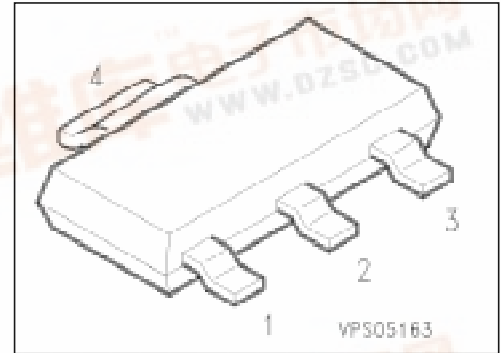


# SIEMENS

## PNP Silicon High-Voltage Transistors

**BF 721**  
**BF 723**

- Suitable for video output stages in TV sets and switching power supplies
- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BF 720/722 (NPN)



| Type             | Marking          | Ordering Code<br>(tape and reel) | Pin Configuration |   |   |   | Package <sup>1)</sup> |
|------------------|------------------|----------------------------------|-------------------|---|---|---|-----------------------|
|                  |                  |                                  | 1                 | 2 | 3 | 4 |                       |
| BF 721<br>BF 723 | BF 721<br>BF 723 | Q62702-F1239<br>Q62702-F1309     | B                 | C | E | C | SOT-223               |

### Maximum Ratings

| Parameter                                                            | Symbol    | Values         |        | Unit               |
|----------------------------------------------------------------------|-----------|----------------|--------|--------------------|
|                                                                      |           | BF 721         | BF 723 |                    |
| Collector-emitter voltage                                            | $V_{CE0}$ | —              | 250    | V                  |
|                                                                      | $V_{CER}$ | 300            | —      |                    |
| Collector-base voltage                                               | $V_{CB0}$ | 300            | 250    |                    |
| Emitter-base voltage                                                 | $V_{EB0}$ | 5              | 5      |                    |
| Collector current                                                    | $I_C$     | 50             |        | mA                 |
| Peak collector current                                               | $I_{CM}$  | 100            |        |                    |
| Total power dissipation, $T_S \leq 110\text{ }^{\circ}\text{C}^{2)}$ | $P_{tot}$ | 1.5            |        | W                  |
| Junction temperature                                                 | $T_j$     | 150            |        | $^{\circ}\text{C}$ |
| Storage temperature range                                            | $T_{stg}$ | − 65 ... + 150 |        |                    |

### Thermal Resistance

|                                  |             |           |     |
|----------------------------------|-------------|-----------|-----|
| Junction - ambient <sup>2)</sup> | $R_{th JA}$ | $\leq 87$ | K/W |
| Junction - soldering point       | $R_{th JS}$ | $\leq 27$ |     |

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

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

## DC characteristics

|                                                                                                                                                                                              |               |     |   |     |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----|---|-----|---------------|
| Collector-emitter breakdown voltage<br>$I_C = 1\text{ mA}$ , $I_B = 0$ BF 723                                                                                                                | $V_{(BR)CE0}$ | 250 | — | —   | V             |
| Collector-emitter breakdown voltage<br>$I_C = 10\text{ }\mu\text{A}$ , $R_{BE} = 2.7\text{ k}\Omega$ BF 721                                                                                  | $V_{(BR)CER}$ | 300 | — | —   |               |
| Collector-base breakdown voltage<br>$I_C = 10\text{ }\mu\text{A}$ , $I_B = 0$ BF 721<br>BF 723                                                                                               | $V_{(BR)CB0}$ | 300 | — | —   |               |
|                                                                                                                                                                                              |               | 250 | — | —   |               |
| Emitter-base breakdown voltage<br>$I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$                                                                                                                  | $V_{(BR)EB0}$ | 5   | — | —   |               |
| Collector-base cutoff current<br>$V_{CB} = 200\text{ V}$ , $I_E = 0$                                                                                                                         | $I_{CB0}$     | —   | — | 10  | nA            |
| Collector-emitter cutoff current<br>$V_{CE} = 200\text{ V}$ , $R_{BE} = 2.7\text{ k}\Omega$<br>$V_{CE} = 200\text{ V}$ , $R_{BE} = 2.7\text{ k}\Omega$ , $T_A = 150\text{ }^{\circ}\text{C}$ | $I_{CER}$     | —   | — | 50  | nA            |
|                                                                                                                                                                                              |               | —   | — | 10  | $\mu\text{A}$ |
| Emitter-base cutoff current<br>$V_{EB} = 5\text{ V}$ , $I_C = 0$                                                                                                                             | $I_{EB0}$     | —   | — | 10  | $\mu\text{A}$ |
| DC current gain <sup>1)</sup><br>$I_C = 25\text{ mA}$ , $V_{CE} = 20\text{ V}$                                                                                                               | $h_{FE}$      | 50  | — | —   | —             |
| Collector-emitter saturation voltage<br>$I_C = 30\text{ mA}$ , $I_B = 5\text{ mA}$                                                                                                           | $V_{CEsat}$   | —   | — | 0.6 | V             |

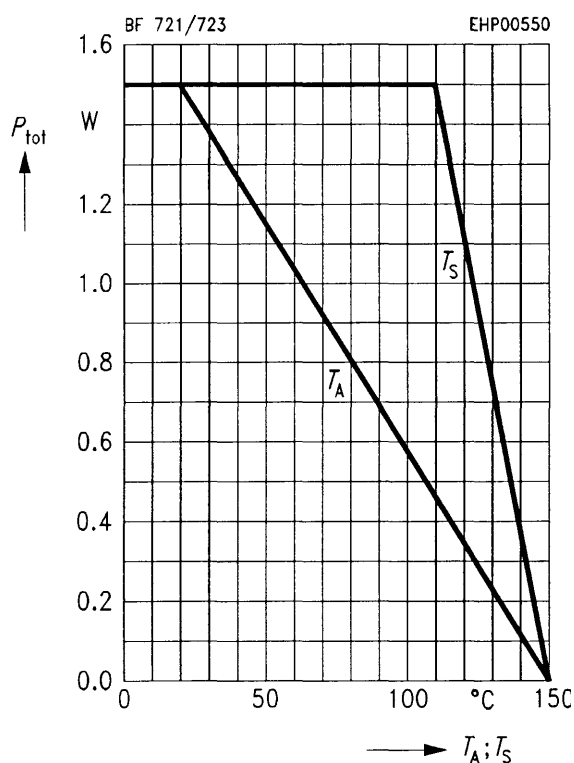
## AC characteristics

|                                                                                              |           |   |     |   |     |
|----------------------------------------------------------------------------------------------|-----------|---|-----|---|-----|
| Transition frequency<br>$I_C = 10\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 100\text{ MHz}$ | $f_T$     | — | 100 | — | MHz |
| Collector-base capacitance<br>$V_{CB} = 30\text{ V}$ , $I_C = 0$ , $f = 1\text{ MHz}$        | $C_{obo}$ | — | 0.8 | — | pF  |

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

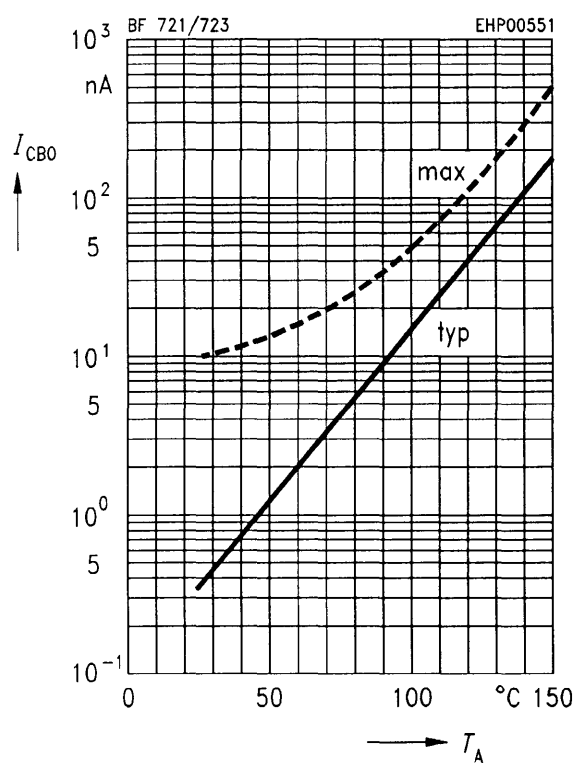
**Total power dissipation**  $P_{\text{tot}} = f(T_A^*; T_S)$

\* Package mounted on epoxy



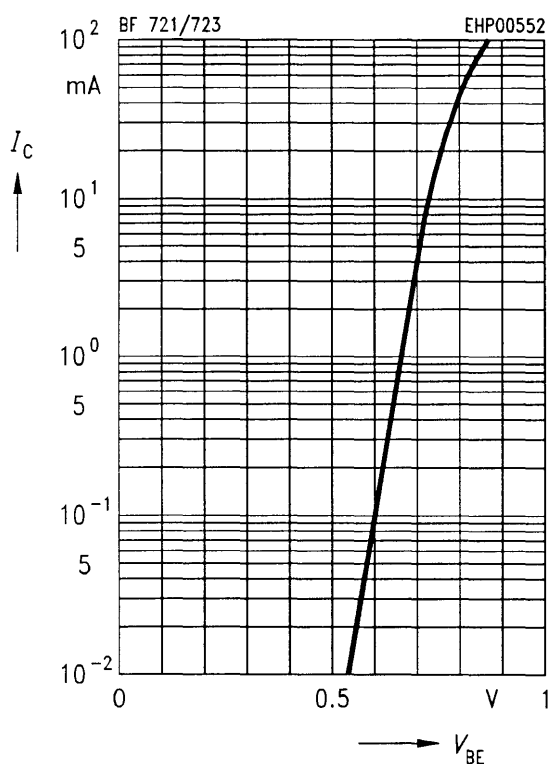
**Collector cutoff current**  $I_{\text{CB0}} = f(T_A)$

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

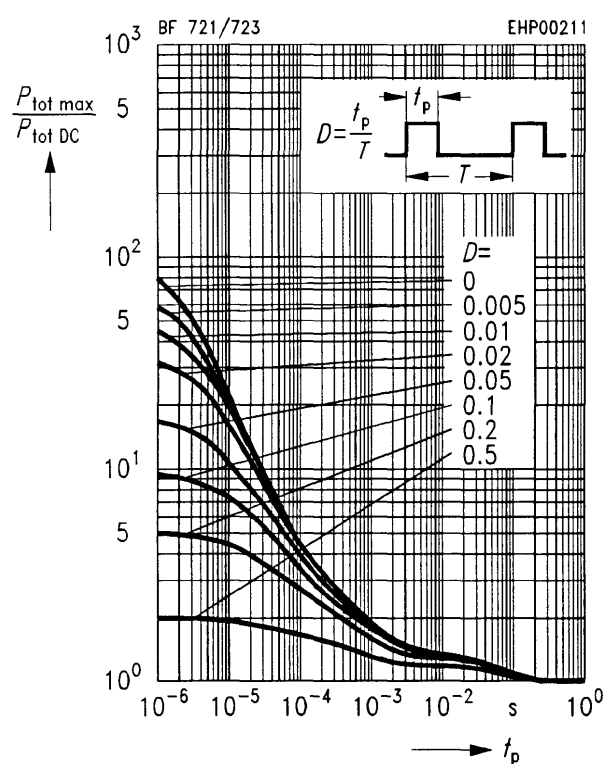


**Collector current**  $I_C = f(V_{\text{BE}})$

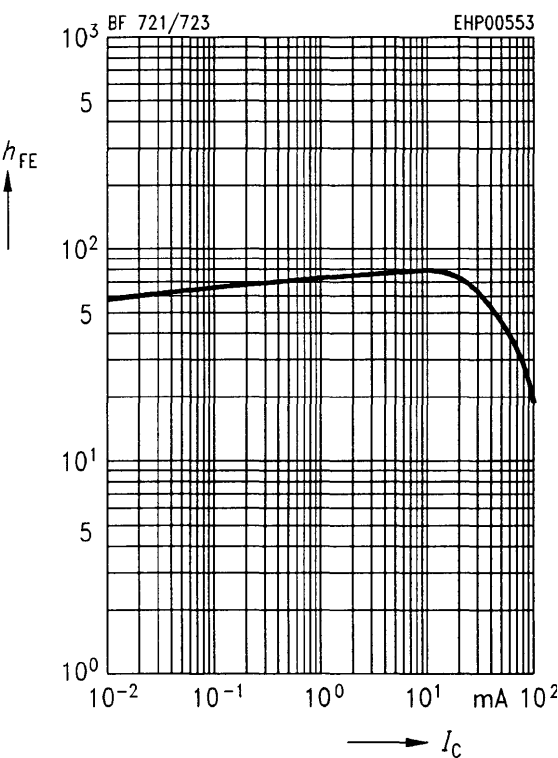
$V_{\text{CE}} = 20 \text{ V}$



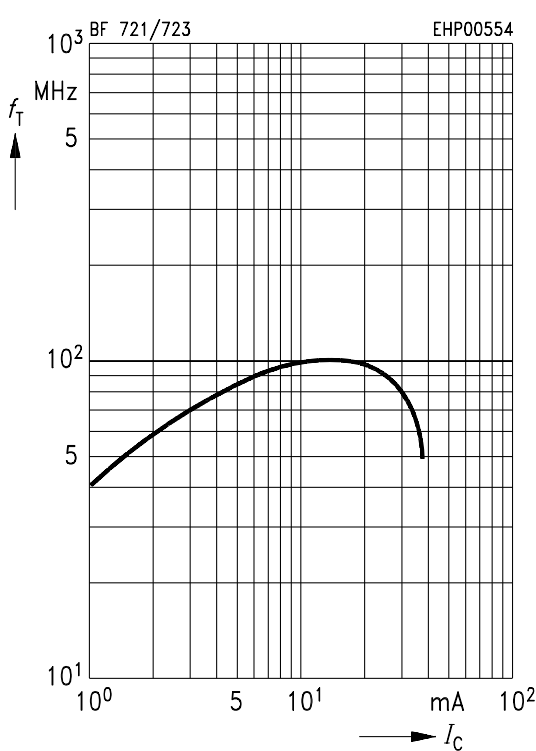
**Permissible pulse load**  $P_{\text{tot max}}/P_{\text{tot DC}} = f(t_p)$



**DC current gain  $h_{FE} = f(I_C)$**   
 $V_{CE} = 20 \text{ V}$



**Transition frequency  $f_T = f(I_C)$**   
 $V_{CE} = 10 \text{ V}, f = 100 \text{ MHz}$



**Collector-base capacitance  $C_{obo} = f(V_{CB})$**   
 $I_C = 0, f = 1 \text{ MHz}$

