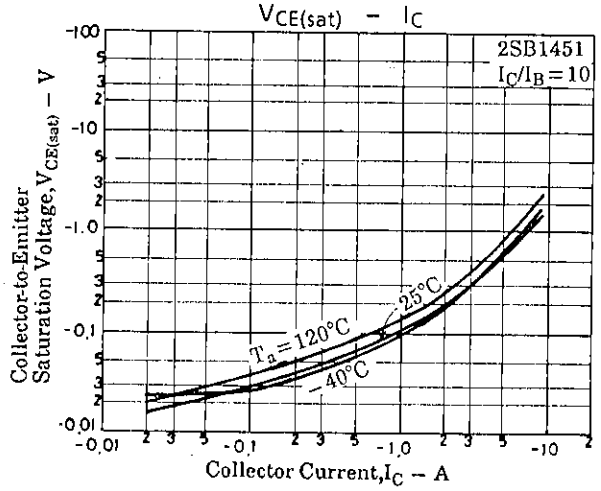

I_C – V_{BE}
2SB1451
V_{CE} = –2V
T_a = 120°C
25°C
–40°C
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V


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

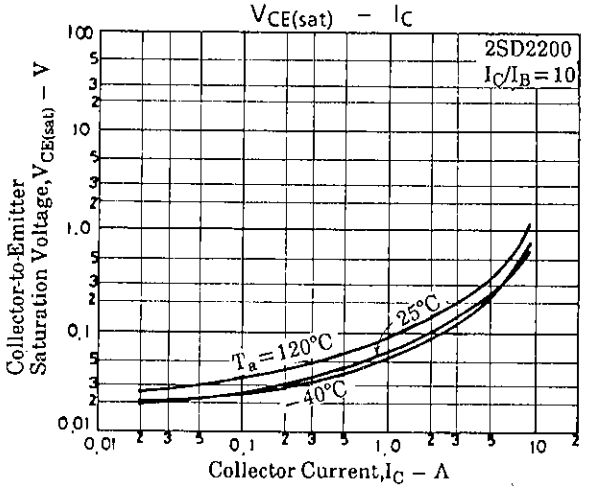

h_{FE} – I_C
2SB1451
V_{CE} = –2V
T_a = 120°C
25°C
–40°C
DC Current Gain, h_{FE}
Collector Current, I_C – A


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

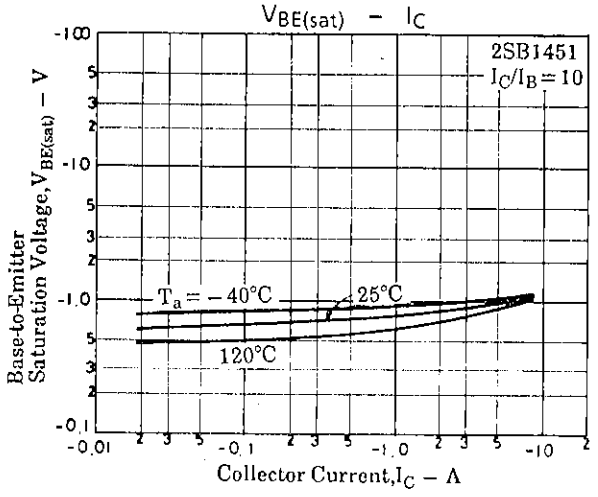
$V_{CE(sat)}$ – I_C



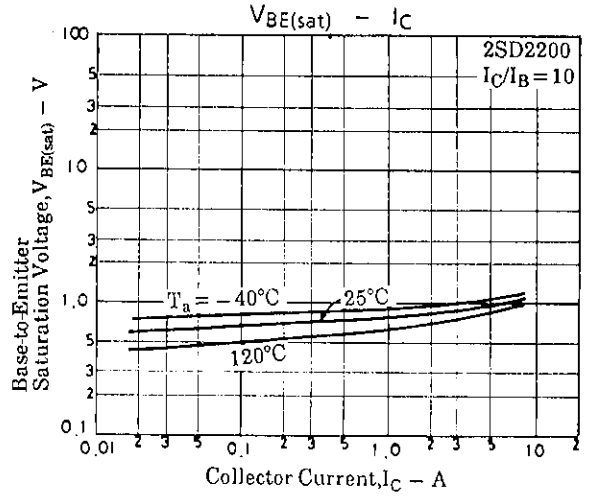
$V_{CE(sat)}$ – I_C



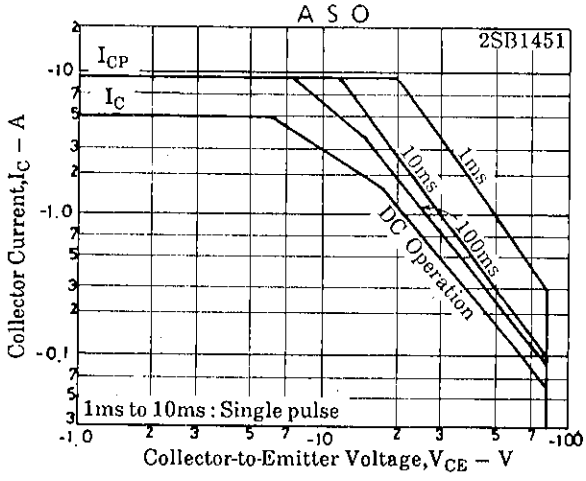
$V_{BE(sat)}$ – I_C



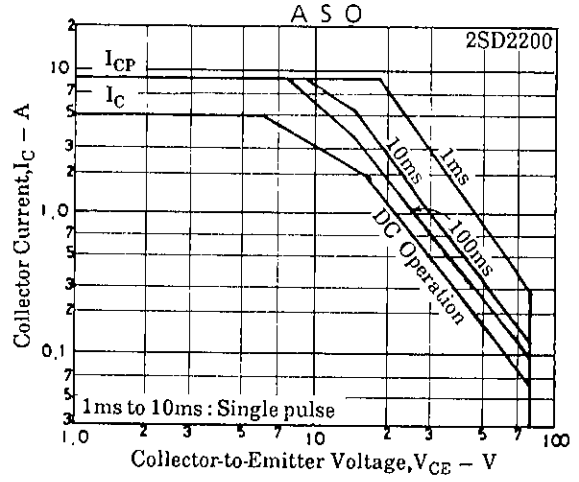
$V_{BE(sat)}$ – I_C



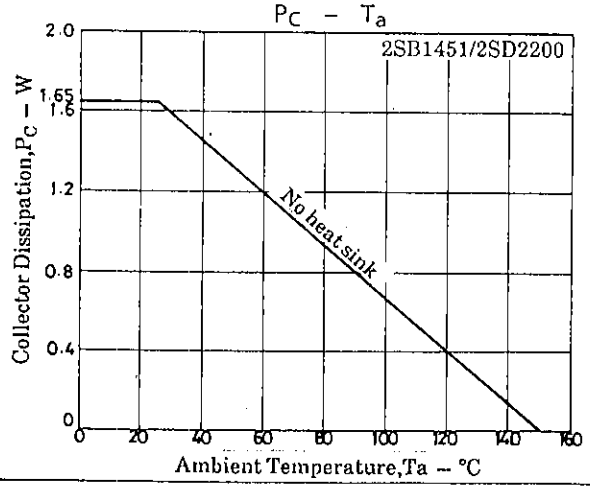
A S O



A S O



P_C – T_a



P_C – Tc