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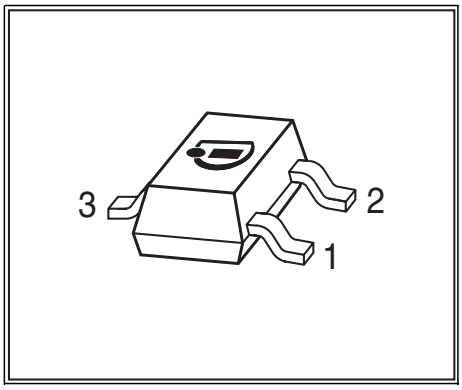
## NPN Silicon RF Transistor




- For linear broadband amplifier application up to 500 MHz
- SAW filter driver in TV tuners
- Pb-free (RoHS compliant) package

RoHS

| Type | Marking | Pin Configuration | | | Package |
|---|---|---|---|---|---|
| BF799 | LKs | 1 = B | 2 = E | 3 = C | SOT23 |

**Maximum Ratings**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-emitter voltage | $V_{CEO}$ | 20 | V |
| Collector-emitter voltage | $V_{CES}$ | 30 | |
| Collector-base voltage | $V_{CBO}$ | 30 | |
| Emitter-base voltage | $V_{EBO}$ | 3 | |
| Collector current | $I_C$ | 35 | mA |
| Peak collector current, | $I_{CM}$ | 50 | |
| Peak base current | $I_{BM}$ | 15 | |
| Total power dissipation $T_S \leq 69$ °C [1)] | $P_{tot}$ | 280 | mW |
| Junction temperature | $T_j$ | 150 | °C |
| Storage temperature | $T_{stg}$ | -65 ... 150 | |

**Thermal Resistance**

| | | | |
|---|---|---|---|
| Junction - soldering point[2)] | $R_{thJS}$ | ≤ 290 | K/W |

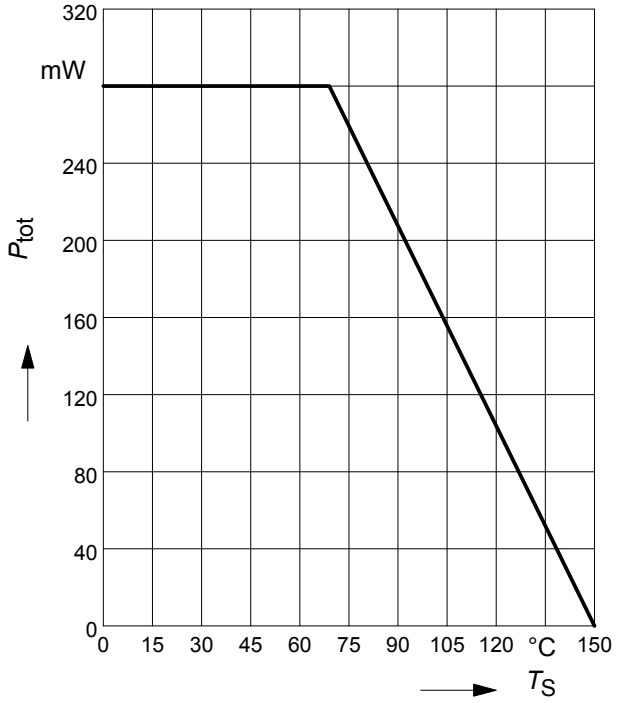
[1] $T_S$ is measured on the collector lead at the soldering point to the pcb

[2] For calculation of $R_{thJA}$ please refer to Application Note AN077 (Thermal Resistance Calculation)

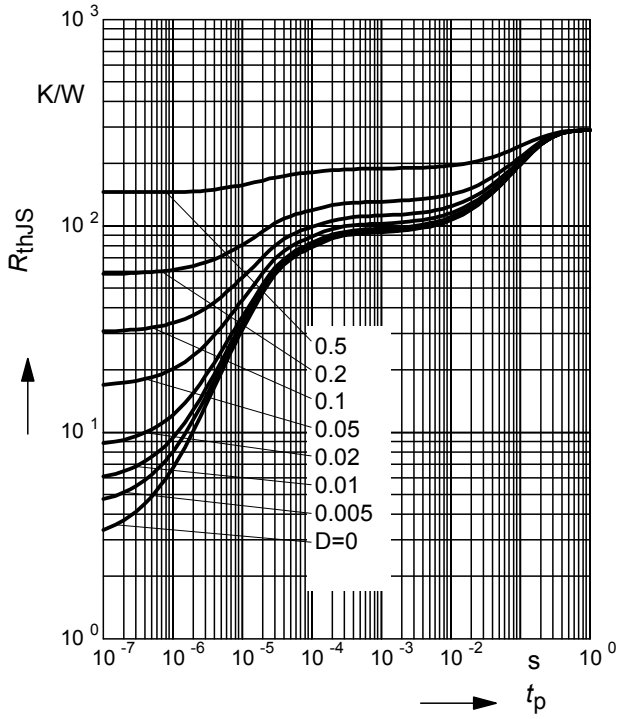
**Electrical Characteristics** at $T_A$ = 25 °C, unless otherwise specified.

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC characteristics** | | | | | |
| Collector-emitter breakdown voltage<br>$I_C$ = 1 mA, $I_B$ = 0 | $V_{(BR)CEO}$ | 20 | - | - | V |
| Collector-base breakdown voltage<br>$I_C$ = 10 µA, $I_E$ = 0 | $V_{(BR)CBO}$ | 30 | - | - | |
| Base-emitter breakdown voltage<br>$I_E$ = 10 µA, $I_C$ = 0 | $V_{(BR)EBO}$ | 3 | - | - | |
| Collector-base cutoff current<br>$V_{CB}$ = 20 V, $I_E$ = 0 | $I_{CBO}$ | - | - | 100 | nA |
| DC current gain<br>$I_C$ = 5 mA, $V_{CE}$ = 10 V<br>$I_C$ = 20 mA, $V_{CE}$ = 10 V | $h_{FE}$ | <br>35<br>40 | <br>95<br>100 | <br>-<br>250 | - |
| Collector-emitter saturation voltage<br>$I_C$ = 20 mA, $I_B$ = 2 mA | $V_{CEsat}$ | - | 0.1 | 0.3 | V |
| Base-emitter saturation voltage<br>$I_C$ = 20 mA, $I_B$ = 2 mA | $V_{BEsat}$ | - | - | 0.95 | |
| **AC characteristics** | | | | | |
| Transition frequency<br>$I_C$ = 5 mA, $V_{CE}$ = 10 V, $f$ = 100 MHz<br>$I_C$ = 20 mA, $V_{CE}$ = 8 V, $f$ = 100 MHz | $f_T$ | <br>-<br>- | <br>800<br>1100 | <br>-<br>- | MHz |
| Output capacitance<br>$V_{CB}$ = 10 V, $I_E$ = 0 mA, $f$ = 1 MHz | $C_{ob}$ | - | 0.96 | - | pF |
| Collector-base capacitance<br>$V_{CB}$ = 10 V, $f$ = 1 MHz | $C_{cb}$ | - | 0.7 | - | |
| Collector-emitter capacitance<br>$V_{CE}$ = 10 V, $f$ = 1 MHz | $C_{ce}$ | - | 0.28 | - | |
| Noise figure<br>$I_C$ = 5 mA, $V_{CE}$ = 10 V, $f$ = 100 MHz,<br>$Z_S$ = 50 Ω | $F$ | - | 3 | - | dB |
| Output conductance<br>$I_C$ = 20 mA, $V_{CE}$ = 10 V, $f$ = 35 MHz | $g_{22e}$ | - | 60 | - | µS |

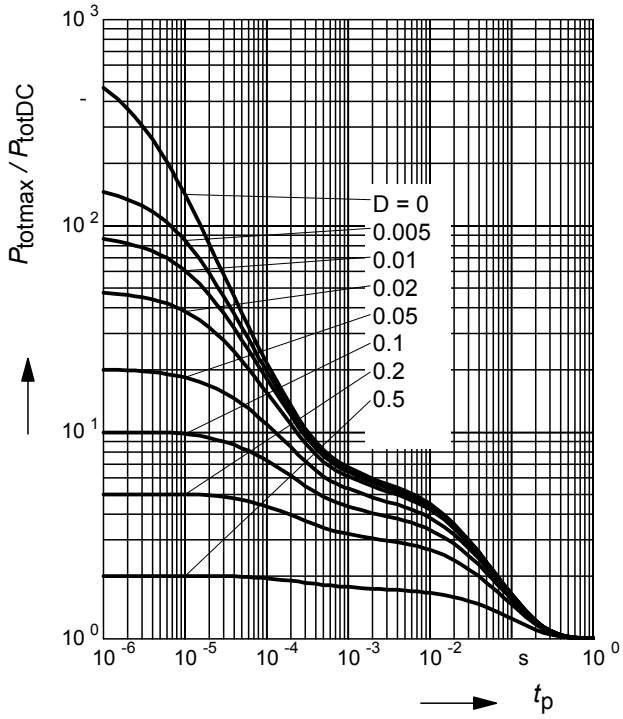
**Total power dissipation $P_{tot} = f(T_S)$**




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

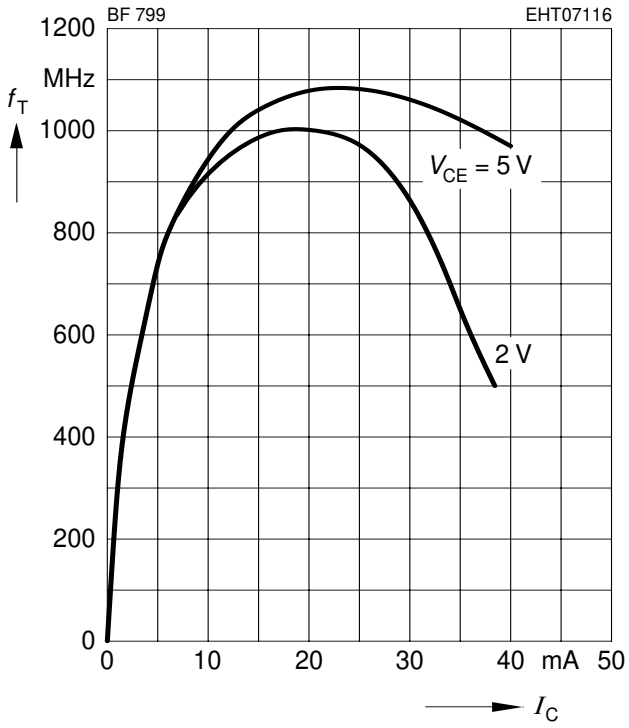



**Permissible Pulse Load $P_{totmax}/P_{totDC} = f(t_p)$**



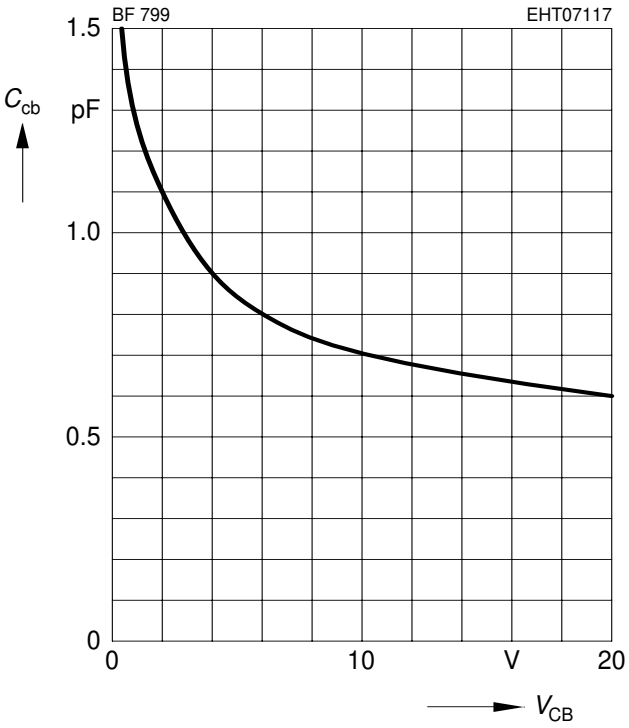
**Transition frequency** $f_T = f(I_C)$

$f$ = 100MHz

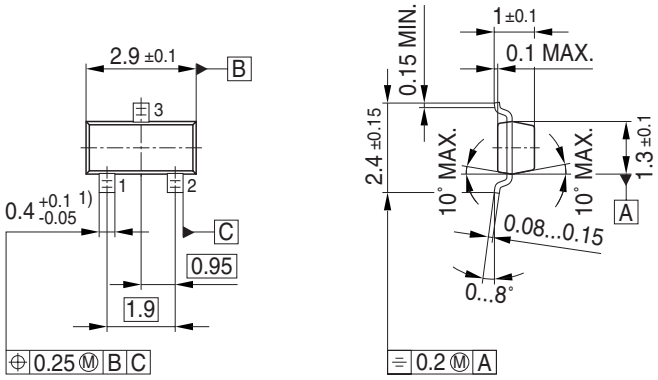



**Collector-base capacitance** $C_{cb} = f(V_{CB})$

$f$ = 1 MHz

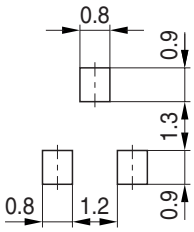


## Package Outline

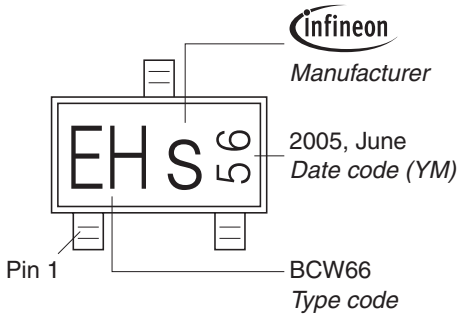



1) Lead width can be 0.6 max. in dambar area

## Foot Print

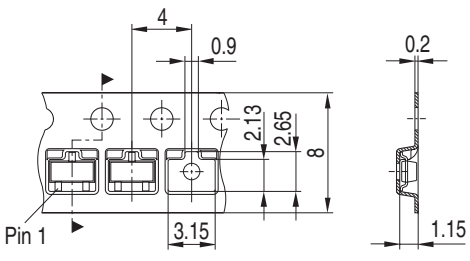



## Marking Layout (Example)




## Standard Packing

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



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