

# NPN General Purpose Transistor

## BC847B

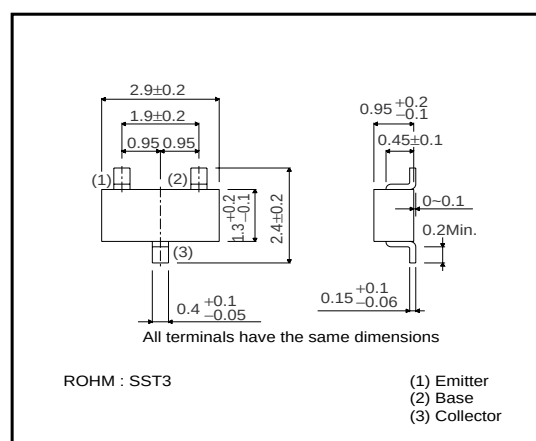
### ●Features

- 1)  $BV_{CEO} < 45V$  ( $I_C=1mA$ )
- 2) Complements the BC857B.

### ●Package, marking, and Packaging specifications

|                              |        |
|------------------------------|--------|
| Part No.                     | BC847B |
| Packaging type               | SST3   |
| Marking                      | G1F    |
| Code                         | T116   |
| Basic ordering unit (pieces) | 3000   |

### ●External dimensions (Unit : mm)



### ●Absolute maximum ratings ( $T_a=25^{\circ}C$ )

| Parameter                   | Symbol    | Limits      | Unit        |
|-----------------------------|-----------|-------------|-------------|
| Collector-base voltage      | $V_{CBO}$ | 50          | V           |
| Collector-emitter voltage   | $V_{CEO}$ | 45          | V           |
| Emitter-base voltage        | $V_{EBO}$ | 6           | V           |
| Collector current           | $I_C$     | 0.1         | A           |
| Collector power dissipation | $P_C$     | 0.2         | W *         |
|                             |           | 0.35        |             |
| Junction temperature        | $T_j$     | 150         | $^{\circ}C$ |
| Storage temperature         | $T_{stg}$ | -65 to +150 | $^{\circ}C$ |

\* When mounted on a 7×5×0.6mm ceramic board.

### ●Electrical characteristics ( $T_a=25^{\circ}C$ )

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                       |
|--------------------------------------|---------------|------|------|------|---------|----------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 50   | —    | —    | V       | $I_C=50\mu A$                    |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 45   | —    | —    | V       | $I_C=1mA$                        |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 6    | —    | —    | V       | $I_E=50\mu A$                    |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | 15   | nA      | $V_{CB}=30V$                     |
|                                      |               | —    | —    | 5    | $\mu A$ | $V_{CB}=30V, T_a=150^{\circ}C$   |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | —    | 0.25 | V       | $I_C/I_E=10mA/0.5mA$             |
|                                      |               | —    | —    | 0.6  |         | $I_C/I_E=100mA/5mA$              |
| Base-emitter saturation voltage      | $V_{BE(on)}$  | 0.58 | —    | 0.77 | V       | $V_{CE}/I_C=5V/10mA$             |
| DC current transfer ratio            | $h_{FE}$      | 200  | —    | 450  | —       |                                  |
| Transition frequency                 | $f_T$         | —    | 200  | —    | MHz     | $V_{CE}=5V, I_E=-20mA, f=100MHz$ |
| Collector output capacitance         | $C_{ob}$      | —    | 3    | —    | pF      | $V_{CB}=10V, I_E=0, f=1MHz$      |
| Emitter input capacitance            | $C_{ib}$      | —    | 8    | —    | pF      | $V_{EB}=0.5V, I_C=0, f=1MHz$     |

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## ●Electrical characteristic curves

The electrical characteristic curves for these products are the same as those of UMT222A, SST222A, MMST222A and PN222A.

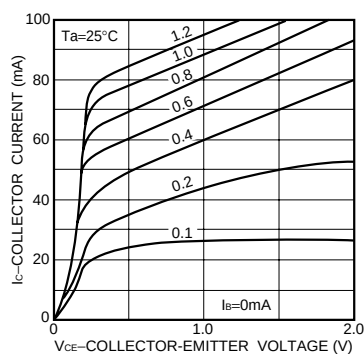


Fig.1 Grounded emitter output characteristics (I)

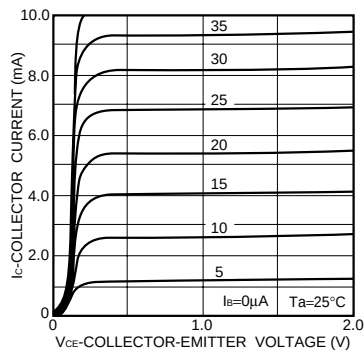


Fig.2 Grounded emitter output characteristics (II)

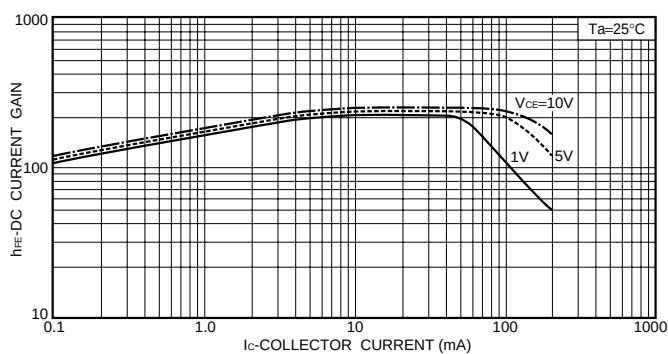


Fig.3 DC current gain vs. collector current (I)

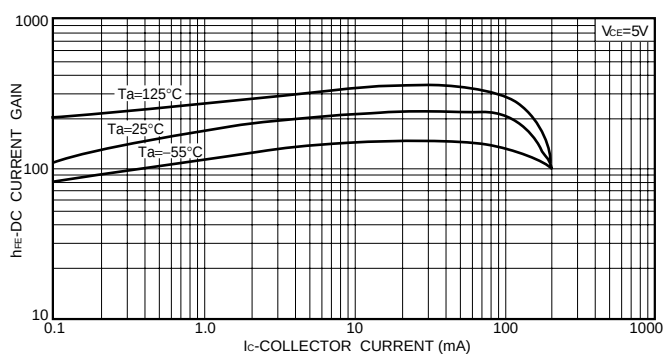
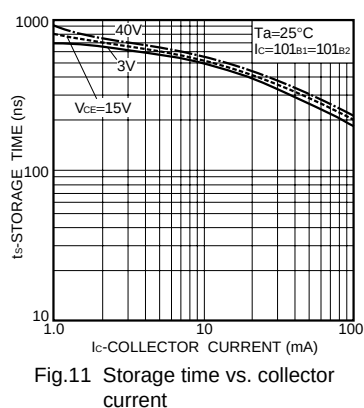
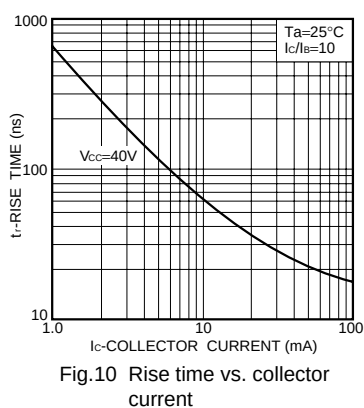
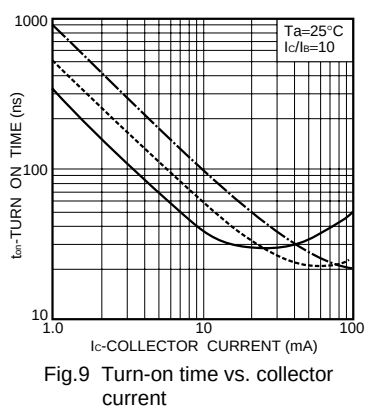
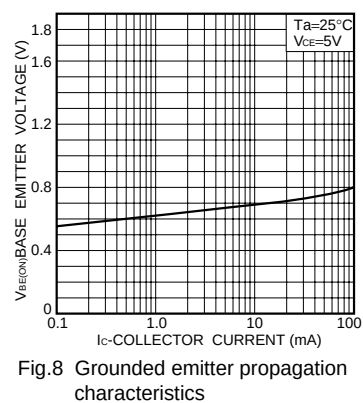
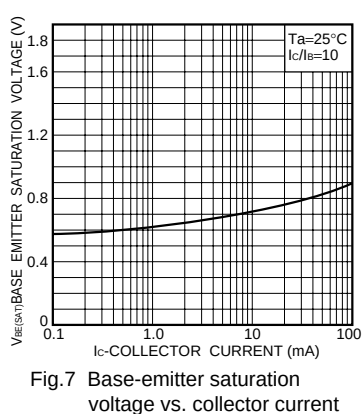
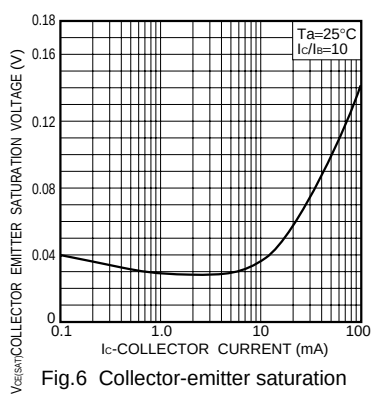
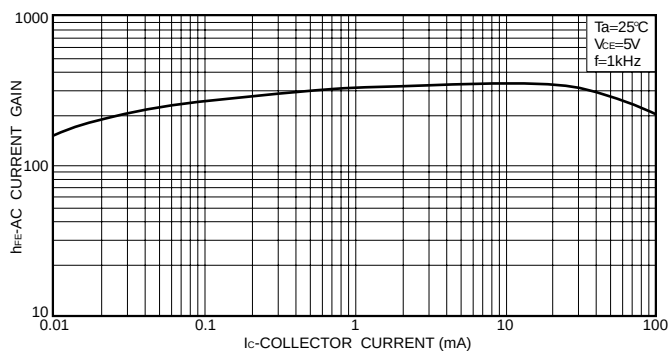


Fig.4 DC current gain vs. collector current (II)

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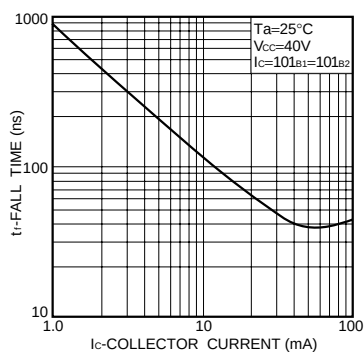


Fig.12 Fall time vs. collector current

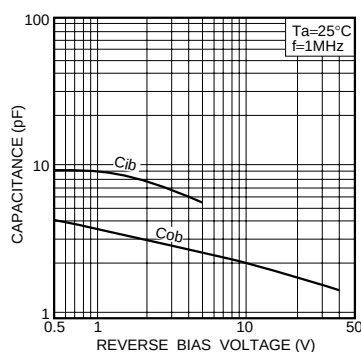


Fig.13 Input/output capacitance vs. voltage

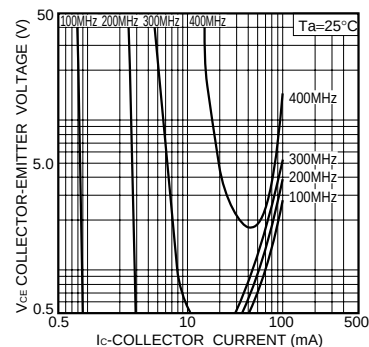


Fig.14 Gain bandwidth product

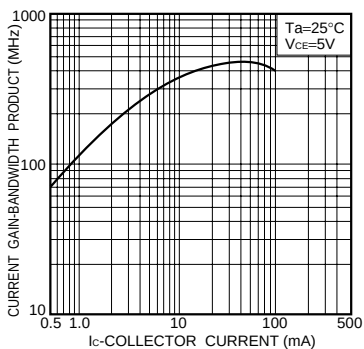


Fig.15 Gain bandwidth product vs. collector current

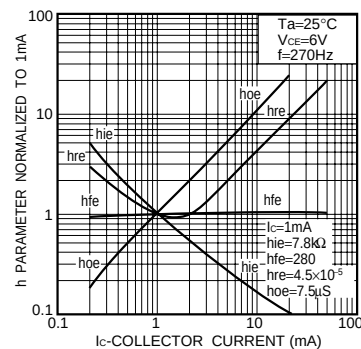


Fig.16 h parameter vs. collector current

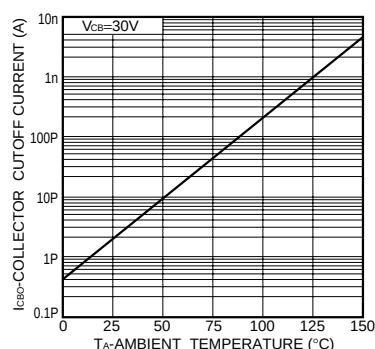


Fig.17 Collector cutoff current

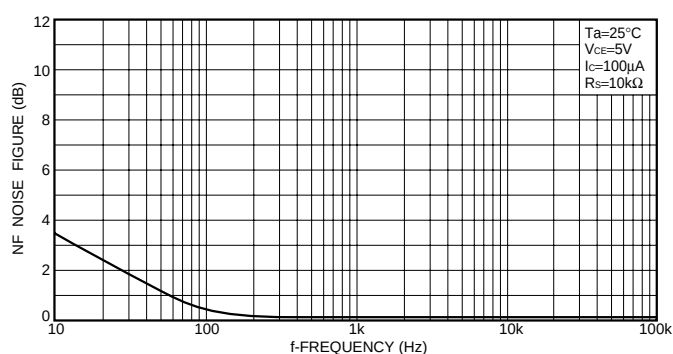


Fig.18 Noise vs. collector current

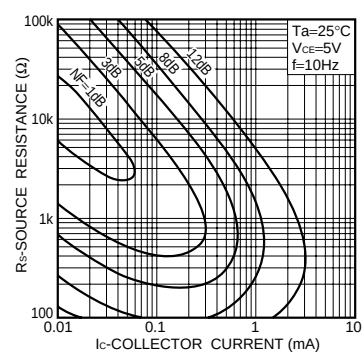
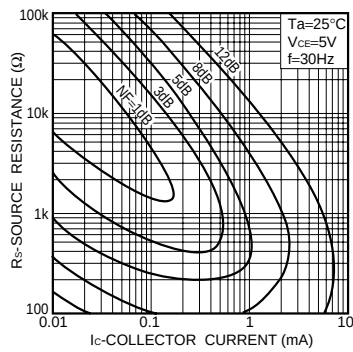


Fig.19 Noise characteristics (I)

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