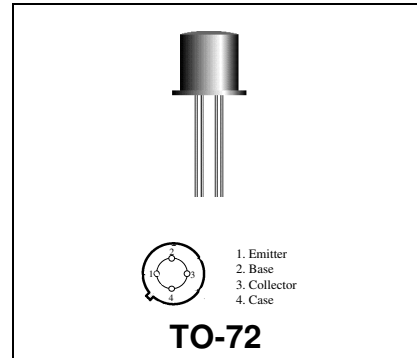


BFY90

RF & MICROWAVE DISCRETE LOW POWER TRANSISTORS

Features

- Silicon NPN, To-72 packaged VHF/UHF Transistor
- Low Noise, 2.5 dB (typ) @ 500 MHz, 5v, 2.0 mA,
- 1.3 GHz Current-Gain Bandwidth Product @ 25mA IC
- Power Gain, $G_{PE} = 19$ dB (typ) @ 200 MHz



DESCRIPTION:

Silicon NPN transistor, designed for VHF/UHF equipment. Applications include low noise amplifier; oscillator, and mixer applications.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

| Symbol | Parameter | Value | Unit |
|------------------|---------------------------|-------|------|
| V _{CEO} | Collector-Emitter Voltage | 15 | Vdc |
| V _{CBO} | Collector-Base Voltage | 30 | Vdc |
| V _{EBO} | Emitter-Base Voltage | 2.5 | Vdc |
| I _C | Collector Current | 50 | mA |

Thermal Data

| | | | |
|----------------|-----------------------------------------------------------------------|-------------|------------------|
| P _D | Total Device Dissipation @ T _A = 25°C Derate above 25°C | 200 1.14 | mWatts mW/ °C |
|----------------|-----------------------------------------------------------------------|-------------|------------------|

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)
**STATIC
(off)**

| Symbol | Test Conditions | Value | | | Unit |
|--------|----------------------------------------------------------------------------------------------------------|-------|------|------|-----------------|
| | | Min. | Typ. | Max. | |
| BVCEO | Collector-Emitter Breakdown Voltage (I _C = 10 mA _{dc} , I _B = 0) | 15 | - | - | V _{dc} |
| ICBO | Collector Cutoff Current (V _{CE} = 15 V _{dc} , I _E = 0 V _{dc}) | - | - | 10 | nA |

(on)

| | | | | | |
|-----|----------------------------------------------------------------------------------------------------|----|---|-----|---|
| HFE | DC Current Gain (I _C = 25 mA _{dc} , V _{CE} = 1.0 V _{dc}) | 20 | - | 125 | - |
|-----|----------------------------------------------------------------------------------------------------|----|---|-----|---|

DYNAMIC

| Symbol | Test Conditions | Value | | | Unit |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|-------|------|------|------|
| | | Min. | Typ. | Max. | |
| f _T | Current-Gain - Bandwidth Product (I _C = 25 mA _{dc} , V _{CE} = 5 V _{dc} , f = 500 MHz) | 1.3 | - | - | GHz |
| NF _{min} | (I _C = 2.0 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 500 MHz) | - | 2.5 | 5.0 | dB |
| C _{ibo} | Emitter-Base Capacitance (V _{EB} = 0.5 V _{dc} , I _C = 0, f = 1.0 MHz) | - | - | 2.0 | pF |

FUNCTIONAL

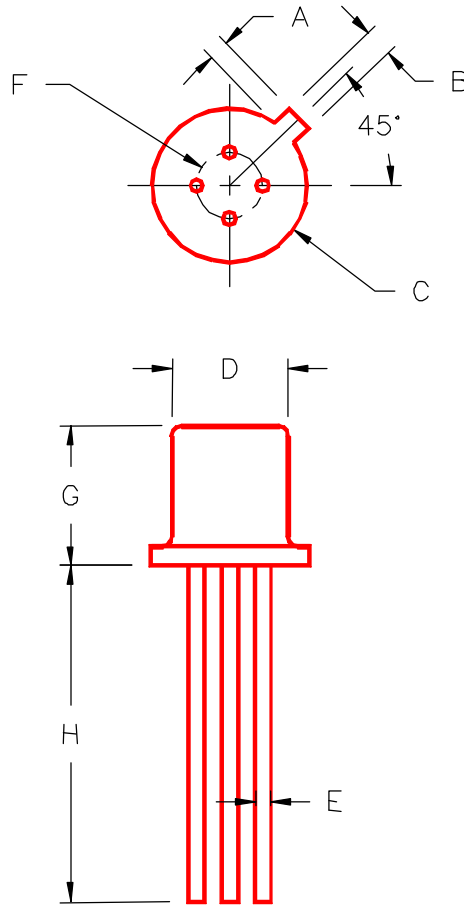
| Symbol | Test Conditions | | Value | | | Unit |
|--------------|-----------------------------|-------------------------------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| $G_{U \max}$ | Maximum Unilateral Gain (1) | IC = 8 mAdc, VCE = 10 Vdc, f = 200 MHz | - | 20 | - | dB |
| MSG | Maximum Stable Gain | IC = 8 mAdc, VCE = 10 Vdc, f = 200 MHz | - | 22 | - | dB |
| $ S_{21} ^2$ | Insertion Gain | IC = 8 mAdc, VCE = 10 Vdc, f = 200 MHz | 15 | 16 | - | dB |

Table 1. Common Emitter S-Parameters, @ VCE = 10 V, IC = 8 mA

| f (MHz) | S11 | | S21 | | S12 | | S22 | |
|------------|------|---------------|-------|---------------|------|---------------|------|---------------|
| | S11 | $\angle \phi$ | S21 | $\angle \phi$ | S12 | $\angle \phi$ | S22 | $\angle \phi$ |
| 100 | .574 | -79 | 10.65 | 127 | .023 | 67 | .788 | -56 |
| 200 | .374 | -130 | 7.01 | 105 | .036 | 60 | .682 | -97 |
| 300 | .292 | -172 | 4.44 | 97 | .047 | 66 | .654 | -136 |
| 400 | .259 | 142 | 3.62 | 92 | .063 | 63 | .640 | -178 |
| 500 | .221 | 96 | 3.02 | 88 | .072 | 60 | .617 | 140 |
| 600 | .198 | 53 | 2.57 | 80 | .082 | 58 | .614 | 98 |
| 700 | .185 | 8.8 | 2.08 | 76 | .087 | 58 | .611 | 55 |
| 800 | .187 | -38 | 1.90 | 76 | .104 | 58 | .621 | 10 |
| 900 | .185 | -91 | 1.79 | 72 | .117 | 50 | .620 | -35 |
| 1000 | .177 | -136 | 1.70 | 61 | .118 | 44 | .632 | -78 |

BFY90

PACKAGE STYLE M244



| | MINIMUM INCHES/MM | MAXIMUM INCHES/MM | | MINIMUM INCHES/MM | MAXIMUM INCHES/MM |
|---|----------------------|----------------------|--|----------------------|----------------------|
| A | .020/0,51 | .048/1,22 | | | |
| B | .036/0,91 | .046/1,17 | | | |
| C | .209/5,31 | .230/5,84 | | | |
| D | .178/4,52 | .195/4,95 | | | |
| E | .016/0,41 | .020/0,51 | | | |
| F | .100/2,54 | | | | |
| G | .170/4,32 | .210/5,33 | | | |
| H | .500/12,70 | | | | |