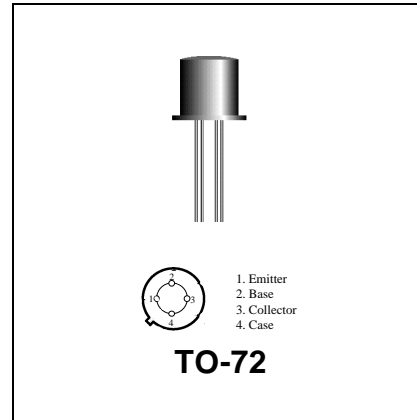


2N5031

**RF & MICROWAVE DISCRETE
LOW POWER TRANSISTORS**

Features

- Silicon NPN, To-72 packaged VHF/UHF Transistor
- 1.2 GHz Current-Gain Bandwidth Product @ 5mA IC
- Maximum Unilateral Gain – 12 dB (typ) @ 400 MHz



DESCRIPTION:

The 2N5031 is a silicon NPN transistor, designed for general purpose small-signal, pre-driver, and driver, applications targeted for military and industrial equipment.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

| Symbol | Parameter | Value | Unit |
|------------------|---------------------------|-------|------|
| V _{CEO} | Collector-Emitter Voltage | 10 | Vdc |
| V _{CBO} | Collector-Base Voltage | 15 | Vdc |
| V _{EBO} | Emitter-Base Voltage | 3.0 | Vdc |
| I _C | Collector Current | 20 | mA |

Thermal Data

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

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)
**STATIC
(off)**

| Symbol | Test Conditions | Value | | | Unit |
|--------|--|-------|------|------|------|
| | | Min. | Typ. | Max. | |
| BVCEO | Collector-Emitter Breakdown Voltage (IC = 1.0 mAdc, IB = 0) | 10 | - | - | Vdc |
| BVCBO | Collector-Base Breakdown Voltage (IC = 0.01 mAdc, IE = 0) | 15 | - | - | Vdc |
| BVEBO | Emitter-Base Breakdown Voltage (IE = 0.01mAdc, IC = 0) | 3.0 | - | - | Vdc |
| ICBO | Collector Cutoff Current (VCE = 6.0 Vdc, IE = 0 Vdc) | - | 1.0 | 10 | nA |

(on)

| | | | | | |
|-----|---|----|---|-----|---|
| HFE | DC Current Gain (IC = 1.0 mAdc, VCE = 6.0 Vdc) | 25 | - | 300 | - |
|-----|---|----|---|-----|---|

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) | 1200 | - | 2500 | MHz |
| CCB | Output Capacitance (IC = 1.0 mAdc, VCE = 6 Vdc, f = 450 MHz) | - | 2.5 | - | dB |

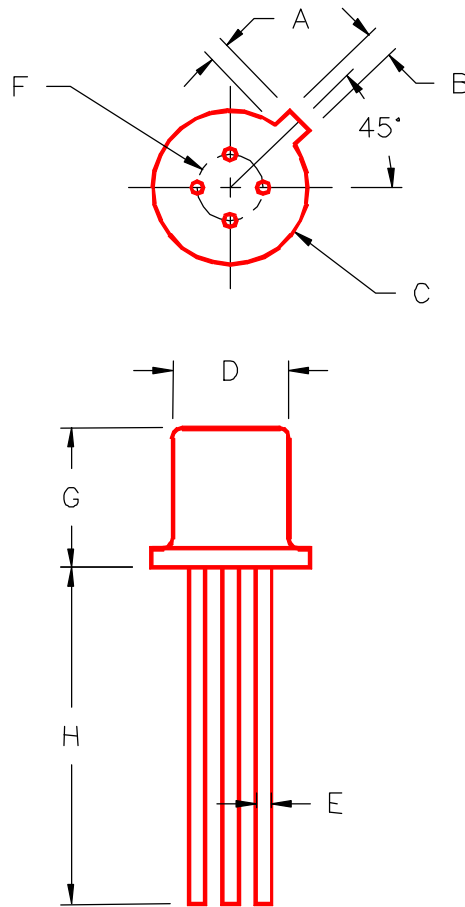
FUNCTIONAL

| Symbol | Test Conditions | | Value | | | Unit |
|--------------|-----------------------------|---|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| $G_{U \max}$ | Maximum Unilateral Gain (1) | IC = 1 mAdc, VCE = 6Vdc, f = 400 MHz | - | 12 | - | dB |
| MAG | Maximum Available Gain | IC = 1 mAdc, VCE = 6Vdc, f = 400 MHz | - | 12.4 | - | dB |

Table 1. Common Emitter S-Parameters, @ VCE = 10 V, IC = 50 mA

| f (MHz) | S11 | | S21 | | S12 | | S22 | |
|------------|------|---------------|------|---------------|------|---------------|------|---------------|
| | S11 | $\angle \phi$ | S21 | $\angle \phi$ | S12 | $\angle \phi$ | S22 | $\angle \phi$ |
| 100 | .610 | -137 | 23.8 | 116 | .026 | 46 | .522 | -78 |
| 200 | .659 | -161 | 13.2 | 98 | .033 | 47 | .351 | -106 |
| 300 | .671 | -171 | 9.0 | 89 | .040 | 51 | .304 | -120 |
| 400 | .675 | -178 | 6.8 | 83 | .047 | 55 | .292 | -128 |
| 500 | .677 | 176 | 5.5 | 77 | .055 | 58 | .293 | -132 |
| 600 | .678 | 172 | 4.6 | 72 | .064 | 61 | .299 | -134 |
| 700 | .677 | 168 | 4.0 | 68 | .073 | 62 | .306 | -135 |
| 800 | .679 | 184 | 3.5 | 64 | .082 | 63 | .314 | -136 |
| 900 | .678 | 160 | 3.1 | 60 | .092 | 64 | .322 | -138 |
| 1000 | .682 | 156 | 2.8 | 56 | .102 | 65 | .311 | -139 |

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 | | | | |