# Low $V_{CE(sat)}$ Transistor (–20V, –3A)

## 2SB1424 / 2SA1585S

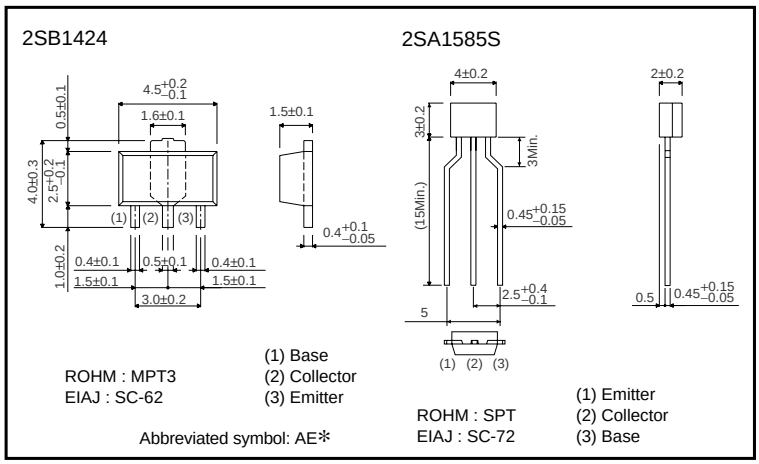
### ●Features

1) Low $V_{CE(sat)}$.
   $V_{CE(sat)}$ = –0.2V (Typ.)
   ($I_C/I_B$ = –2A / –0.1A)
2) Excellent DC current gain characteristics.
3) Complements the 2SD2150 / 2SC4115S.

### ●Structure

Epitaxial planar type
PNP silicon transistor

### ●External dimensions (Unit : mm)




* Denotes $h_{FE}$

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

| Parameter | | Symbol | Limits | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | –20 | V |
| Collector-emitter voltage | | $V_{CEO}$ | –20 | V |
| Emitter-base voltage | | $V_{EBO}$ | –6 | V |
| Collector current | 2SB1424 | $I_C$ | –3 | A |
| | 2SA1585S | | –2 | |
| | | $I_{CP}$ | –5 | A(Pulse) * |
| Collector power dissipation | 2SB1424 | $P_C$ | 0.5 | W |
| | 2SA1585S | | 0.4 | |
| Junction temperature | | Tj | 150 | °C |
| Storage temperature | | Tstg | –55 to 150 | °C |

* Single pulse Pw=10ms

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | –20 | – | – | V | $I_C$= –50μA |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | –20 | – | – | V | $I_C$= –1mA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | –6 | – | – | V | $I_E$= –50μA |
| Collector cutoff current | $I_{CBO}$ | – | – | –0.1 | μA | $V_{CB}$= –20V |
| Emitter cutoff current | $I_{EBO}$ | – | – | –0.1 | μA | $V_{EB}$= –5V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | – | – | –0.5 | V | $I_C/I_B$= –2A/ –0.1A |
| DC current transfer ratio | $h_{FE}$ | 120 | – | 390 | – | $V_{CE}$= –2V, $I_C$= –0.1A |
| Transition frequency | $f_T$ | – | 240 | – | MHz | $V_{CE}$= –2V, $I_E$=0.5A, f=100MHz |
| Output capacitance | Cob | – | 35 | – | pF | $V_{CB}$= –10V, $I_E$=0A, f=1MHz |

●**Packaging specifications and $h_{FE}$**

| Type | $h_{FE}$ | Package | Taping | |
|---|---|---|---|---|
| | | Code | TP | T100 |
| | | Basic ordering unit (pieces) | 5000 | 1000 |
| 2SA1585S | QR | | ○ | – |
| 2SB1424 | QR | | – | ○ |

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

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

●**Electrical characteristic curves**

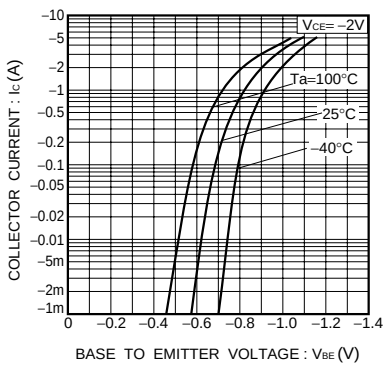



Fig.1 Grounded emitter propagation characteristics

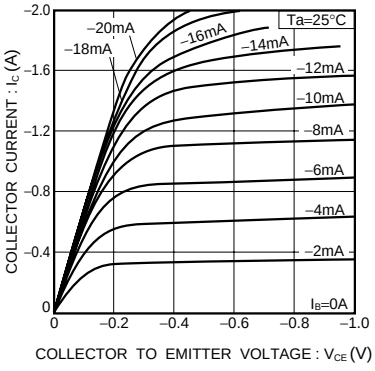



Fig.2 Grounded emitter output characteristics ( I )

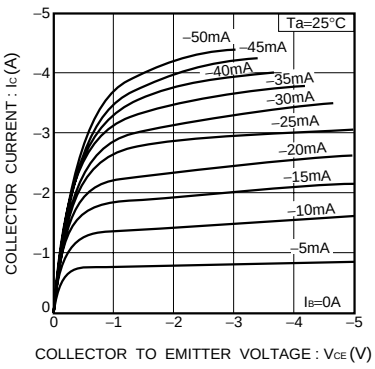



Fig.3 Grounded emitter output characteristics (II)

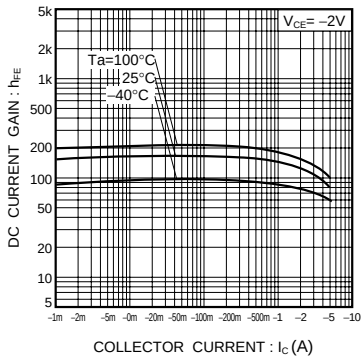



Fig.4 DC current gain vs. collector current

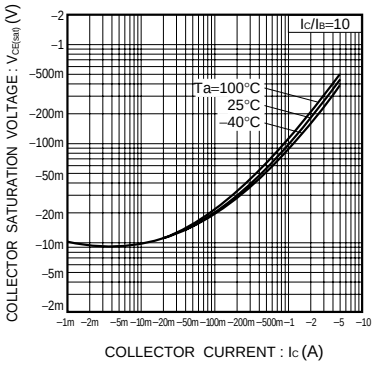



Fig.5 Collector-emitter saturation voltage vs. collector curren (Ⅰ)

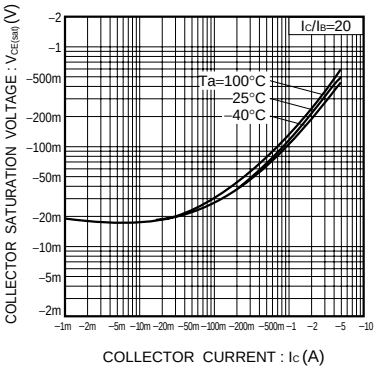



Fig.6 Collector-emitter saturation voltage vs. collector current (Ⅱ)

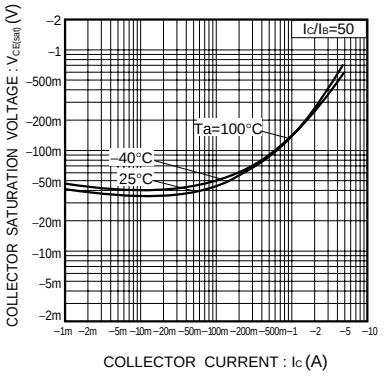



Fig.7 Collector-emitter saturation voltage vs. collector current (Ⅲ)

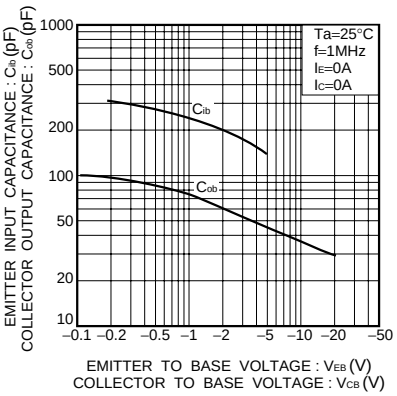



Fig.8 Gain bandwidth product vs. emitter current
Collector output capacitance vs. collector-base voltage

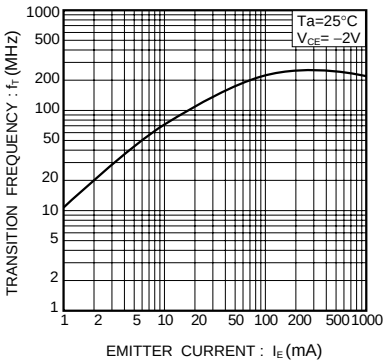



Fig.9 Emitter input capacitance vs. emitter base voltage

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