

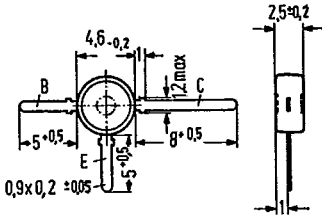
NPN Silicon RF Broadband Transistors

BFW 92  
2 N 6621

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BFW 92 is an epitaxial NPN silicon planar RF transistor in a plastic package similar to TO 119 (50 B 3 DIN 41867); intended for use as RF amplifier up to the GHz range, e. g. for broadband antenna amplifiers. This transistor is also available upon request as JEDEC version under the designation 2N6621.

| Type     | Ordering code |
|----------|---------------|
| BFW 92   | Q62702-F321   |
| 2 N 6621 | Q68000-A4669  |



Approx. weight 0.3 g    Dimensions in mm

Maximum ratings

- Collector-base voltage
- Collector-emitter voltage
- Emitter-base voltage
- Collector current
- Collector peak current ( $f > 1$  MHz)
- Junction temperature
- Storage temperature range
- Total power dissipation ( $T_{amb} = 70^{\circ}\text{C}$ )

|           | BFW 92<br>2 N 6621 |                    |
|-----------|--------------------|--------------------|
| $V_{CBO}$ | 25                 | V                  |
| $V_{CEO}$ | 15                 | V                  |
| $V_{EBO}$ | 2.5                | V                  |
| $I_C$     | 25                 | mA                 |
| $I_{CM}$  | 50                 | mA                 |
| $T_j$     | 150                | $^{\circ}\text{C}$ |
| $T_{stg}$ | -55 to +125        | $^{\circ}\text{C}$ |
| $P_{tot}$ | 200                | mW                 |

Thermal resistance

- Junction to ambient air  
(mounted on glass fiber epoxy resin  
PCB 40 mm x 25 mm x 1 mm)

|            |     |     |
|------------|-----|-----|
| $R_{thJA}$ | 400 | K/W |
|------------|-----|-----|

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

|                                                                                |             |             |    |
|--------------------------------------------------------------------------------|-------------|-------------|----|
| Collector cutoff current ( $V_{CBO} = 10\text{ V}$ )                           | $I_{CBO}$   | $\leq 50$   | nA |
| Collector-emitter saturation voltage <sup>1)</sup><br>( $I_C = 20\text{ mA}$ ) | $V_{CEsat}$ | $\leq 0.75$ | V  |
| DC current gain<br>( $I_C = 2\text{ mA}$ ; $V_{CE} = 1\text{ V}$ )             | $h_{FE}$    | 20 to 150   | —  |
| ( $I_C = 25\text{ mA}$ ; $V_{CE} = 1\text{ V}$ )                               | $h_{FE}$    | $\geq 20$   | —  |

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

|                                                                                                                                        |           |     |     |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------|-----|-----|
| Transition frequency<br>( $I_C = 14\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 200\text{ MHz}$ )                                        | $f_T$     | 1.9 | GHz |
| Reverse transfer capacitance<br>( $I_C = 2\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 1\text{ MHz}$ )                                   | $C_{12e}$ | 0.6 | pF  |
| Collector-base capacitance<br>( $V_{CBO} = 10\text{ V}$ ; $f = 1\text{ MHz}$ )                                                         | $C_{CBO}$ | 0.7 | pF  |
| Power gain<br>( $I_C = 14\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 800\text{ MHz}$ ; $R_g = 60\ \Omega$ )                             | $G_{ps}$  | 11  | dB  |
| Noise figure<br>( $I_C = 2\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ;<br>$f = 800\text{ MHz}$ ; $R_g = 60\ \Omega$ )                         | $NF$      | 4   | dB  |
| Output voltage <sup>2)</sup><br>( $I_C = 14\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $R_g = R_L = 75\ \Omega$<br>$d_{IM} = 60\text{ dB}$ ) | $V_o$     | 150 | mV  |

S parameter

Operating point:  $I_C = 14\text{ mA}$ ;  $V_{CE} = 5\text{ V}$ ;  $Z_o = 60\ \Omega$

| $f$<br>(GHz) | $S_{11}$ | $\varphi$ | $S_{21}$ | $\varphi$ | $S_{12}$ | $\varphi$ | $S_{22}$ | $\varphi$ |
|--------------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| 0,1          | 0,445    | -73       | 16,307   | 131       | 0,017    | 58        | 0,810    | -14       |
| 0,2          | 0,345    | -118      | 10,622   | 109       | 0,027    | 62        | 0,678    | -19       |
| 0,3          | 0,313    | -142      | 7,400    | 98        | 0,034    | 64        | 0,646    | -19       |
| 0,4          | 0,309    | -157      | 5,750    | 90        | 0,043    | 65        | 0,611    | -19       |
| 0,5          | 0,311    | -169      | 4,628    | 84        | 0,051    | 69        | 0,594    | -22       |
| 0,6          | 0,315    | -178      | 3,919    | 80        | 0,059    | 72        | 0,617    | -24       |
| 0,7          | 0,326    | 173       | 3,362    | 76        | 0,067    | 72        | 0,601    | -23       |
| 0,8          | 0,337    | 168       | 2,926    | 71        | 0,077    | 73        | 0,572    | -26       |
| 0,9          | 0,349    | 164       | 2,622    | 68        | 0,085    | 73        | 0,576    | -31       |
| 1,0          | 0,357    | 159       | 2,344    | 63        | 0,094    | 74        | 0,602    | -33       |

1) Applicable to that characteristic passing through  $I_C = 22\text{ mA}$ ;  $V_{CE} = 1\text{ V}$  at constant  $I_B$ .

2) Measured with three tone modulation  $f$  approx. 800 MHz

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