



**THE DATASHEET OF  
SMBTA92E6327**



**PNP Silicon High-Voltage Transistors**

- Suitable for video output stages in TV sets and switching power supplies
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary types:  
SMBTA42 / MMBT42 (NPN)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



| Type            | Marking | Pin Configuration |     |     | Package |
|-----------------|---------|-------------------|-----|-----|---------|
| SMBTA92/MMBTA92 | s2D     | 1=B               | 2=E | 3=C | SOT23   |

**Maximum Ratings**

| Parameter  | Symbol    | Value       | Unit             |
|--|-----------|-------------|------------------|
| Collector-emitter voltage  | $V_{CEO}$ | 300         | V                |
| Collector-base voltage   | $V_{CBO}$ | 300         |                  |
| Emitter-base voltage   | $V_{EBO}$ | 5           |                  |
| Collector current  | $I_C$     | 500         | mA               |
| Base current   | $I_B$     | 100         |                  |
| Total power dissipation-<br>$T_S \leq 74 \text{ }^\circ\text{C}$ | $P_{tot}$ | 360         | mW               |
| Junction temperature   | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature  | $T_{stg}$ | -65 ... 150 |                  |

**Thermal Resistance**

| Parameter                                | Symbol     | Value      | Unit |
|--|------------|------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ | $\leq 210$ | K/W  |

<sup>1</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

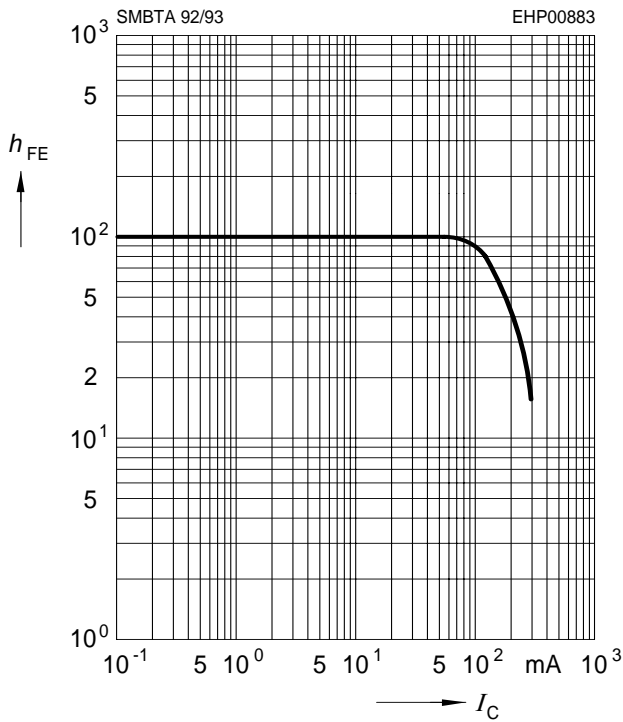
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter  | Symbol        | Values         |             |             | Unit          |
|--|---------------|----------------|-------------|-------------|---------------|
|  |               | min.           | typ.        | max.        |               |
| <b>DC Characteristics</b>  |               |                |             |             |               |
| Collector-emitter breakdown voltage<br>$I_C = 1\text{ mA}, I_B = 0$  | $V_{(BR)CEO}$ | 300            | -           | -           | V             |
| Collector-base breakdown voltage<br>$I_C = 100\text{ }\mu\text{A}, I_E = 0$  | $V_{(BR)CBO}$ | 300            | -           | -           |               |
| Emitter-base breakdown voltage<br>$I_E = 100\text{ }\mu\text{A}, I_C = 0$  | $V_{(BR)EBO}$ | 5              | -           | -           |               |
| Collector-base cutoff current<br>$V_{CB} = 200\text{ V}, I_E = 0$<br>$V_{CB} = 200\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$                                 | $I_{CBO}$     | -              | -           | 0.1<br>20   | $\mu\text{A}$ |
| Emitter-base cutoff current<br>$V_{EB} = 5\text{ V}, I_C = 0$  | $I_{EBO}$     | -              | -           | 100         | nA            |
| DC current gain <sup>1)</sup><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>25 | -<br>-<br>- | -<br>-<br>- | -             |
| Collector-emitter saturation voltage <sup>1)</sup><br>$I_C = 20\text{ mA}, I_B = 2\text{ mA}$  | $V_{CEsat}$   | -              | -           | 0.5         | V             |
| Base emitter saturation voltage <sup>1)</sup><br>$I_C = 20\text{ mA}, I_B = 2\text{ mA}$   | $V_{BEsat}$   | -              | -           | 0.9         |               |
| <b>AC Characteristics</b>  |               |                |             |             |               |
| Transition frequency<br>$I_C = 20\text{ MHz}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$  | $f_T$         | 50             | -           | -           | MHz           |
| Collector-base capacitance<br>$V_{CB} = 20\text{ V}, f = 1\text{ MHz}$   | $C_{cb}$      | -              | -           | 6           | pF            |

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

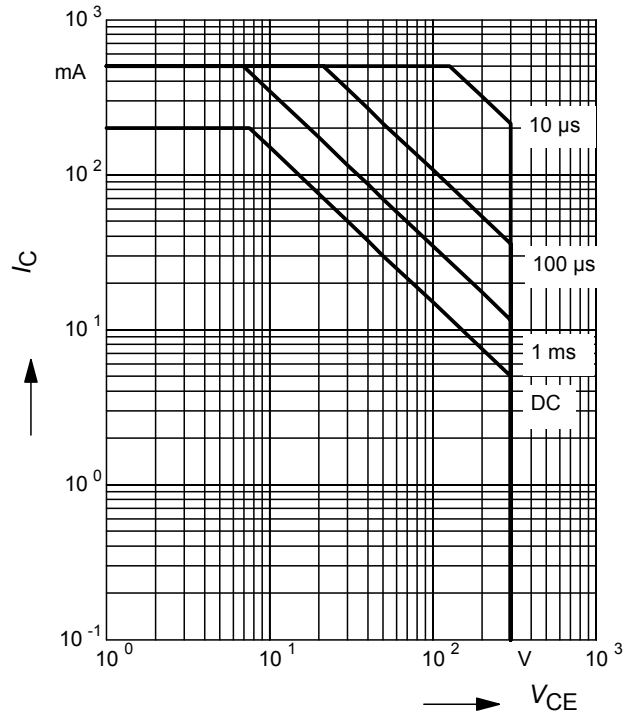
**DC current gain  $h_{FE} = f(I_C)$**

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



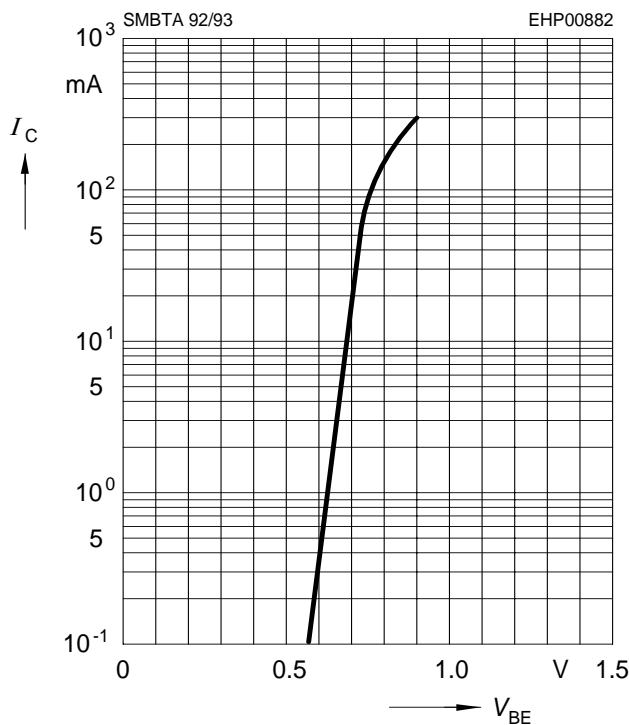
**Operating range  $I_C = f(V_{CE0})$**

$T_A = 25^\circ\text{C}, D = 0$



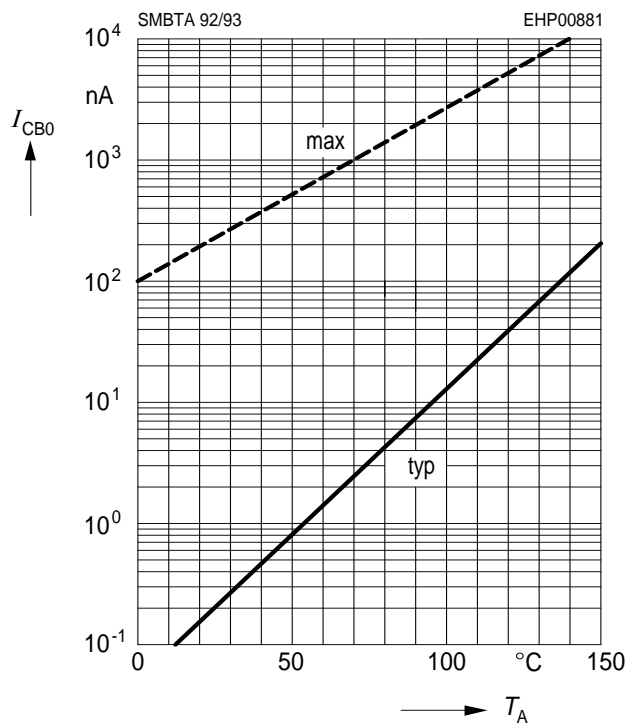
**Collector current  $I_C = f(V_{BE})$**

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



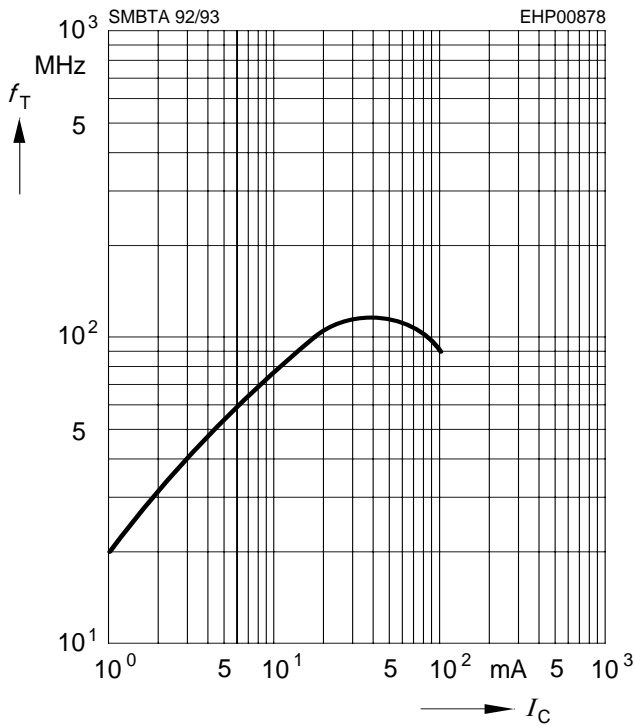
**Collector cutoff current  $I_{CBO} = f(T_A)$**

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



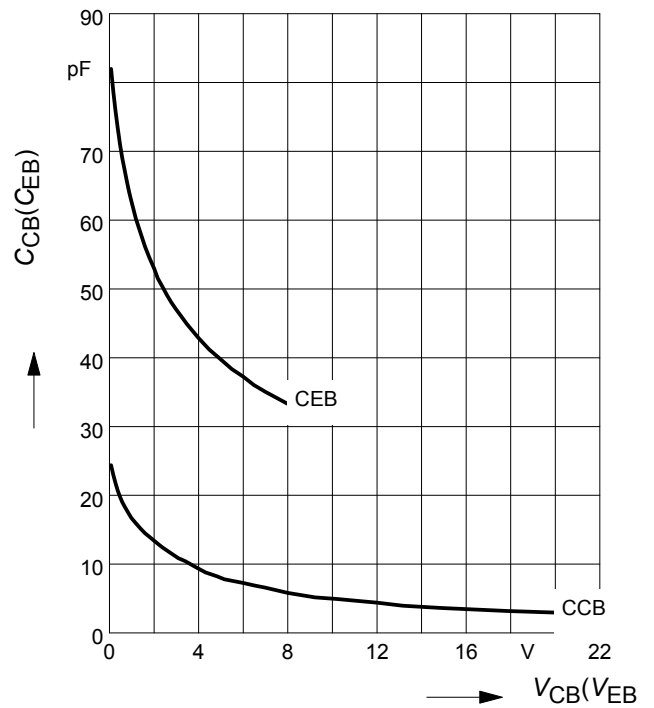
Transition frequency  $f_T = f(I_C)$

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

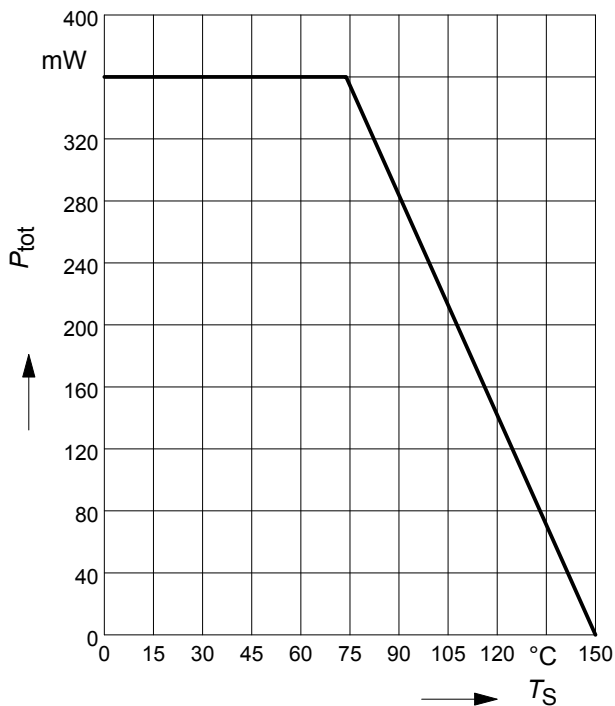


Collector-base capacitance  $C_{cb} = f(V_{CB})$

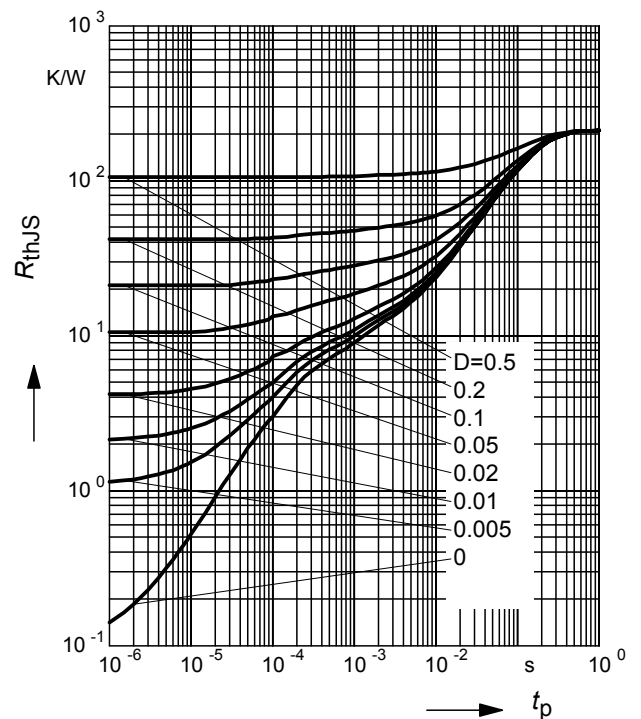
Emitter-base capacitance  $C_{eb} = f(V_{EB})$



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

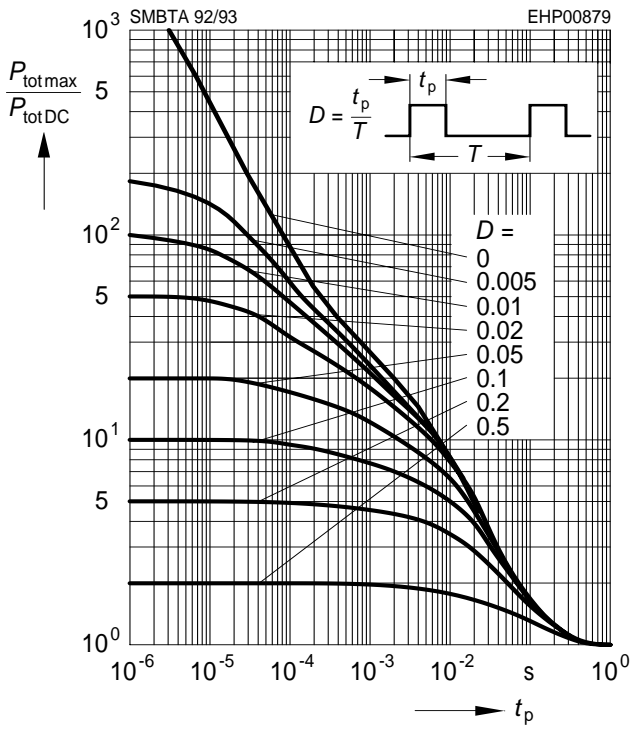


Permissible Pulse Load  $R_{thJS} = f(t_p)$

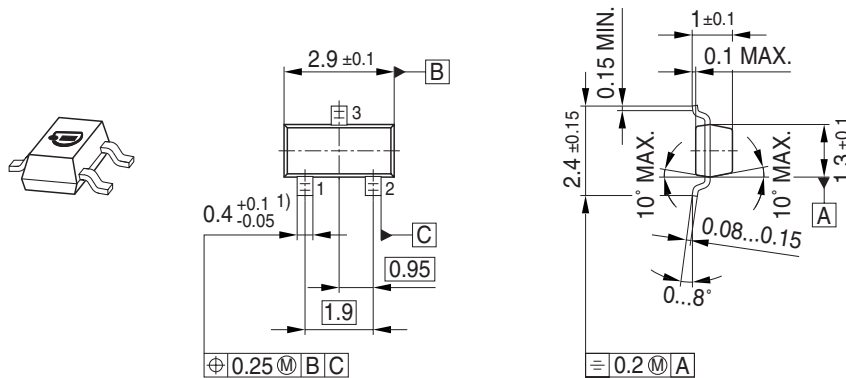


**Permissible Pulse Load**

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

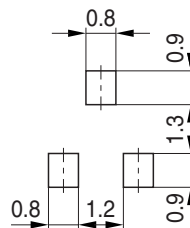


Package Outline

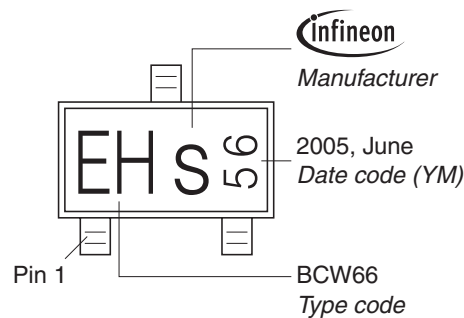


1) Lead width can be 0.6 max. in dambar area

Foot Print

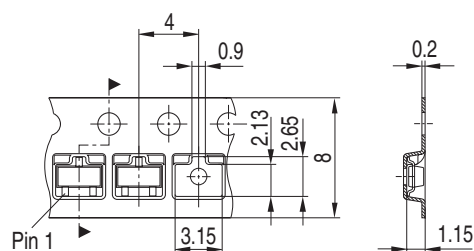


Marking Layout (Example)



Standard Packing

Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



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