

PNP Silicon High-Voltage Transistors

BFN 37
BFN 39

- Suitable for video output stages in TV sets and switching power supplies
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary types: BFN 36, BFN 38 (NPN)



| Type | Marking | Ordering Code (tape and reel) | Pin Configuration | | | | Package ¹⁾ |
|------------------|------------------|----------------------------------|-------------------|---|---|---|-----------------------|
| | | | 1 | 2 | 3 | 4 | |
| BFN 37 BFN 39 | BFN 37 BFN 39 | Q62702-F1304 Q62702-F1305 | B | C | E | C | SOT-223 |

Maximum Ratings

| Parameter | Symbol | Values | | Unit |
|--|-----------|----------------|--------|------|
| | | BFN 37 | BFN 39 | |
| 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, $T_s = 124\text{ °C}$ | P_{tot} | 1.5 | | W |
| Junction temperature | T_j | 150 | | °C |
| Storage temperature range | T_{stg} | - 65 ... + 150 | | |

Thermal Resistance

| | | | |
|----------------------------------|--------------|------|-----|
| Junction - ambient ²⁾ | $R_{th\ JA}$ | ≤ 72 | K/W |
| Junction - soldering point | $R_{th\ JS}$ | ≤ 17 | |

¹⁾ For detailed information see chapter Package Outlines.

²⁾ Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm² Cu.

Electrical Characteristics

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

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

DC characteristics

| | | | | | |
|--|---------------|----------------------|------------------|------------------------|--|
| Collector-emitter breakdown voltage $I_C = 1\text{ mA}, I_B = 0$ | $V_{(BR)CE0}$ | 250 300 | – – | – – | V |
| Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}, I_B = 0$ | $V_{(BR)CB0}$ | 250 300 | – – | – – | |
| Emitter-base breakdown voltage $I_E = 100\text{ }\mu\text{A}, I_B = 0$ | $V_{(BR)EB0}$ | 5 | – | – | |
| Collector-base cutoff current $V_{CB} = 200\text{ V}$ $V_{CB} = 250\text{ V}$ $V_{CB} = 200\text{ V}, T_A = 150\text{ °C}$ $V_{CB} = 250\text{ V}, T_A = 150\text{ °C}$ | I_{CB0} | – – – – | – – – – | 100 100 20 20 | nA nA μA μA |
| Emitter-base cutoff current $V_{EB} = 4\text{ V}, I_C = 0$ | I_{EB0} | – | – | 100 | nA |
| DC current gain ¹⁾ $I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 30\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 30\text{ mA}, V_{CE} = 10\text{ V}$ | h_{FE} | 25 40 40 30 | – – – – | – – – – | – |
| Collector-emitter saturation voltage ¹⁾ $I_C = 20\text{ mA}, I_B = 2\text{ mA}$ | V_{CEsat} | – – | – – | 0.4 0.5 | V |
| Base-emitter saturation voltage ¹⁾ $I_C = 20\text{ mA}, I_B = 2\text{ mA}$ | V_{BEsat} | – | – | 0.9 | |

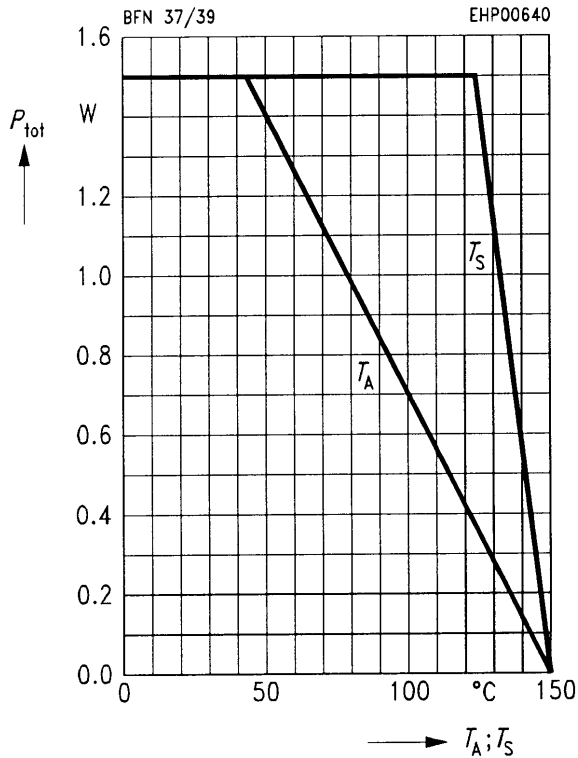
AC characteristics

| | | | | | |
|--|-----------|---|----------|---|-----|
| Transition frequency $I_C = 20\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$ | f_t | – | 100 0 | – | MHz |
| Output capacitance $V_{CB} = 30\text{ V}, f = 1\text{ MHz}$ | C_{obo} | – | 2.5 | – | pF |

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

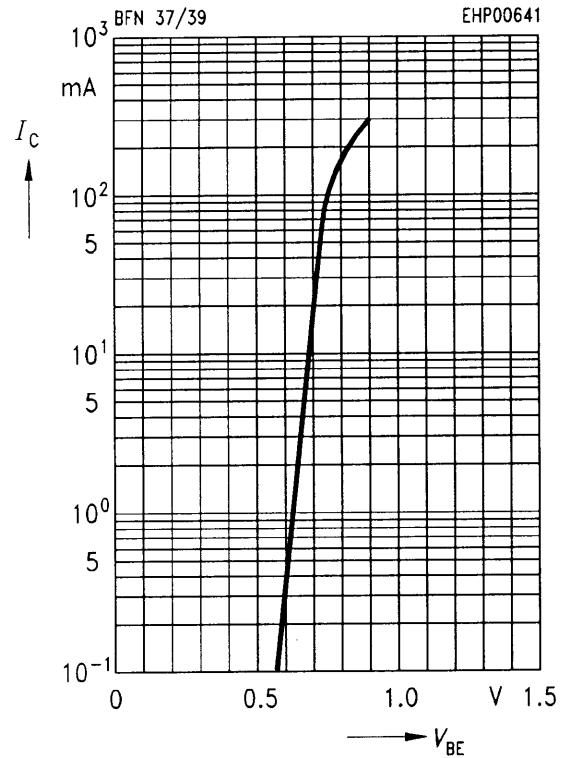
Total power dissipation $P_{tot} = f(T_A^*; T_S)$

* Package mounted on epoxy

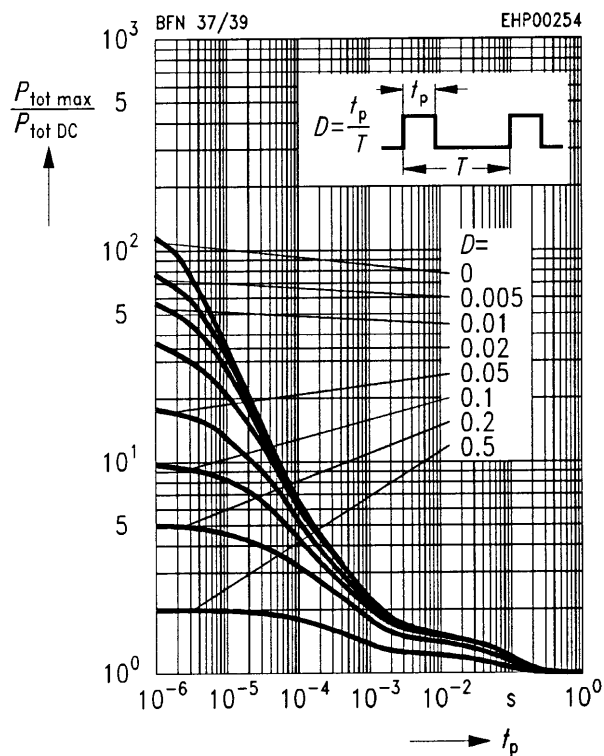


Collector current $I_C = f(V_{BE})$

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

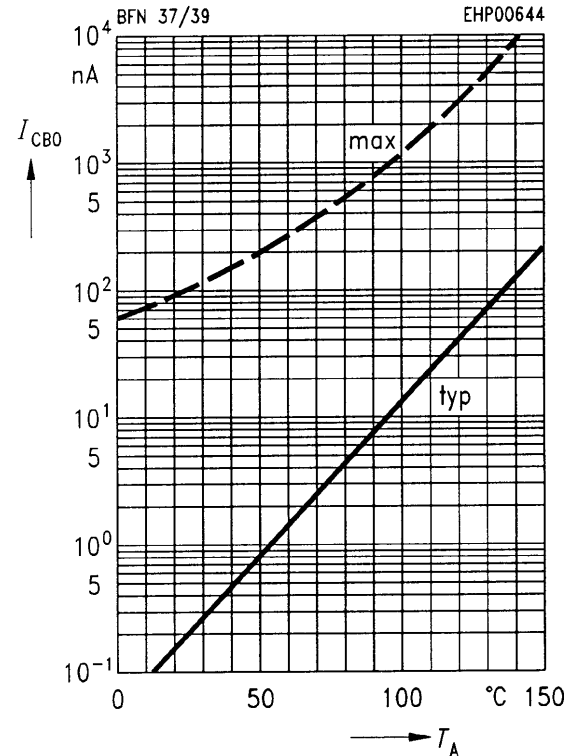


Permissible pulse load $P_{tot\ max}/P_{tot\ DC} = f(t_p)$



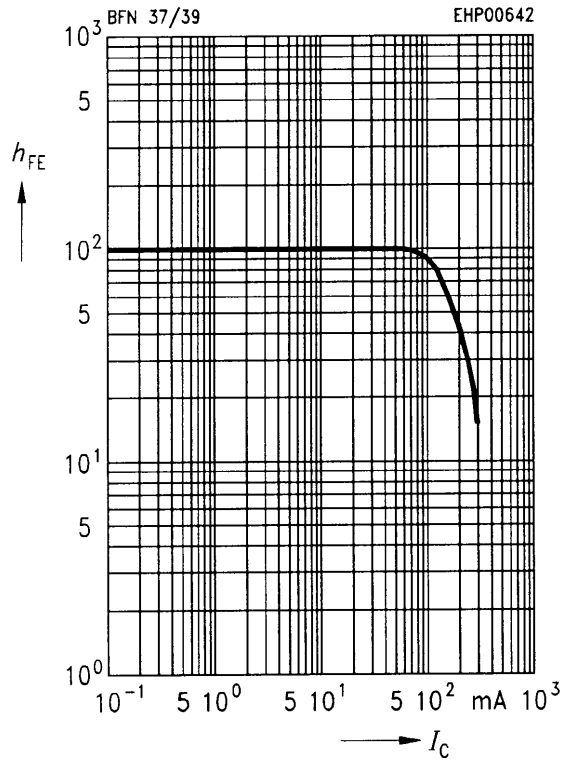
Collector cutoff current $I_{CB0} = f(T_A)$

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



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

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



Transition frequency $f_T = f(I_C)$

$V_{CE} = 10\text{ V}, f = 100\text{ MHz}$

