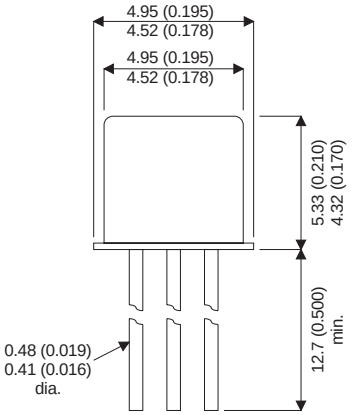
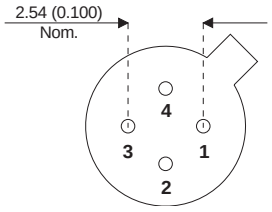
# BFY90

## MECHANICAL DATA

Dimensions in mm (inches)




**TO72**

# SILICON PLANAR EPITAXIAL NPN TRANSISTOR

## DESCRIPTION

The BFY90 is a low noise transistor intended for use in broad and narrow-band amplifiers up to 1GHz.

| | |
|---|---|
| Pin 1 – Emitter | Pin 3 – Collector |
| Pin 2 –Base | Pin 4 – Connected to Case |

## ABSOLUTE MAXIMUM RATINGS ($T_A$= 25°C unless otherwise stated)

| | | |
|---|---|---|
| $V_{CBO}$ | Collector – Base Voltage | 30V |
| $V_{CER}$ | Collector – Emitter Voltage ($R_{BE} \leq 50\Omega$ ) | 30V |
| $V_{CEO}$ | Collector – Emitter Voltage | 15V |
| $V_{EBO}$ | Emitter – Base Voltage | 2.5v |
| $I_{C(AV)}$ | Average Collector Current | 25mA |
| $I_{CM}$ | Peak Collector Current (f ≥1MHz) | 50mA |
| $P_{tot}$ | Power Dissipation at $T_{amb}$ = 25°C | 200mW°C |
| $T_j$ | Storage Temperature | 200°C |
| $T_{stg,}$ | Junction Temperature | –65 to +200°C |

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## ELECTRICAL CHARACTERISTICS ($T_A$= 25°C unless otherwise stated)

| | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector Cut Off Current | $V_{CB}$ = 15V | $I_E$ = 0 | | | 10 | nA |
| $V_{(BR)CEO}$* | Collector Emitter Breakdown Voltage | $I_C$ = 10mA | $I_B$ = 0 | 15 | | | V |
| $V_{(BR)CER}$* | Collector Emitter Breakdown Voltage | $I_C$ = 10mA | $R_{BE} \leq 50\Omega$ | 30 | | | |
| $V_{CEK}$ | Collector Emitter Knee Voltage | $I_C$ = 10mA | | | | 0.75 | |
| $h_{21E}$ | Static Forward Current Transfer Ratio | $V_{CE}$ = 1V | $I_C$ = 2mA | 25 | | 150 | — |
| | | $V_{CE}$ = 1V | $I_C$ = 25mA | 20 | | 125 | |
| | **DYNAMIC CHARACTERISTICS** | | | | | | |
| $f_T$ | Transition Frequency | $V_{CE}$ = 5V<br>f = 500MHz | $I_C$ = 2mA | 1 | | | GHz |
| | | $V_{CE}$ = 5V<br>f = 500MHz | $I_C$ = 25mA | | | 1.3 | |
| $C_{22b(1)}$ | Output Capacitance | $V_{CB}$ = 10V<br>f = 1MHz | $I_E$ = 0. | | | 1.5 | pF |
| $C_{12e(2)}$ | Open-Circuit Reverse Transfer Capacitance | $V_{CE}$ = 5V<br>f = 1MHz | $I_C$ = 0 | | | 0.8 | pF |
| NF | Noise Figure | $V_{CE}$ = 5V<br>f = 100kHz | $I_C$ = 2mA<br>$R_G$ optimum | | | 4 | dB |
| | | $V_{CE}$ = 5V<br>f = 200MHz | $I_C$ = 2mA<br>$R_G$ optimum | | | 3.5 | |
| | | $V_{CE}$ = 5V<br>f = 500MHz | $I_C$ = 2mA<br>$R_G$ = 50Ω | | | 5 | |
| | | $V_{CE}$ = 5V<br>f = 800MHz | $I_C$ = 2mA<br>$R_G$ optimum | | 5 | | |
| $G_p$ | Power Gain | $V_{CE}$ = 10V<br>f = 200MHz | $I_C$ = 14mA | 21 | | | dB |
| $P_{O(2)}$ | Output Power | $V_{CE}$ = 10V<br>$f_1$ = 202MHz<br>Output SWR ≤ 2<br>TOS sortie ≤ 2<br>$d_{IM}$* = - 30dB at 2 $f_2$ - $f_1$ = 208MHz | $I_C$ = 14mA<br>$f_2$= 205MHz | 10 | | | mW |

## THERMAL DATA

| | | | |
|---|---|---|---|
| $R_{th(j-a)}$ | Junction-ambient thermal resistance | ≤ 0.875 Max | °C/W |
| $R_{th(j-c)}$ | Junction-case thermal resistance | ≤ 0.575 Max | °C/W |

* Pulse test $t_p$ = 300μs , δ ≤ 2%

(1) Shield Lead (case) not connected
(2) Shield Lead (case) grounded
* Intermodulation Distortion

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