



No.2041A

# 2SB1144/2SD1684

PNP/NPN Epitaxial Planar Silicon Transistors

Low-Frequency Power Amp,  
Medium-Speed Switching Applications

### Features

- Adoption of FBET and MBIT processes.
- High breakdown voltage
- Low saturation voltage.
- Plastic-covered heat sink facilitating high-density mounting.

( ) : 2SB1144

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

			unit
Collector-to-Base Voltage	V <sub>CB0</sub>	(- )120	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>	(- )100	V
Emitter-to-Base Voltage	V <sub>EBO</sub>	(- )6	V
Collector Current	I <sub>C</sub>	(- )1.5	A
Collector Current (Pulse)	I <sub>CP</sub>	(- )2.0	A
Collector Dissipation	P <sub>C</sub>	1.5	W
		10	W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

T<sub>c</sub> = 25°C

### Electrical Characteristics at Ta = 25°C

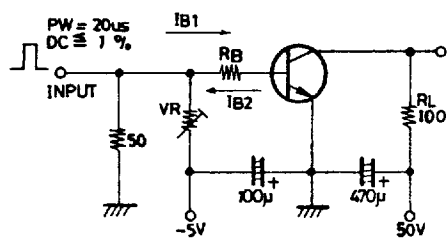
			min	typ	max	unit
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> = (-)100V, I <sub>E</sub> = 0		(- )100		nA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = (-)4V, I <sub>C</sub> = 0		(- )100		nA
DC Current Gain	h <sub>FE</sub> (1)	V <sub>CE</sub> = (-)5V, I <sub>C</sub> = (-)100mA	100※		400※	
	h <sub>FE</sub> (2)	V <sub>CE</sub> = (-)5V, I <sub>C</sub> = (-)1A	30			
Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = (-)10V, I <sub>C</sub> = (-)50mA		(100)		MHz
				120		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = (-)10V, f = 1MHz		(18)		pF
				11		pF
C-E Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = (-)500mA, I <sub>B</sub> = (-)50mA	(- )180	(- )500		mV
			100	300		mV
B-E Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = (-)500mA, I <sub>B</sub> = (-)50mA	(- )0.85	(- )1.2		V
C-B Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = (-)10μA, I <sub>E</sub> = 0	(- )120			V
C-E Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = (-)1mA, R <sub>BE</sub> = ∞	(- )100			V
E-B Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = (-)10μA, I <sub>C</sub> = 0	(- )6			V

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※ : The 2SB1144/2SD1684 are classified by 100mA h<sub>FE</sub> as follows :

100 Q	200	140 S	280	200 T	400
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### Switching Time Test Circuit

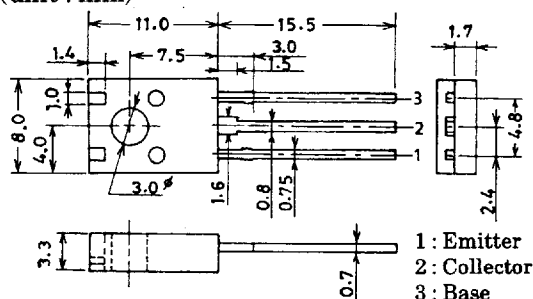


I<sub>C</sub> = 10I<sub>B1</sub> = -10I<sub>B2</sub> = 500mA

Unit (Resistance : Ω, Capacitance : F)

### Package Dimensions 2042B

(unit : mm)



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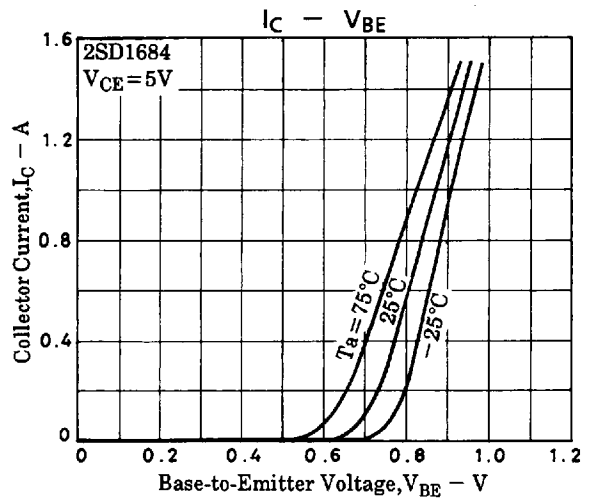
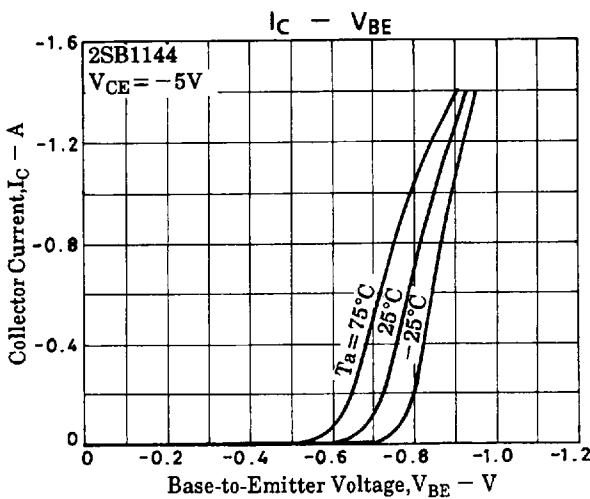
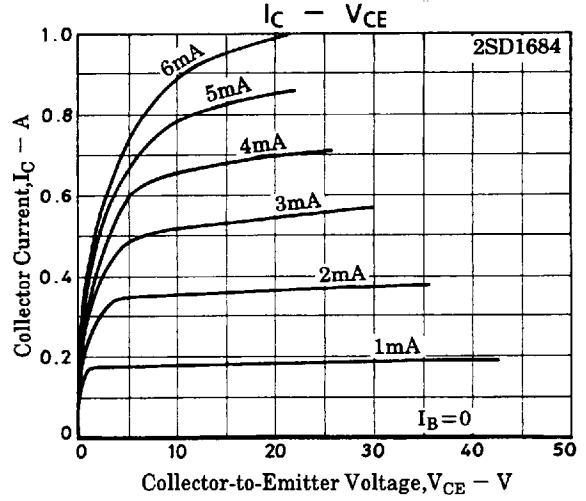
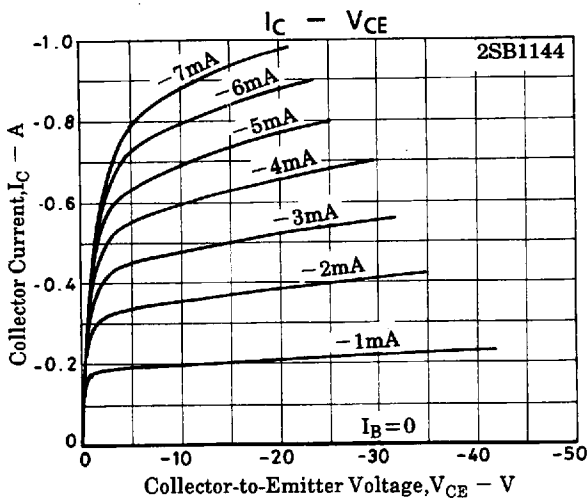
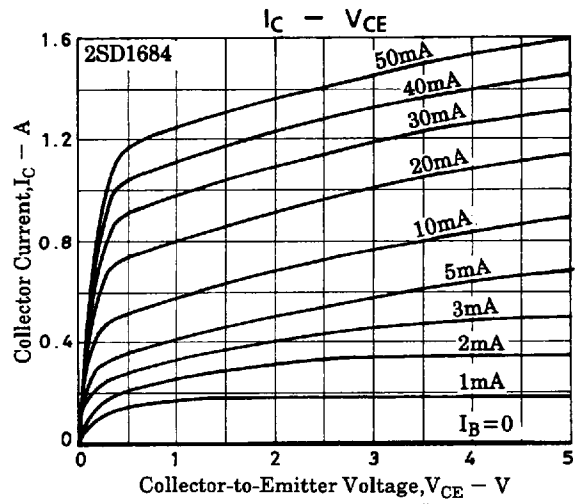
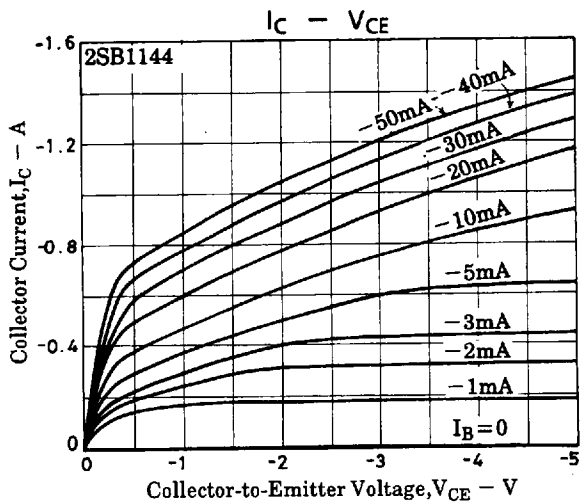
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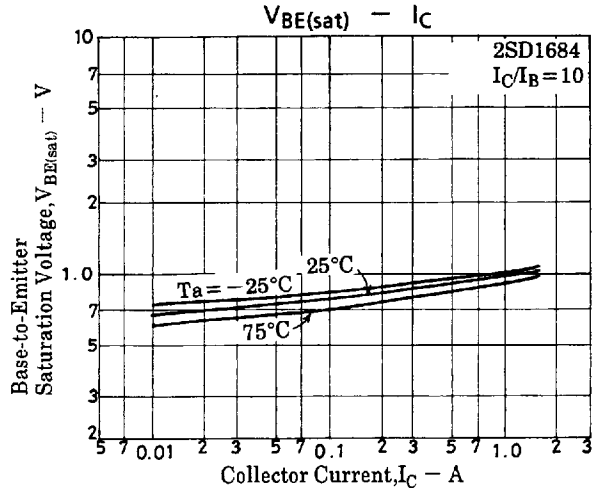
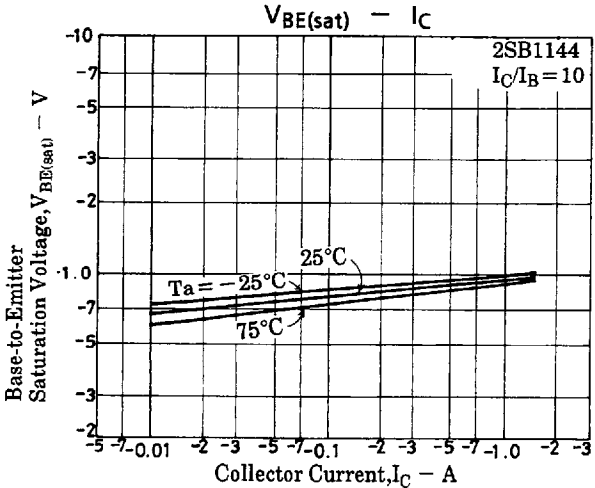
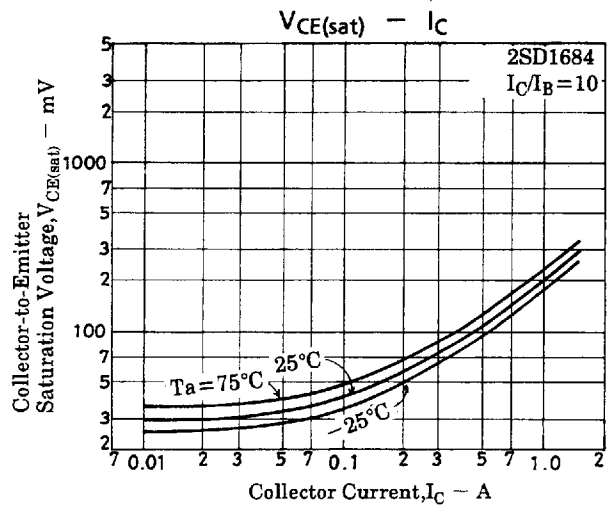
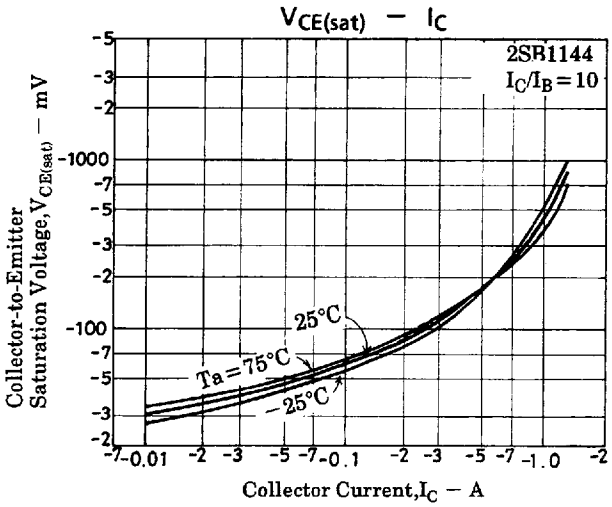
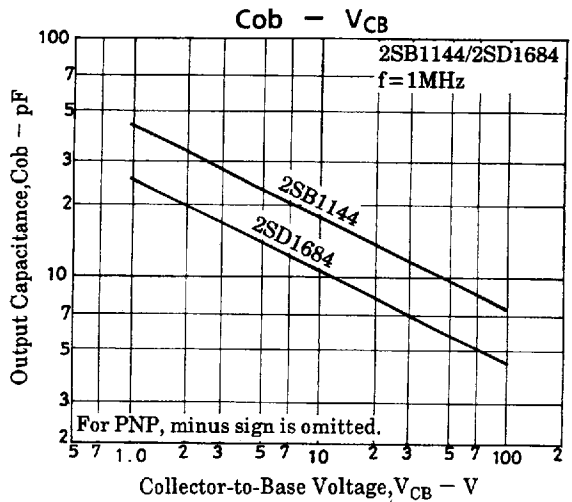
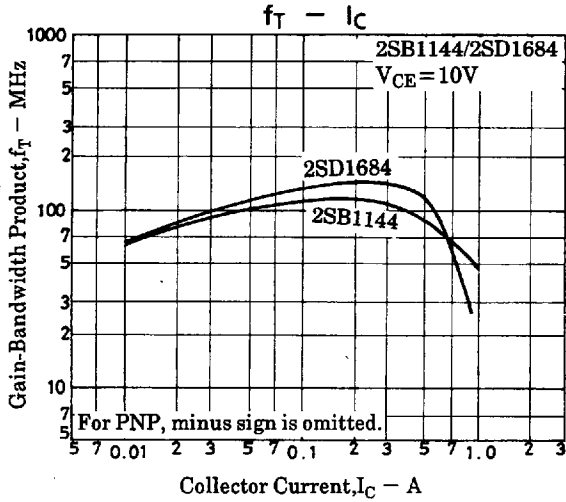
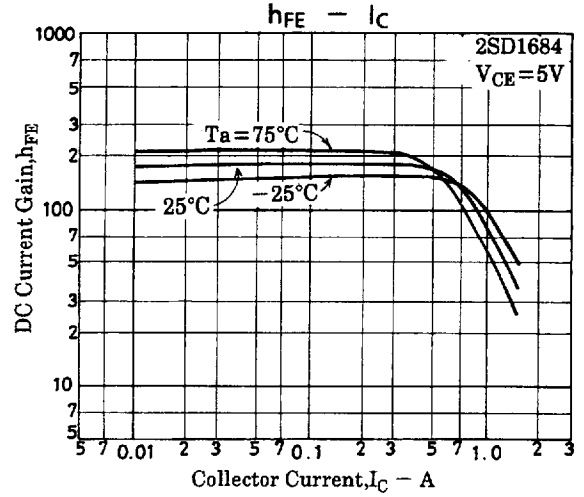
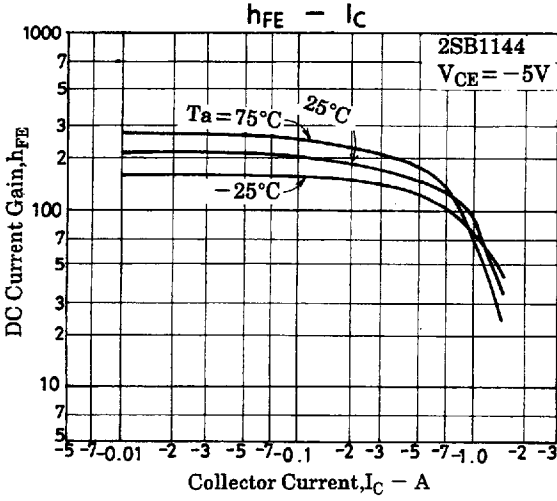
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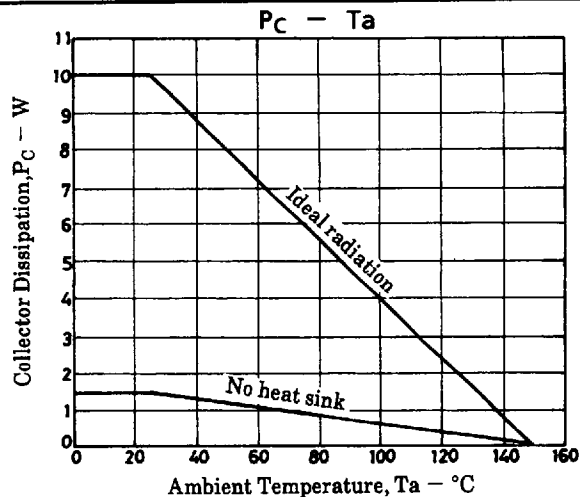
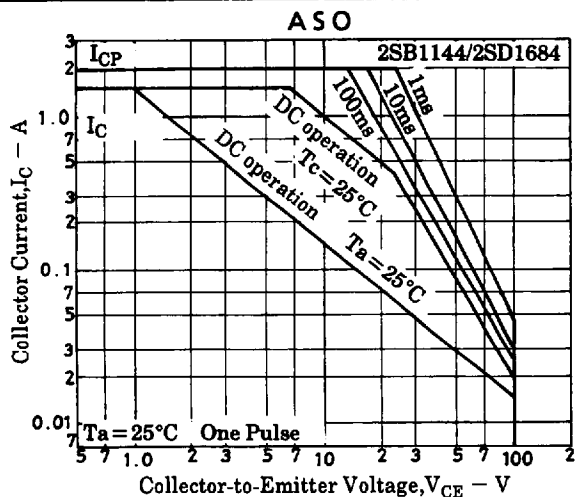
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			min	typ	max	unit
Rise Time	$t_{on}$	See specified Test Circuit.		(80)		ns
				80		ns
Storage Time	$t_{stg}$			(750)		ns
				1000		ns
Fall Time	$t_f$			(40)		ns
				50		ns



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