

| | | |
|--------------|----------|--|
| SANYO | No.2086B | 2SB1204/2SD1804 |
| | | PNP/NPN Epitaxial Planar Silicon Transistors High-Current Switching Applications |

Applications

- Relay drivers, high-speed inverters, converters, and other general high-current switching applications

Features

- Low collector-to-emitter saturation voltage
- High current and high f_T
- Excellent linearity of h_{FE}
- Fast switching time
- Small and slim package making it easy to make 2SB1204/2SD1804-applied sets smaller

() : 2SB1204

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

| | | | unit |
|------------------------------|-----------|-------------|------------------|
| Collector to Base Voltage | V_{CB0} | (-)60 | V |
| Collector to Emitter Voltage | V_{CE0} | (-)50 | V |
| Emitter to Base Voltage | V_{EB0} | (-)6 | V |
| Collector Current | I_C | (-)8 | A |
| Collector Current(Pulse) | I_{CP} | (-)12 | A |
| Collector Dissipation | P_C | 1 | W |
| | | 20 | W |
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

$T_c = 25^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

| | | | min | typ | max | unit |
|--------------------------|-------------|---|-----|--------|------|---------------|
| Collector Cutoff Current | I_{CBO} | $V_{CB} = (-)40\text{V}, I_E = 0$ | | | (-)1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = (-)4\text{V}, I_C = 0$ | | | (-)1 | μA |
| DC Current Gain | $h_{FE(1)}$ | $V_{CE} = (-)2\text{V}, I_C = (-)0.5\text{A}$ | 70* | | 400* | |
| | $h_{FE(2)}$ | $V_{CE} = (-)2\text{V}, I_C = (-)6\text{A}$ | 35 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE} = (-)5\text{V}, I_C = (-)1\text{A}$ | | 180 | | MHz |
| | | | | (130) | | |
| Output Capacitance | C_{ob} | $V_{CB} = (-)10\text{V}, f = 1\text{MHz}$ | | (95)65 | | pF |

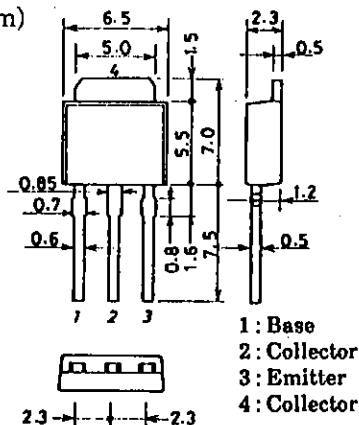
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* : The 2SB1204/2SD1804 are classified by 0.5A h_{FE} as follows :

| | | | | | | | | | | | |
|----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|
| 70 | Q | 140 | 100 | R | 200 | 140 | S | 280 | 200 | T | 400 |
|----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|

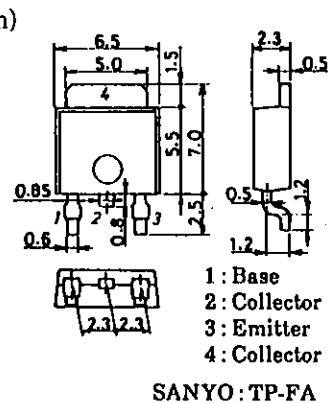
Package Dimensions 2045B

(unit: mm)



Package Dimensions 2044B

(unit: mm)

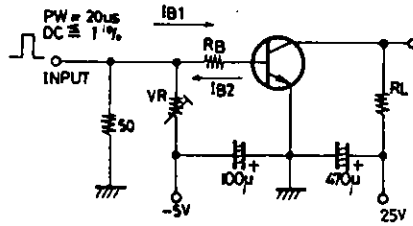


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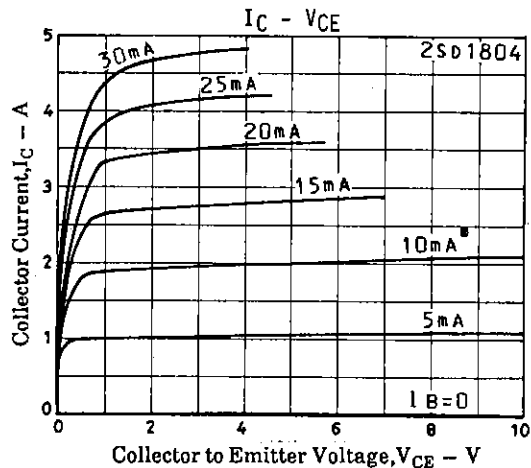
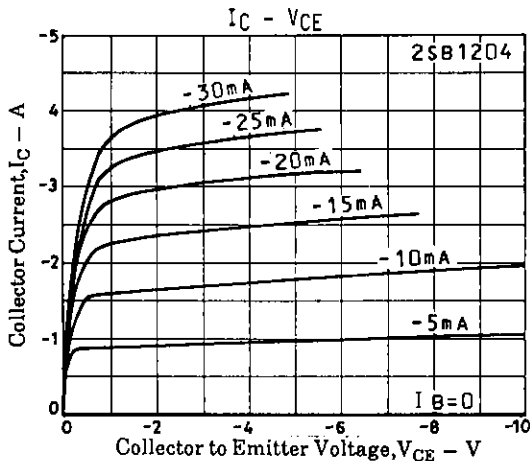
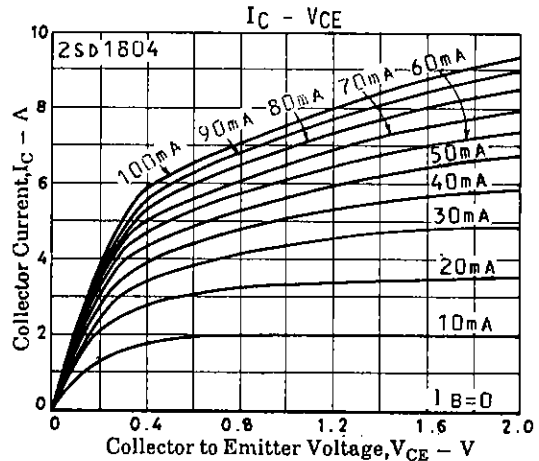
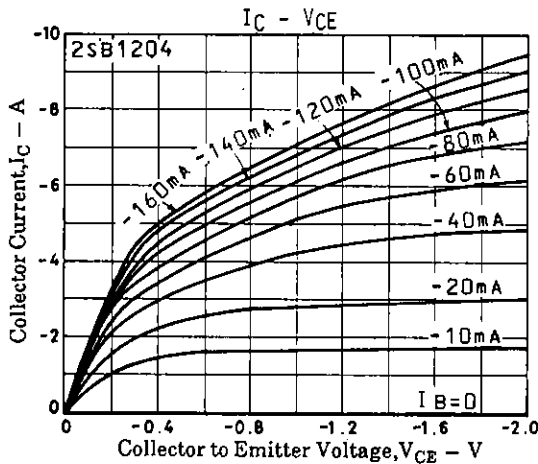
| | | | min | typ | max | unit | |
|------------------------|---------------|---------------------------------|-----|----------|--------|------|---|
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C = (-)4A, I_B = (-)0.2A$ | | 200 | 400 | mV | |
| | | | | (-250) | (-500) | | |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C = (-)4A, I_B = (-)0.2A$ | | (-) | 0.95 | (-) | V |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = (-)10\mu A, I_E = 0$ | (-) | 60 | | V | |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = (-)1mA, R_{BE} = \infty$ | (-) | 50 | | V | |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = (-)10\mu A, I_C = 0$ | (-) | 6 | | V | |
| Turn-on Time | t_{on} | See specified Test Circuit. | | (50) | | ns | |
| Storage Time | t_{stg} | " | | (450)500 | | ns | |
| Fall Time | t_f | " | | 20 | | ns | |

Switching Time Test Circuit

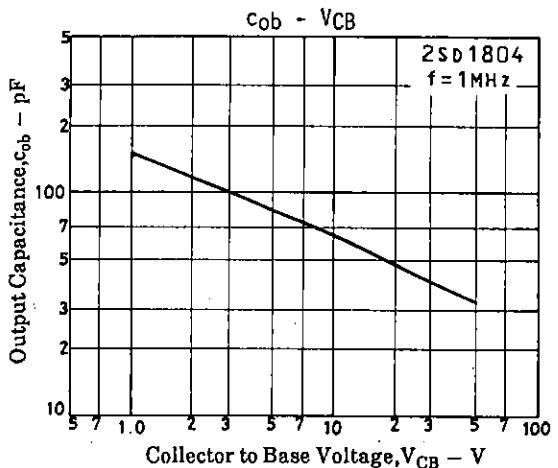
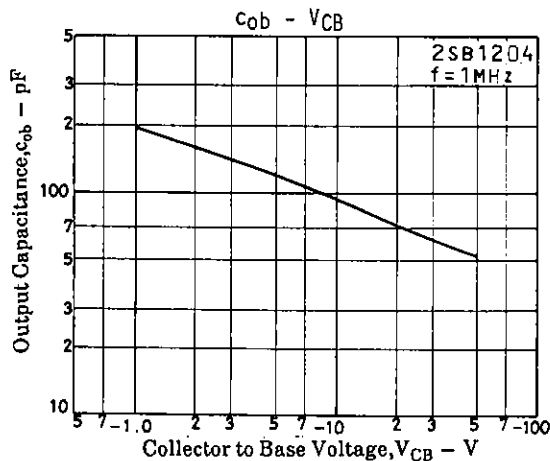
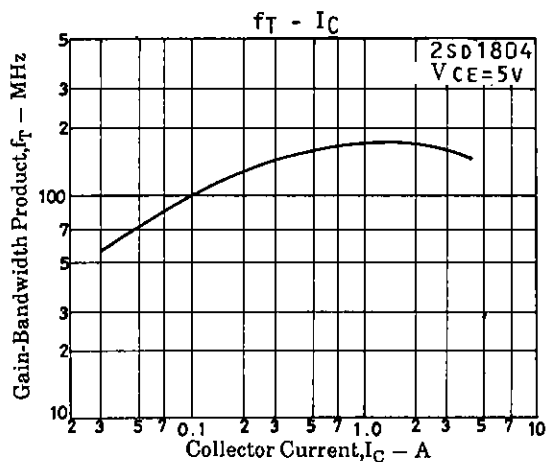
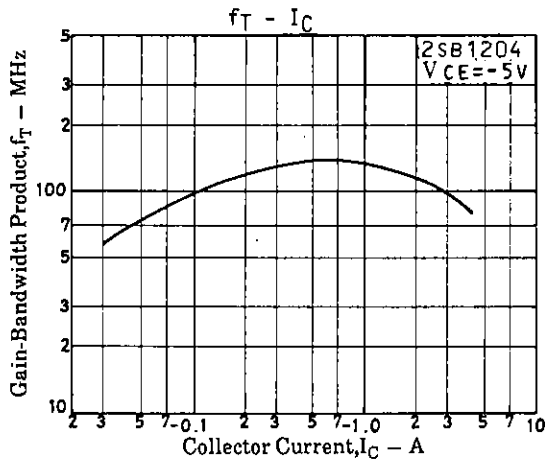
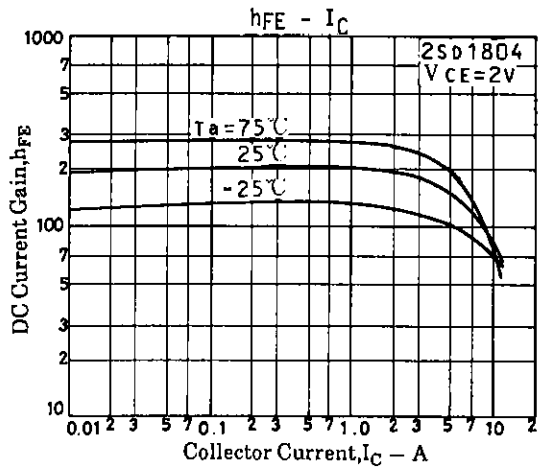
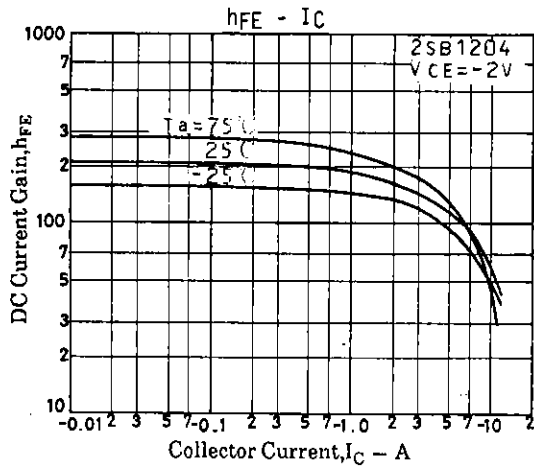
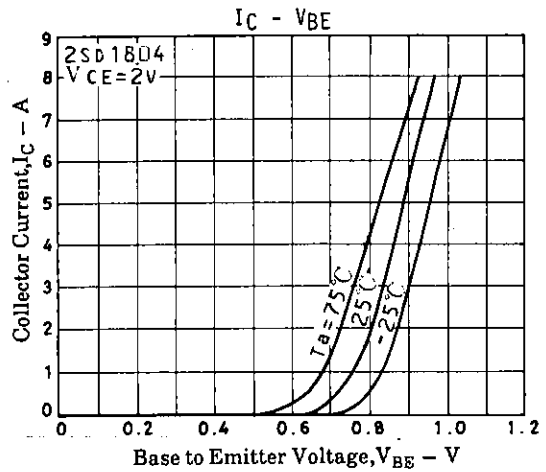
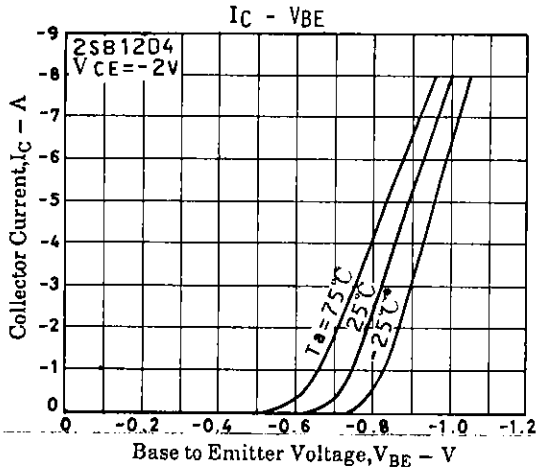


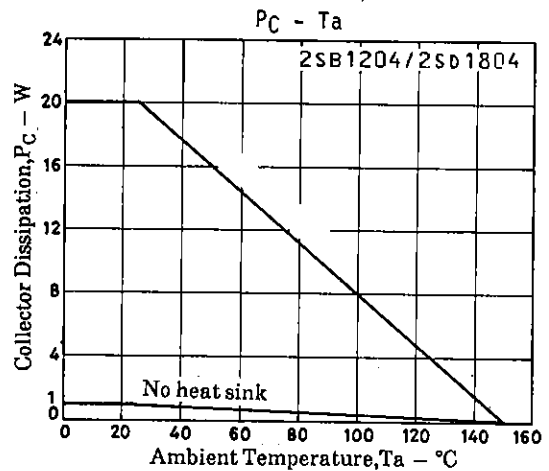
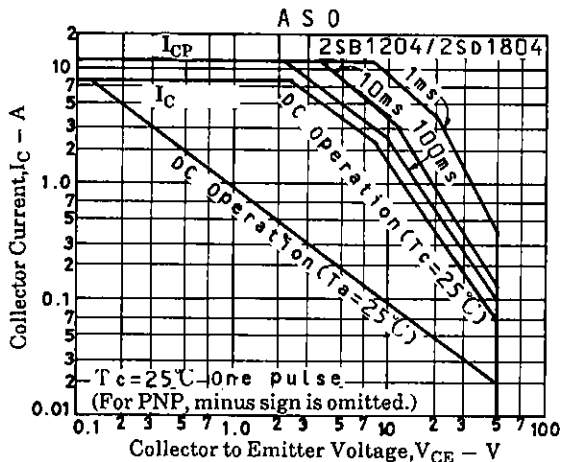
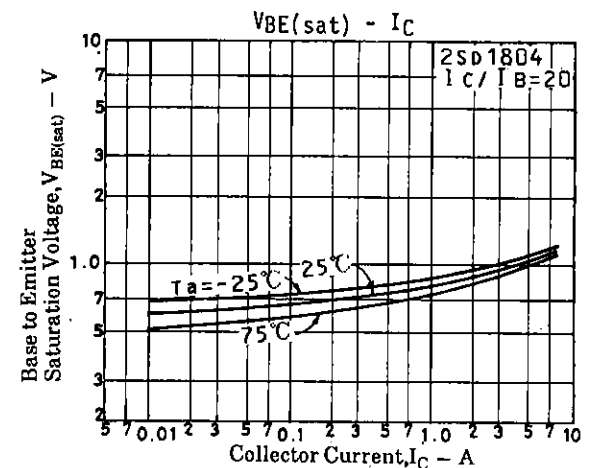
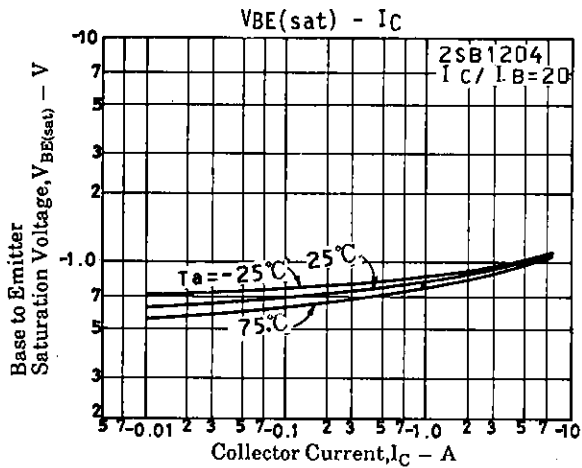
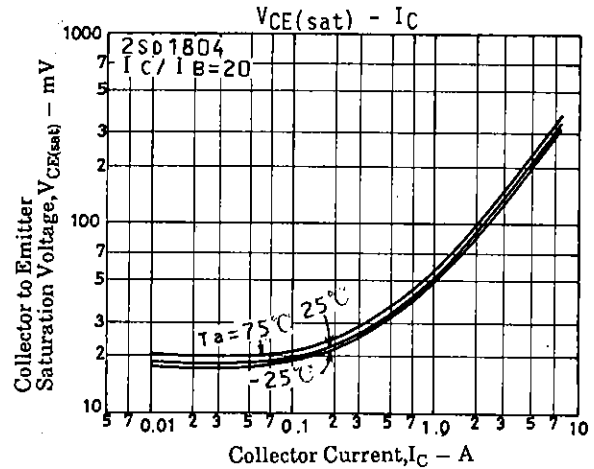
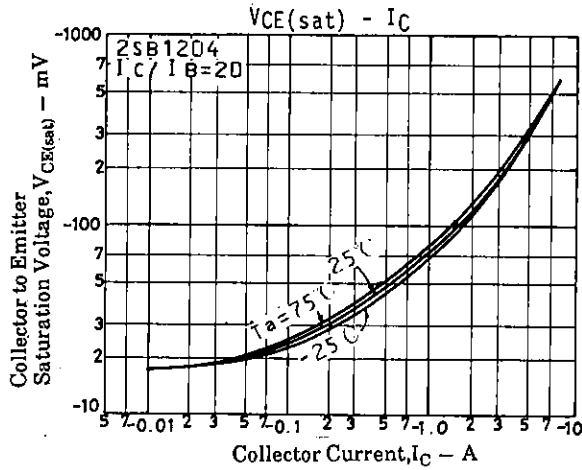
$I_C = 10 I_B$ $I_B = -10 I_B = 4A$
 (For PNP, the polarity is reversed.)

Unit (Resistance : Ω , Capacitance : F)



2SB1204/2SD1804





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