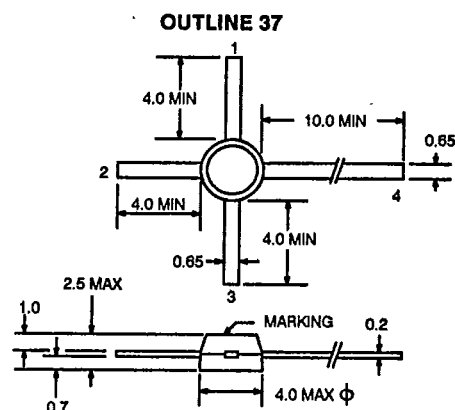


NEC[®]**NPN SILICON HIGH
FREQUENCY TRANSISTOR****NE68337****FEATURES**

- LOW OPERATING VOLTAGE
- LOW POWER CONSUMPTION
- HIGH INPUT IMPEDANCE

DESCRIPTION AND APPLICATIONS

The NE68337 is designed primarily for use in low voltage and low current applications up to 2 GHz. The NE68337 is ideal for pagers, electro-optic detector post-amplifier applications, and other battery powered systems.

OUTLINE DIMENSIONS (Units in mm)**ABSOLUTE MAXIMUM RATINGS** ($T_A = 25^\circ\text{C}$)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CB0}	Collector to Base Voltage	V	15
V_{CE0}	Collector to Emitter Voltage	V	8
V_{EB0}	Emitter to Base Voltage	V	2
I_C	Collector Current	mA	5
T_J	Junction Temperature	$^\circ\text{C}$	150
T_{STG}	Storage Temperature	$^\circ\text{C}$	-65 to +150

PIN CONNECTIONS

1. Emitter
2. Base
3. Emitter
4. Collector

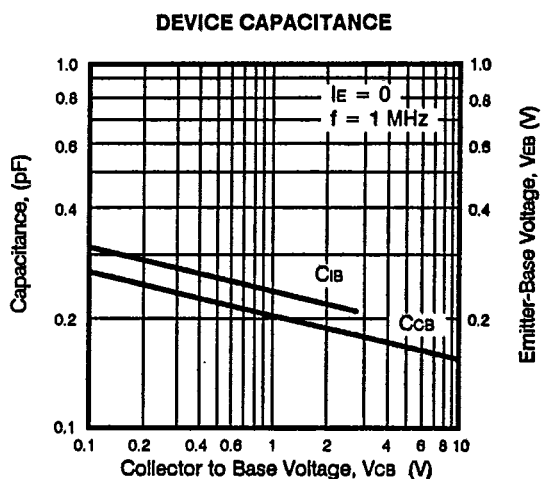
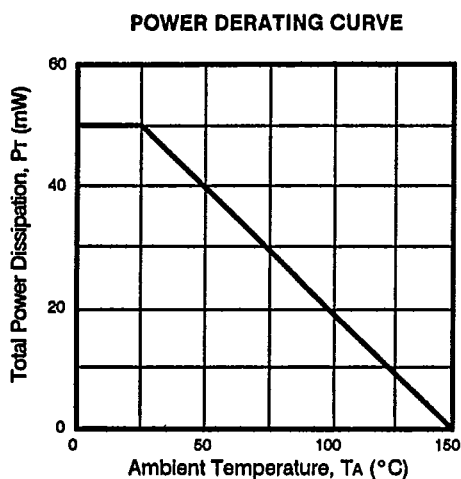
PERFORMANCE SPECIFICATIONS ($T_A = 25^\circ\text{C}$)

PART NUMBER PACKAGE OUTLINE			NE68337 37		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
f_T	Gain Bandwidth Product at $V_{CE} = 1\text{ V}$, $I_C = 1\text{ mA}$	GHz		4.0	
$ S_{21E} ^2$	Insertion Power Gain at $V_{CE} = 1\text{ V}$, $I_C = 1\text{ mA}$, $f = 1\text{ GHz}$	dB	5.5	7.5	
MAG	Maximum Available Gain at $V_{CE} = 1\text{ V}$, $I_C = 1\text{ mA}$, $f = 1\text{ GHz}$	dB	13.0	14.5	
NF	Noise Figure at $V_{CE} = 1\text{ V}$, $I_C = 0.25\text{ mA}$, $f = 1\text{ GHz}$	dB		3.0	4.5
GA	Associated Gain at Optimum Noise Figure, $V_{CE} = 1\text{ V}$, $I_C = 0.25\text{ mA}$, $f = 1\text{ GHz}$	dB		6.5	

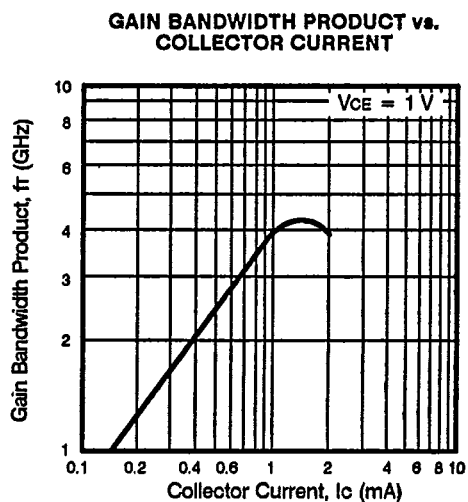
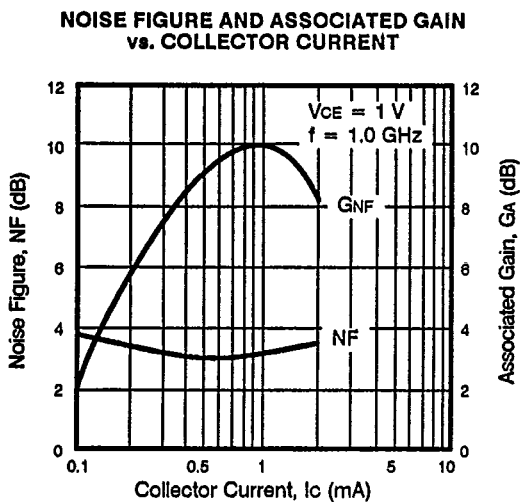
ELECTRICAL CHARACTERISTICS (TA = 25°C)

PART NUMBER PACKAGE OUTLINE			NE68337 37		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
ICBO	Collector Cutoff Current at VCB = 5 V, IE = 0	μA			0.1
IEBO	Emitter Cutoff Current at VEB = 1 V, IC = 0	μA			0.1
hFE	Forward Current Gain at VCE = 1 V, IC = 250 μA		50	100	250
CcB	Collector to Base Capacitance at VCB = 1 V, IE = 0, f = 1 MHz	pF		0.2	0.3
PT	Total Power Dissipation	mW			50

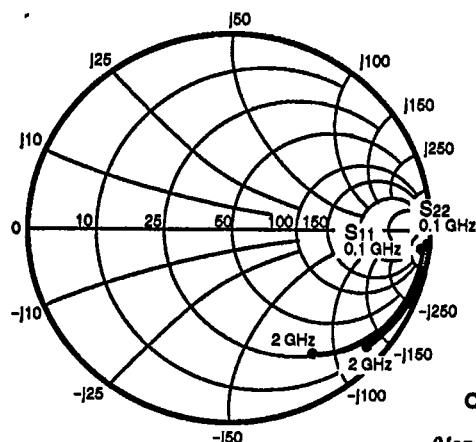
TYPICAL DEVICE CHARACTERISTICS (TA = 25°C)



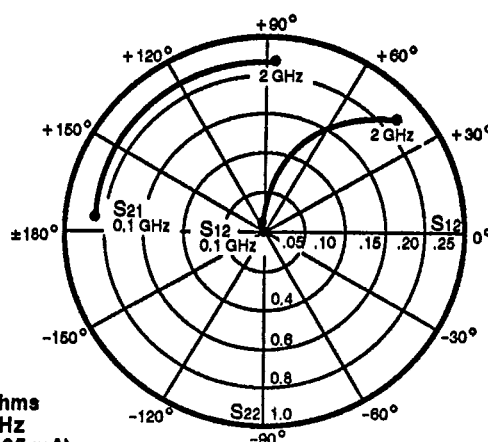
TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25°C)



TYPICAL COMMON EMITTER SCATTERING PARAMETERS



NE68337
Coordinates in Ohms
Frequency in GHz
($V_{CE} = 1.0 \text{ V}$, $I_C = 0.25 \text{ mA}$)

**S-MAGN AND ANGLES:** **$V_{CE} = 1.0 \text{ V}$, $I_C = 0.25 \text{ mA}$** **FREQUENCY (MHz)**

	S_{11}	S_{21}	S_{12}	S_{22}
100	0.99 -3	0.82 174	0.01 92	1.00 -2
200	0.99 -6	0.84 171	0.02 84	1.00 -4
400	0.99 -10	0.82 162	0.05 82	1.00 -9
600	0.99 -16	0.85 153	0.08 75	1.00 -12
800	0.96 -21	0.86 142	0.10 70	0.99 -16
1000	0.94 -28	0.86 132	0.13 65	0.97 -22
1200	0.89 -35	0.86 123	0.15 59	0.97 -26
1400	0.87 -40	0.88 112	0.17 55	0.95 -30
1600	0.83 -45	0.87 104	0.19 51	0.92 -34
1800	0.79 -50	0.88 95	0.20 46	0.92 -39
2000	0.74 -56	0.87 88	0.22 42	0.89 -42

 $V_{CE} = 1.0 \text{ V}$, $I_C = 0.5 \text{ mA}$

	S_{11}	S_{21}	S_{12}	S_{22}
100	0.99 -3	1.57 173	0.01 87	1.00 -2
200	0.98 -8	1.60 169	0.02 86	1.00 -5
400	0.97 -13	1.54 159	0.05 80	1.00 -10
600	0.96 -19	1.57 149	0.08 73	0.99 -14
800	0.91 -26	1.53 138	0.10 69	0.97 -18
1000	0.87 -33	1.51 128	0.12 63	0.94 -24
1200	0.80 -40	1.47 117	0.14 57	0.93 -28
1400	0.76 -45	1.46 107	0.16 53	0.90 -32
1600	0.71 -50	1.40 99	0.17 50	0.86 -36
1800	0.66 -54	1.37 89	0.19 44	0.86 -40
2000	0.61 -59	1.32 83	0.20 42	0.83 -43

 $V_{CE} = 1.0 \text{ V}$, $I_C = 0.75 \text{ mA}$

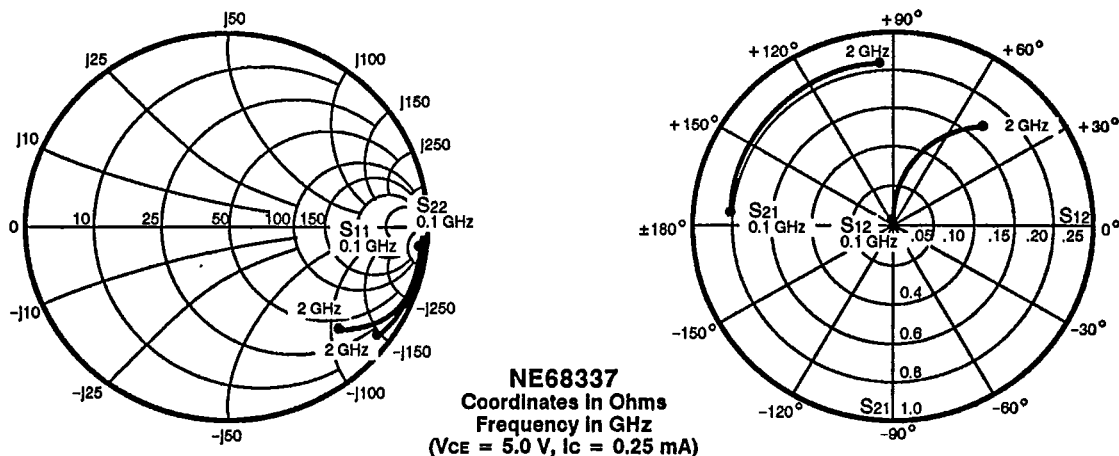
	S_{11}	S_{21}	S_{12}	S_{22}
100	0.98 -4	2.27 172	0.01 84	1.00 -3
200	0.97 -9	2.30 167	0.02 84	0.99 -5
400	0.95 -15	2.17 156	0.05 77	0.98 -11
600	0.92 -22	2.19 145	0.07 72	0.96 -16
800	0.85 -29	2.10 132	0.10 66	0.93 -20
1000	0.80 -37	2.02 122	0.11 61	0.90 -26
1200	0.72 -44	1.92 111	0.13 56	0.88 -30
1400	0.67 -48	1.85 101	0.15 52	0.85 -33
1600	0.61 -53	1.74 93	0.16 49	0.82 -36
1800	0.56 -56	1.66 84	0.17 45	0.81 -41
2000	0.51 -60	1.57 77	0.19 43	0.78 -43

 $V_{CE} = 1.0 \text{ V}$, $I_C = 1.0 \text{ mA}$

	S_{11}	S_{21}	S_{12}	S_{22}
100	0.97 -4	2.93 171	0.01 88	1.00 -3
200	0.96 -10	2.95 165	0.02 81	0.99 -6
400	0.93 -17	2.75 152	0.05 76	0.98 -12
600	0.88 -25	2.72 140	0.07 70	0.95 -17
800	0.80 -32	2.55 127	0.09 64	0.91 -21
1000	0.73 -40	2.39 116	0.11 60	0.87 -26
1200	0.65 -46	2.24 106	0.13 55	0.85 -30
1400	0.59 -50	2.11 96	0.14 52	0.82 -33
1600	0.54 -53	1.97 88	0.15 50	0.78 -37
1800	0.49 -55	1.85 80	0.17 47	0.77 -40
2000	0.45 -59	1.72 73	0.18 45	0.75 -43

NE68337

TYPICAL COMMON EMITTER SCATTERING PARAMETERS



S-MAGN AND ANGLES:

VCE = 5.0 V, IC = 0.25 mA

FREQUENCY (MHz)

	S11		S21		S12		S22	
100	0.99	-2	0.80	174	0.00	89	1.00	-2
200	0.99	-5	0.82	172	0.01	87	1.00	-3
400	1.00	-9	0.80	164	0.03	82	1.00	-7
600	1.00	-14	0.83	156	0.06	79	1.00	-10
800	0.97	-19	0.83	146	0.08	73	1.00	-14
1000	0.96	-25	0.84	137	0.09	69	1.00	-18
1200	0.91	-31	0.83	128	0.11	63	1.00	-22
1400	0.89	-35	0.85	118	0.13	59	0.98	-26
1600	0.86	-40	0.84	111	0.14	56	0.96	-29
1800	0.84	-45	0.85	102	0.15	51	0.95	-34
2000	0.79	-50	0.84	95	0.17	48	0.95	-37

VCE = 5.0 V, IC = 0.5 mA

	S11		S21		S12		S22	
100	0.98	-3	1.54	174	0.01	93	1.00	-2
200	0.99	-7	1.58	170	0.01	81	1.00	-3
400	0.97	-11	1.52	161	0.03	80	1.00	-8
600	0.97	-17	1.56	152	0.05	76	1.00	-12
800	0.93	-22	1.52	141	0.07	72	1.00	-15
1000	0.89	-30	1.50	132	0.09	67	0.96	-20
1200	0.84	-36	1.45	122	0.11	61	0.96	-23
1400	0.80	-40	1.46	112	0.12	58	0.94	-27
1600	0.76	-44	1.40	105	0.13	55	0.92	-30
1800	0.71	-49	1.38	95	0.14	51	0.91	-35
2000	0.66	-53	1.32	89	0.15	49	0.90	-37

VCE = 5.0 V, IC = 0.75 mA

	S11		S21		S12		S22	
100	0.97	-3	2.26	173	0.01	83	1.00	-2
200	0.97	-7	2.30	168	0.01	81	1.00	-4
400	0.96	-13	2.18	158	0.03	80	0.99	-9
600	0.93	-19	2.20	148	0.05	73	0.98	-13
800	0.88	-26	2.11	136	0.07	70	0.96	-17
1000	0.83	-33	2.04	126	0.09	65	0.94	-21
1200	0.77	-39	1.94	116	0.10	61	0.93	-25
1400	0.72	-43	1.89	106	0.11	58	0.91	-28
1600	0.67	-46	1.78	98	0.12	55	0.88	-31
1800	0.62	-49	1.70	90	0.13	52	0.88	-35
2000	0.58	-53	1.61	83	0.15	50	0.86	-38

VCE = 5.0 V, IC = 1.0 mA

	S11		S21		S12		S22	
100	0.97	-3	2.90	172	0.01	89	1.00	-2
200	0.97	-9	2.93	166	0.01	84	1.00	-4
400	0.94	-15	2.76	155	0.03	80	1.00	-10
600	0.90	-21	2.73	144	0.05	73	0.98	-13
800	0.83	-28	2.58	131	0.07	70	0.95	-17
1000	0.78	-35	2.45	121	0.08	65	0.92	-22
1200	0.70	-40	2.29	111	0.10	61	0.91	-25
1400	0.65	-43	2.19	101	0.11	57	0.88	-28
1600	0.60	-46	2.03	94	0.12	56	0.86	-31
1800	0.56	-49	1.92	85	0.13	53	0.85	-35
2000	0.52	-52	1.79	79	0.14	51	0.83	-37