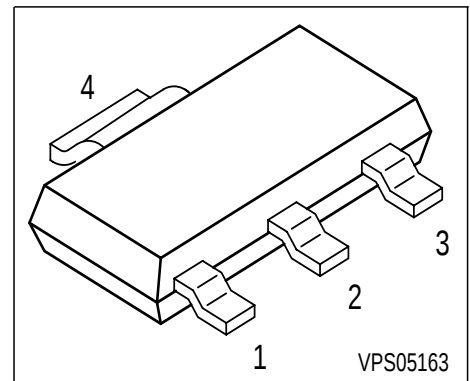


## NPN Silicon High Voltage Transistor

- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary type: PZTA92 (PNP)



| Type   | Marking | Pin Configuration |     |     |     | Package |
|--------|---------|-------------------|-----|-----|-----|---------|
| PZTA42 | PZTA 42 | 1=B               | 2=C | 3=E | 4=C | SOT223  |

### Maximum Ratings

| Parameter                                      | Symbol    | Value       | Unit |
|------------------------------------------------|-----------|-------------|------|
| Collector-emitter voltage                      | $V_{CEO}$ | 300         | V    |
| Collector-base voltage                         | $V_{CBO}$ | 300         |      |
| Emitter-base voltage                           | $V_{EBO}$ | 6           |      |
| DC collector current                           | $I_C$     | 500         | mA   |
| Base current                                   | $I_B$     | 100         |      |
| Total power dissipation, $T_S = 124\text{ °C}$ | $P_{tot}$ | 1.5         | W    |
| Junction temperature                           | $T_j$     | 150         | °C   |
| Storage temperature                            | $T_{stg}$ | -65 ... 150 |      |

### Thermal Resistance

|                                          |            |     |     |
|------------------------------------------|------------|-----|-----|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ | ≤17 | K/W |
|------------------------------------------|------------|-----|-----|

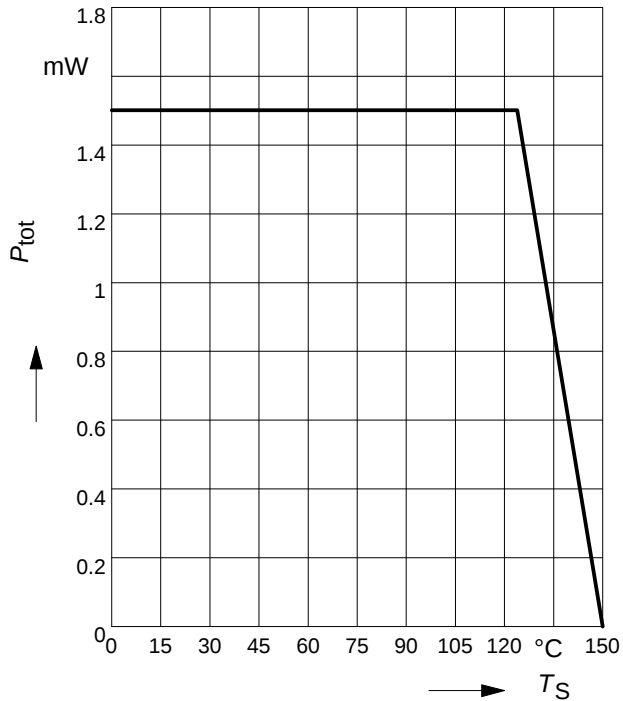
<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

| Parameter                                                                                                                                                   | Symbol        | Values         |             |             | Unit          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|-------------|-------------|---------------|
|                                                                                                                                                             |               | min.           | typ.        | max.        |               |
| DC Characteristics                                                                                                                                          |               |                |             |             |               |
| Collector-emitter breakdown voltage<br>$I_C = 1\text{ mA}, I_B = 0$                                                                                         | $V_{(BR)CEO}$ | 300            | -           | -           | V             |
| Collector-base breakdown voltage<br>$I_C = 100\text{ }\mu\text{A}, I_B = 0$                                                                                 | $V_{(BR)CBO}$ | 300            | -           | -           |               |
| Emitter-base breakdown voltage<br>$I_E = 100\text{ }\mu\text{A}, I_C = 0$                                                                                   | $V_{(BR)EBO}$ | 6              | -           | -           |               |
| Collector cutoff current<br>$V_{CB} = 200\text{ V}, I_E = 0$                                                                                                | $I_{CBO}$     | -              | -           | 100         | nA            |
| Collector cutoff current<br>$V_{CB} = 200\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$                                                               | $I_{CBO}$     | -              | -           | 20          | $\mu\text{A}$ |
| Emitter cutoff current<br>$V_{EB} = 3\text{ V}, I_C = 0$                                                                                                    | $I_{EBO}$     | -              | -           | 100         | nA            |
| DC current gain 1)<br>$I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$<br>$I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$<br>$I_C = 30\text{ mA}, V_{CE} = 10\text{ V}$ | $h_{FE}$      | 25<br>40<br>40 | -<br>-<br>- | -<br>-<br>- | -             |
| Collector-emitter saturation voltage1)<br>$I_C = 20\text{ mA}, I_B = 2\text{ mA}$                                                                           | $V_{CEsat}$   | -              | -           | 0.5         | V             |
| Base-emitter saturation voltage 1)<br>$I_C = 20\text{ mA}, I_B = 2\text{ mA}$                                                                               | $V_{BEsat}$   | -              | -           | 0.9         |               |
| AC Characteristics                                                                                                                                          |               |                |             |             |               |
| Transition frequency<br>$I_C = 20\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$                                                                      | $f_T$         | -              | 70          | -           | MHz           |
| Collector-base capacitance<br>$V_{CB} = 20\text{ V}, f = 1\text{ MHz}$                                                                                      | $C_{cb}$      | -              | -           | 3           | pF            |

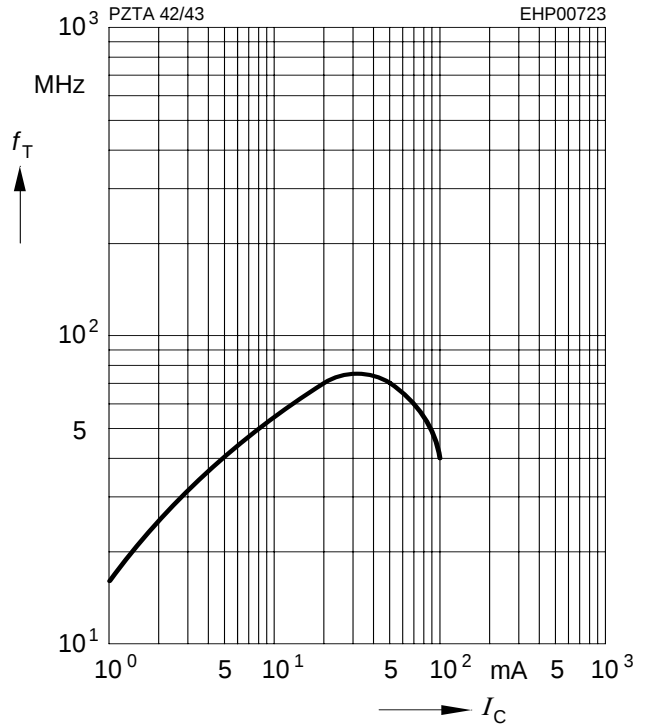
1) Pulse test:  $t < 300\mu\text{s}$ ;  $D < 2\%$

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



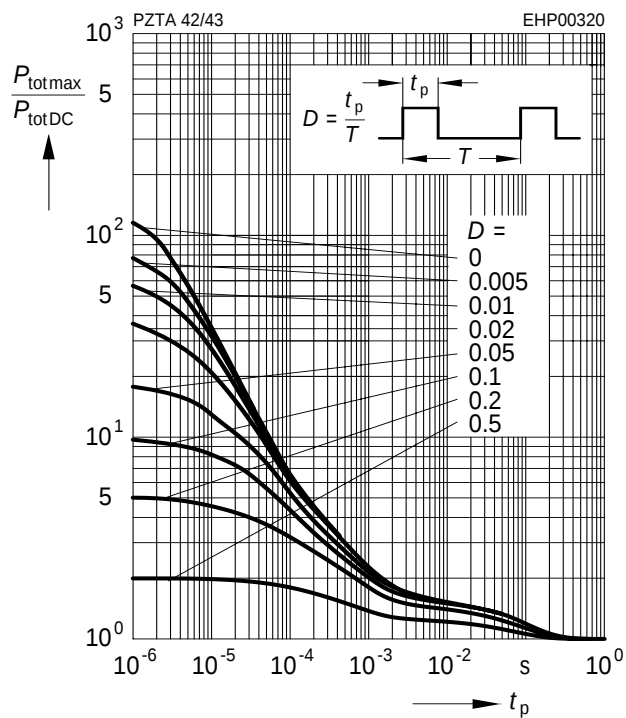
**Transition frequency**  $f_T = f(I_C)$

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



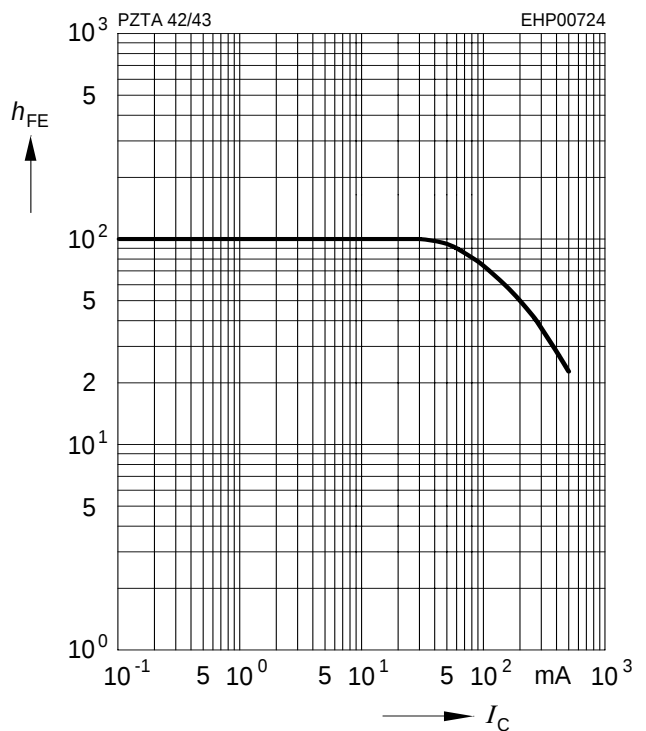
**Permissible pulse load**

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



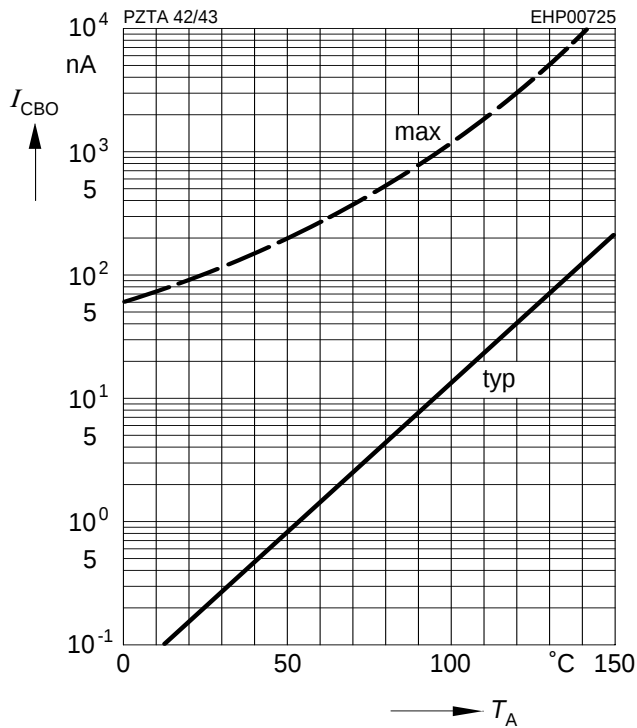
**DC current gain**  $h_{FE} = f(I_C)$

$V_{CE} = 10V$



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

$V_{CB} = 200V$



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

$V_{CE} = 10V$

