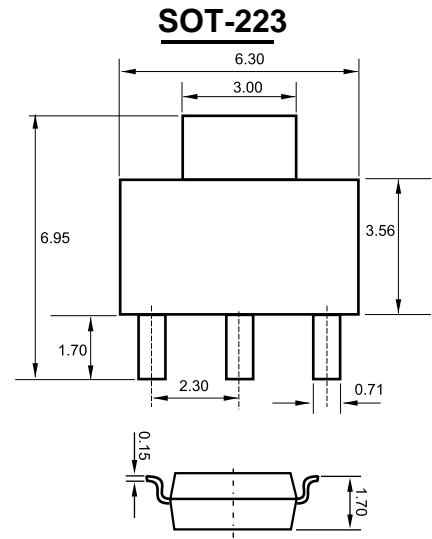




1. BASE
2. COLLECTOR
3. EMITTER

### Features

- ✧ For AF driver and output stages
- ✧ High collector current
- ✧ Low collector-emitter saturation voltage
- ✧ Complementary types: BCP54...BCP56 (NPN)



### MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Dimensions in inches and (millimeters)

| Symbol          | Parameter                              | BCP51     | BCP52 | BCP53 | Units                     |
|-----------------|--|-----------|-------|-------|---------------------------|
| $V_{CBO}$       | Collector-Base Voltage                 | -45       | -60   | -100  | V                         |
| $V_{CEO}$       | Collector-Emitter Voltage              | -45       | -60   | -80   | V                         |
| $V_{EBO}$       | Emitter-Base Voltage                   | -5        |       |       | V                         |
| $I_C$           | Collector Current -Continuous          | -1        |       |       | A                         |
| $P_C$           | Collector Power Dissipation            | 1.5       |       |       | W                         |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient | 94        |       |       | $^\circ\text{C}/\text{W}$ |
| $T_{stg}$       | Storage Temperature Range              | -65to+150 |       |       | $^\circ\text{C}$          |

### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^\circ\text{C}$ unless otherwise specified)

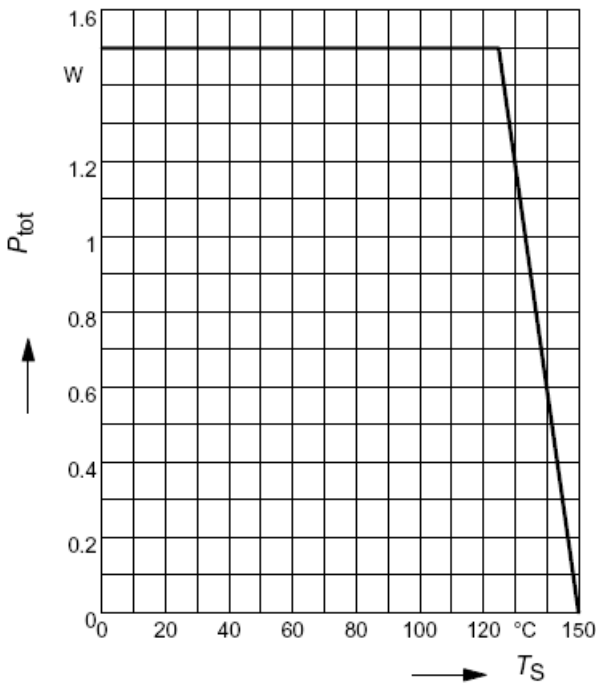
| Parameter                            | Symbol        | Test conditions   | MIN | MAX  | UNIT |
|--------------------------------------|---------------|---|-----|------|------|
| Collector-base breakdown voltage     | <b>BCP51</b>  | $I_C = -0.1\text{mA}, I_E = 0$                                | -45 |      | V    |
|                                      | <b>BCP52</b>  |   |     |      |      |
|                                      | <b>BCP53</b>  |   |     |      |      |
| Collector-emitter breakdown voltage  | <b>BCP51</b>  | $I_C = -10\text{mA}, I_B = 0$                                 | -45 |      | V    |
|                                      | <b>BCP52</b>  |   |     |      |      |
|                                      | <b>BCP53</b>  |   |     |      |      |
| Base-emitter breakdown voltage       | $V_{(BR)EBO}$ | $I_C = -10\mu\text{A}, I_E = 0$                               | -5  |      | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = -30\text{V}, I_E = 0$                               |     | -100 | nA   |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE} = -2\text{V}, I_C = -5\text{mA}$                      | 25  |      |      |
|                                      | $h_{FE(2)}$   | $V_{CE} = -2\text{V}, I_C = -150\text{mA}$                    | 63  | 250  |      |
|                                      | $h_{FE(3)}$   | $V_{CE} = -2\text{V}, I_C = -500\text{mA}$                    | 25  |      |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -500\text{mA}, I_B = -50\text{mA}$                     |     | -0.5 | V    |
| Base-emitter voltage                 | $V_{BE}$      | $V_{CE} = -2\text{V}, I_C = -500\text{mA}$                    |     | -1   | V    |
| Transition frequency                 | $f_T$         | $V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$ | 100 |      | MHz  |

### CLASSIFICATION OF $h_{FE(2)}$

| Rank  | BCP51-10, BCP52-10, BCP53-10 | BCP51-16, BCP52-16, BCP53-16 |
|-------|------------------------------|------------------------------|
| Range | 63-160                       | 100-250                      |

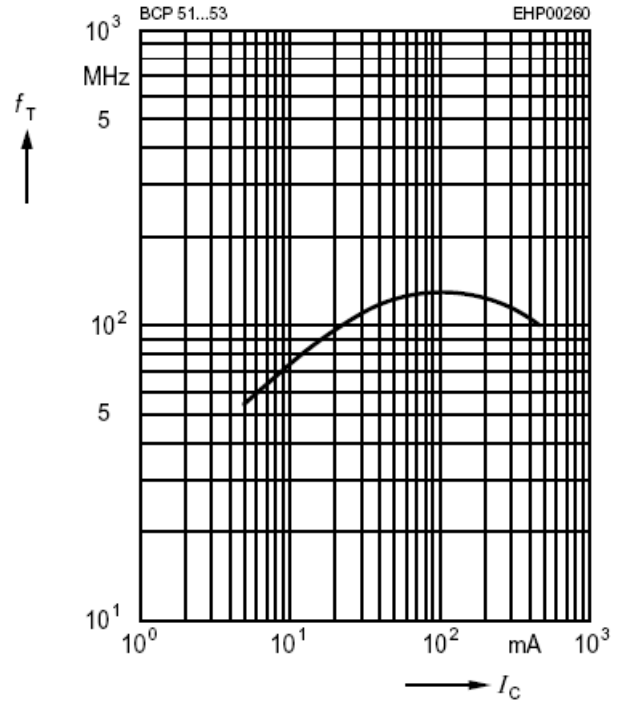
## Typical Characteristics

Total power dissipation  $P_{tot} = f(T_S)$



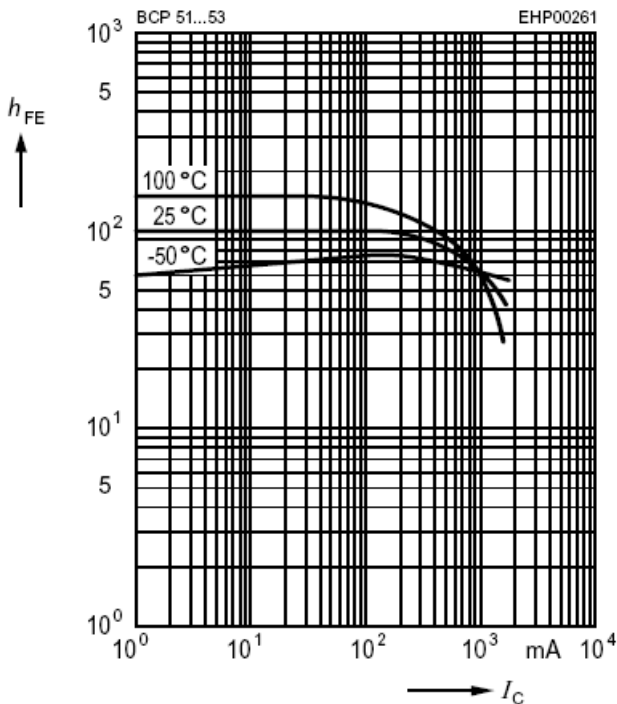
Transition frequency  $f_T = f(I_C)$

$V_{CE} = 10V$



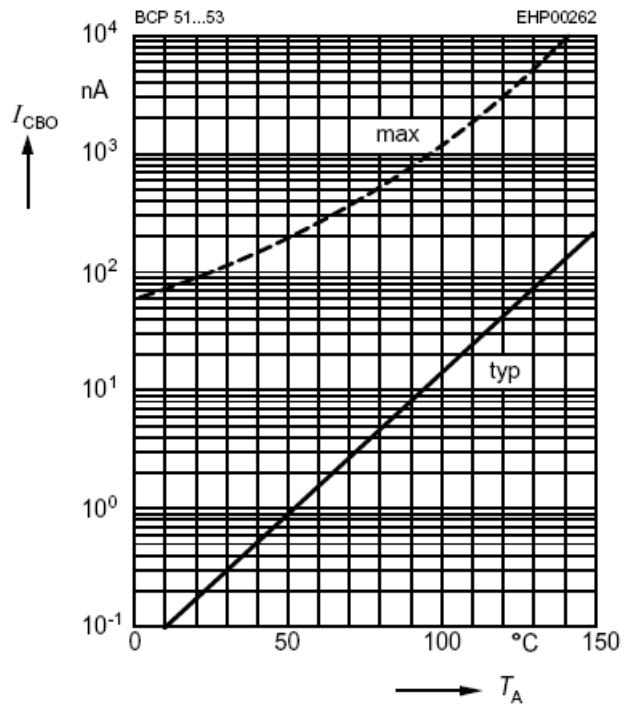
DC current gain  $h_{FE} = f(I_C)$

$V_{CE} = 2V$



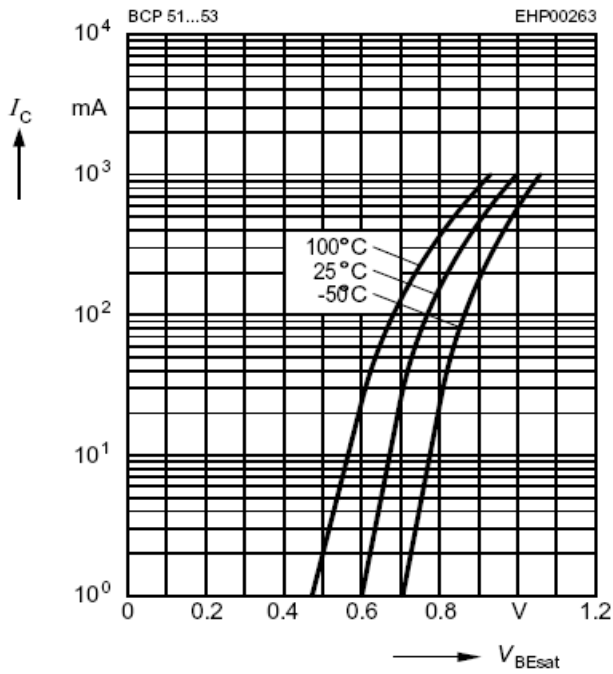
Collector cutoff current  $I_{CBO} = f(T_A)$

$V_{CB} = 30V$



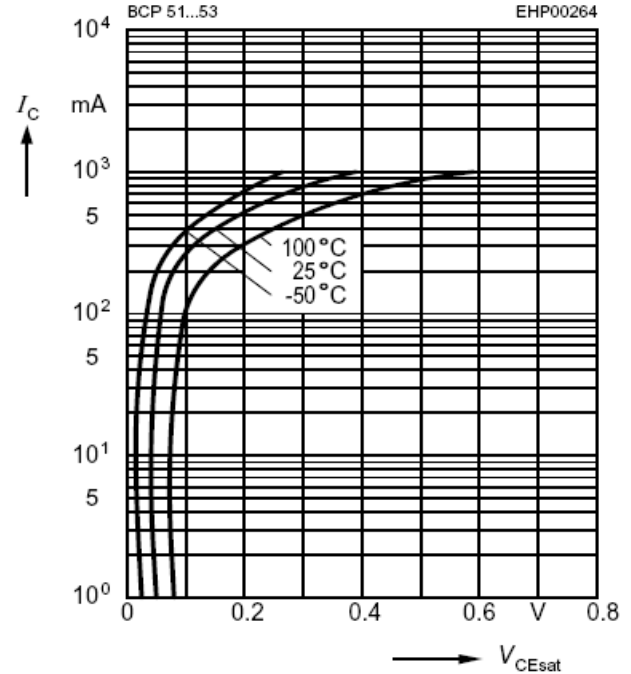
### Base-emitter saturation voltage

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



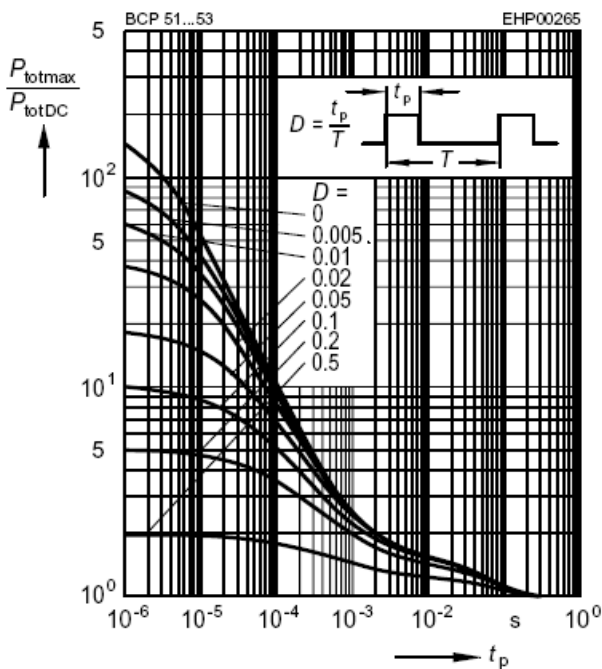
### Collector-emitter saturation voltage

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



### Permissible pulse load

$$P_{totmax} / P_{totDC} = f(t_p)$$



| Package  | Reel    | Reel Size | Box     | Box Size(mm) | Carton    | Carton Size(mm) |
|----------|---------|-----------|---------|--------------|-----------|-----------------|
| SOT -223 | 2500pcs | 13inch    | 2500pcs | 336×336×48   | 20,000pcs | 445×355×365     |