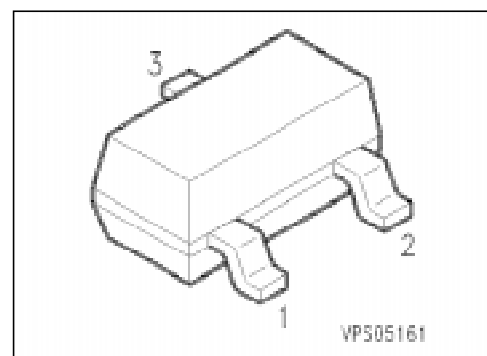


## NPN Silicon High-Voltage Transistors

**BFN 24**  
**BFN 26**

- Suitable for video output stages in TV sets and switching power supplies
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary types: BFN 25, BFN 27 (PNP)



| Type             | Marking    | Ordering Code<br>(tape and reel) | Pin Configuration |   |   | Package <sup>1)</sup> |
|------------------|------------|----------------------------------|-------------------|---|---|-----------------------|
|                  |            |                                  | 1                 | 2 | 3 |                       |
| BFN 24<br>BFN 26 | FHs<br>FJs | Q62702-F1065<br>Q62702-F976      | B                 | E | C | SOT-23                |

### Maximum Ratings

| Parameter                                                   | Symbol    | Values         |        | Unit               |
|-------------------------------------------------------------|-----------|----------------|--------|--------------------|
|                                                             |           | BFN 24         | BFN 26 |                    |
| Collector-emitter voltage                                   | $V_{CE0}$ | 250            | 300    | V                  |
| Collector-base voltage                                      | $V_{CB0}$ | 250            | 300    |                    |
| Emitter-base voltage                                        | $V_{EB0}$ | 5              |        |                    |
| Collector current                                           | $I_C$     | 200            |        | mA                 |
| Peak collector current                                      | $I_{CM}$  | 500            |        |                    |
| Base current                                                | $I_B$     | 100            |        |                    |
| Peak base current                                           | $I_{BM}$  | 200            |        |                    |
| Total power dissipation, $T_S = 74\text{ }^{\circ}\text{C}$ | $P_{tot}$ | 360            |        | mW                 |
| Junction temperature                                        | $T_j$     | 150            |        | $^{\circ}\text{C}$ |
| Storage temperature range                                   | $T_{stg}$ | − 65 ... + 150 |        |                    |

### Thermal Resistance

|                                  |             |            |     |
|----------------------------------|-------------|------------|-----|
| Junction - ambient <sup>2)</sup> | $R_{th JA}$ | $\leq 280$ | K/W |
| Junction - soldering point       | $R_{th JS}$ | $\leq 210$ |     |

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

<sup>2)</sup> Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm<sup>2</sup> Cu.

## Electrical Characteristics

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

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

### DC characteristics

|                                                                                                                                                                                                                         |               |                      |                  |                        |                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------|------------------|------------------------|--------------------------------------------|
| Collector-emitter breakdown voltage<br>$I_C = 1\text{ mA}$                                                                                                                                                              | $V_{(BR)CE0}$ | 250<br>300           | —<br>—           | —<br>—                 | V                                          |
| Collector-base breakdown voltage<br>$I_C = 100\text{ }\mu\text{A}$                                                                                                                                                      | $V_{(BR)CB0}$ | 250<br>300           | —<br>—           | —<br>—                 |                                            |
| Emitter-base breakdown voltage<br>$I_E = 100\text{ }\mu\text{A}$                                                                                                                                                        | $V_{(BR)EB0}$ | 5                    | —                | —                      |                                            |
| Collector-base cutoff current<br>$V_{CB} = 200\text{ V}$ BFN 24<br>$V_{CB} = 250\text{ V}$ BFN 26<br>$V_{CB} = 200\text{ V}, T_A = 150^\circ\text{C}$ BFN 24<br>$V_{CB} = 250\text{ V}, T_A = 150^\circ\text{C}$ BFN 26 | $I_{CB0}$     | —<br>—<br>—<br>—     | —<br>—<br>—<br>— | 100<br>100<br>20<br>20 | nA<br>nA<br>$\mu\text{A}$<br>$\mu\text{A}$ |
| Emitter-base cutoff current<br>$V_{EB} = 3\text{ V}$                                                                                                                                                                    | $I_{EB0}$     | —                    | —                | 100                    | nA                                         |
| DC current gain<br>$I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$<br>$I_C = 10\text{ mA}, V_{CE} = 10\text{ V}^{1)}$<br>$I_C = 30\text{ mA}, V_{CE} = 10\text{ V}^{1)}$ BFN 24<br>BFN 26                                     | $h_{FE}$      | 25<br>40<br>40<br>30 | —<br>—<br>—<br>— | —<br>—<br>—<br>—       | —                                          |
| Collector-emitter saturation voltage <sup>1)</sup><br>$I_C = 20\text{ mA}, I_B = 2\text{ mA}$ BFN 24<br>BFN 26                                                                                                          | $V_{CEsat}$   | —<br>—               | —<br>—           | 0.4<br>0.5             | V                                          |
| Base-emitter saturation voltage <sup>1)</sup><br>$I_C = 20\text{ mA}, I_B = 2\text{ mA}$                                                                                                                                | $V_{BEsat}$   | —                    | —                | 0.9                    |                                            |

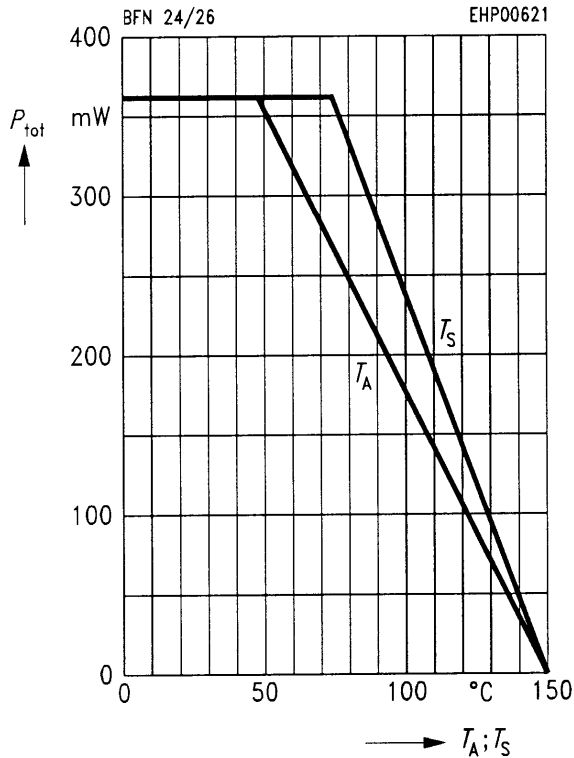
### AC characteristics

|                                                                                       |           |   |     |   |     |
|---------------------------------------------------------------------------------------|-----------|---|-----|---|-----|
| Transition frequency<br>$I_C = 20\text{ mA}, V_{CE} = 10\text{ V}, f = 20\text{ MHz}$ | $f_t$     | — | 70  | — | MHz |
| Output capacitance<br>$V_{CB} = 30\text{ V}, f = 1\text{ MHz}$                        | $C_{obo}$ | — | 1.5 | — | pF  |

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

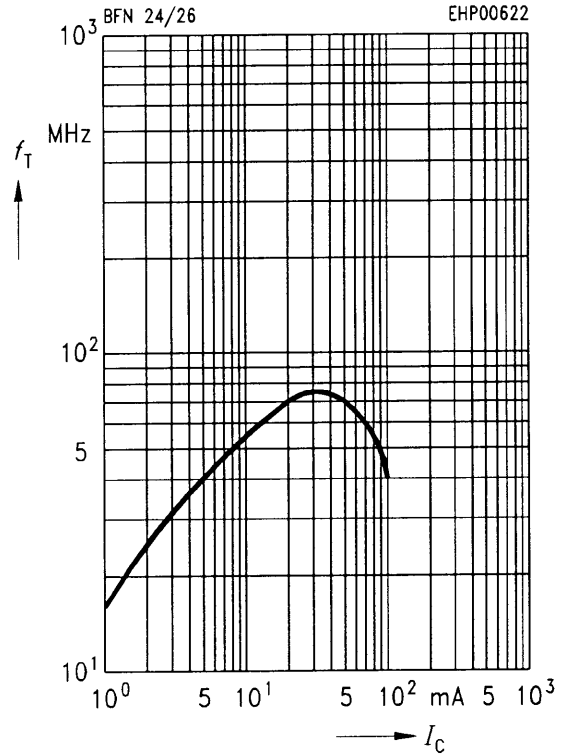
## Total power dissipation $P_{\text{tot}} = f(T_A^*; T_S)$

\* Package mounted on epoxy



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

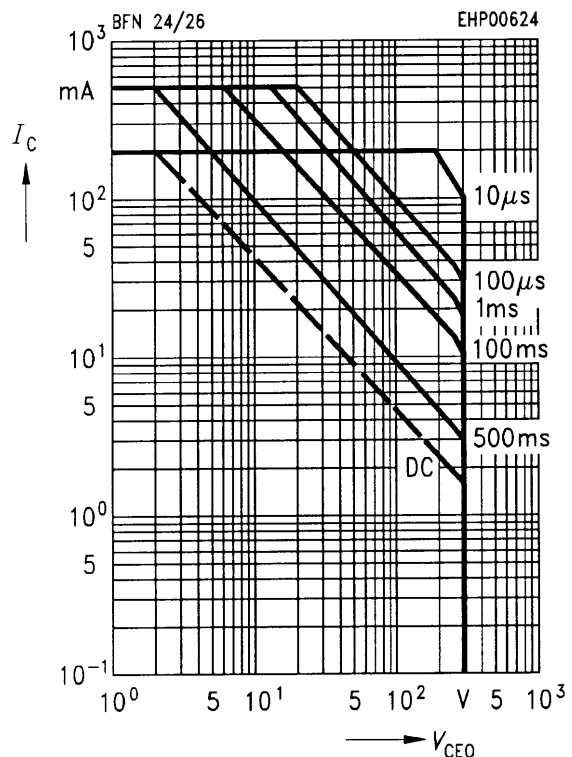
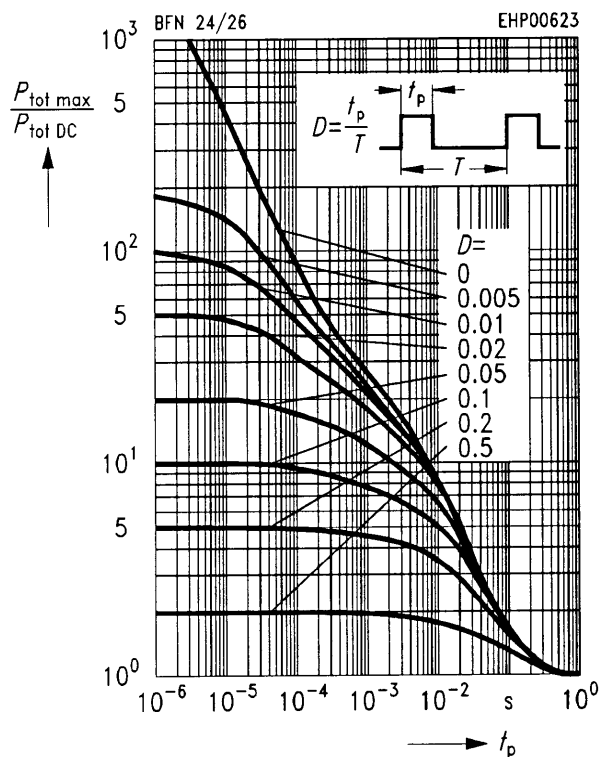
$V_{CE} = 10 \text{ V}$



## Permissible pulse load $P_{\text{tot max}} / P_{\text{tot DC}} = f(t_p)$

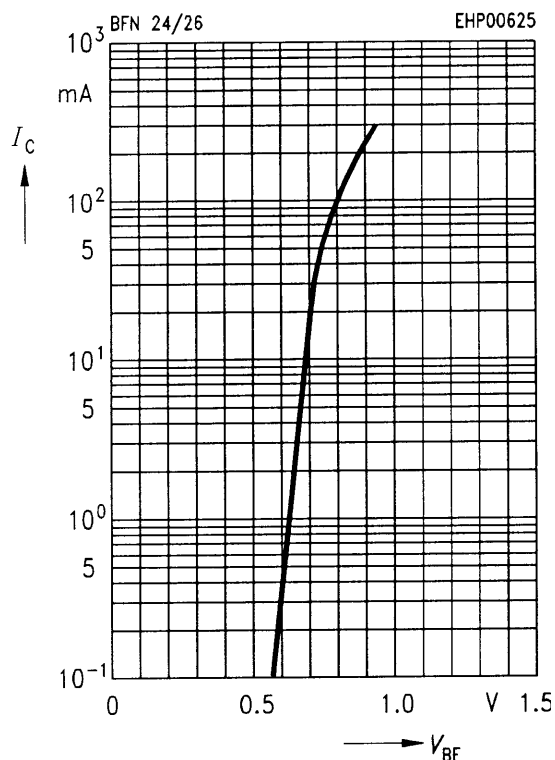
## Operating range $I_C = f(V_{CE0})$

$T_A = 25 \text{ °C}, D = 0$



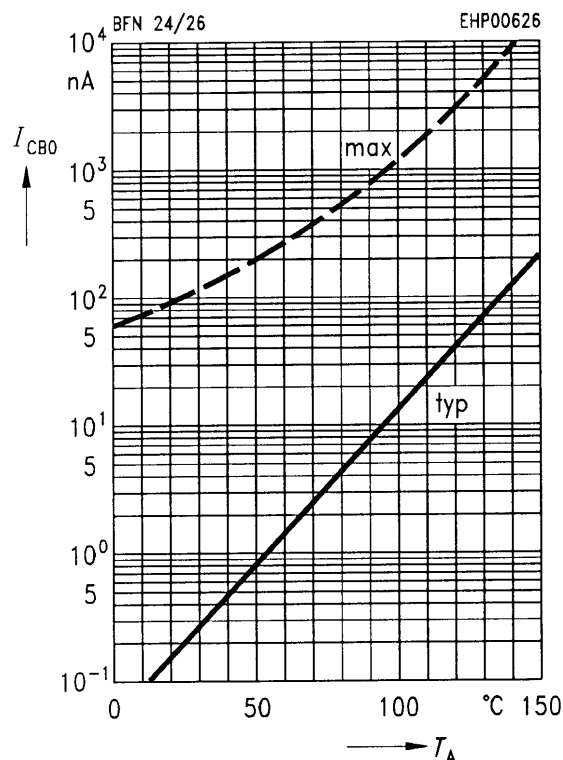
## Collector current $I_C = f(V_{BE})$

$V_{CE} = 10 \text{ V}$



## Collector cutoff current $I_{CB0} = f(T_A)$

$V_{CB} = 200 \text{ V}$



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

$V_{CE} = 10 \text{ V}$

