

25C D ■ 8235605 0004728 7 ■ SIEG

T-31-17

NPN Silicon RF Broadband Transistor

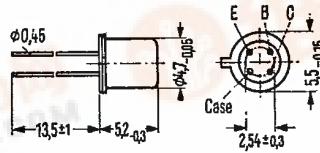
BFV 30

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Not for new design

BFV 30 is an epitaxial NPN silicon planar RF transistor in a TO 72 case (18 A 4 DIN 41876), designed for universal application up to the GHz range, e. g. for vertical amplifiers in broadband oscillographs and for broadband antenna amplifiers. The terminals E, B, C are insulated from the case.

| Type | Ordering code |
|--------|---------------|
| BFV 30 | Q62702-F320 |



Approx. weight 0.4 g Dimensions in mm

Maximum ratings

| | | | |
|--|-----------|-------------|-------------|
| Collector-base voltage | V_{CBO} | 20 | V |
| Collector-emitter voltage | V_{CEO} | 10 | V |
| Emitter-base voltage | V_{EBO} | 2.5 | V |
| Collector current | I_C | 50 | mA |
| Collector-peak current ($f \geq 1$ MHz) | I_{CM} | 100 | mA |
| Junction temperature | T_j | 200 | $^{\circ}C$ |
| Storage temperature range | T_{stg} | -65 to +175 | $^{\circ}C$ |
| Total power dissipation ($T_{amb} \leq 25^{\circ}C$) | P_{tot} | 250 | mW |

Thermal resistance

| | | | |
|-------------------------|------------|------------|-----|
| Junction to ambient air | R_{thJA} | ≤ 700 | K/W |
| Junction to case | R_{thJC} | ≤ 400 | K/W |

774

2105

C-14



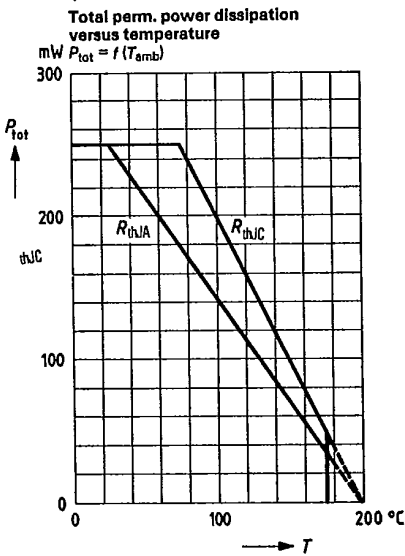
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Static characteristics ($T_{amb} = 25^{\circ}\text{C}$)

| | | | |
|--|-----------|-----------|----|
| Collector cutoff current ($V_{CBO} = 10\text{ V}$) | I_{CBO} | ≤ 50 | nA |
| DC current gain ($I_C = 25\text{ mA}; V_{CE} = 5\text{ V}$) | h_{FE} | ≥ 25 | - |
| ($I_C = 50\text{ mA}; V_{CE} = 5\text{ V}$) | h_{FE} | ≥ 25 | - |

Dynamic characteristics ($T_{amb} = 25^{\circ}\text{C}$)

| | | | |
|--|-----------|------------------|-----|
| Transition frequency ($I_C = 50\text{ mA}; V_{CE} = 5\text{ V}; f = 200\text{ MHz}$) | f_T | 1.6 | GHz |
| Reverse transfer capacitance ($I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; f = 1\text{ MHz}$) | C_{12e} | 0.8 | pF |
| Collector-base capacitance ($V_{CBO} = 5\text{ V}; f = 1\text{ MHz}$) | C_{CBO} | ≤ 1.5 | pF |
| Power gain ($I_C = 30\text{ mA}; V_{CE} = 5\text{ V}; f = 200\text{ MHz}; R_g = 60\ \Omega$) | G_{pe} | 21 (≥ 19) | dB |
| ($I_C = 30\text{ mA}; V_{CE} = 5\text{ V}; f = 800\text{ MHz}; R_g = 60\ \Omega$) | G_{pe} | 7.5 | dB |
| Noise figure ($I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; f = 500\text{ MHz}; R_g = 60\ \Omega$) | NF | ≤ 5 | dB |
| Output voltage ¹⁾ ($I_C = 30\text{ mA}; V_{CE} = 5\text{ V}; d_{IM} = 60\text{ dB}; R_g = R_L = 75\ \Omega$) | V_0 | 350 | mV |



1) Three tone modulation f approx. 800 MHz

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 25C 04730 D 7-31-17

BFW 30

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S parameter

Operating point: $V_{CE} = 5 \text{ V}$, $I_C = 30 \text{ mA}$, $Z_o = 50 \Omega$

| f (MHz) | S ₁₁ | φ | S ₂₁ | φ | S ₁₂ | φ | S ₂₂ | φ |
|------------|-----------------|------|-----------------|-----|-----------------|----|-----------------|-----|
| 0,1 | 0,171 | -89 | 11,49 | 107 | 0,036 | 74 | 0,580 | -17 |
| 0,2 | 0,133 | -126 | 6,20 | 94 | 0,064 | 80 | 0,494 | -13 |
| 0,3 | 0,133 | -148 | 4,26 | 89 | 0,093 | 82 | 0,465 | -11 |
| 0,4 | 0,154 | -160 | 3,27 | 84 | 0,122 | 84 | 0,450 | -10 |
| 0,5 | 0,177 | -165 | 2,67 | 80 | 0,150 | 85 | 0,417 | -11 |
| 0,6 | 0,197 | -168 | 2,28 | 77 | 0,178 | 86 | 0,402 | -15 |
| 0,7 | 0,214 | -171 | 1,98 | 73 | 0,201 | 87 | 0,399 | -17 |
| 0,8 | 0,230 | -172 | 1,84 | 69 | 0,229 | 88 | 0,399 | -20 |
| 0,9 | 0,224 | -170 | 1,69 | 68 | 0,260 | 89 | 0,406 | -24 |
| 1,0 | 0,221 | -172 | 1,54 | 66 | 0,286 | 89 | 0,419 | -27 |
| 1,1 | 0,204 | -173 | 1,42 | 63 | 0,309 | 90 | 0,447 | -28 |
| 1,2 | 0,183 | -172 | 1,33 | 59 | 0,332 | 89 | 0,465 | -31 |
| 1,3 | 0,138 | -168 | 1,26 | 57 | 0,355 | 88 | 0,501 | -32 |
| 1,4 | 0,100 | -168 | 1,17 | 53 | 0,372 | 87 | 0,515 | -32 |
| 1,5 | 0,061 | -162 | 1,11 | 49 | 0,390 | 83 | 0,534 | -35 |
| 1,6 | 0,039 | -127 | 1,05 | 45 | 0,409 | 80 | 0,564 | -37 |
| 1,7 | 0,068 | -80 | 0,99 | 40 | 0,416 | 77 | 0,605 | -41 |
| 1,8 | 0,142 | -83 | 0,87 | 31 | 0,393 | 71 | 0,650 | -49 |
| 1,9 | 0,299 | -97 | 0,69 | 17 | 0,321 | 61 | 0,734 | -60 |
| 2,0 | 0,559 | -124 | 0,32 | 4 | 0,161 | 62 | 0,786 | -81 |