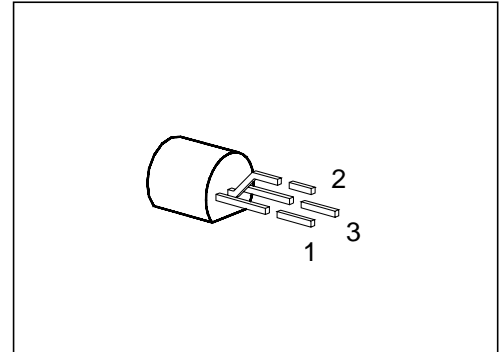


## NPN Silicon AF Transistors

**BC 337**  
**BC 338**

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 327, BC 328 (PNP)



| Type      | Marking | Ordering Code  | Pin Configuration |   |   | Package <sup>1)</sup> |
|-----------|---------|----------------|-------------------|---|---|-----------------------|
|           |         |                | 1                 | 2 | 3 |                       |
| BC 337    | —       | Q62702-C313    | C                 | B | E | TO-92                 |
| BC 337-16 |         | Q62702-C313-V3 |                   |   |   |                       |
| BC 337-25 |         | Q62702-C313-V1 |                   |   |   |                       |
| BC 337-40 |         | Q62702-C313-V2 |                   |   |   |                       |
| BC 338    |         | Q62702-C314    |                   |   |   |                       |
| BC 338-16 |         | Q62702-C314-V1 |                   |   |   |                       |
| BC 338-25 |         | Q62702-C314-V2 |                   |   |   |                       |
| BC 338-40 |         | Q62702-C314-V3 |                   |   |   |                       |

<sup>1)</sup> For detailed information see chapter Package Outlines.

## Maximum Ratings

| Parameter                                     | Symbol    | Values         |        | Unit |
|---|-----------|----------------|--------|------|
|   |           | BC 337         | BC 338 |      |
| Collector-emitter voltage                     | $V_{CE0}$ | 45             | 25     | V    |
| Collector-base voltage                        | $V_{CB0}$ | 50             | 30     |      |
| Emitter-base voltage                          | $V_{EB0}$ | 5              |        |      |
| Collector current                             | $I_C$     | 800            |        | mA   |
| Peak collector current                        | $I_{CM}$  | 1              |        | A    |
| Base current                                  | $I_B$     | 100            |        | mA   |
| Peak base current                             | $I_{BM}$  | 200            |        |      |
| Total power dissipation, $T_C = 66\text{ °C}$ | $P_{tot}$ | 625            |        | mW   |
| Junction temperature                          | $T_j$     | 150            |        | °C   |
| Storage temperature range                     | $T_{stg}$ | – 65 ... + 150 |        |      |

## Thermal Resistance

|                               |              |       |     |
|-------------------------------|--------------|-------|-----|
| Junction - ambient            | $R_{th\ JA}$ | ≤ 200 | K/W |
| Junction - case <sup>1)</sup> | $R_{th\ JC}$ | ≤ 135 |     |

<sup>1)</sup> Mounted on Al heat sink 15 mm × 25 mm × 0.5 mm.

## Electrical Characteristics

at  $T_A = 25\text{ °C}$ , unless otherwise specified.

| Parameter   | Symbol        | Values |      |      | Unit          |
|---|---------------|--------|------|------|---------------|
|   |               | min.   | typ. | max. |               |
| Collector-emitter breakdown voltage<br>$I_C = 10\text{ mA}$                                     | $V_{(BR)CE0}$ |        |      |      | V             |
| BC 337  |               | 45     | –    | –    |               |
| BC 338  |               | 25     | –    | –    |               |
| Collector-base breakdown voltage<br>$I_C = 100\text{ }\mu\text{A}$                              | $V_{(BR)CB0}$ |        |      |      |               |
| BC 337  |               | 50     | –    | –    |               |
| BC 338  |               | 30     | –    | –    |               |
| Emitter-base breakdown voltage<br>$I_E = 10\text{ }\mu\text{A}$                                 | $V_{(BR)EB0}$ | 5      | –    | –    |               |
| Collector cutoff current<br>$V_{CB} = 25\text{ V}$  | $I_{CB0}$     |        |      |      | nA            |
| BC 338  |               | –      | –    | 100  |               |
| $V_{CB} = 45\text{ V}$  |               |        |      |      | nA            |
| BC 337  |               | –      | –    | 100  |               |
| $V_{CB} = 25\text{ V}, T_A = 150\text{ °C}$   |               |        |      |      | $\mu\text{A}$ |
| BC 338  |               | –      | –    | 10   |               |
| $V_{CB} = 45\text{ V}, T_A = 150\text{ °C}$   |               |        |      |      | $\mu\text{A}$ |
| BC 337  |               | –      | –    | 10   |               |
| Emitter cutoff current<br>$V_{EB} = 4\text{ V}$   | $I_{EB0}$     | –      | –    | 100  | nA            |
| DC current gain <sup>1)</sup><br>$I_C = 100\text{ mA}; V_{CE} = 1\text{ V}$                     | $h_{FE}$      |        |      |      | –             |
| BC 337/16; BC 338/16  |               | 100    | 160  | 250  |               |
| BC 337/25; BC 338/25  |               | 160    | 250  | 400  |               |
| BC 337/40; BC 338/40  |               | 250    | 350  | 630  |               |
| $I_C = 300\text{ mA}; V_{CE} = 1\text{ V}$  |               |        |      |      |               |
| BC 337/16; BC 338/16  |               | 60     | –    | –    |               |
| BC 337/25; BC 338/25  |               | 100    | –    | –    |               |
| BC 337/40; BC 338/40  |               | 170    | –    | –    |               |
| Collector-emitter saturation voltage <sup>1)</sup><br>$I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | $V_{CEsat}$   | –      | –    | 0.7  | V             |
| Base-emitter saturation voltage<br>$I_C = 500\text{ mA}; I_B = 50\text{ mA}$                    | $V_{BEsat}$   | –      | –    | 2    |               |

<sup>1)</sup> Pulse test:  $t \leq 300\text{ }\mu\text{s}, D \leq 2\text{ %}$ .

## Electrical Characteristics

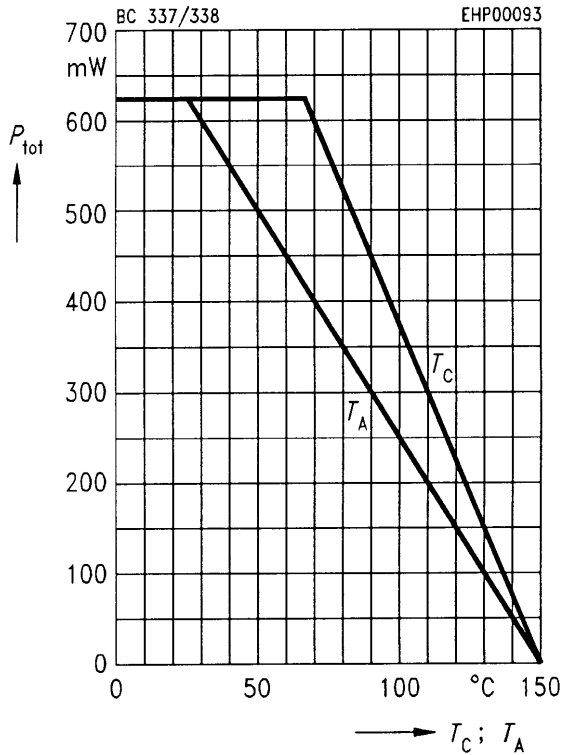
at  $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified.

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

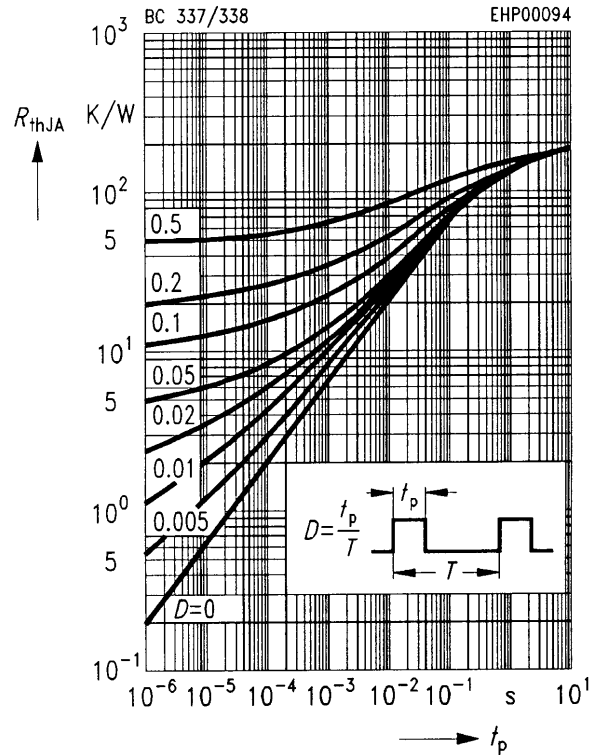
### AC characteristics

|  |           |   |     |   |     |
|--|-----------|---|-----|---|-----|
| Transition frequency<br>$I_C = 50\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $f = 20\text{ MHz}$ | $f_t$     | – | 170 | – | MHz |
| Output capacitance<br>$V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                          | $C_{obo}$ | – | 8   | – | pF  |
| Input capacitance<br>$V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$                          | $C_{ibo}$ | – | 60  | – |     |

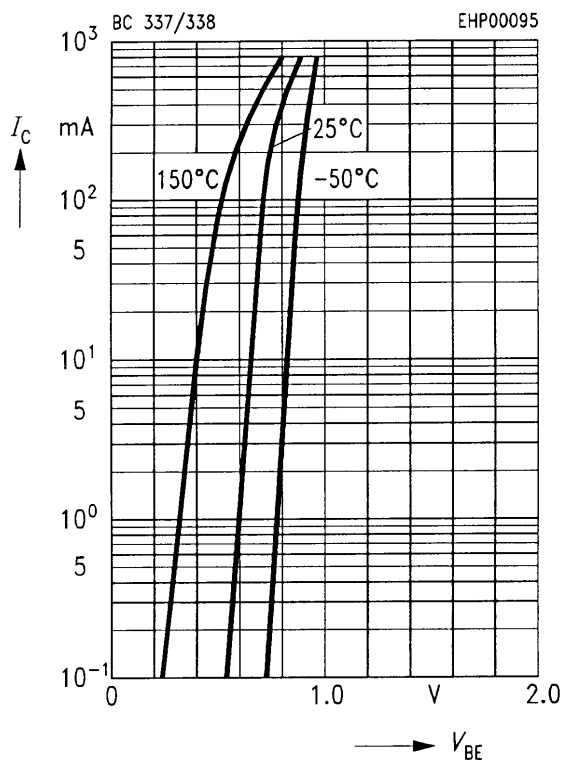
**Total power dissipation**  $P_{tot} = f(T_A; T_C)$



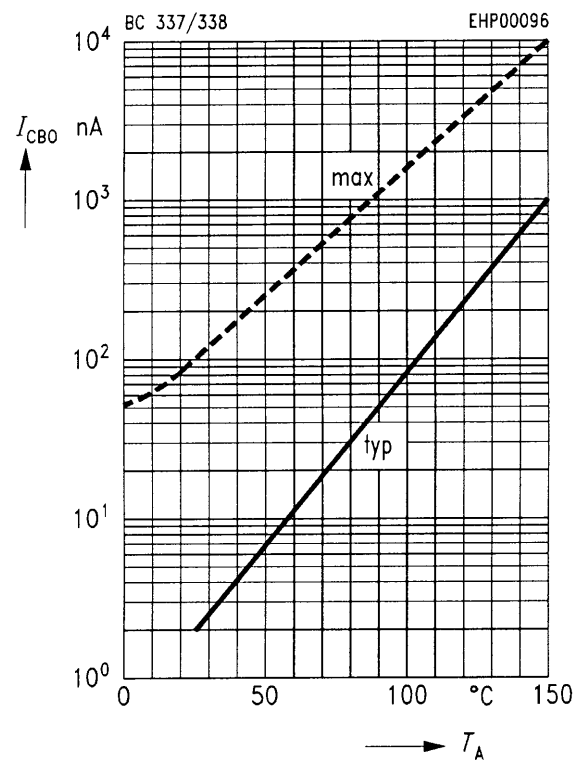
**Permissible pulse load**  $R_{thJA} = f(t_p)$



**Collector current**  $I_C = f(V_{BE})$   
 $V_{CE} = 1 V$

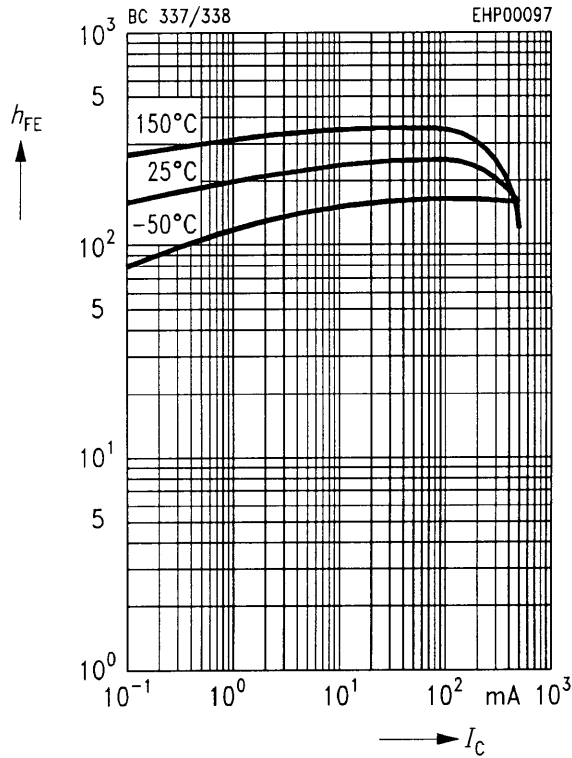


**Collector cutoff current**  $I_{CB0} = f(T_A)$   
 $V_{CB} = 45 V$



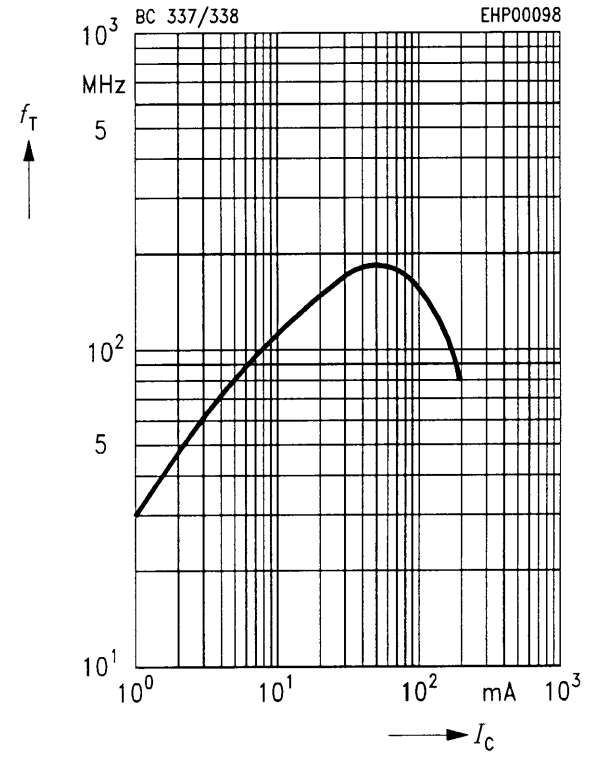
### DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 1 \text{ V}$



### Transition frequency $f_T = f(I_C)$

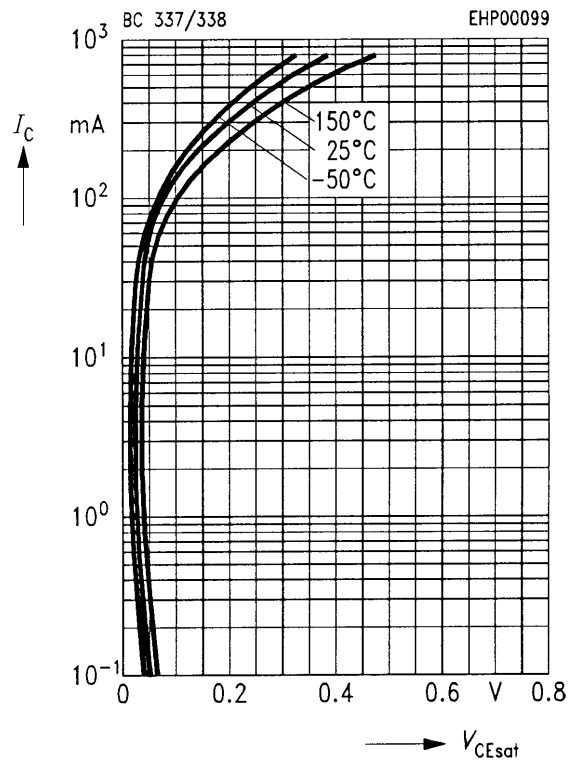
$f = 20 \text{ MHz}, T_A = 25^\circ \text{C}$



### Collector-emitter saturation voltage

$V_{CEsat} = f(I_C)$

$h_{FE} = 10$



### Base-emitter saturation voltage

$V_{BEsat} = f(I_C)$

$h_{FE} = 10$

