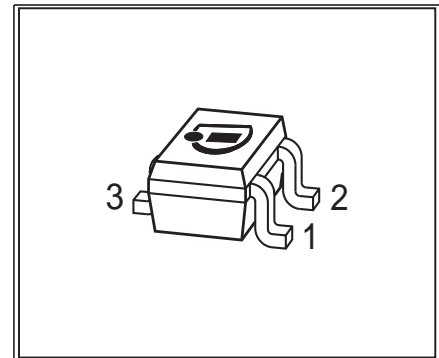


NPN Silicon RF Transistor

- For linear broadband amplifier application up to 500 MHz
- SAW filter driver in TV tuners
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101



| Type | Marking | Pin Configuration | | | Package |
|--------|---------|-------------------|-------|-------|---------|
| BF799W | LKs | 1 = B | 2 = E | 3 = C | SOT323 |

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 |
| Base current | I_B | 10 | |
| Total power dissipation $T_S = 107\text{ °C}$ | P_{tot} | 280 | mW |
| Junction temperature | T_j | 150 | |
| Storage temperature | T_{stg} | -65 ... 150 | |

Thermal Resistance

| | | | |
|--|------------|-------|-----|
| Junction - soldering point ²⁾ | R_{thJS} | ≤ 155 | K/W |
|--|------------|-------|-----|

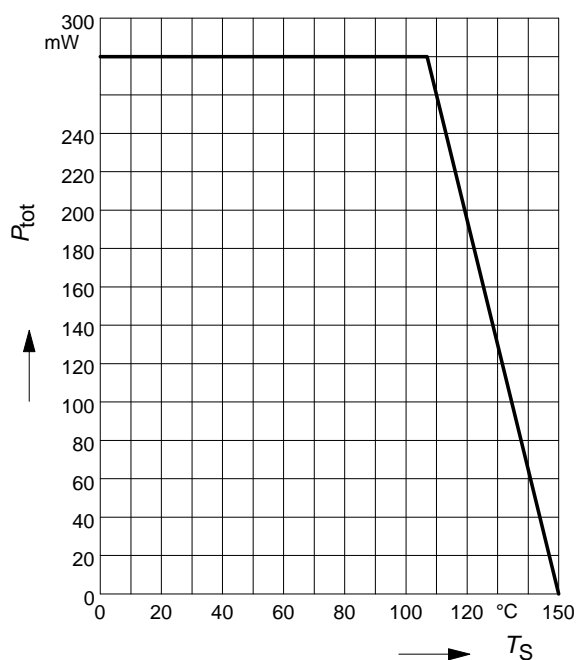
¹⁾Pb-containing package may be available upon special request

²⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

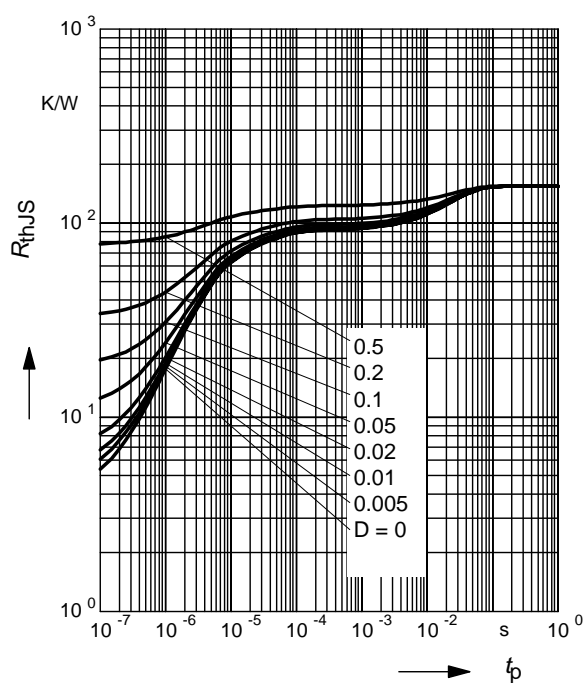
Electrical Characteristics at $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified.

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

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

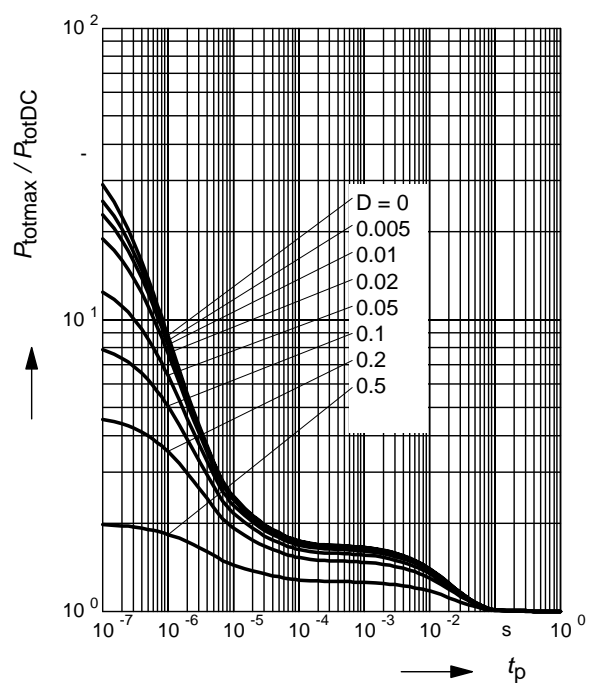


Permissible Pulse Load $R_{\text{thJS}} = f(t_p)$



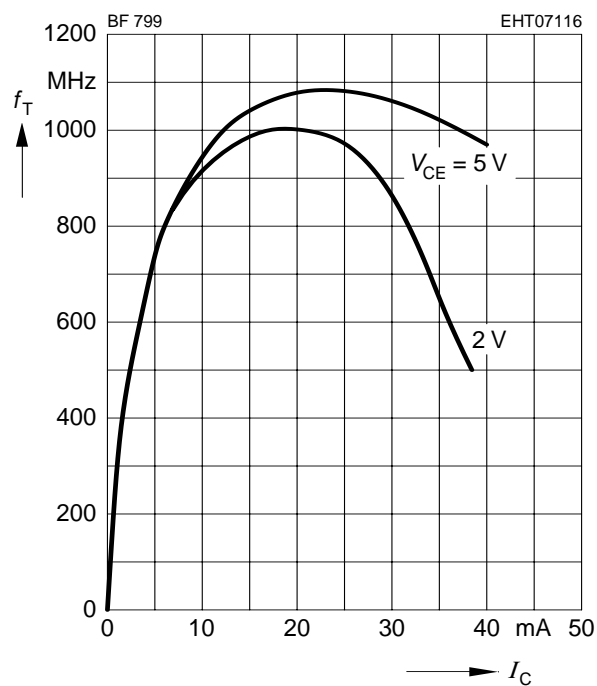
Permissible Pulse Load

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



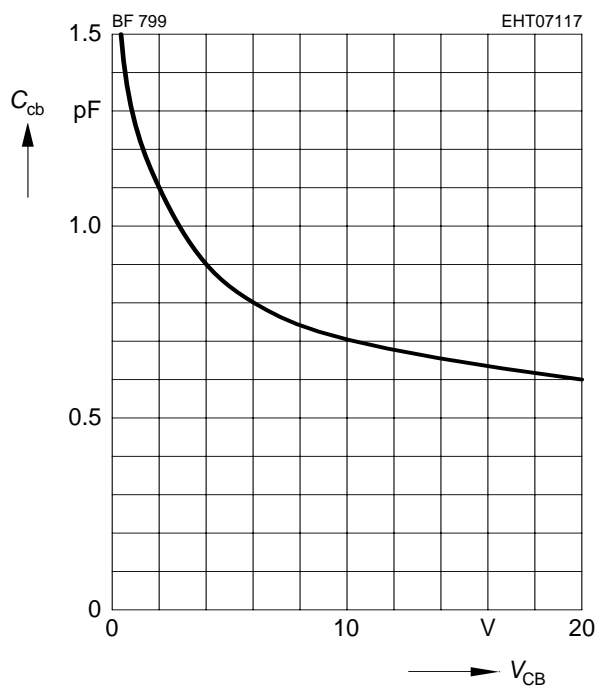
Transition frequency $f_T = f(I_C)$

$f = 100\text{MHz}$

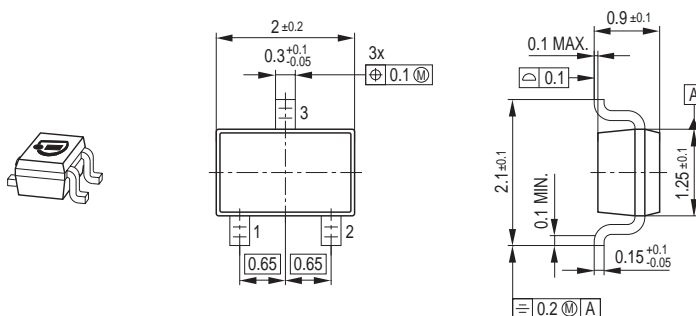


Collector-base capacitance $C_{cb} = f(V_{CB})$

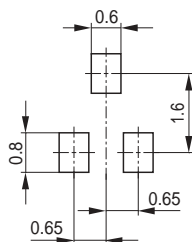
$f = 1\text{ MHz}$



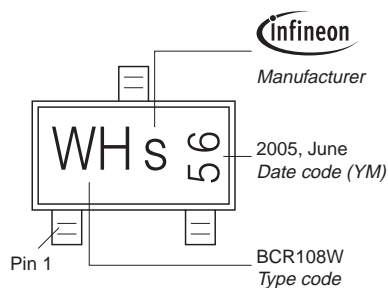
Package Outline



Foot Print

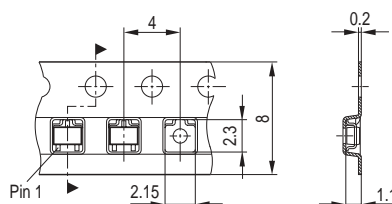


Marking Layout (Example)



Standard Packing

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



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