

Features

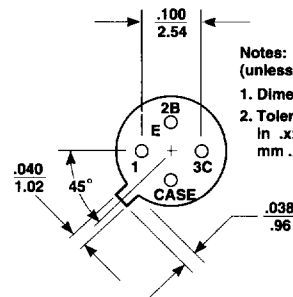
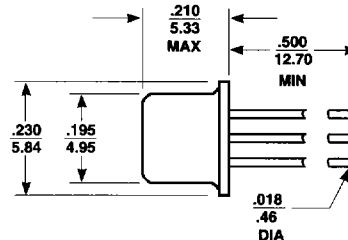
- 24.0 dBm typical $P_{1\text{ dB}}$ at 1.0 GHz
- 5.5 dB typical $G_{1\text{ dB}}$ at 1.0 GHz
- High Gain-Bandwidth Product: 5.5 GHz typical f_T
- Hermetic, Metal Package

Description

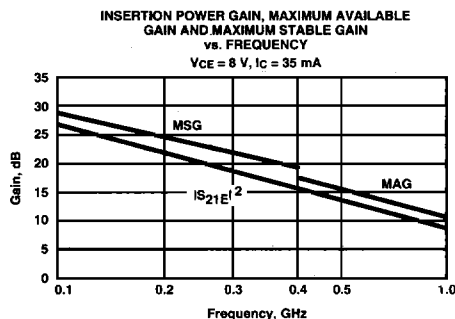
The AT-01672 is a high performance NPN silicon bipolar transistor housed in a hermetic high reliability metal package. This device is designed for use in medium power amplifier applications operating over VHF, UHF and microwave frequencies.

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 = ±.005 mm .xx = ±.13



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

Symbol	Parameters and Test Conditions	Units	Min.	Typ.	Max.
IS_{21E}^2	Insertion Power Gain: $V_{CE} = 8\text{ V}, I_C = 35\text{ mA}$	dB	13.0	14.5	
$P_{1\text{ dB}}$	Power Output @ 1 dB Gain Compression: $V_{CE} = 8\text{ V}, I_C = 60\text{ mA}$	dBm		24.0	
$G_{1\text{ dB}}$	1 dB Compressed Gain: $V_{CE} = 8\text{ V}, I_C = 60\text{ mA}$	dB		5.5	
NFO	Optimum Noise Figure: $V_{CE} = 8\text{ V}, I_C = 35\text{ mA}$	dB		2.0	
GA	Gain @ NFO: $V_{CE} = 8\text{ V}, I_C = 35\text{ mA}$	dB		10.5	
f_T	Gain Bandwidth Product: $V_{CE} = 8\text{ V}, I_C = 10\text{ mA}$	GHz		5.5	
hFE	Forward Current Transfer Ratio: $V_{CE} = 8\text{ V}, I_C = 35\text{ mA}$		30	150	300
ICBO	Collector Cutoff Current: $V_{CB} = 8\text{ V}$	μA			0.2
IEBO	Emitter Cutoff Current: $V_{EB} = 1\text{ V}$	μA			2.0
CCB	Collector Base Capacitance ¹ : $V_{CB} = 8\text{ V}, f = 1\text{ MHz}$	pF		1.0	

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

AT-01672
General Purpose Silicon Bipolar Transistor

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	150 mA
Power Dissipation ^{2,3}	PT	1000 mW
Junction Temperature	Tj	200°C
Storage Temperature	TSTG	-65° to 200°C

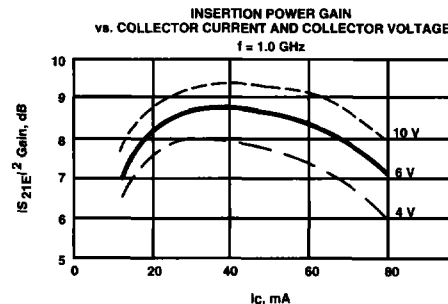
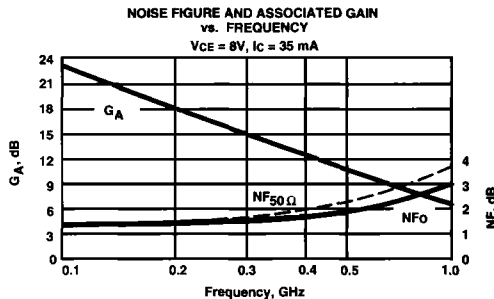
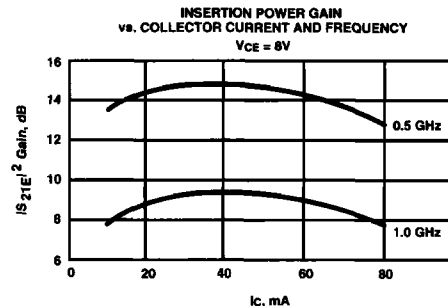
Thermal Resistance^{2,4}: $\theta_{jc} = 190^\circ\text{C/W}$

Notes:

1. Operation of this device above any one of these parameters may use permanent damage.
2. TCASE = 25°C.
3. Derate at 5.3 mW/°C for Tc > 10°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 = 35 mA

Freq. GHz	S11		S21			S12			S22	
	Mag	Ang	dB	Mag	Ang	dB	Mag	Ang	Mag	Ang
0.1	.33	-81	26.7	21.73	114	-30.2	.031	72	.51	-36
0.2	.22	-112	21.8	12.28	98	-26.0	.050	75	.36	-36
0.3	.19	-134	18.7	8.61	92	-22.8	.072	74	.30	-37
0.4	.18	-148	16.4	6.58	83	-21.0	.090	72	.26	-34
0.5	.17	-159	14.6	5.35	79	-19.1	.111	70	.22	-33
0.6	.17	-171	13.1	4.51	77	-17.5	.133	71	.21	-38
0.7	.17	178	12.0	3.97	72	-16.2	.154	68	.19	-45
0.8	.18	171	11.1	3.61	68	-15.3	.172	66	.18	-53
0.9	.18	169	9.9	3.12	65	-14.3	.192	66	.20	-58
1.0	.19	164	9.2	2.89	61	-13.5	.212	63	.22	-60

TA = 25°C, VCE = 8 V, Ic = 60 mA

0.1	.30	-92	26.7	21.60	110	-30.4	.030	73	.47	-35
0.2	.22	-125	21.5	11.92	96	-26.2	.049	76	.33	-35
0.3	.21	-145	18.4	8.29	90	-23.0	.070	75	.28	-34
0.4	.20	-159	16.1	6.35	82	-21.0	.089	72	.26	-31
0.5	.19	-169	14.2	5.16	77	-19.3	.109	70	.23	-31
0.6	.20	-178	12.8	4.34	76	-17.7	.131	72	.21	-37
0.7	.20	173	11.6	3.81	71	-16.4	.152	68	.19	-43
0.8	.21	167	10.8	3.47	67	-15.4	.170	66	.19	-51
0.9	.21	165	9.5	2.99	64	-14.5	.189	67	.21	-58
1.0	.22	160	8.9	2.78	60	-13.6	.208	64	.23	-60

A model for this device is available in the DEVICE MODELS section.