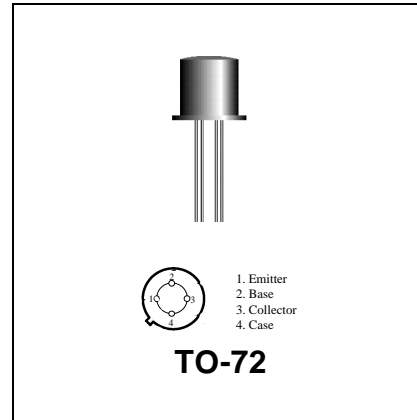


**2N5031**

**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 <sub>CEO</sub>	Collector-Emitter Voltage	10	Vdc
V <sub>CBO</sub>	Collector-Base Voltage	15	Vdc
V <sub>EBO</sub>	Emitter-Base Voltage	3.0	Vdc
I <sub>C</sub>	Collector Current	20	mA

**Thermal Data**

P <sub>D</sub>	Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	200 1.14	mWatts mW/ °C
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## 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	-
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### 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

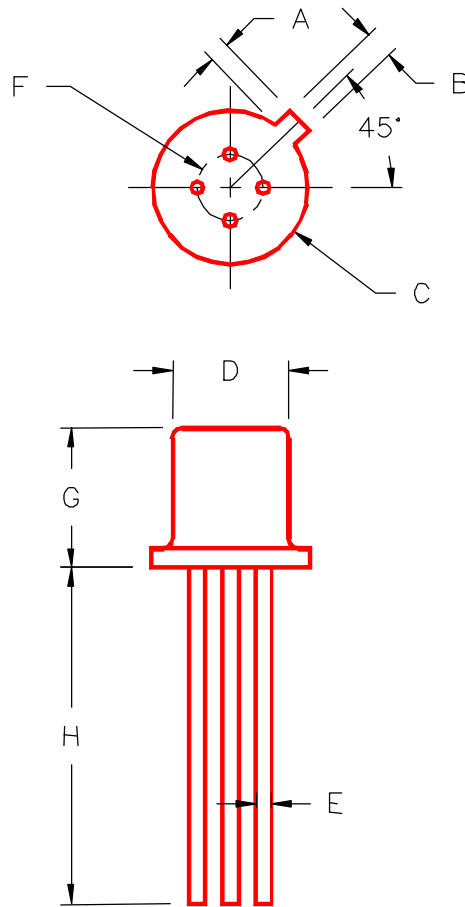
### FUNCTIONAL

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				