

2N5179

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC (off)

| Symbol | Test Conditions | Value | | | Unit |
|--------|---|-------|------|------|------|
| | | Min. | Typ. | Max. | |
| BVCEO | Collector-Emitter Sustaining Voltage (IC = 3.0 mAdc, IB = 0) | 12 | - | - | Vdc |
| BVCBO | Collector-Base Breakdown Voltage (IC=1.0 Adc, IE=0) | 20 | - | - | Vdc |
| BVEBO | Emitter Base Breakdown Voltage (IE = 0.01 mAdc, IC = 0) | 2.5 | - | - | Vdc |
| ICBO | Collector Cutoff Current (VCB = 15 Vdc, IE = 0) | - | - | .02 | mA |

(on)

| | | | | | |
|----------|---|----|---|-----|-----|
| HFE | DC Current Gain (IC = 3.0 mAdc, VCE = 1.0 Vdc) | 25 | - | 250 | - |
| VBE(sat) | Base-Emitter Saturation Voltage (IC = 10 mAdc, IB = 1.0 mAdc) | - | - | 1.0 | Vdc |
| VCE(sat) | Collector-Emitter Saturation Voltage (IC = 10 mAdc, IB = 1.0 mAdc) | - | - | 0.4 | Vdc |

DYNAMIC

| Symbol | Test Conditions | Value | | | Unit |
|----------------|---|-------|------|------|------|
| | | Min. | Typ. | Max. | |
| f _T | Current-Gain - Bandwidth Product (IC = 5.0 mAdc, VCE = 6 Vdc, f = 100 MHz) | 900 | 1500 | - | MHz |
| CCB | Collector-base Capacitance (VCB = 10 Vdc, IE = 0, f = 1.0 MHz) | - | - | 1.0 | pF |

FUNCTIONAL

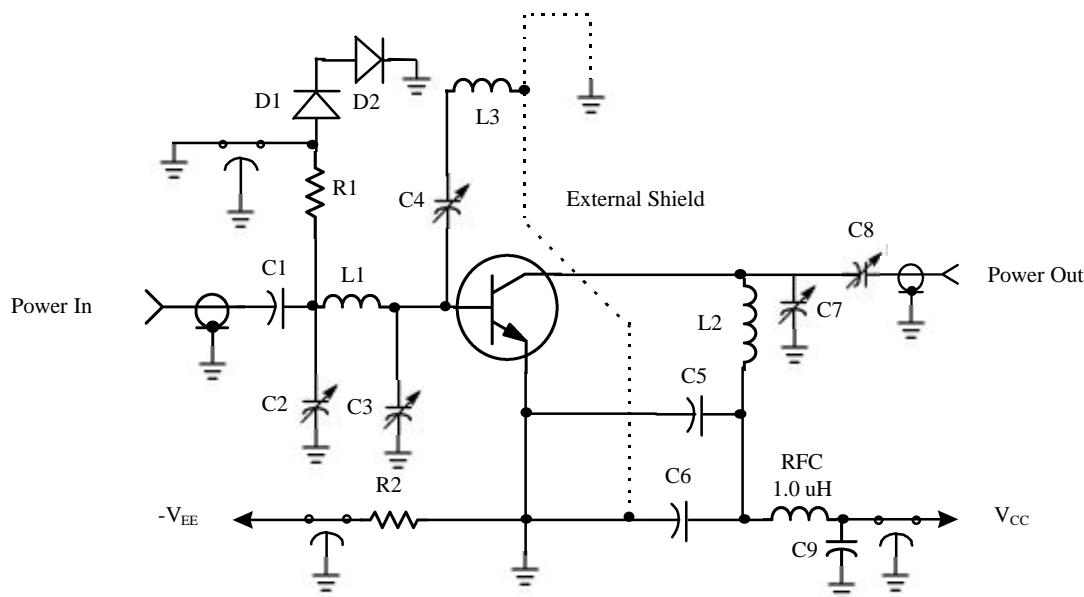
| Symbol | Test Conditions | | Value | | | Unit |
|--------|--|---|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| NF | Noise Figure (figure 1) | IC = 1.5 mAdc, VCE = 6.0 Vdc, f = 200 MHz | - | - | 4.5 | dB |
| GPE | Common-Emitter Amplifier Power Gain (figure 1) | IC = 1.5 mAdc, VCE = 6.0 Vdc, f = 200 MHz | 20 | - | - | dB |

FUNCTIONAL (CONT)

| Symbol | Test Conditions | | Value | | | Unit |
|--------------|-----------------------------|---|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| GU_{MAX} | Maximum Unilateral Gain (1) | IC = 5 mAdc, VCE = 6.0 Vdc, f = 200 MHz | - | 17 | - | dB |
| MAG | Maximum Available Gain | IC = 5 mAdc, VCE = 6.0 Vdc, f = 200 MHz | - | 18 | - | dB |
| $ S_{21} ^2$ | Insertion Gain | IC = 5 mAdc, VCE = 6.0 Vdc, f = 200 MHz | - | 12 | - | dB |

Note: 1. Maximum Unilateral Gain = $|S_{21}|^2 / (1 - |S_{11}|^2)(1 - |S_{22}|^2)$

TEST CIRCUIT SCHEMATIC



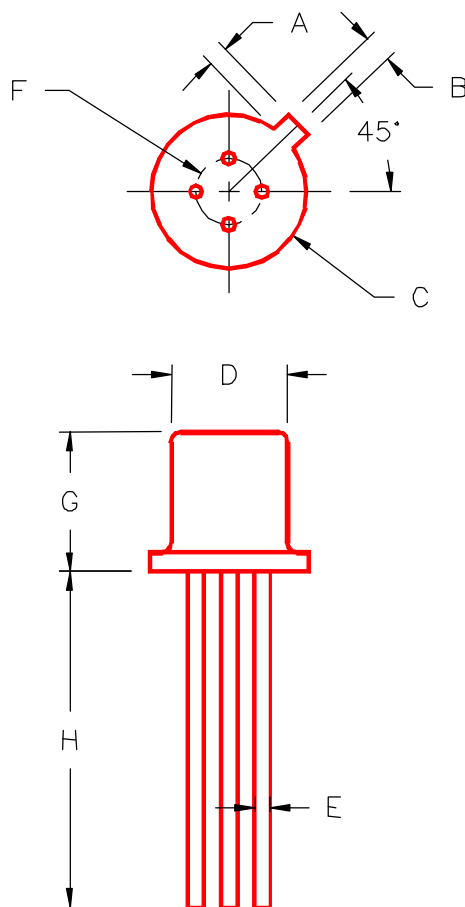
| | | | |
|-------------|------------|-----|----------------------------------|
| C1: | 0.02 uF | R2: | 10 K |
| C2: | 3.0-35 pF | L1: | 1 3/4 turn, #18 AWG |
| C3, C7, C8: | 2.0-10 pF | | 0.5" L, 0.5" Dia. |
| C4: | 1.0-5.0 pF | L2: | 2 turn, #16 AWG |
| C5, C9: | 0.1 uF | | 0.5" L, 0.5" Dia. |
| C6: | 0.001 uF | L3: | 2 turn, #13 AWG |
| Cbypass: | 1200 pF | | 0.25" L, 0.5" Dia. Position 1/4" |
| R1: | 91 ohm | | from L2 |

Figure 1. 200 MHz Amplifier for Power Gain and Noise Figure specifications.

Table 1. Common Emitter S-Parameters, @ VCE = 6 V, IC = 5 mA

| f | S11 | | S21 | | S12 | | S22 | |
|-------|------|---------------|------|---------------|------|---------------|------|---------------|
| (MHz) | S11 | $\angle \phi$ | S21 | $\angle \phi$ | S12 | $\angle \phi$ | S22 | $\angle \phi$ |
| 100 | .471 | -90 | 6.78 | 122 | .023 | 64 | .844 | -51 |
| 200 | .314 | -145 | 4.20 | 100 | .034 | 58 | .780 | -93 |
| 300 | .230 | 156 | 2.76 | 91 | .043 | 65 | .768 | -134 |
| 400 | .171 | 108 | 2.17 | 86 | .056 | 63 | .756 | -177 |
| 500 | .168 | 54 | 1.86 | 79 | .062 | 62 | .741 | 140 |
| 600 | .149 | -9 | 1.53 | 71 | .069 | 66 | .740 | 98 |
| 700 | .137 | -72 | 1.31 | 67 | .073 | 71 | .739 | 54 |
| 800 | .119 | -129 | 1.18 | 64 | .092 | 74 | .744 | 8 |
| 900 | .153 | -174 | 1.13 | 58 | .101 | 68 | .742 | -38 |
| 1000 | .171 | 122 | .979 | 49 | .106 | 71 | .749 | -82 |

PACKAGE STYLE M244



TO-72

| | 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 | | | | |