

**SANYO**

No.1787A

**2SB1121/2SD1621**

PNP/NPN Epitaxial Planar Silicon Transistors

High-Current Driver Applications

**Applications**

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

**Features**

- . Adoption of FBET, MBIT processes.
- . Low collector-to-emitter saturation voltage.
- . Large current capacity and wide ASO.
- . Fast switching speed.
- . Very small size making it easy to provide high-density, small-sized hybrid IC's.

( ): 2SB1121

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

|                              |                                                             |             | unit |
|------------------------------|-------------------------------------------------------------|-------------|------|
| Collector to Base Voltage    | $V_{CB0}$                                                   | (- )30      | V    |
| Collector to Emitter Voltage | $V_{CEO}$                                                   | (- )25      | V    |
| Emitter to Base Voltage      | $V_{EBO}$                                                   | (- )6       | V    |
| Collector Current            | $I_C$                                                       | (- )2       | A    |
| Collector Current(Pulse)     | $I_{CP}$                                                    | (- )5       | A    |
| Collector Dissipation        | $P_C$                                                       | 500         | mW   |
|                              | $P_C$ Mounted on ceramic board (250mm <sup>2</sup> x 0.8mm) | 1.3         | W    |
| Junction Temperature         | $T_j$                                                       | 150         | °C   |
| Storage Temperature          | $T_{stg}$                                                   | -55 to +150 | °C   |

**Electrical Characteristics at Ta=25°C**

|                          |               |                              | min  | typ      | max     | unit |
|--------------------------|---------------|------------------------------|------|----------|---------|------|
| Collector Cutoff Current | $I_{CB0}$     | $V_{CB}=(-)20V, I_E=0$       |      |          | (- )0.1 | μA   |
| Emitter Cutoff Current   | $I_{EBO}$     | $V_{EB}=(-)4V, I_C=0$        |      |          | (- )0.1 | μA   |
| DC Current Gain          | $h_{FE}(1)$   | $V_{CE}=(-)2V, I_C=(-)100mA$ | 100* |          | 560*    |      |
|                          | $h_{FE}(2)$   | $V_{CE}=(-)2V, I_C=(-)1.5A$  | 65   |          |         |      |
| Gain-Bandwidth Product   | $f_T$         | $V_{CE}=(-)10V, I_C=(-)50mA$ |      | 150      |         | MHz  |
| C-E Saturation Voltage   | $V_{CE(sat)}$ | $I_C=(-)1.5A, I_B=(-)75mA$   |      | 0.18     | 0.4     | V    |
|                          |               |                              |      | (-0.35)  | (-0.6)  | V    |
| B-E Saturation Voltage   | $V_{BE(sat)}$ | $I_C=(-)1.5A, I_B=(-)75mA$   |      | (- )0.85 | (- )1.2 | V    |

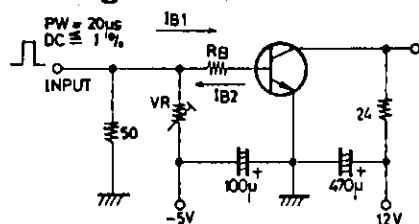
Continued on next page.

\*:The 2SB1121/2SD1621 are classified by 100mA  $h_{FE}$  as follows:

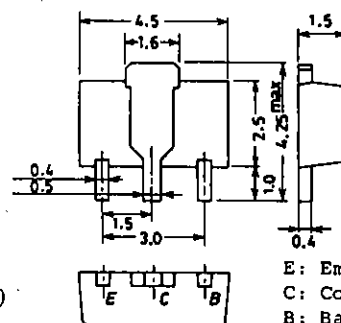
|     |   |     |     |   |     |     |   |     |     |   |     |
|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|
| 100 | R | 200 | 140 | S | 280 | 200 | T | 400 | 280 | U | 560 |
|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|

Marking 2SB1121:BD  $h_{FE}$  rank : R, S, T, U

2SD1621:DD

Package Dimensions 2038  
(unit:mm)**Switching Time Test Circuit** $20I_{B1} = -20I_{B2} = I_C = 500mA$  Unit (Resistance : Ω, Capacitance : F)

(For PNP, the polarity is reversed.)



(Bottom View)

E: Emitter  
C: Collector  
B: Base

SANYO: PCP

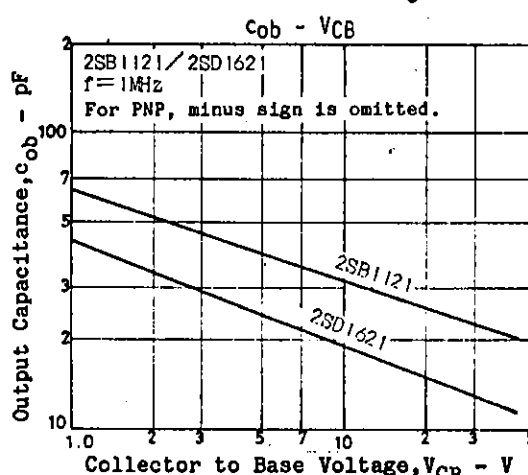
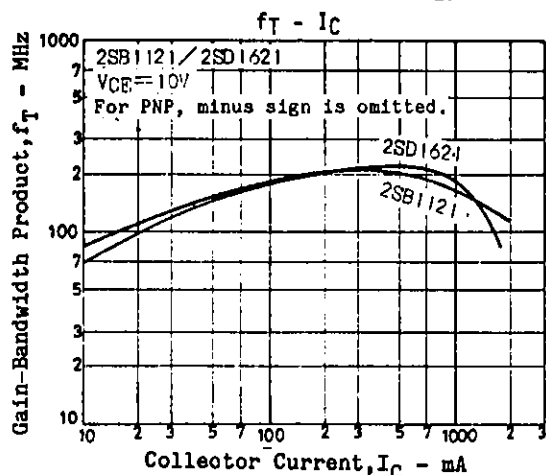
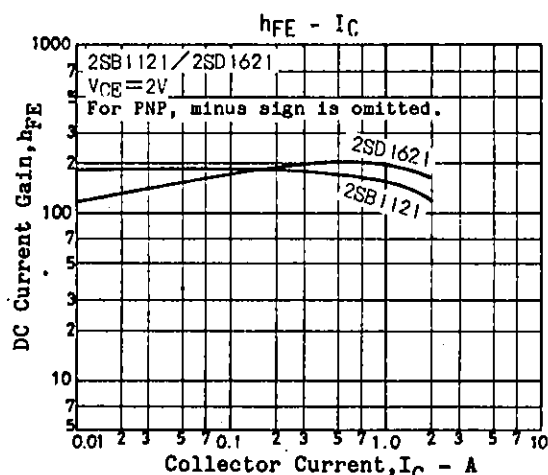
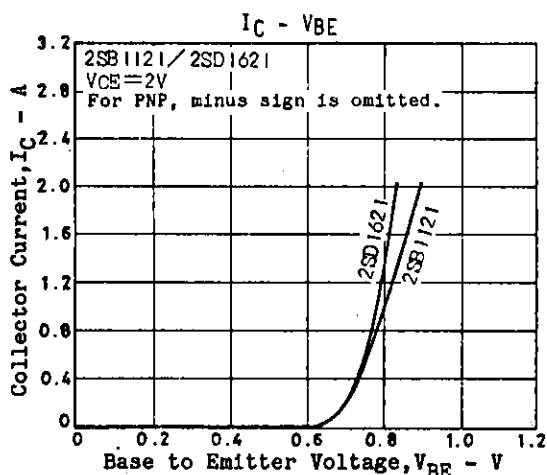
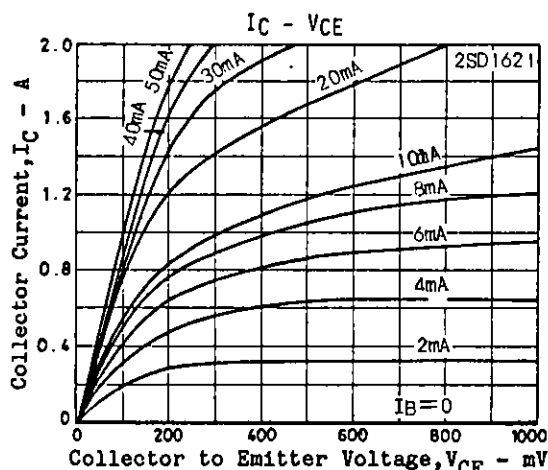
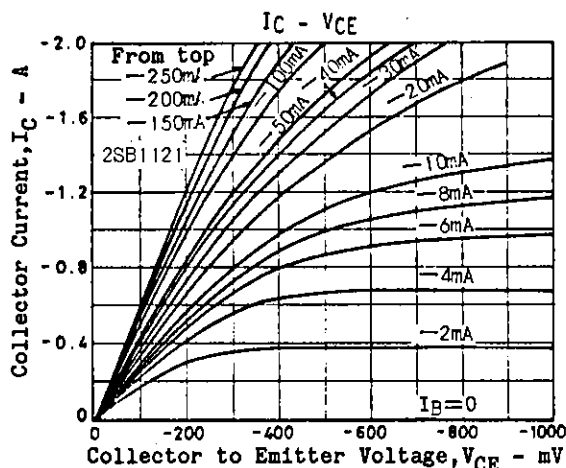
**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**

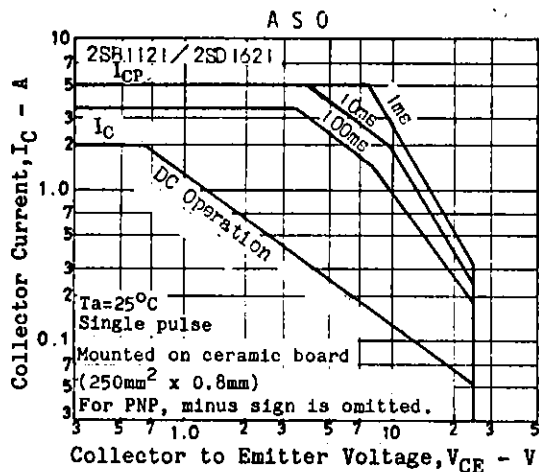
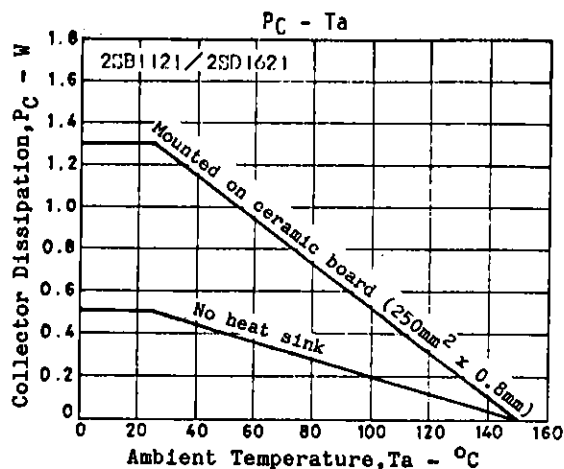
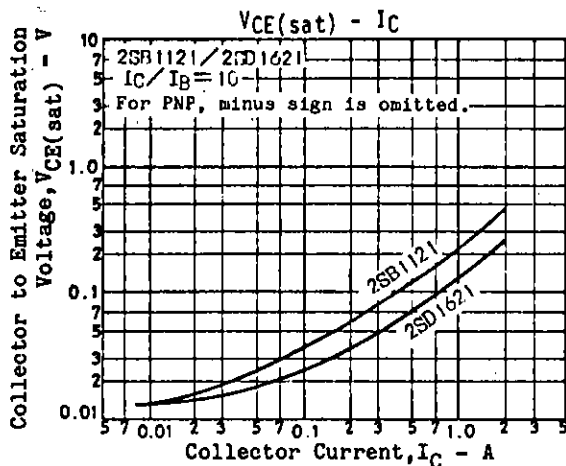
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

# 2SB1121/2SD1621

Continued from preceding page.

|                       |               |                                 | min   | typ          | max | unit     |
|-----------------------|---------------|---------------------------------|-------|--------------|-----|----------|
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = (-)10\mu A, I_E = 0$     | (-)30 |              |     | V        |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = (-)1mA, R_{BE} = \infty$ | (-)25 |              |     | V        |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = (-)10\mu A, I_C = 0$     | (-)6  |              |     | V        |
| Output Capacitance    | $c_{ob}$      | $V_{CB} = (-)10V, f = 1MHz$     |       | 19<br>(32)   |     | pF<br>pF |
| Turn-ON Time          | $t_{on}$      | See specified Test Circuit.     |       | 60<br>(60)   |     | ns<br>ns |
| Storage Time          | $t_{stg}$     |                                 |       | 500<br>(350) |     | ns<br>ns |
| Fall Time             | $t_f$         |                                 |       | 25<br>(25)   |     | ns<br>ns |





- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
  - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use;
  - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.