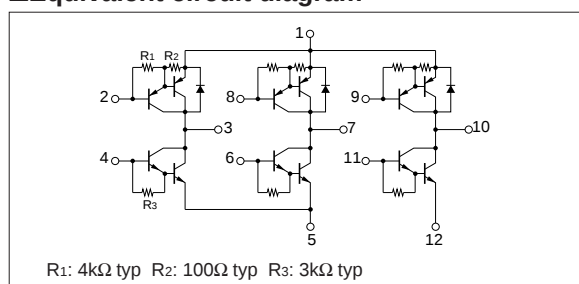


## Absolute maximum ratings

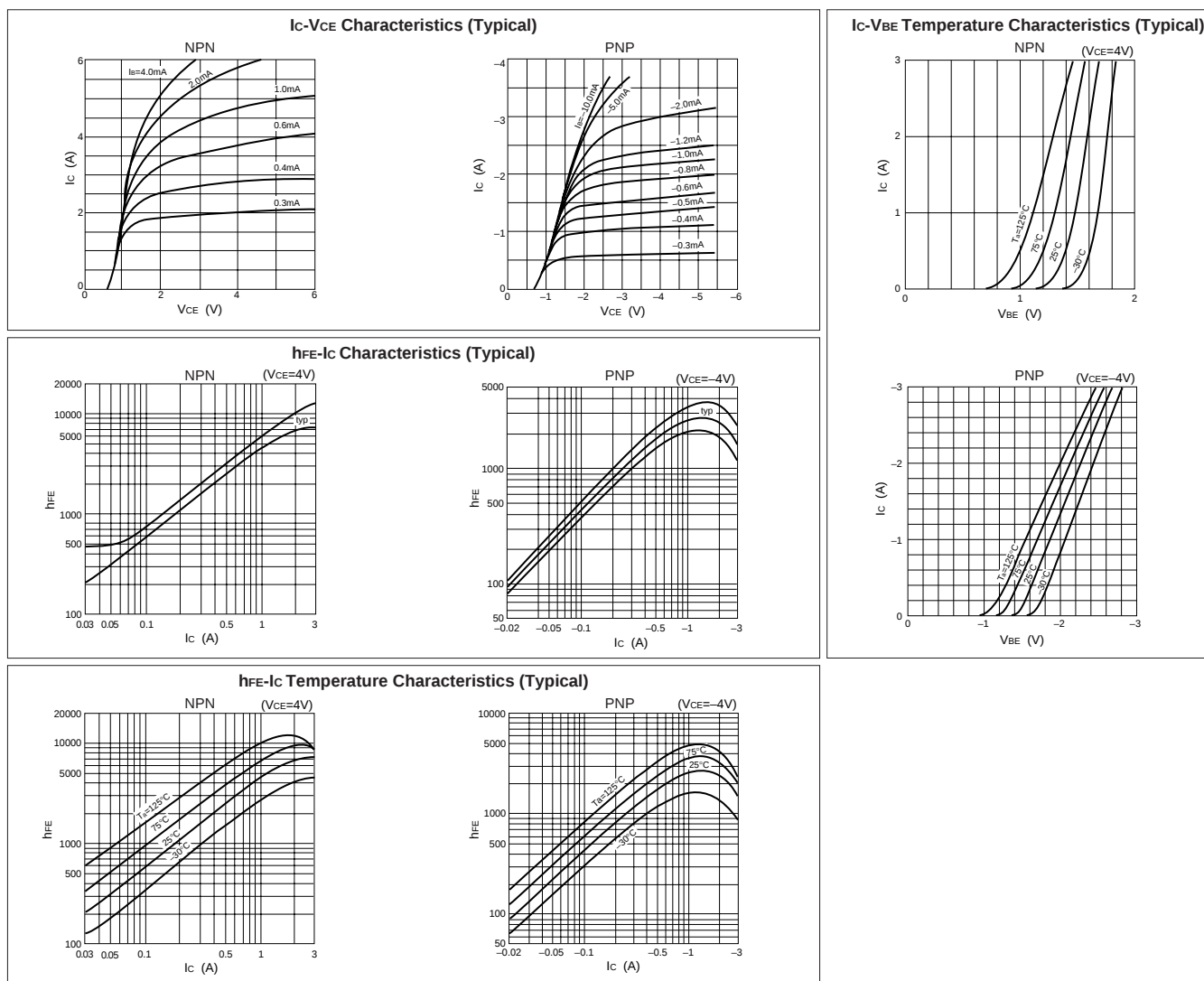
(T<sub>a</sub>=25°C)

| Symbol           | Ratings                   |                     | Unit |
|------------------|---------------------------|---------------------|------|
|                  | NPN                       | PNP                 |      |
| V <sub>CB0</sub> | 60                        | −60                 | V    |
| V <sub>CEO</sub> | 60                        | −60                 | V    |
| V <sub>EBO</sub> | 6                         | −6                  | V    |
| I <sub>C</sub>   | 2                         | −2                  | A    |
| I <sub>CP</sub>  | 3 (PW≤1ms, Du≤50%)        | −3 (PW≤1ms, Du≤50%) | A    |
| I <sub>B</sub>   | 0.5                       | −0.5                | A    |
| P <sub>T</sub>   | 4 (T <sub>a</sub> =25°C)  |                     | W    |
|                  | 20 (T <sub>c</sub> =25°C) |                     |      |
| T <sub>j</sub>   | 150                       |                     | °C   |
| T <sub>stg</sub> | −40 to +150               |                     | °C   |
| θ <sub>J-c</sub> | 6.25                      |                     | °C/W |

## Equivalent circuit diagram



## Characteristic curves



## Electrical characteristics

( $T_a=25^\circ\text{C}$ )

| Symbol           | NPN           |      |       |               |                                                                                                               | PNP           |      |       |               |                                                                                                                  |
|------------------|---------------|------|-------|---------------|---------------------------------------------------------------------------------------------------------------|---------------|------|-------|---------------|------------------------------------------------------------------------------------------------------------------|
|                  | Specification |      |       | Unit          | Conditions                                                                                                    | Specification |      |       | Unit          | Conditions                                                                                                       |
|                  | min           | typ  | max   |               |                                                                                                               | min           | typ  | max   |               |                                                                                                                  |
| ICBO             |               |      | 10    | $\mu\text{A}$ | $V_{\text{CB}}=60\text{V}$                                                                                    |               |      | -10   | $\mu\text{A}$ | $V_{\text{CB}}=-60\text{V}$                                                                                      |
| IEBO             |               |      | 10    | $\mu\text{A}$ | $V_{\text{EB}}=6\text{V}$                                                                                     |               |      | -5    | mA            | $V_{\text{EB}}=-6\text{V}$                                                                                       |
| VCEO             | 60            |      |       | V             | $I_{\text{C}}=10\text{mA}$                                                                                    | -60           |      |       | V             | $I_{\text{C}}=-10\text{mA}$                                                                                      |
| hFE              | 1500          | 4000 | 10000 |               | $V_{\text{CE}}=4\text{V}$ , $I_{\text{C}}=1\text{A}$                                                          | 2000          | 4000 | 10000 |               | $V_{\text{CE}}=-4\text{V}$ , $I_{\text{C}}=-1\text{A}$                                                           |
| VCE(sat)         |               |      | 1.5   | V             | $I_{\text{C}}=1\text{A}$ , $I_{\text{B}}=2\text{mA}$                                                          |               |      | -1.5  | V             | $I_{\text{C}}=-1\text{A}$ , $I_{\text{B}}=-2\text{mA}$                                                           |
| VBE(sat)         |               |      | 2.2   | V             |                                                                                                               |               |      | -2.2  | V             |                                                                                                                  |
| VFEC             |               | —    |       | V             |                                                                                                               |               |      | -1.8  | V             | $I_{\text{FEC}}=-1\text{A}$                                                                                      |
| t <sub>rr</sub>  |               | —    |       | $\mu\text{s}$ | $V_{\text{CC}}\doteq 30\text{V}$ ,<br>$I_{\text{C}}=1\text{A}$ ,<br>$I_{\text{B1}}=-I_{\text{B2}}=2\text{mA}$ |               | 3.0  |       | $\mu\text{s}$ | $I_{\text{FEC}}=\pm 100\text{mA}$                                                                                |
| t <sub>on</sub>  |               | 0.7  |       | $\mu\text{s}$ |                                                                                                               |               | 0.4  |       | $\mu\text{s}$ | $V_{\text{CC}}\doteq -30\text{V}$ ,<br>$I_{\text{C}}=-1\text{A}$ ,<br>$I_{\text{B1}}=-I_{\text{B2}}=-2\text{mA}$ |
| t <sub>stg</sub> |               | 5.0  |       | $\mu\text{s}$ |                                                                                                               |               | 1.0  |       | $\mu\text{s}$ |                                                                                                                  |
| t <sub>f</sub>   |               | 3.0  |       | $\mu\text{s}$ |                                                                                                               |               | 0.4  |       | $\mu\text{s}$ |                                                                                                                  |
| f <sub>T</sub>   |               | 20   |       | MHz           | $V_{\text{CE}}=12\text{V}$ , $I_{\text{E}}=-1\text{A}$                                                        |               | 100  |       | MHz           | $V_{\text{CE}}=-12\text{V}$ , $I_{\text{E}}=0.1\text{A}$                                                         |
| C <sub>ob</sub>  |               | 45   |       | pF            | $V_{\text{CB}}=10\text{V}$ , $f=1\text{MHz}$                                                                  |               | 30   |       | pF            | $V_{\text{CB}}=-10\text{V}$ , $f=1\text{MHz}$                                                                    |

## Characteristic curves

