

Medium power Transistor(- 32V, - 2A)

2SB1188 / 2SB1182 / 2SB1240 / 2SB822 / 2SB1277 / 2SB911M

●Features

1) Low $V_{CE(sat)}$.

$$V_{CE(sat)} = -0.5V \text{ (Typ.)}$$

$$(I_c / I_B = -2A / -0.2A)$$

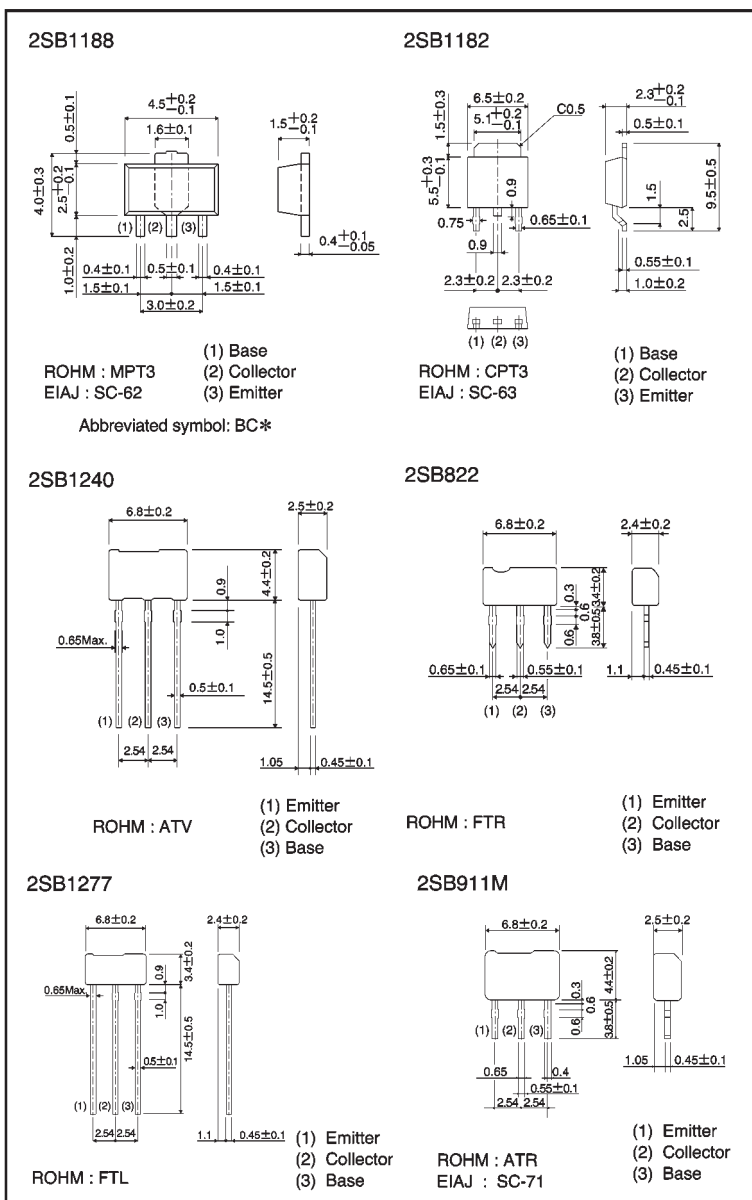
2) Complements the 2SD1766 /
2SD1758 / 2SD1862 / 2SD1189F /
2SD1055 / 2SD1919 / SD1227M.

●Structure

Epitaxial planar type

PNP silicon transistor

●External dimensions (Unit: mm)



* Denotes hFE

(96-131-B24)

● Absolute maximum ratings (Ta = 25°C)

| Parameter | | Symbol | Limits | Unit |
|-----------------------------|-----------------|------------------|----------|--------------------------|
| Collector-base voltage | | V _{CB0} | -40 | V |
| Collector-emitter voltage | | V _{CEO} | -32 | V |
| Emitter-base voltage | | V _{EBO} | -5 | V |
| Collector current | | I _c | -2 | A (DC) |
| | | | -3 | A (Pulse) *1 |
| Collector power dissipation | 2SB1188 | P _c | 0.5 | W |
| | 2SB1182 | | 2 | W *2 |
| | 2SB1240,2SB911M | | 10 | W (T _c =25°C) |
| | 2SB822,2SB1277 | | 1 | W *3 |
| Junction temperature | | T _j | 150 | °C |
| Storage temperature | | T _{stg} | -55~+150 | °C |

*1 Single pulse, P_w=100ms

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

*3 Printed circuit board, 1.7mm thick, collector copper plating 100mm² or larger.

● Electrical characteristics (Ta = 25°C)

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|-----------------|----------------------|------|------|------|------|---|
| Collector-base breakdown voltage | | BV _{CB0} | -40 | — | — | V | I _c =-50 μA |
| Collector-emitter breakdown voltage | | BV _{CEO} | -32 | — | — | V | I _c =-1mA |
| Emitter-base breakdown voltage | | BV _{EBO} | -5 | — | — | V | I _E =-50 μA |
| Collector cutoff current | | I _{CB0} | — | — | -1 | μA | V _{CB} =-20V |
| Emitter cutoff current | | I _{EBO} | — | — | -1 | μA | V _{EB} =-4V |
| Collector-emitter saturation voltage | | V _{CE(sat)} | — | -0.5 | -0.8 | V | I _c /I _B =-2A/-0.2A * |
| DC current transfer ratio | 2SB1188,2SB1182 | h _{FE} | 82 | — | 390 | — | V _{CE} =-3V, I _c =-0.5A * |
| | 2SB1240 | | | | | | |
| | 2SB822,2SB1277 | | 120 | — | 270 | | |
| | 2SB911M | | | | | | |
| Transition frequency | | f _T | — | 100 | — | MHz | V _{CE} =-5V, I _E =0.5A, f=30MHz |
| Output capacitance | | C _{ob} | — | 50 | — | pF | V _{CB} =-10V, I _E =0A, f=1MHz |

* Measured using pulse current.

● Packaging specifications and h_{FE}

| Type | h_{FE} | Package | Taping | | | | Bulk |
|---------|----------|------------------------------|--------|------|------|------|------|
| | | Code | T100 | TL | TV2 | TL2 | — |
| | | Basic ordering unit (pieces) | 1000 | 2500 | 2500 | 2500 | 2000 |
| 2SB1188 | PQR | ○ | — | — | — | — | |
| 2SB1182 | PQR | — | ○ | — | — | — | |
| 2SB1240 | PQR | — | — | ○ | — | — | |
| 2SB822 | Q | — | — | — | — | ○ | |
| 2SB1277 | Q | — | — | — | ○ | — | |
| 2SB911M | Q | — | — | — | — | ○ | |

h_{FE} values are classified as follows :

| Item | P | Q | R |
|----------|--------|---------|---------|
| h_{FE} | 82~180 | 120~270 | 180~390 |

● Electrical characteristic curves

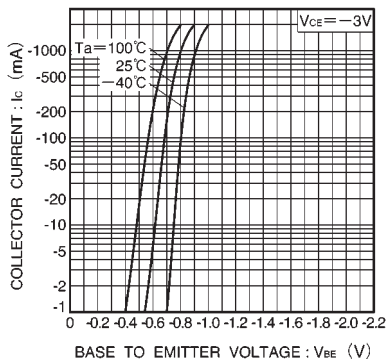


Fig.1 Grounded emitter propagation characteristics

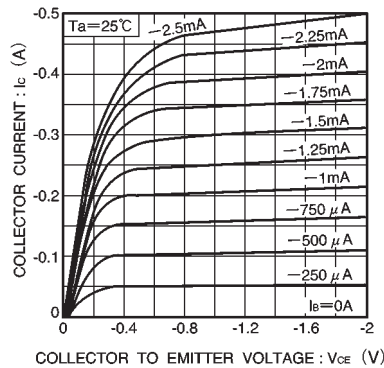


Fig.2 Grounded emitter output characteristics

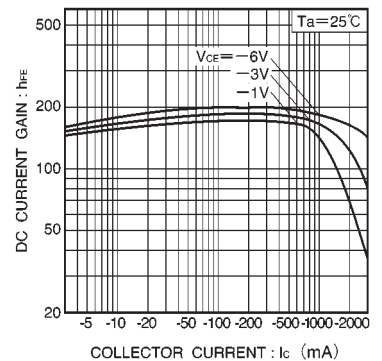


Fig.3 DC current gain vs. collector current (I)

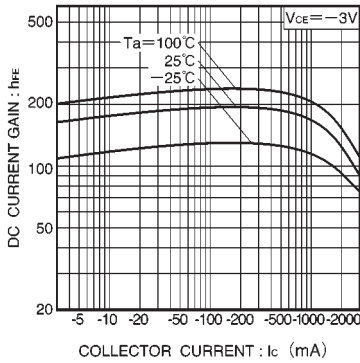


Fig.4 DC current gain vs. collector current (I)

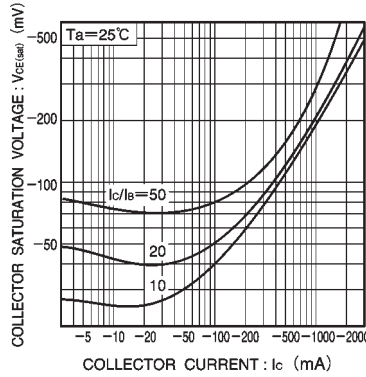


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

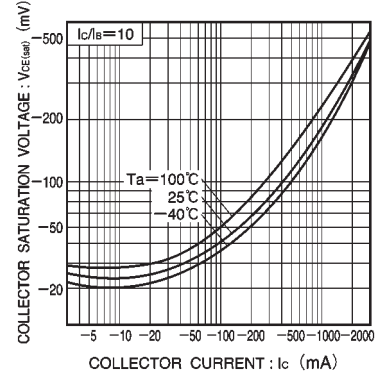


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

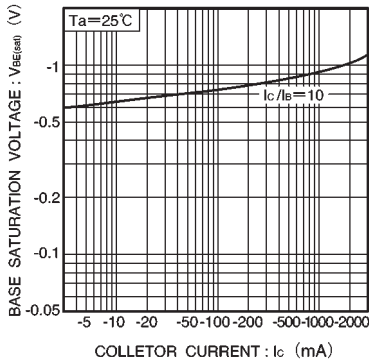


Fig.7 Base-emitter saturation voltage vs. collector current

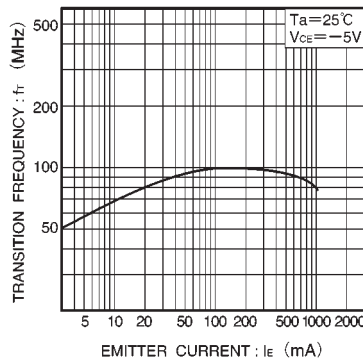


Fig.8 Gain bandwidth product vs. emitter current

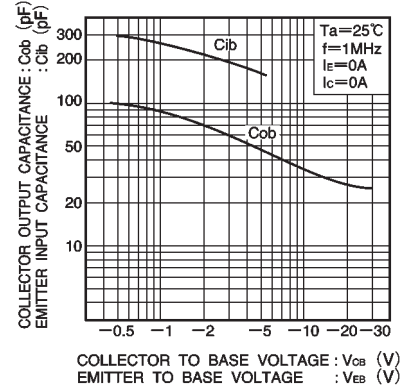


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

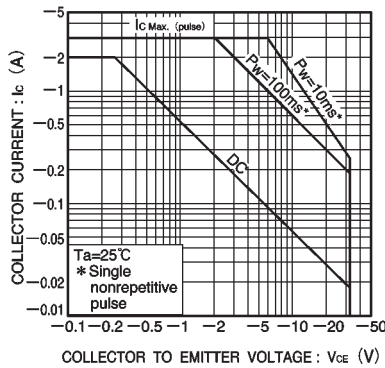


Fig.10 Safe operation area (2SB1188)

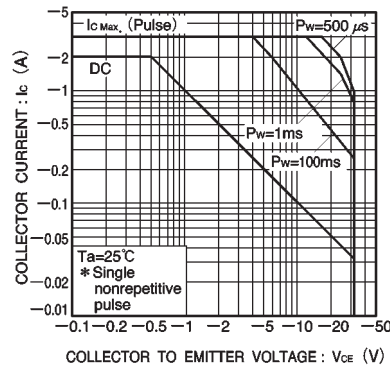


Fig.11 Safe operation area (2SB1182)