

SANYO

No.2063A

2SB1143/2SD1683

PNP/NPN Epitaxial Planar Silicon Transistors

50V/4A Switching Applications**Applications**

- . Voltage regulators, relay drivers, lamp drivers, electrical equipment

Features

- . Adoption of FBET, MBIT processes
- . Low saturation voltage
- . Large current capacity and wide ASO

(): 2SB1143

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 | (-)4 | A |
| Collector Current (Pulse) | I_{CP} | (-)6 | A |
| Collector Dissipation | P_C | 1.5 | W |
| | | 10 | W |
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

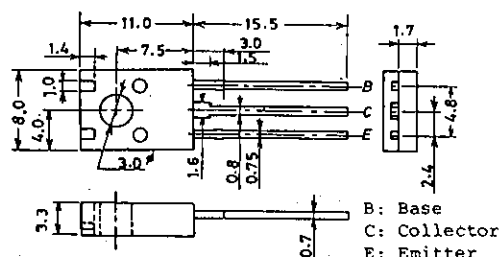
 $T_c=25^\circ\text{C}$ **Electrical Characteristics at $T_a=25^\circ\text{C}$**

| | | | 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 | $h_{FE}(1)$ | $V_{CE}=(-)2\text{V}, I_C=(-)100\text{mA}$ | 100* | | 560* | |
| | $h_{FE}(2)$ | $V_{CE}=(-)2\text{V}, I_C=(-)3\text{A}$ | 40 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE}=(-)10\text{V}, I_C=(-)50\text{mA}$ | | 150 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=(-)10\text{V}, f=1\text{MHz}$ | | (39) | | pF |
| | | | | 25 | | pF |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)2\text{A}, I_B=(-)100\text{mA}$ | | (-350)(-700) | | mV |
| | | | | 190 | 500 | mV |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C=(-)2\text{A}, I_B=(-)100\text{mA}$ | | (-)0.94(-)1.2 | | V |

Continued on next page.

*: The 2SB1143/2SD1683 are classified by 100mA h_{FE} as follows:

| | | | | | | | | | | | |
|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|
| 100 | R | 200 | 140 | S | 280 | 200 | T | 400 | 280 | U | 560 |
|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|

Package Dimensions 2042A
(unit:mm)

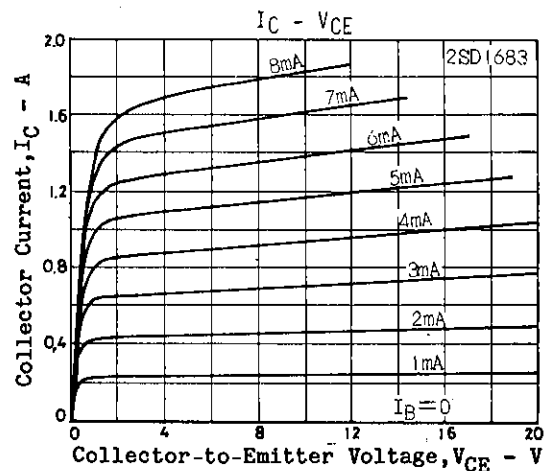
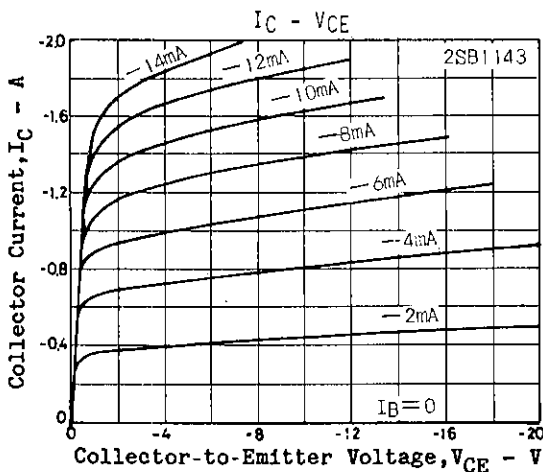
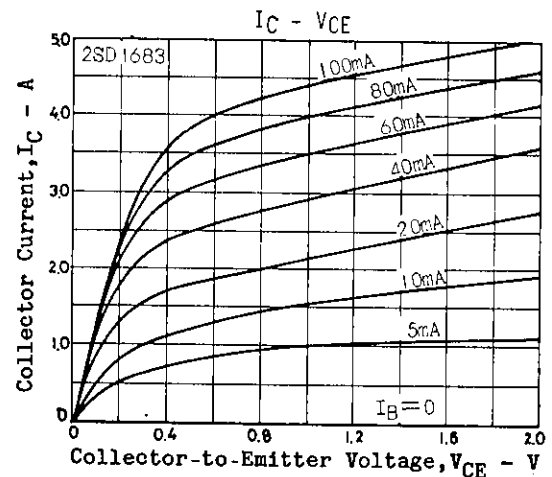
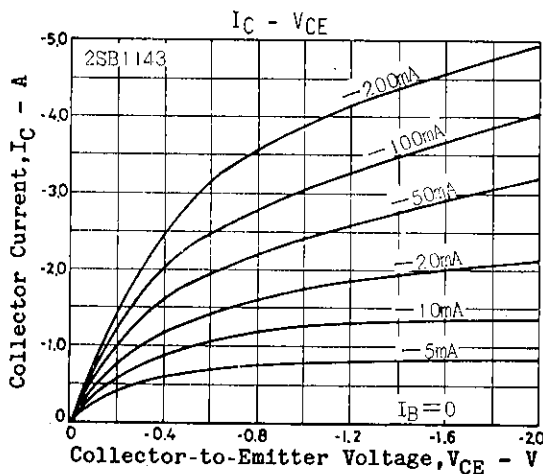
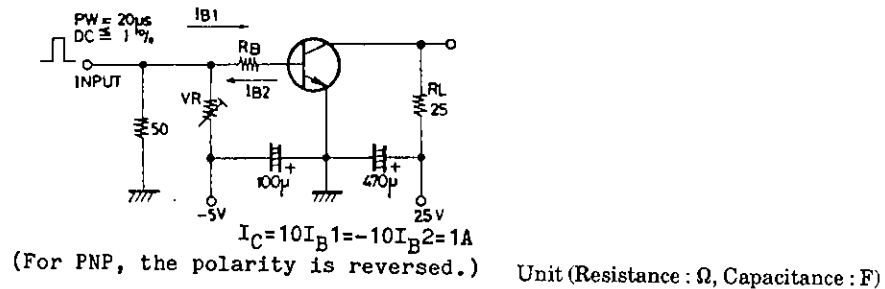
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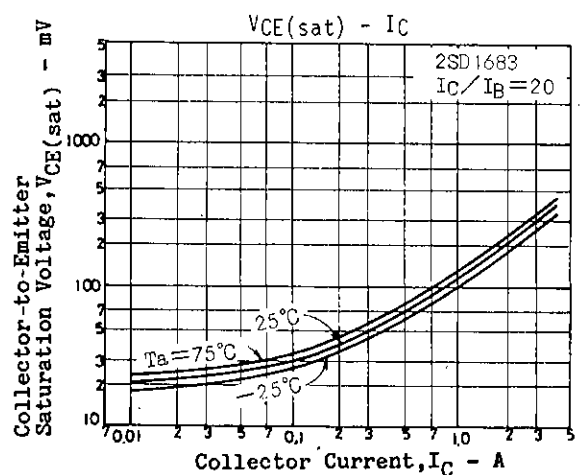
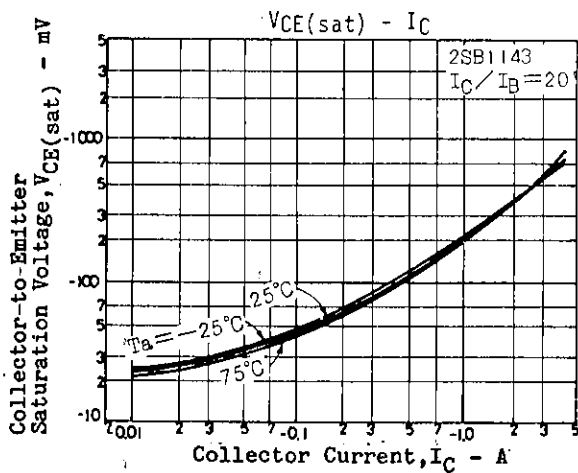
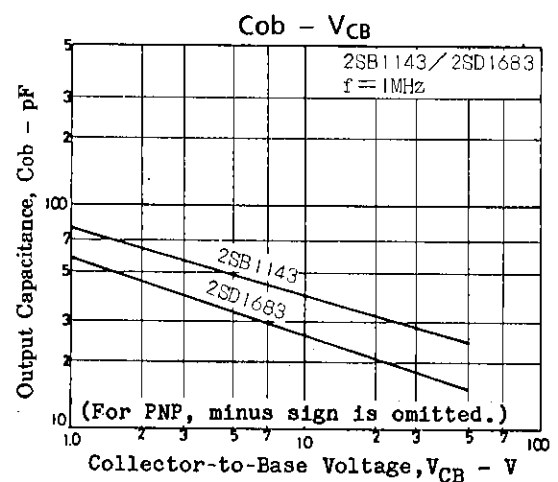
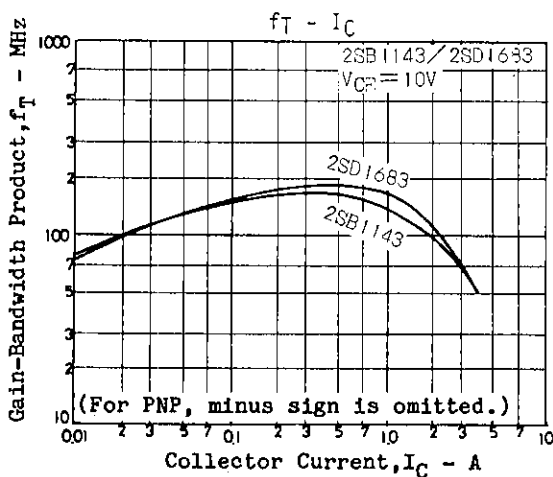
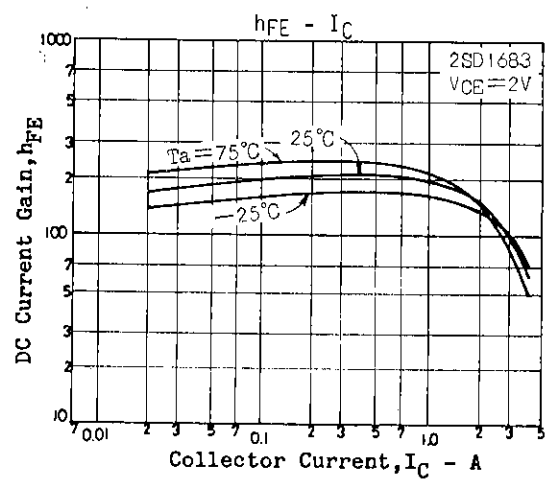
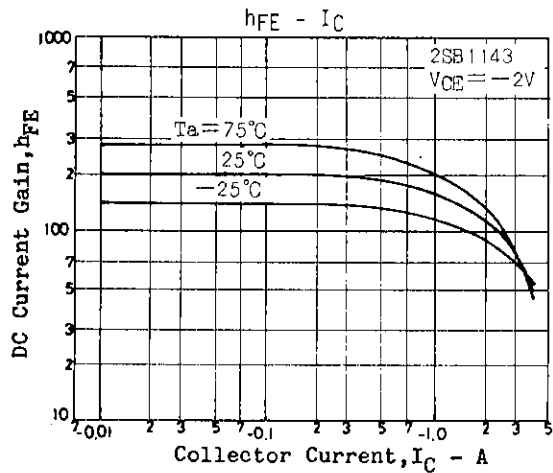
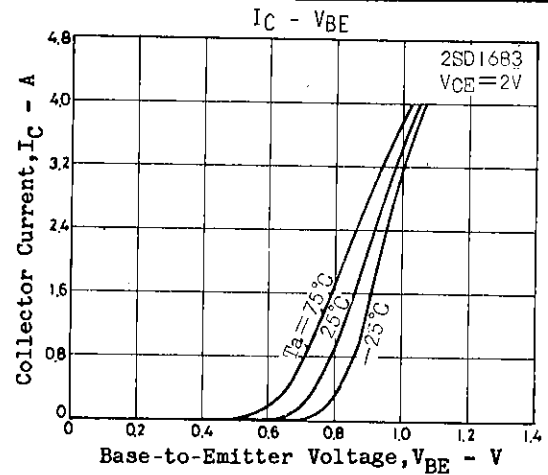
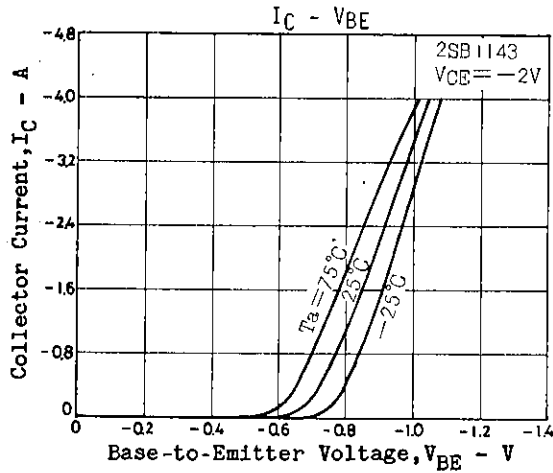
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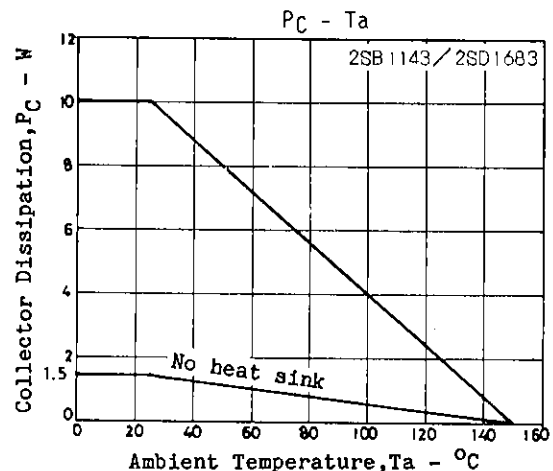
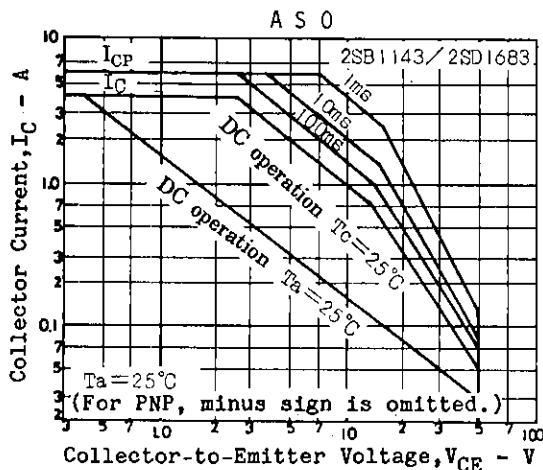
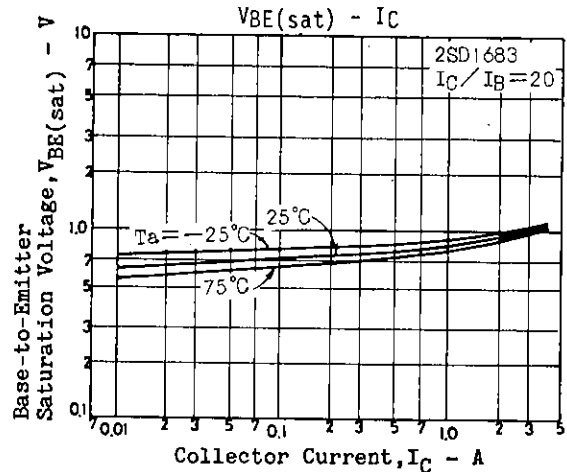
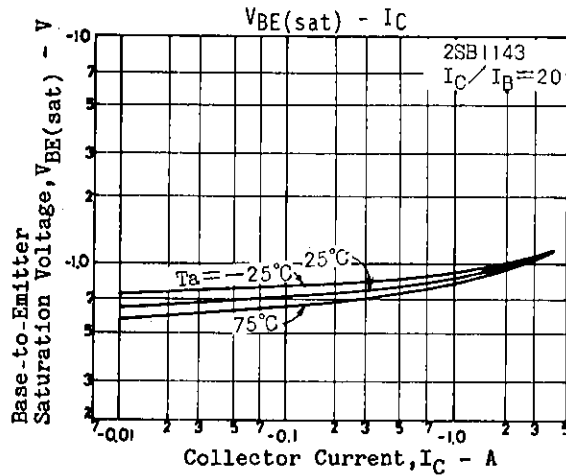
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| | | min | typ | max | unit |
|-----------------------|---|-------|-------|-----|------|
| C-B Breakdown Voltage | $V_{(BR)CBO}$ $I_C=(-)10\mu A, I_E=0$ | (-)60 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ $I_C=(-)1mA, R_{BE}=\infty$ | (-)50 | | | 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. | | (70) | | ns |
| | | | 70 | | ns |
| Storage Time | t_{stg} | | (450) | | ns |
| | | | 650 | | ns |
| Fall Time | t_f | | (30) | | ns |
| | | | 35 | | ns |

Switching Time Test Circuit







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