

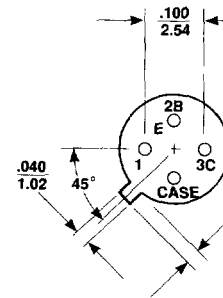
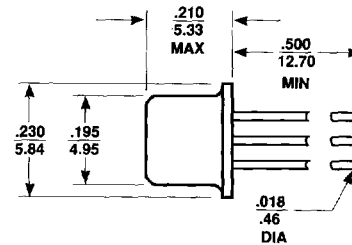
Features

- 19.0 dBm typical $P_{1\text{ dB}}$ at 1.0 GHz
- 6.0 dB typical $G_{1\text{ dB}}$ at 1.0 GHz
- 2.3 dB typical NF_O at 1.0 GHz
- High Gain-Bandwidth Product: 6.5 GHz typical f_T
- Hermetic, Metal Package

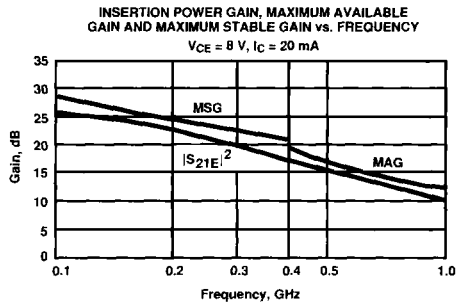
Description

The AT-00572 is a high performance NPN silicon bipolar transistor housed in a hermetic high reliability metal package. This device is designed for use in wide band amplifier and oscillator applications operating over VHF, UHF and micro-wave frequencies.

Excellent device uniformity, performance and reliability are produced by the use of ion-implantation, self-alignment techniques, and gold metallization in the fabrication of these devices.

TO-72 Package


- Notes:
(unless otherwise specified)
1. Dimensions are in mm
 2. Tolerances in .xxx = $\pm .005$
mm .xx = $\pm .13$


Electrical Specifications, $T_A = 25^\circ\text{C}$

Symbol	Parameters and Test Conditions	Units	Min.	Typ.	Max.
$ S_{21E} ^2$	Insertion Power Gain: $V_{CE} = 8\text{ V}, I_C = 20\text{ mA}$				
		$f = 0.5\text{ GHz}$	14.0	15.5	
		$f = 1.0\text{ GHz}$		10.0	
$P_{1\text{ dB}}$	Power Output @ 1 dB Gain Compression: $V_{CE} = 8\text{ V}, I_C = 20\text{ mA}$			19.0	
		$f = 1.0\text{ GHz}$			
$G_{1\text{ dB}}$	1 dB Compressed Gain: $V_{CE} = 8\text{ V}, I_C = 20\text{ mA}$			6.0	
		$f = 1.0\text{ GHz}$			
NF_O	Optimum Noise Figure: $V_{CE} = 8\text{ V}, I_C = 5\text{ mA}$			1.9	
		$f = 0.5\text{ GHz}$		2.3	
		$f = 1.0\text{ GHz}$			
G_A	Gain @ NF_O : $V_{CE} = 8\text{ V}, I_C = 5\text{ mA}$			12.0	
		$f = 0.5\text{ GHz}$		8.5	
		$f = 1.0\text{ GHz}$			
f_T	Gain Bandwidth Product: $V_{CE} = 8\text{ V}, I_C = 20\text{ mA}$			6.5	
h_{FE}	Forward Current Transfer Ratio: $V_{CE} = 8\text{ V}, I_C = 20\text{ mA}$		30	150	300
I_{CBO}	Collector Cutoff Current: $V_{CB} = 8\text{ V}$	μA			0.2
I_{EBO}	Emitter Cutoff Current: $V_{EB} = 1\text{ V}$	μA			1.0
C_{CB}	Collector Base Capacitance ¹ : $V_{CE} = 8\text{ V}, f = 1\text{ MHz}$	pF		0.65	

Note: 1. For this test, the emitter is grounded.

Absolute Maximum Ratings

Parameter	Symbol	Absolute Maximum ¹
Emitter-Base Voltage	VEBO	1.5 V
Collector-Base Voltage	VCBO	20 V
Collector-Emitter Voltage	VCEO	12 V
Collector Current	IC	50 mA
Power Dissipation ^{2,3}	PT	500 mW
Junction Temperature	Tj	200°C
Storage Temperature	TSTG	-65°C to 200°C

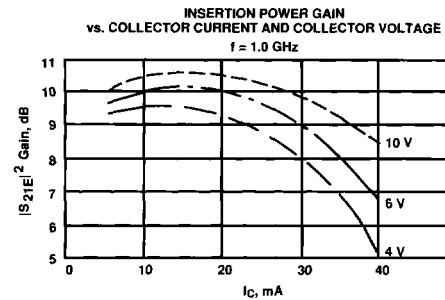
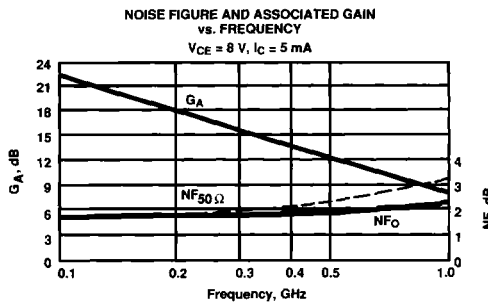
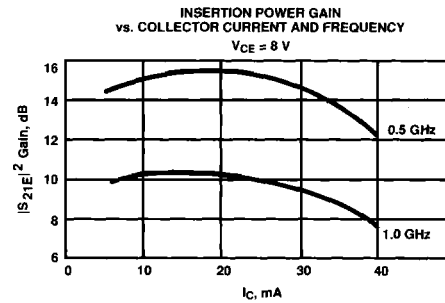
Thermal Resistance^{2,4}: $\theta_{jc} = 235^\circ\text{C/W}$

Notes:

1. Operation of this device above any one of these parameters may cause permanent damage.
2. TCASE = 25°C.
3. Derate at 4.3 mW/°C for TC > 83°C.
4. The small spot size of this technique results in a higher, though more accurate determination of θ_{jc} than do alternate methods. See MEASUREMENTS section "Thermal Resistance" for more information.

Typical Performance, TA = 25°C

(unless otherwise noted)



Typical Scattering Parameters: Common Emitter, ZO = 50 Ω

TA = 25°C, VCE = 8 V, IC = 5 mA

Freq. GHz	S11		S21		S12		S22			
	Mag	Ang	dB	Mag	Ang	dB	Mag	Ang		
0.1	.82	-22	19.1	8.99	150	-31.4	.027	75	.87	-19
0.2	.65	-40	18.7	8.57	129	-27.1	.044	72	.72	-27
0.3	.51	-54	17.6	7.55	116	-24.3	.061	69	.64	-30
0.4	.40	-61	16.0	6.29	103	-22.6	.074	66	.57	-30
0.5	.31	-65	14.6	5.34	94	-21.3	.086	65	.51	-31
0.6	.25	-70	13.5	4.73	91	-19.7	.103	67	.48	-35
0.7	.21	-73	12.4	4.17	84	-18.6	.118	65	.45	-39
0.8	.17	-76	11.6	3.81	79	-17.6	.131	64	.44	-43
0.9	.16	-81	10.5	3.37	76	-16.8	.145	65	.46	-47
1.0	.14	-83	10.0	3.14	72	-16.0	.158	64	.46	-48

TA = 25°C, VCE = 8 V, IC = 20 mA

0.1	.51	-39	25.7	19.28	131	-32.8	.023	77	.74	-21
0.2	.33	-51	22.3	12.96	110	-28.2	.039	77	.60	-24
0.3	.24	-58	19.6	9.50	100	-25.2	.055	77	.53	-26
0.4	.19	-58	17.3	7.28	91	-23.2	.069	74	.49	-24
0.5	.16	-57	15.4	5.91	85	-21.6	.084	72	.46	-25
0.6	.13	-57	14.1	5.09	83	-19.8	.102	73	.44	-29
0.7	.11	-56	13.0	4.44	78	-18.5	.119	70	.42	-33
0.8	.09	-59	12.1	4.02	74	-17.5	.134	69	.41	-37
0.9	.08	-64	10.9	3.52	72	-16.5	.149	70	.43	-42
1.0	.08	-64	10.3	3.29	68	-15.8	.163	68	.44	-44