

# NPN General Purpose Transistor

BC848BW / BC848B / BC848C

●Features

- 1)  $V_{CE0}$  minimum is 30V ( $I_C=1mA$ )
- 2) Complements the BC858B / BC858BW.

●Package, marking and packaging specifications

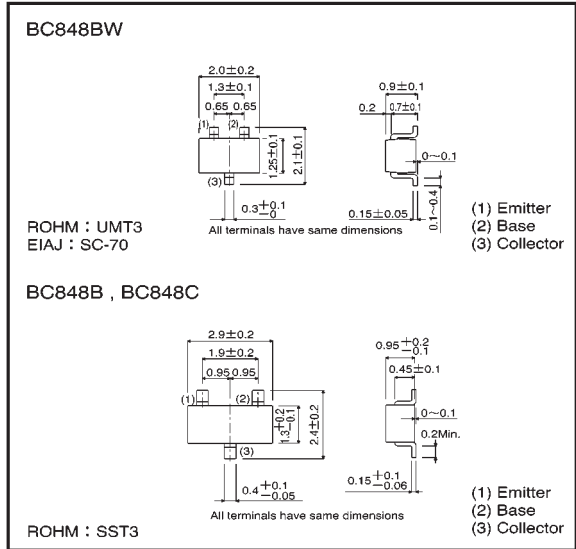
| Part No.                     | BC848BW | BC848B | BC848C |
|------------------------------|---------|--------|--------|
| Packaging type               | UMT3    | SST3   | SST3   |
| Marking                      | G1K     | G1K    | G1L    |
| Code                         | T106    | T116   | T116   |
| Basic ordering unit (pieces) | 3000    | 3000   | 3000   |

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

| Parameter                   | Symbol    | Limits          | Unit       |
|-----------------------------|-----------|-----------------|------------|
| Collector-base voltage      | $V_{CBO}$ | 30              | V          |
| Collector-emitter voltage   | $V_{CEO}$ | 30              | V          |
| Emitter-base voltage        | $V_{EB0}$ | 5               | 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         | $T_{stg}$ | $-55 \sim +150$ | $^\circ C$ |

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

●External dimensions (Units : mm)



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

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                       |
|--------------------------------------|---------------|------|------|------|---------|----------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 30   | —    | —    | V       | $I_C=50 \mu A$                   |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 30   | —    | —    | V       | $I_C=1mA$                        |
| Emitter-base breakdown voltage       | $BV_{EB0}$    | 5    | —    | —    | V       | $I_E=50 \mu A$                   |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | 15   | $\mu A$ | $V_{CB}=30V$                     |
|                                      |               | —    | —    | 5    |         | $V_{CB}=30V, T_a=150^\circ C$    |
| 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  | —       | $V_{CE}/I_C=5V/2mA$ (BC848B/BW)  |
|                                      |               | 420  | —    | 800  |         | $V_{CE}/I_C=5V/2mA$ (BC848C)     |
| Transition frequency                 | $f_T$         | —    | 200  | —    | MHz     | $V_{CE}=5V, I_E=-20mA, f=100MHz$ |
| Collector output capacitance         | $C_{ob}$      | —    | 3    | —    | pF      | $V_{CB}=10V, I_E=0, f=1MHz$      |
| Collector output capacitance         | $C_{ib}$      | —    | 8    | —    | pF      | $V_{EB}=0.5V, I_E=0, f=1MHz$     |

(SPEC-C22)

●Electrical characteristic curves

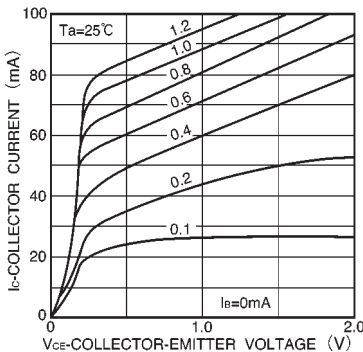


Fig.1 Grounded emitter output characteristics (I)

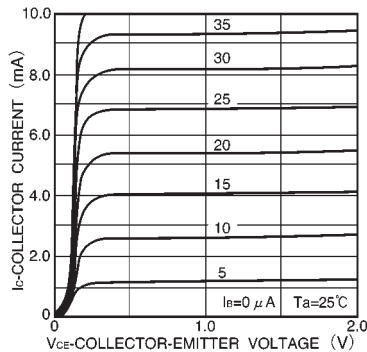


Fig.2 Grounded emitter output characteristics (II)

(SPEC-C22)

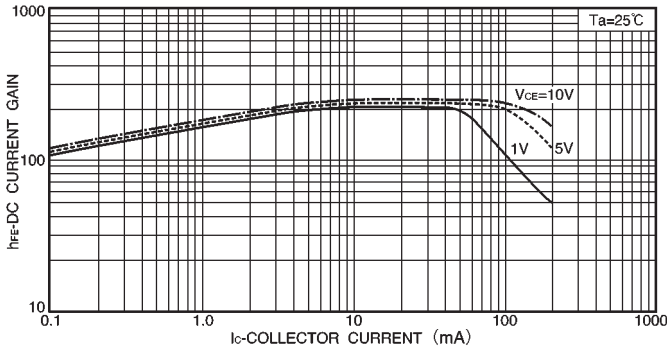


Fig.3 DC current gain vs. collector current ( I )

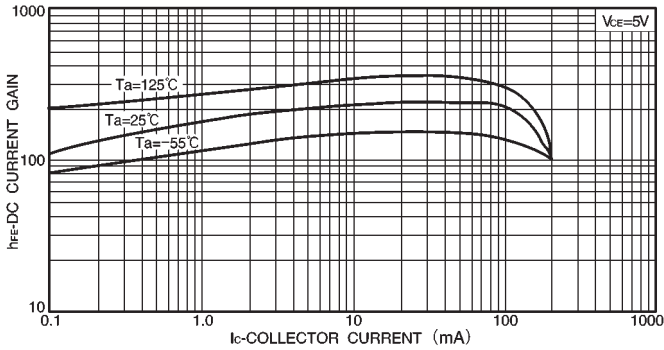


Fig.4 DC current gain vs. collector current ( II )

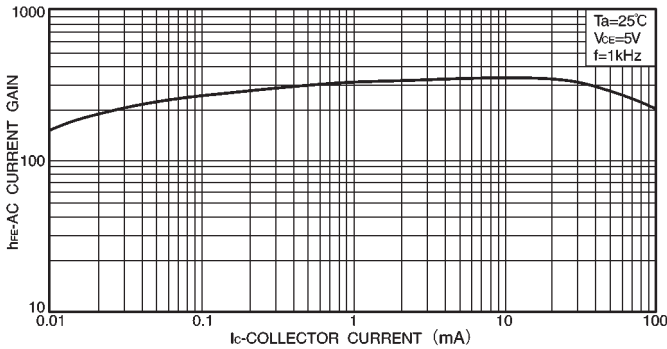


Fig.5 AC current gain vs. collector current

● Electrical characteristic curves

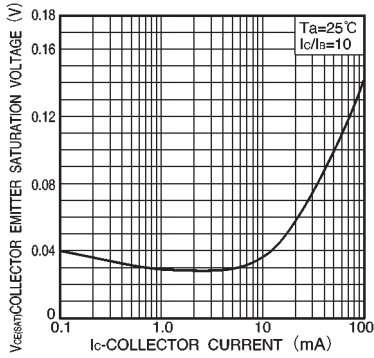


Fig.6 Collector-emitter saturation voltage vs. collector current

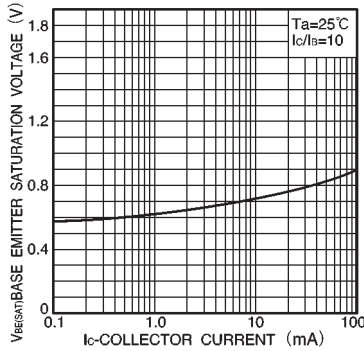


Fig.7 Base-emitter saturation voltage vs. collector current

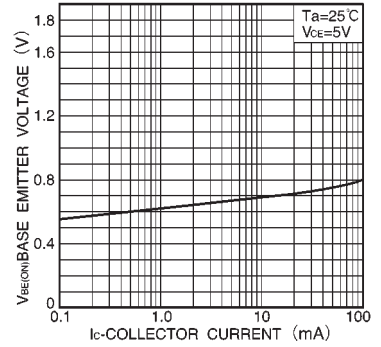


Fig.8 Grounded emitter propagation characteristics

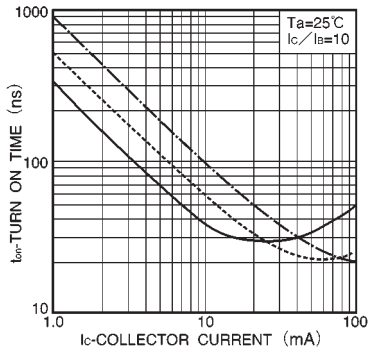


Fig.9 Turn-on time vs. collector current

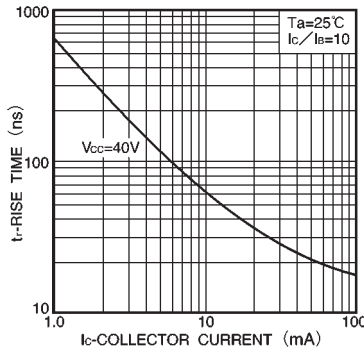


Fig.10 Rise time vs. collector current

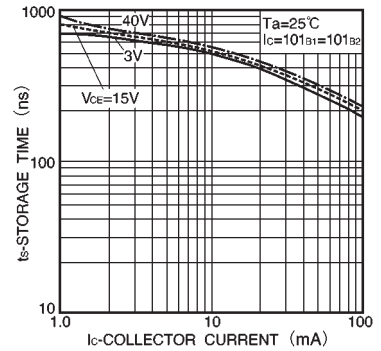


Fig.11 Storage time vs. collector current

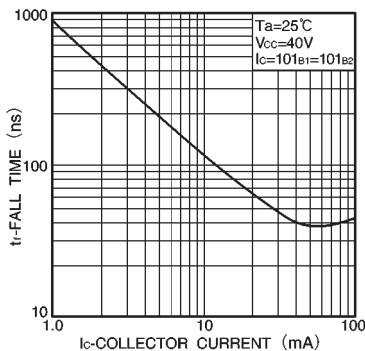


Fig.12 Fall time vs. collector current

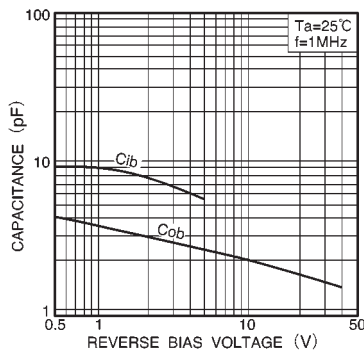


Fig.13 Input/output capacitance vs. voltage

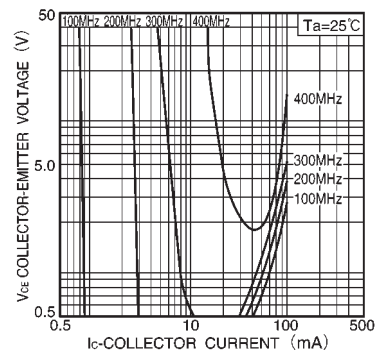


Fig.14 Gain bandwidth product

●Electrical characteristic curves

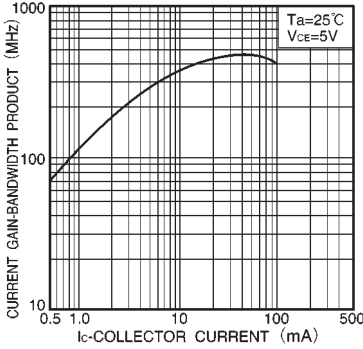


Fig.15 Gain bandwidth product vs. collector current

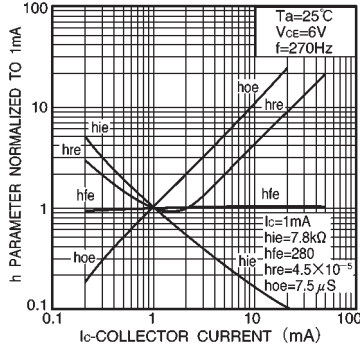


Fig.16 h parameter vs. collector current

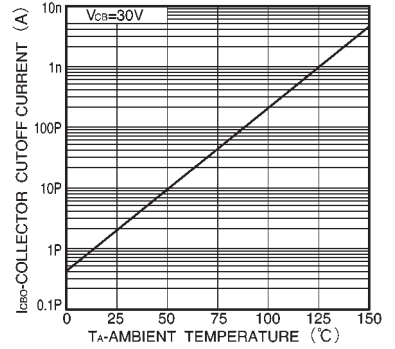


Fig.17 Collector cutoff current

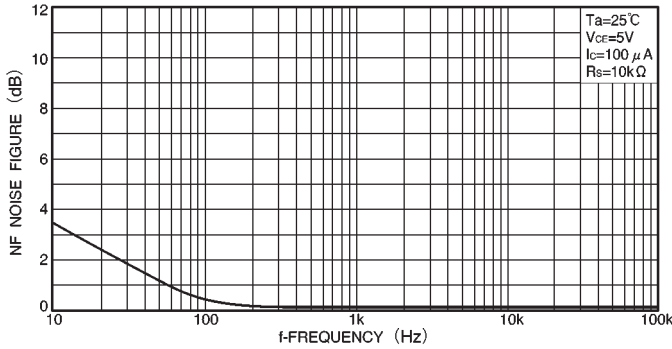


Fig.18 Noise vs. collector current

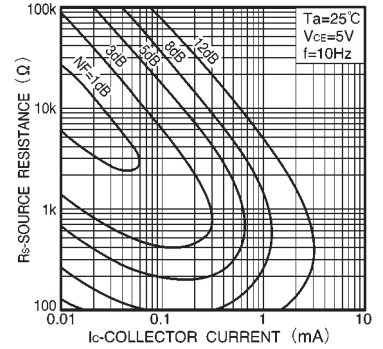


Fig.19 Noise characteristics (I)

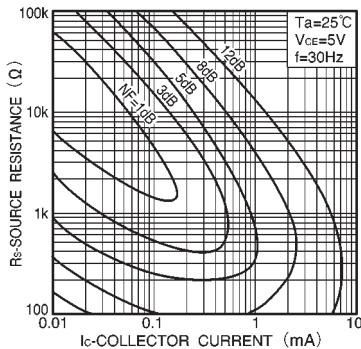


Fig.20 Noise characteristics (II)

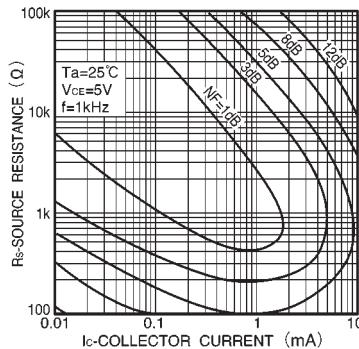


Fig.21 Noise characteristics (III)

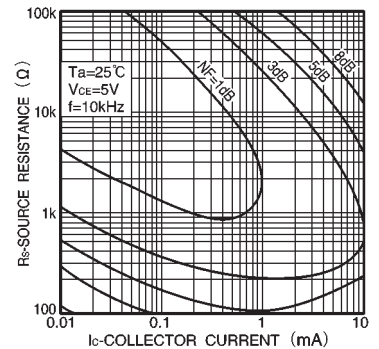


Fig.22 Noise characteristics (IV)