

# Medium Power Transistor (−32V, −1A)

2SB1132 / 2SA1515S / 2SB1237

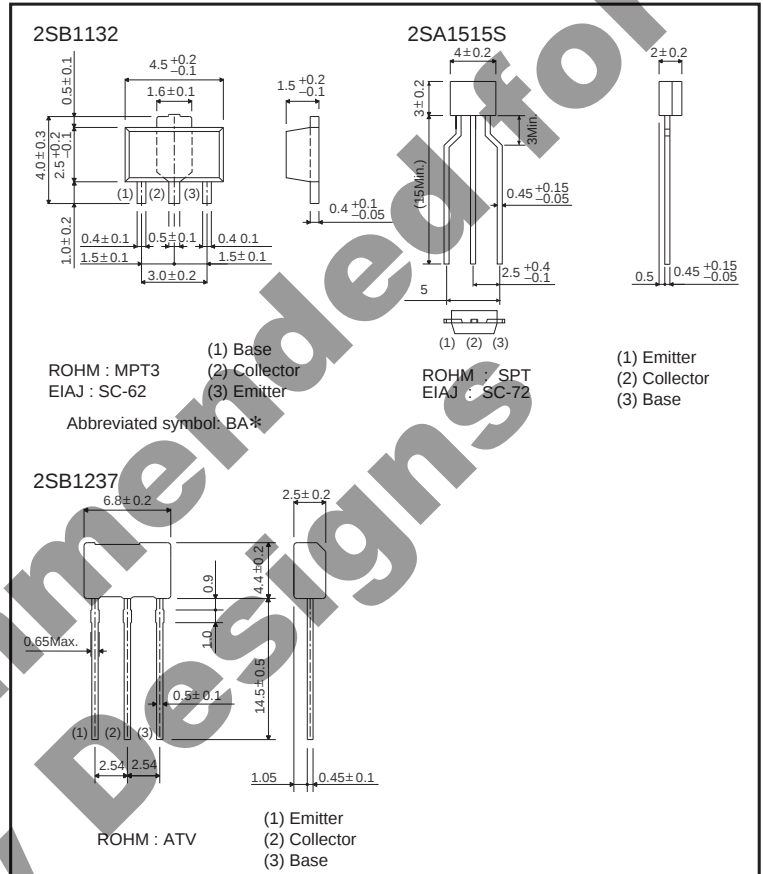
## ●Features

- 1) Low  $V_{CE(sat)}$ .  
 $V_{CE(sat)} = -0.2V(Typ.)$   
 $(I_C / I_B = -500mA / -50mA)$
- 2) Compliments 2SD1664 /  
 2SD1858

## ●Structure

Epitaxial planar type  
 PNP silicon transistor

## ●Dimensions (Unit : mm)



\* Denotes  $h_{FE}$

## ●Absolute maximum ratings (Ta=25°C)

| Parameter                   |          | Symbol    | Limits      | Unit        |
|-----------------------------|----------|-----------|-------------|-------------|
| Collector-base voltage      |          | $V_{CBO}$ | -40         | V           |
| Collector-emitter voltage   |          | $V_{CEO}$ | -32         | V           |
| Emitter-base voltage        |          | $V_{EBO}$ | -5          | V           |
| Collector current           |          | $I_C$     | -1          | A(DC)       |
|                             |          |           | -2          | A(Pulse) *1 |
| Collector power dissipation | 2SB1132  | $P_C$     | 0.5         | W *2        |
|                             |          |           | 2           |             |
|                             | 2SA1515S |           | 0.3         |             |
|                             | 2SB1237  |           | 1           | *3          |
| Junction temperature        |          | $T_J$     | 150         | °C          |
| Storage temperature         |          | $T_{stg}$ | -55 to +150 | °C          |

\*1 Single pulse,  $P_w=100ms$ 

\*2 When mounted on a 40×40×0.7 mm ceramic board.

\*3 Printed circuit board, 1.7 mm thick, collector copper plating 100mm<sup>2</sup> or larger.

## ●Electrical characteristics (Ta=25°C)

| Parameter                            |                  | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                            |
|--------------------------------------|------------------|---------------|------|------|------|---------|---------------------------------------|
| Collector-base breakdown voltage     |                  | $BV_{CBO}$    | -40  | —    | —    | V       | $I_C = -50\mu A$                      |
| Collector-emitter breakdown voltage  |                  | $BV_{CEO}$    | -32  | —    | —    | V       | $I_C = -1mA$                          |
| Emitter-base breakdown voltage       |                  | $BV_{EBO}$    | -5   | —    | —    | V       | $I_E = -50\mu A$                      |
| Collector cutoff current             |                  | $I_{CBO}$     | —    | —    | -0.5 | $\mu A$ | $V_{CB} = -20V$                       |
| Emitter cutoff current               |                  | $I_{EBO}$     | —    | —    | -0.5 | $\mu A$ | $V_{EB} = -4V$                        |
| Collector-emitter saturation voltage |                  | $V_{CE(sat)}$ | —    | -0.2 | -0.5 | V       | $I_C/I_E = -500mA/-50mA$ *            |
| DC current transfer ratio            | 2SB1132, 2SB1237 | $h_{FE}$      | 120  | —    | 390  | —       | $V_{CE} = -3V, I_C = -0.1A$ *         |
|                                      | 2SA1515S         |               | 120  | —    | 390  | —       |                                       |
| Transition frequency                 |                  | $f_T$         | —    | 150  | —    | MHz     | $V_{CE} = -5V, I_E = 50mA, f = 30MHz$ |
| Output capacitance                   |                  | $C_{ob}$      | —    | 20   | 30   | pF      | $V_{CB} = -10V, I_E = 0A, f = 1MHz$   |

\* Measured using pulse current.

●Packaging specifications and  $h_{FE}$ 

| Type     | $h_{FE}$ | Package Code                 | Taping |    |     |
|----------|----------|------------------------------|--------|----|-----|
|          |          | Basic ordering unit (pieces) | T100   | TP | TU2 |
| 2SB1132  | QR       |                              | ○      | —  | —   |
| 2SA1515S | QR       |                              | —      | ○  | —   |
| 2SB1237  | QR       |                              | —      | —  | ○   |

 $h_{FE}$  values are classified as follows :

| Item     | Q          | R          |
|----------|------------|------------|
| $h_{FE}$ | 120 to 270 | 180 to 390 |

## ●Electrical characteristics curves

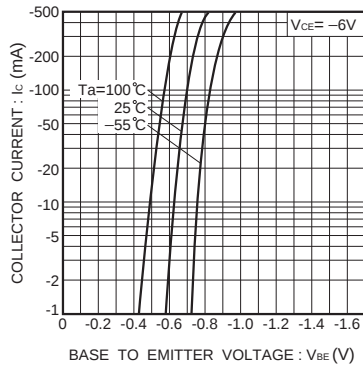


Fig.1 Grounded emitter propagation characteristics

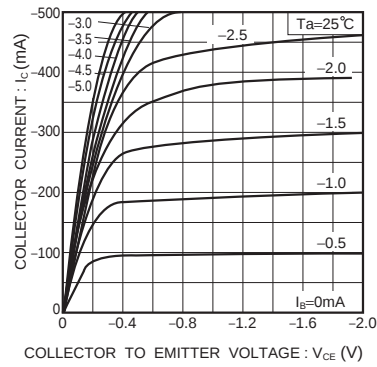


Fig.2 Grounded emitter output characteristics

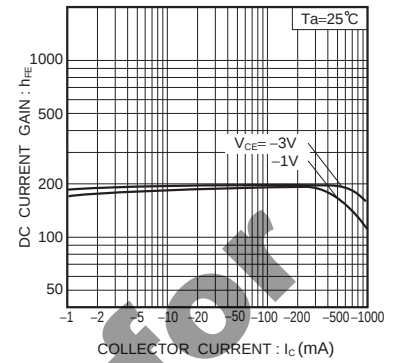


Fig.3 DC current gain vs. collector current(I)

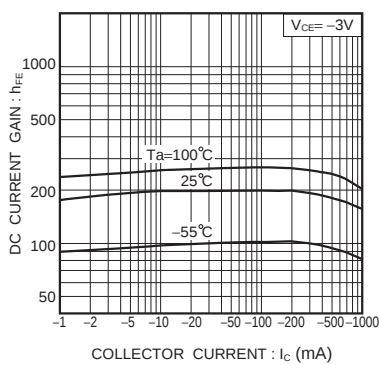


Fig.4 DC current gain vs. collector current(II)

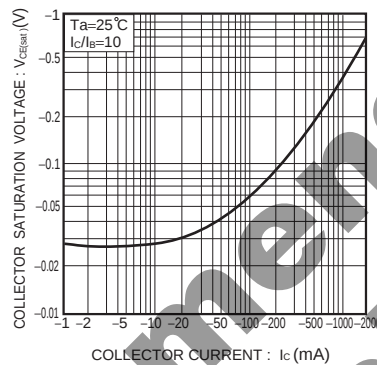


Fig.5 Collector-emitter saturation voltage vs. collector current

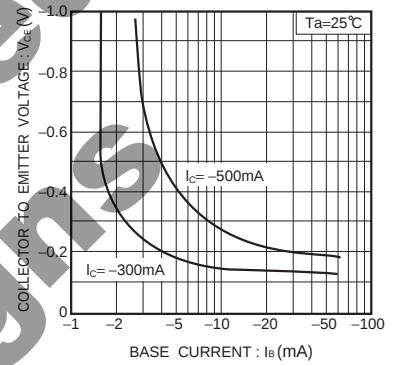


Fig.6 Collector-emitter saturation voltage vs. base current

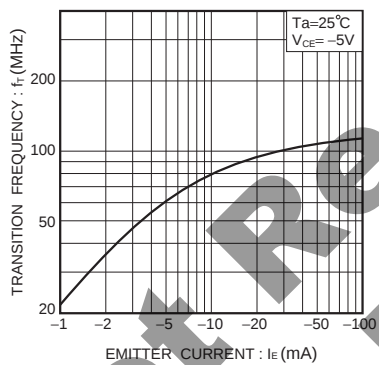


Fig.7 Gain bandwidth product vs. emitter current

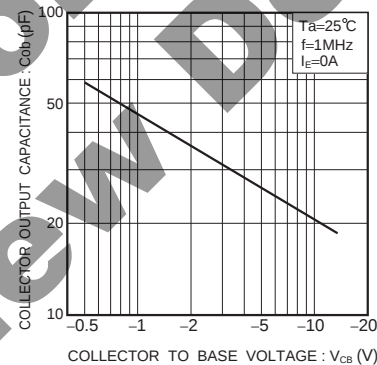


Fig.8 Collector output capacitance vs. collector-base voltage

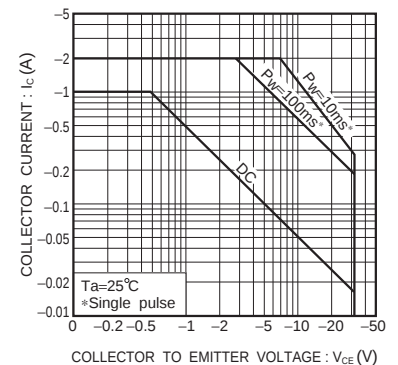


Fig.9 Safe operation area (2SB1132)

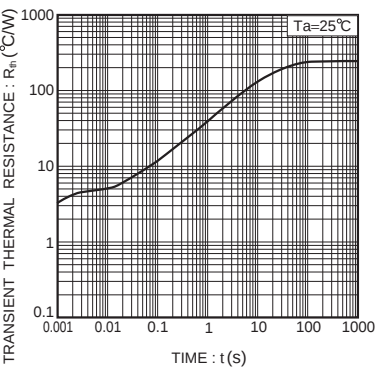


Fig.10 Transient thermal resistance (2SB1132)

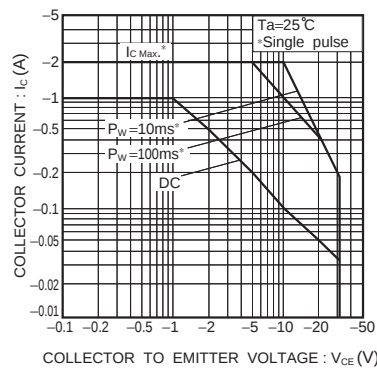


Fig.11 Safe operation area (2SB1237)

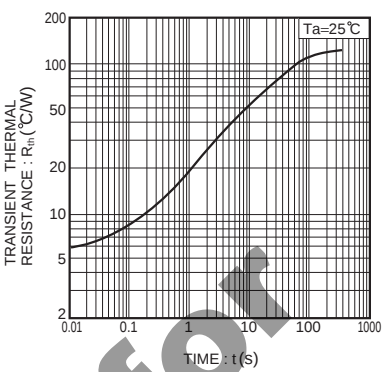


Fig.12 Transient thermal resistance (2SB1237)

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