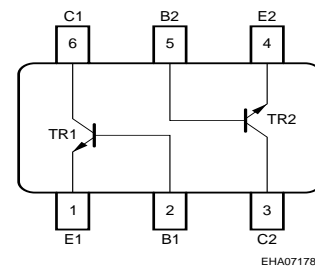
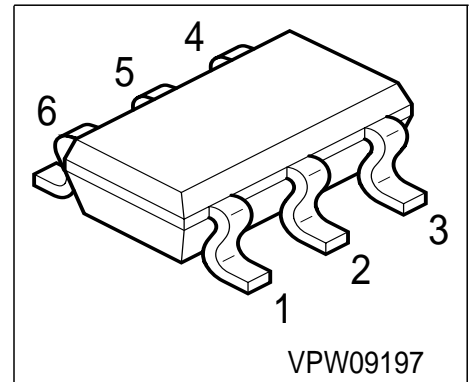


NPN Silicon AF Transistor Array

- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary type: SMBTA56U (PNP)
- Two (galvanic) internal isolated Transistors with good matching in one package



| Type | Marking | Pin Configuration | | | | | Package | |
|----------|---------|-------------------|------|------|------|------|---------|------|
| SMBTA06U | s1G | 1=E1 | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SC74 |

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|------------------------------------------------|-----------|-------------|------|
| Collector-emitter voltage | V_{CEO} | 80 | V |
| Collector-base voltage | V_{CBO} | 80 | V |
| Emitter-base voltage | V_{EBO} | 4 | V |
| DC collector current | I_C | 500 | mA |
| Peak collector current | I_{CM} | 1 | A |
| Base current | I_B | 100 | mA |
| Peak base current | I_{BM} | 200 | mA |
| Total power dissipation, $T_S = 115\text{ °C}$ | P_{tot} | 330 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -65 ... 150 | °C |

Thermal Resistance

| | | | |
|------------------------------------------|------------|------|-----|
| Junction - soldering point ¹⁾ | R_{thJS} | ≤105 | K/W |
|------------------------------------------|------------|------|-----|

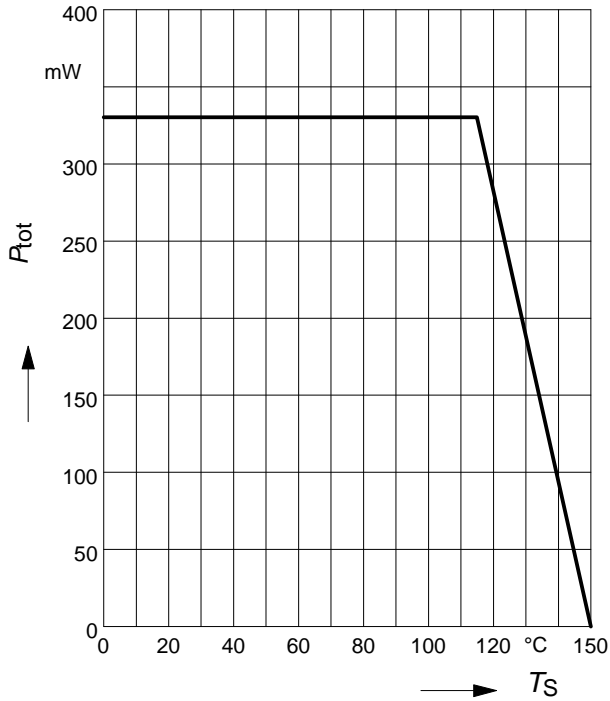
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics

| Parameter | Symbol | Values | | | Unit |
|-------------------------------------------------------------------------------------------------------------------|---------------|------------|--------|--------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 1 \text{ mA}, I_B = 0$ | $V_{(BR)CEO}$ | 80 | - | - | V |
| Collector-base breakdown voltage $I_C = 100 \text{ }\mu\text{A}, I_E = 0$ | $V_{(BR)CBO}$ | 80 | - | - | |
| Emitter-base breakdown voltage $I_E = 10 \text{ }\mu\text{A}, I_C = 0$ | $V_{(BR)EBO}$ | 4 | - | - | |
| Collector cutoff current $V_{CB} = 80 \text{ V}, I_E = 0$ | I_{CBO} | - | - | 100 | nA |
| Collector cutoff current $V_{CB} = 80 \text{ V}, I_E = 0, T_A = 150 \text{ }^\circ\text{C}$ | I_{CBO} | - | - | 20 | μA |
| Collector cutoff current $V_{CE} = 60 \text{ V}, I_B = 0$ | I_{CEO} | - | - | 100 | nA |
| DC current gain 1) $I_C = 10 \text{ mA}, V_{CE} = 1 \text{ V}$ $I_C = 100 \text{ mA}, V_{CE} = 1 \text{ V}$ | h_{FE} | 100 100 | - - | - - | - |
| Collector-emitter saturation voltage1) $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ | V_{CEsat} | - | - | 0.25 | V |
| Base-emitter voltage 1) $I_C = 100 \text{ mA}, V_{CE} = 1 \text{ V}$ | $V_{BE(ON)}$ | - | - | 1.2 | |
| AC Characteristics | | | | | |
| Transition frequency $I_C = 20 \text{ mA}, V_{CE} = 5 \text{ V}, f = 20 \text{ MHz}$ | f_T | - | 100 | - | MHz |
| Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$ | C_{cb} | - | 12 | - | pF |

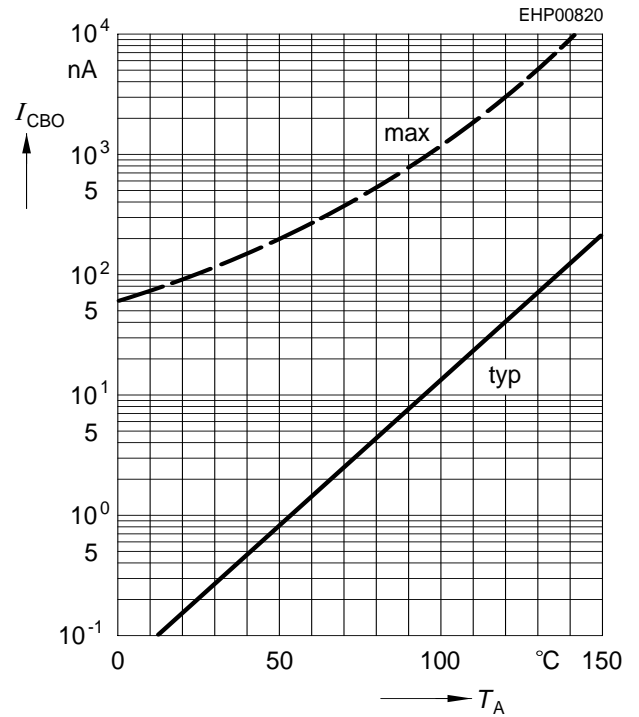
 1) Pulse test: $t \leq 300 \mu\text{s}, D = 2\%$

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

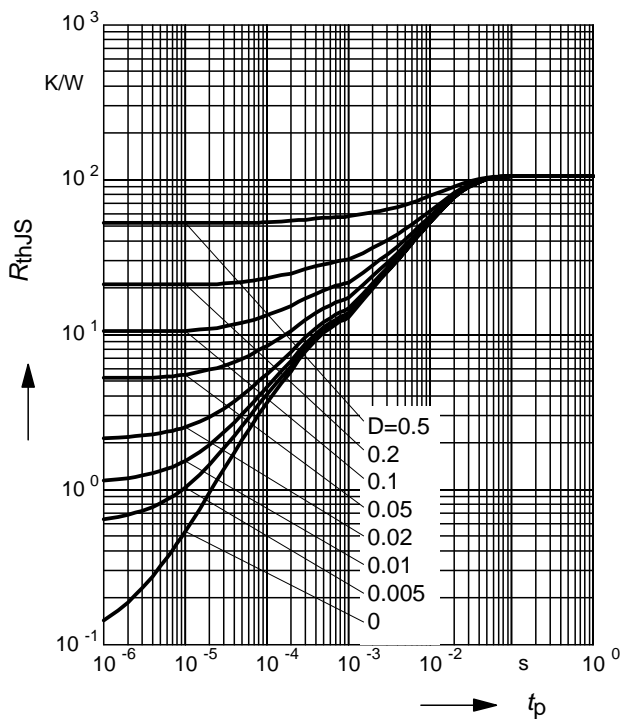


Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 80V$

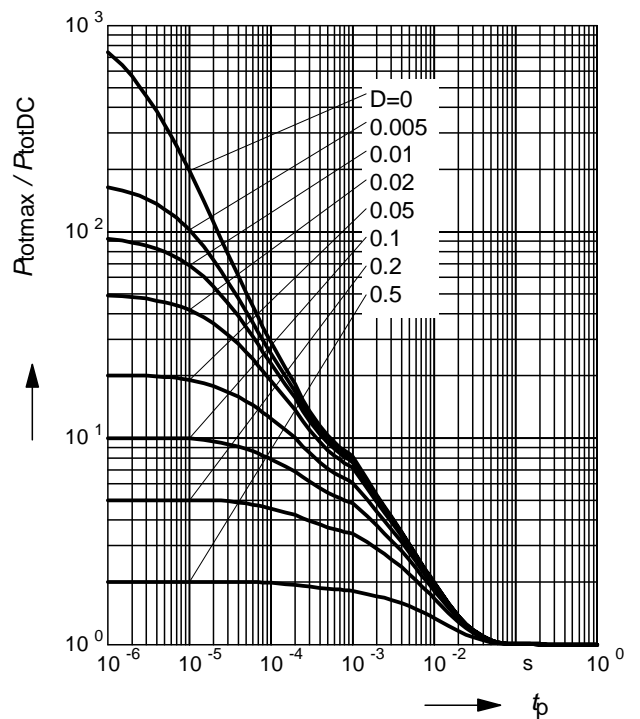


Permissible Pulse Load $R_{thJS} = f(t_p)$



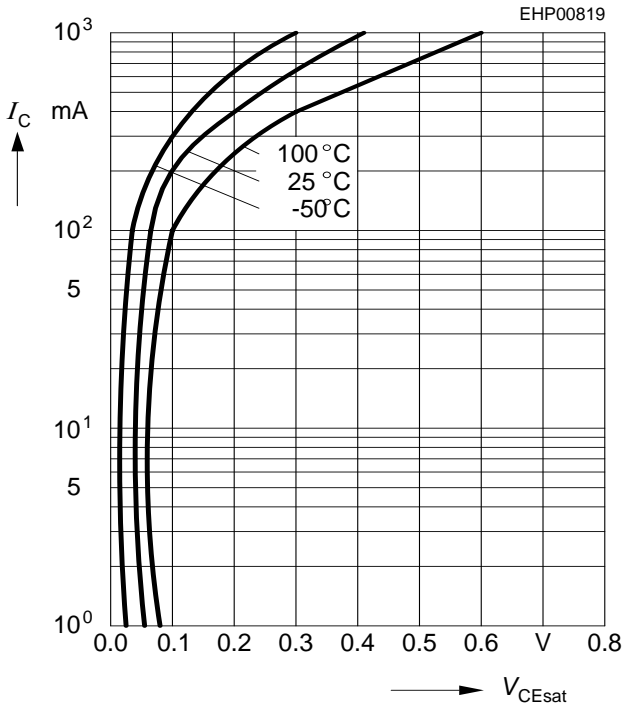
Permissible Pulse Load

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



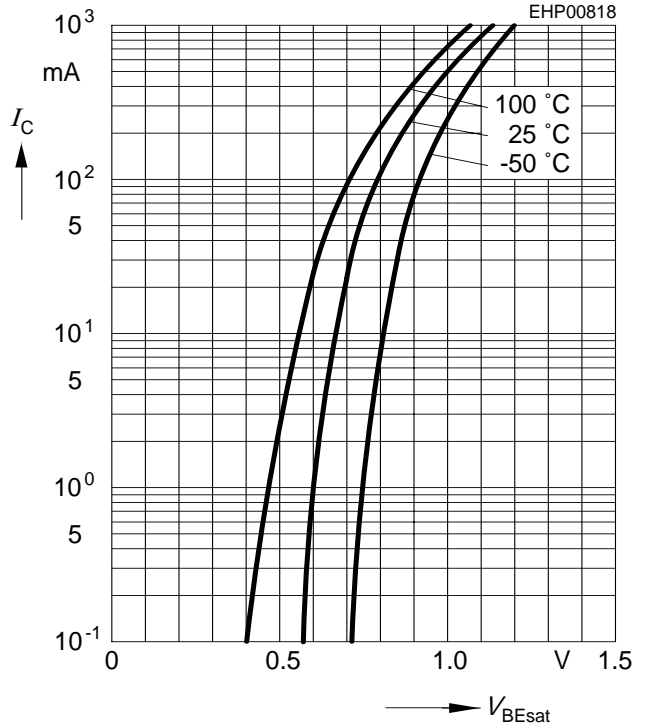
Collector-emitter saturation voltage

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



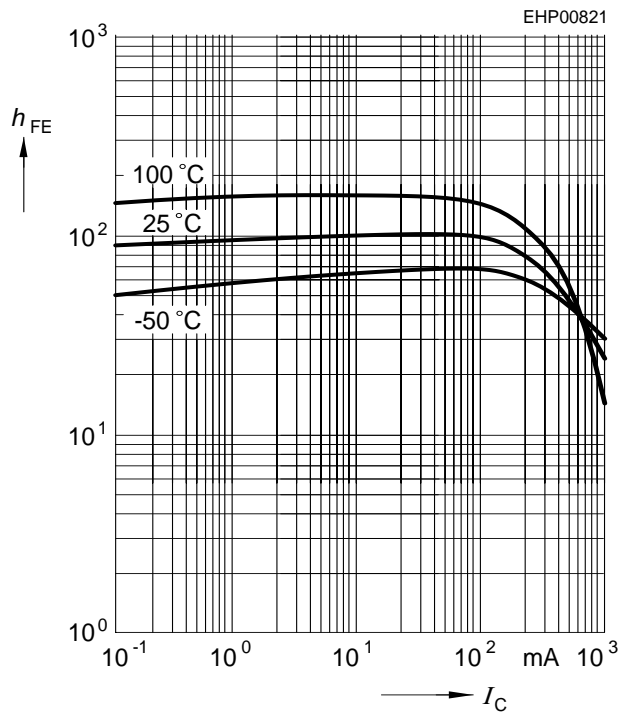
Base-emitter saturation voltage

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



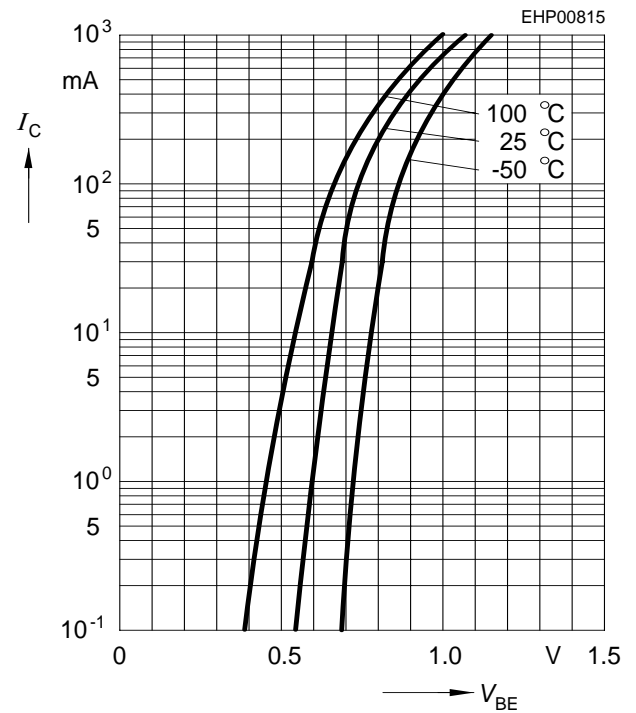
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 1V$



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

$V_{CE} = 1V$



Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$

