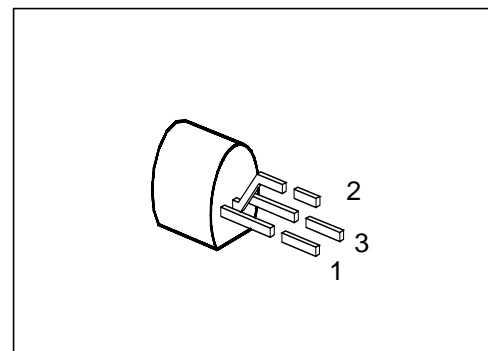


NPN Silicon AF Switching Transistor

BCX 12

- For general AF applications
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary type: BCX 13 (PNP)



| Type | Marking | Ordering Code | Pin Configuration | | | Package ¹⁾ |
|--------|---------|---------------|-------------------|---|---|-----------------------|
| | | | 1 | 2 | 3 | |
| BCX 12 | BCX 12 | Q62702-C25 | C | B | E | TO-92 |

Maximum Ratings

| Parameter | Symbol | Values | Unit |
|---|-----------|----------------|------|
| Collector-emitter voltage | V_{CE0} | 125 | V |
| Collector-base voltage | V_{CB0} | 125 | |
| 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 ²⁾ | $R_{th\ JC}$ | ≤ 135 | |

¹⁾ For detailed information see chapter Package Outlines.

²⁾ 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. | |

DC characteristics

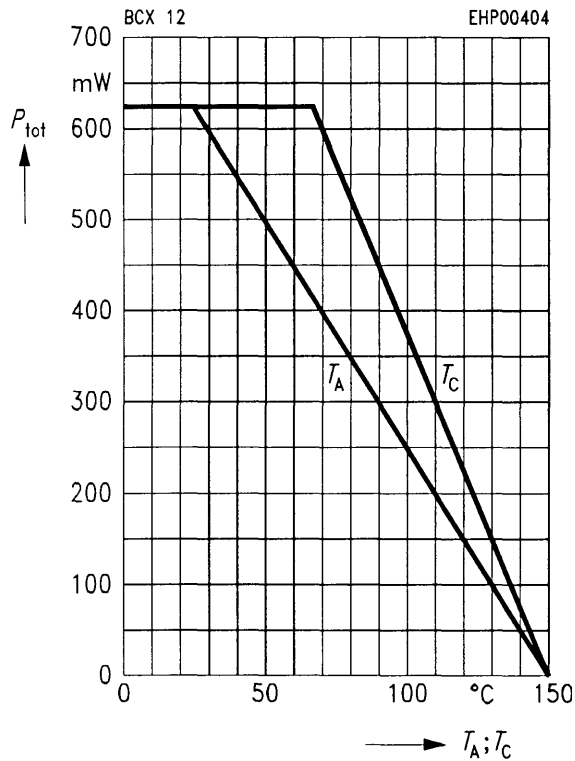
| | | | | | |
|--|---------------|----------------------|------------------|------------------|---------------------|
| Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$ | $V_{(BR)CE0}$ | 125 | — | — | V |
| Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_B = 0$ | $V_{(BR)CB0}$ | 125 | — | — | |
| Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$ | $V_{(BR)EBS}$ | 5 | — | — | |
| Collector-base cutoff current $V_{CB} = 100\text{ V}$, $I_E = 0$ $V_{CB} = 100\text{ V}$, $I_E = 0$, $T_A = 150\text{ °C}$ | I_{CB0} | — — | — — | 100 10 | nA μA |
| Emitter cutoff current $V_{EB} = 4\text{ V}$ | I_{EB0} | — | — | 100 | nA |
| DC current gain ¹⁾ $I_C = 1\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 10\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 100\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 200\text{ mA}$, $V_{CE} = 1\text{ V}$ | h_{FE} | 25 50 63 40 | — — — — | — — — — | — |
| Collector-emitter saturation voltage ¹⁾ $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$ | V_{CEsat} | — | — | 1.0 | V |
| Base-emitter saturation voltage ¹⁾ $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$ | V_{BEsat} | — | — | 1.6 | |

AC characteristics

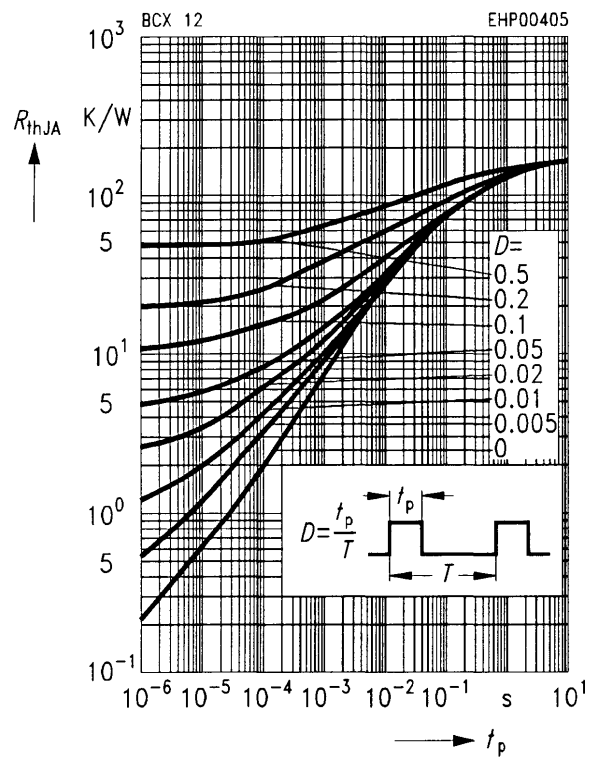
| | | | | | |
|--|-----------|---|-----|---|-----|
| Transition frequency $I_C = 20\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 20\text{ MHz}$ | f_T | — | 100 | — | MHz |
| Output capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$ | C_{obo} | — | 10 | — | pF |

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

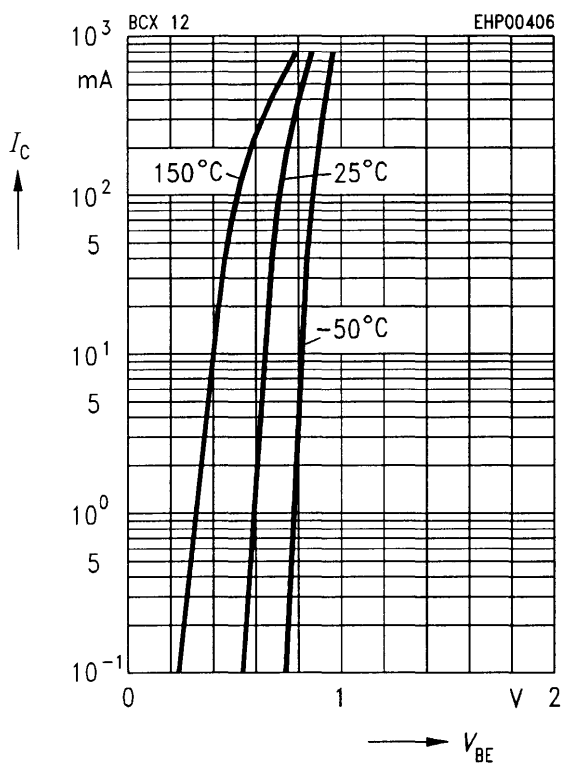
Total power dissipation $P_{\text{tot}} = f(T_A; T_C)$



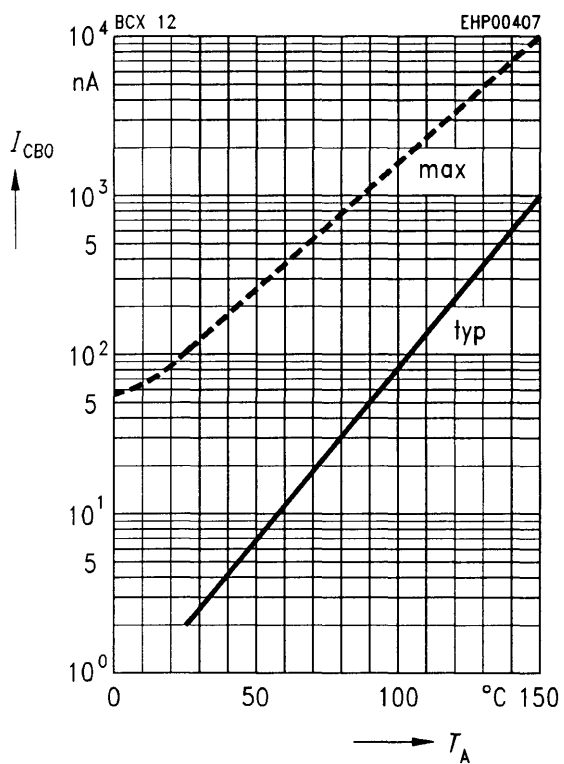
Permissible pulse load $R_{\text{thJA}} = f(t_p)$



Collector current $I_C = f(V_{\text{BE}})$
 $V_C = 1 \text{ V}$

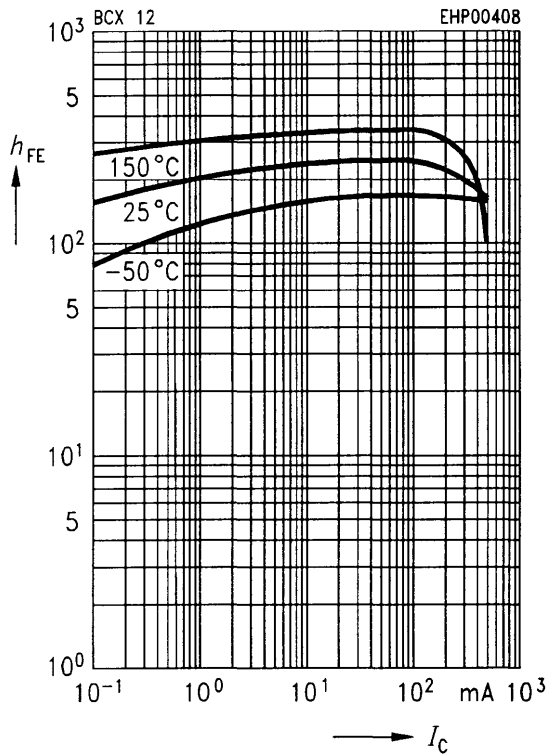


Collector cutoff current $I_{\text{CB0}} = f(T_A)$
 $V_{\text{CB}} = V_{\text{CBmax}}$



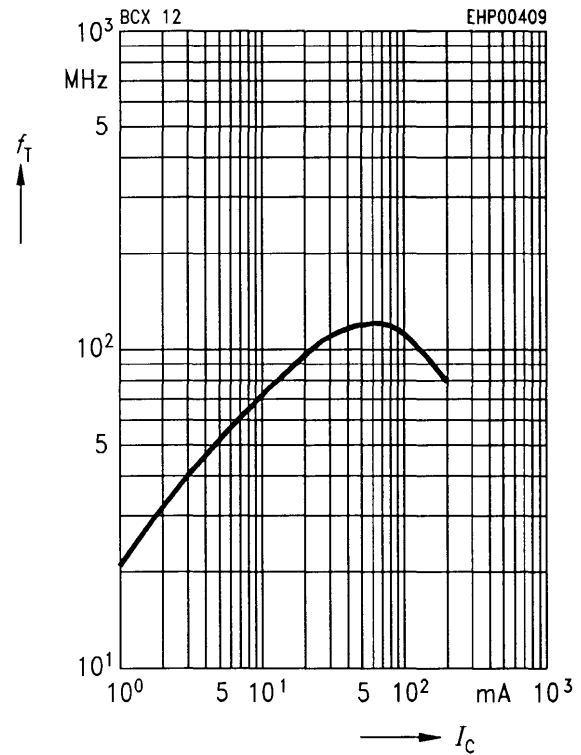
DC current gain $h_{FE} = f(I_C)$

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



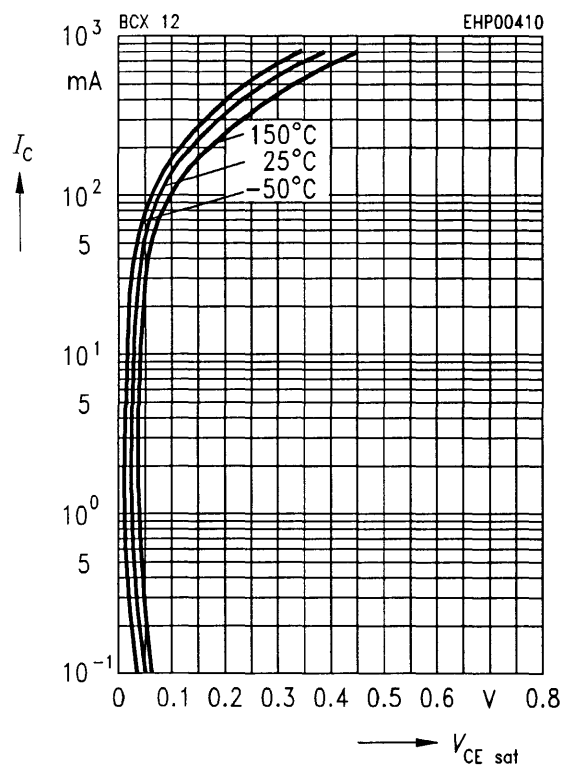
Transition frequency $f_T = f(I_C)$

$f = 20 \text{ MHz}$, $V_{CE} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$



Collector-emitter saturation voltage

$I_C = f(V_{CEsat}, h_{FE} = 10)$



Base-emitter saturation voltage

$I_C = f(V_{BEsat}, h_{FE} = 10)$

