**NPN Silicon RF Transistor**

- For amplifier and oscillator applications in TV-tuners
- Pb-free (RoHS compliant) package[1]
- Qualified according AEC Q101

**AEC** Qualified    **RoHS**

**ESD** (**E**lectro**s**tatic **d**ischarge) sensitive device, observe handling precaution!

| Type | Marking | Pin Configuration | | | Package |
|------|---------|-------------------|---|---|---------|
| BF517 | LRs | 1 = B | 2 = E | 3 = C | SOT23 |

**Maximum Ratings**

| Parameter | Symbol | Value | Unit |
|-----------|--------|-------|------|
| Collector-emitter voltage | $V_{CEO}$ | 15 | V |
| Collector-base voltage | $V_{CBO}$ | 25 | |
| Emitter-base voltage | $V_{EBO}$ | 2.5 | |
| Collector current | $I_C$ | 25 | mA |
| Peak collector current | $I_{CM}$ | 50 | |
| Total power dissipation[2] $T_S \leq 55\,°C$ | $P_{tot}$ | 280 | mW |
| Junction temperature | $T_i$ | 150 | °C |
| Ambient temperature | $T_A$ | -65 ... 150 | |
| Storage temperature | $T_{stg}$ | -65 ... 150 | |

**Thermal Resistance**

| Parameter | Symbol | Value | Unit |
|-----------|--------|-------|------|
| Junction - soldering point[3] | $R_{thJS}$ | $\leq 340$ | K/W |

[1]Pb-containing package may be available upon special request
[2]$T_S$ is measured on the collector lead at the soldering point to the pcb
[3]For calculation of $R_{thJA}$ please refer to Application Note Thermal Resistance

2007-04-20

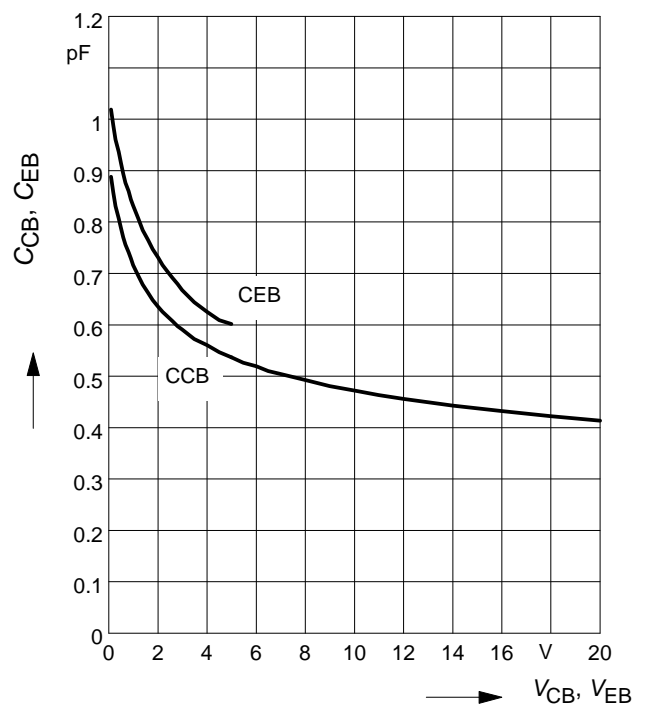**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC Characteristics** | | | | | |
| Collector-emitter breakdown voltage $I_C$ = 1 mA, $I_B$ = 0 | $V_{(BR)CEO}$ | 15 | - | - | V |
| Collector-base cutoff current $V_{CB}$ = 10 V, $I_E$ = 0 $V_{CB}$ = 25 V, $I_E$ = 0 | $I_{CBO}$ | - - | - - | 0.05 10 | µA |
| Emitter-base cutoff current $V_{EB}$ = 2.5 V, $I_C$ = 0 | $I_{EBO}$ | - | - | 100 | |
| DC current gain- $I_C$ = 2 mA, $V_{CE}$ = 1 V, pulse measured $I_C$ = 25 mA, $V_{CE}$ = 1 V, pulse measured | $h_{FE}$ | 40 20 | - 70 | 150 - | - |
| Collector-emitter saturation voltage $I_C$ = 10 mA, $I_B$ = 1 mA | $V_{CEsat}$ | - | 0.1 | 0.4 | V |

**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

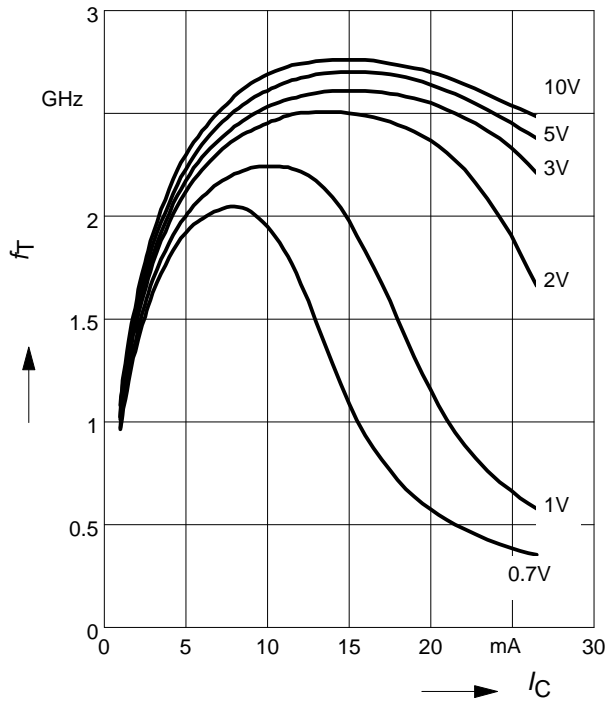| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **AC Characteristics** (verified by random sampling) | | | | | |
| Transition frequency | $f_T$ | | | | GHz |
| $I_C$ = 2 mA, $V_{CE}$ = 5 V, $f$ = 200 MHz | | 1 | 1.4 | - | |
| $I_C$ = 25 mA, $V_{CE}$ = 5 V, $f$ = 200 MHz | | 1.3 | 2.5 | - | |
| Collector-base capacitance $V_{CB}$ = 5 V, $f$ = 1 MHz, $V_{BE}$ = 0 , emitter grounded | $C_{cb}$ | - | 0.55 | 0.8 | pF |
| Collector emitter capacitance $V_{CE}$ = 5 V, $f$ = 1 MHz, $V_{BE}$ = 0 , base grounded | $C_{ce}$ | - | 0.27 | - | |
| Emitter-base capacitance $V_{EB}$ = 0.5 V, $f$ = 1 MHz, $V_{CB}$ = 0 , collector grounded | $C_{eb}$ | - | 0.9 | 1.45 | |
| Noise figure $I_C$ = 2 mA, $V_{CE}$ = 5 V, $Z_S$ = 50 Ω, $f$ = 800 MHz | $F$ | - | 3.5 | 5 | dB |
| Transducer gain $I_C$ = 20 mA, $V_{CE}$ = 5 V, $Z_S = Z_L$ = 50Ω, $f$ = 500 MHz | $|S_{21e}|^2$ | - | 13 | - | dB |
| Third order intercept point at output $V_{CE}$ = 5 V, $I_C$ = 20 mA, $f$ = 800 MHz, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$ | $IP_3$ | - | 21.5 | - | dBm |
| 1dB Compression point $I_C$ = 20 mA, $V_{CE}$ = 5 V, $Z_S = Z_L$ = 50Ω, $f$ = 800 MHz | $P_{-1dB}$ | - | 10 | - | - |

**Total power dissipation** $P_{tot} = f(T_S)$
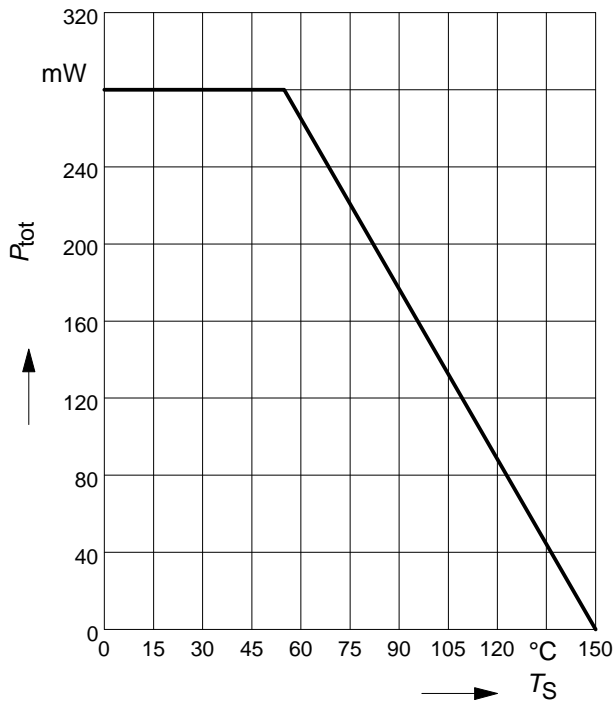
**Permissible Pulse Load** $R_{thJS} = f(t_p)$
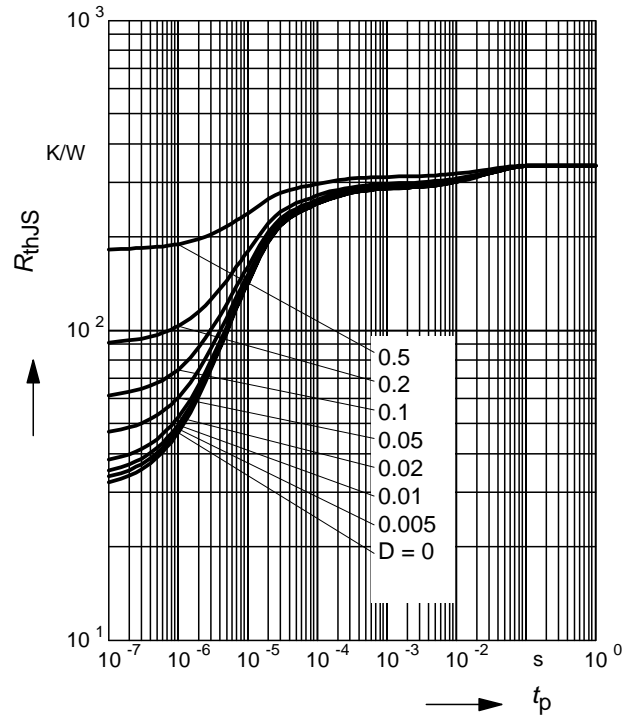
**Permissible Pulse Load**

$P_{totmax}/P_{totDC} = f(t_p)$
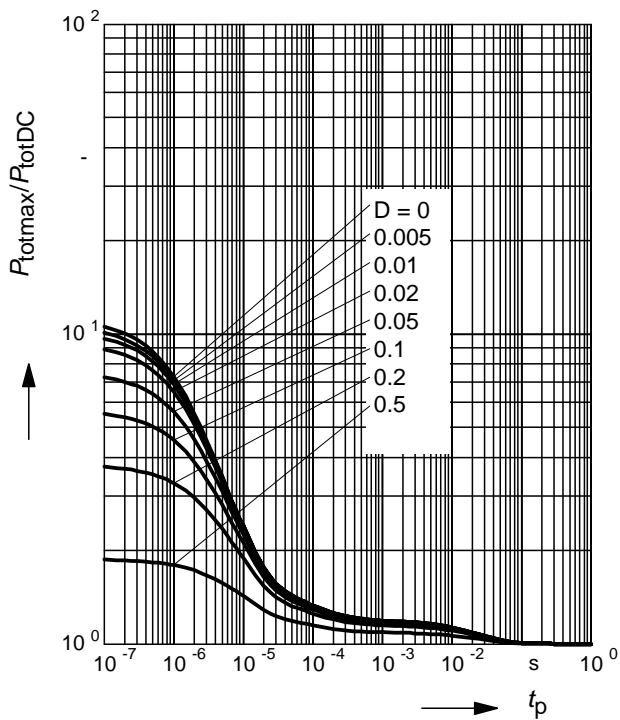
**Collector-base capacitance** $C_{cb} = f(V_{CB})$

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

$f$ = 1 MHz

2007-04-20

**Transition frequency** $f_T = f(I_C)$
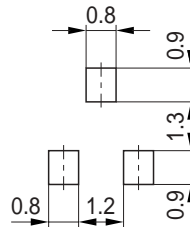
$V_{CE}$ = parameter

## Package Outline

2.9 ±0.1　　B

3

1　　　2

0.4 +0.1 1)
　　 -0.05　　　C

0.95

1.9

⊕ | 0.25 Ⓜ | B | C

0.15 MIN.

1 ±0.1

0.1 MAX.

2.4 ±0.15

10° MAX.　　10° MAX.

1.3 ±0.1

A

0.08...0.15

0...8°

= | 0.2 Ⓜ | A

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

## Foot Print

0.8

0.9

1.3

0.8　　1.2

0.9

## Marking Layout (Example)

*Infineon*
*Manufacturer*

E H S 5 6

2005, June
*Date code (YM)*

Pin 1

BCW66
*Type code*
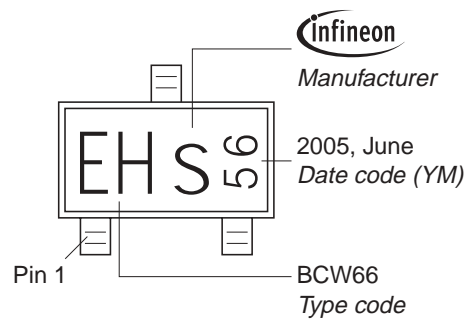
## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel
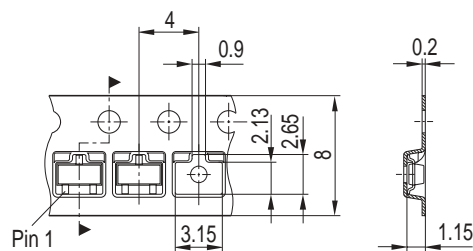
4

0.9

0.2

2.13

2.65

8

Pin 1

3.15

1.15

　　　　　　　　　　　　　　　　　2007-04-20

**Attention please!**

The information given in this dokument shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie"). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

**Information**

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office ( **www.infineon.com** ).

**Warnings**

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.
Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system.
Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

2007-04-20