

## GBC548

### NPN SILICON TRANSISTOR

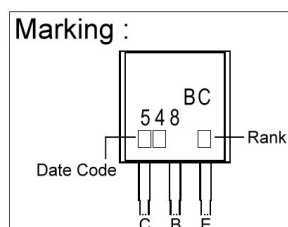
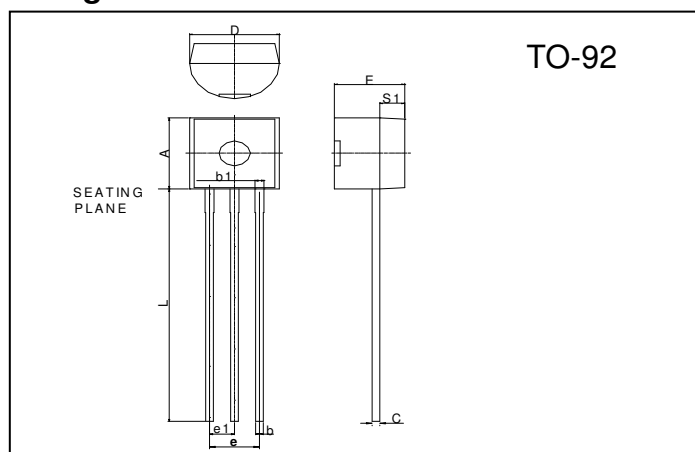
#### Description

The GBC548 is designed for drive and output-stages of audio amplifiers.

#### Features

- High DC Current Gain: 110~800 @  $V_{CE}=5V$ ,  $I_C=2mA$
- Complementary to GBC558

#### Package Dimensions



| REF. | Millimeter |      | REF. | Millimeter |       |
|------|------------|------|------|------------|-------|
|      | Min.       | Max. |      | Min.       | Max.  |
| A    | 4.45       | 4.7  | D    | 4.44       | 4.7   |
| S1   | 1.02       | -    | E    | 3.30       | 3.81  |
| b    | 0.36       | 0.51 | L    | 12.70      | -     |
| b1   | 0.36       | 0.76 | e1   | 1.150      | 1.390 |
| C    | 0.36       | 0.51 | e    | 2.42       | 2.66  |

#### Absolute Maximum Ratings ( $T_A=25^{\circ}C$ )

| Parameter                                    | Symbol          | Ratings    | Unit            |
|----------------------------------------------|-----------------|------------|-----------------|
| Collector to Base Voltage                    | $V_{CBO}$       | 30         | V               |
| Collector to Emitter Voltage                 | $V_{CEO}$       | 30         | V               |
| Emitter to Base Voltage                      | $V_{EBO}$       | 6          | V               |
| Collector Current (continuous)               | $I_C$           | 100        | mA              |
| Total Device Dissipation @ $T_A=25^{\circ}C$ | $P_D$           | 625        | mW              |
| Derate above $25^{\circ}C$                   |                 | 5.0        | mW/ $^{\circ}C$ |
| Total Device Dissipation @ $T_C=25^{\circ}C$ | $P_D$           | 1.5        | W               |
| Derate above $25^{\circ}C$                   |                 | 12         | mW/ $^{\circ}C$ |
| Operating and Storage Junction Temperature   | $T_J, T_{stg}$  | -55 ~ +150 | $^{\circ}C$     |
| Thermal Resistance, Junction to Ambient      | $R_{\theta JA}$ | 200        | $^{\circ}C/W$   |
| Thermal Resistance, Junction to Case         | $R_{\theta JC}$ | 83.3       | $^{\circ}C/W$   |

#### Electrical Characteristics ( $T_A = 25^{\circ}C$ unless otherwise noted)

| Symbol           | Min. | Typ. | Max. | Unit | Test Conditions                 |
|------------------|------|------|------|------|---------------------------------|
| $V_{CBO}$        | 30   | -    | -    | V    | $I_C=100\mu A, I_E=0$           |
| $V_{CEO}$        | 30   | -    | -    | V    | $I_C=1mA, I_B=0$                |
| $V_{EBO}$        | 6    | -    | -    | V    | $I_E=10\mu A, I_C=0$            |
| $I_{CES}$        | -    | -    | 15   | nA   | $V_{CE}=35V, V_{BE}=0$          |
| * $V_{CE(sat)1}$ | -    | 0.09 | 0.25 | V    | $I_C=10mA, I_B=0.5mA$           |
| * $V_{CE(sat)2}$ | -    | 0.2  | 0.6  | V    | $I_C=100mA, I_B=5mA$            |
| * $V_{BE(sat)}$  | -    | 0.7  | -    | V    | $I_C=10mA, I_B=0.5mA$           |
| * $V_{BE(on)1}$  | 0.55 | -    | 0.7  | V    | $V_{CE}=5V, I_C=2mA$            |
| * $V_{BE(on)2}$  | -    | -    | 0.77 | V    | $V_{CE}=5V, I_C=10mA$           |
| * $h_{FE}$       | 110  | -    | 800  |      | $V_{CE}=5V, I_C=2mA$            |
| fT               | 150  | 300  | -    | MHz  | $V_{CE}=5V, I_C=10mA, f=100MHz$ |
| Cob              | -    | 1.7  | 4.5  | pF   | $V_{CB}=10V, I_C=0, f=1MHz$     |

\*Pulse Test: Pulse Width  $\leq 380\mu s$ , Duty Cycle  $\leq 2\%$

#### Classification Of $h_{FE}$

| Rank  | A         | B         | C         |
|-------|-----------|-----------|-----------|
| Range | 110 ~ 220 | 200 ~ 450 | 420 ~ 800 |

## Characteristics Curve

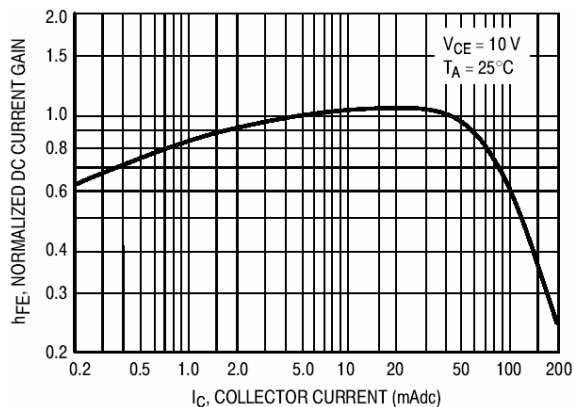


Fig 1. DC Current Gain

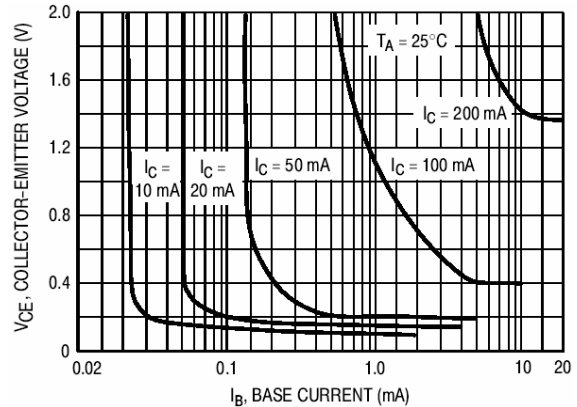


Fig 2. Collector Saturation Region

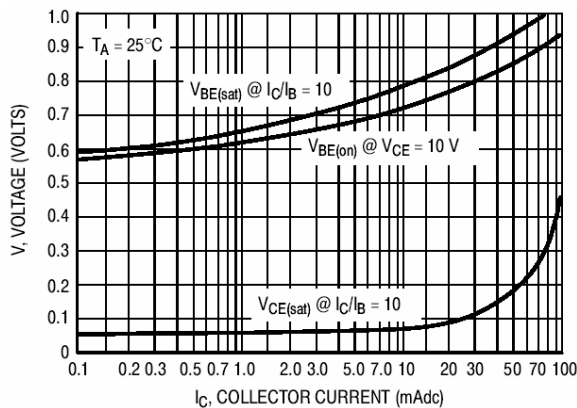


Fig 3. "Saturation" &amp; "On" Voltages

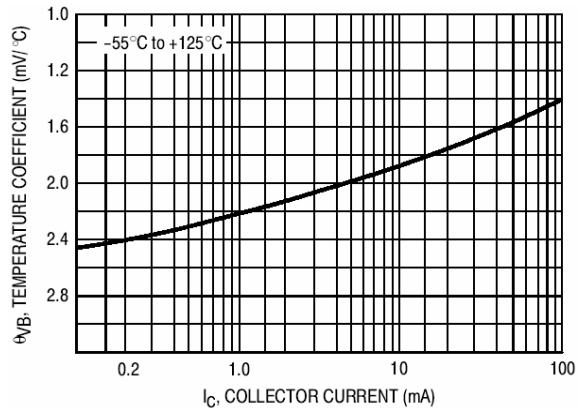


Fig 4. Temperature Coefficients

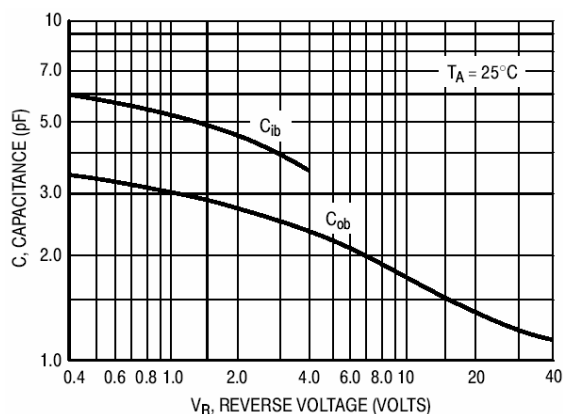


Fig 5. Capacitances

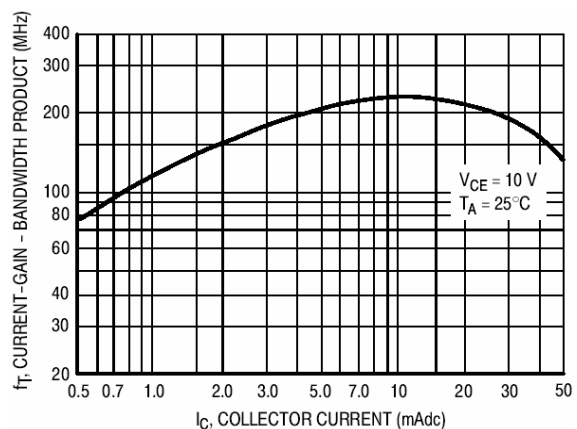


Fig 6. Bandwidth Product

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**Head Office And Factory:**

- **Taiwan:** No. 17-1 Tatung Rd. Fu Kou Hsin-Chu Industrial Park, Hsin-Chu, Taiwan, R. O. C.  
TEL : 886-3-597-7061 FAX : 886-3-597-9220, 597-0785
- **China:** (201203) No.255, Jang-Jiang Tsai-Lueng RD. , Pu-Dung-Hsin District, Shang-Hai City, China  
TEL : 86-21-5895-7671 ~ 4 FAX : 86-21-38950165