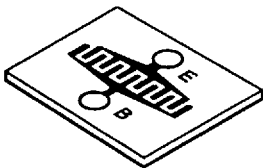
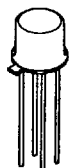


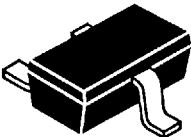
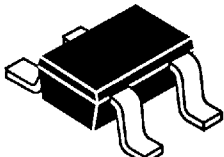

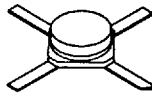


FEATURES

- **LOW NOISE FIGURE:** < 3 dB at 500 MHz
- **HIGH GAIN:** 15 dB at 500 MHz
- **HIGH GAIN BANDWIDTH PRODUCT:** 2 GHz
(3 GHz for the NE73435)
- **SMALL COLLECTOR CAPACITANCE:** 1 pF
- **DUAL CHIP CONFIGURATIONS**
- **HIGH RELIABILITY METALLIZATION**

DESCRIPTION

The NE734 series of NPN silicon general purpose UHF transistors provide the designer with a wide selection of reliable transistors for high speed logic and wide-band low noise amplifier applications. The series uses NEC's highly reliable platinum-silicide, titanium, platinum, and gold metallization system to assure uniform performance and reliability. Besides the chip form (NE73400) several package styles are available. While the series is designed for industrial applications, the NE734 is also available in screening levels through space grade. The NE73433 is in the plastic Mini-Mold package designed for high-speed automated assembly operations for large volume hybrid ICs. For applications requiring small size and light weight the NE73430 is recommended. Forty percent smaller than the SOT 23 version, it is ideal for hand held portable designs. For hybrid MIC applications requiring more performance, the NE73435 is recommended. This device is packaged in the economical metal-ceramic, hermetic Micro-X package.

	
00 (CHIP)	12 (TO-72)
	
16	30 (SOT 323 STYLE)
	
33 (SOT 23 STYLE)	39 (SOT 143 STYLE)
	
32 (TO-92)	35 (MICRO-X)

NE734 SERIES

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER EIAJ ¹ REGISTERED NUMBER PACKAGE OUTLINE			NE73400 00 (CHIP)			NE73412 2SC1424 12			NE73416 16			NE73430 2SC4185 30		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
f _T	Gain Bandwidth Product at V _{CE} = 10 V, I _C = 10 mA V _{CE} = 10 V, I _C = 5 mA	GHz GHz	1.5	2.0		1.5	2.0		1.5	2.0			2.3	
NF _{MIN}	Minimum Noise Figure ² at V _{CE} = 10 V, I _C = 3 mA, f = 0.5 GHz V _{CE} = 10 V, I _C = 5 mA, f = 0.9 GHz	dB dB		2.1	3.5		3.0	4.0		3.0	4.0		4.0	
MAG	Maximum Available Gain at V _{CE} = 10 V, I _C = 10 mA, f = 0.5 GHz f = 1 GHz	dB dB		21 16		13	15 8			15 9			17	
S _{21E} ²	Insertion Power Gain at V _{CE} = 10 V, I _C = 10 mA, f = 0.5 GHz f = 1 GHz	dB dB	8	16 9		5	12 6			12 6			8	
h _{FE}	Forward Current Gain Ratio at V _{CE} = 10 V, I _C = 10 mA V _{CE} = 10 V, I _C = 5 mA		25	100	200	25	100	200	25	100	200	40	100	180
I _{CBO}	Collector Cutoff Current at V _{CB} = 15 V, I _E = 0	μA			0.1			0.5			0.5			0.1
I _{EBO}	Emitter Cutoff Current at V _{EB} = 2 V, I _C = 0	μA			0.1			0.5			0.5			
CCB	Collector to Base Capacitance ⁴ at V _{CB} = 10 V, I _C = 0 mA, f = 1 MHz	pF						1.1	1.5		1.1	1.5		0.75
P _T	Total Power Dissipation	mW						250			300			150
R _{TH}	Thermal Resistance (Junction to Case)	°C/W												833

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER EIAJ ¹ REGISTERED NUMBER PACKAGE OUTLINE			NE73432E 2SC2026 32			NE73433 2SC2759 33			NE73435 2SC2148 35			NE73439 2SC4090 39		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
f _T	Gain Bandwidth Product at V _{CE} = 10 V, I _C = 10 mA V _{CE} = 10 V, I _C = 5 mA	GHz GHz	1.5	2.0		1.5	2.0		1.5	3.0		1.5	2.0	
NF _{MIN}	Minimum Noise Figure ² at V _{CE} = 10 V, I _C = 3 mA, f = 0.5 GHz	dB		3.0	4.0		3.0	4.0		2.1	3.5		3.0	4.0
MAG	Maximum Available Gain ³ at V _{CE} = 10 V, I _C = 10 mA, f = 0.5 GHz f = 1 GHz	dB dB	13	15 9			17			18 13			17	
S _{21E} ²	Insertion Power Gain at V _{CE} = 10 V, I _C = 10 mA, f = 0.5 GHz f = 1 GHz	dB dB		13 8			13 8		8	16 9			13 8	
h _{FE}	Forward Current Gain Ratio at V _{CE} = 10 V, I _C = 10 mA V _{CE} = 10 V, I _C = 5 mA		25	100	200	25	100	200	25	100	200	40	100	180
I _{CBO}	Collector Cutoff Current at V _{CB} = 15 V, I _E = 0	μA			0.1			0.1			0.1			0.1
I _{EBO}	Emitter Cutoff Current at V _{EB} = 2 V, I _C = 0	μA			0.1						0.1			
CCB	Collector to Base Capacitance ⁴ at V _{CB} = 10 V, I _C = 0 mA, f = 1 MHz	pF		0.75	1.1		1	1.5		.55	1.5			
P _T	Total Power Dissipation	mW			250			200			250			150
R _{TH}	Thermal Resistance (Junction to Ambient)	°C/W						625			550			625

Notes:

- Electronic Industrial Association of Japan.
- Input and output are tuned for optimum noise figures.
- Maximum Available Gain (MAG) is calculated

$$MAG = \frac{|S_{21}|}{|S_{12}|} \left(K \pm \sqrt{K^2 - 1} \right). \text{ When } K \leq 1, \text{ MAG is undefined and MSG values are used. } MSG = \frac{|S_{21}|}{|S_{12}|}, K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2 |S_{12} S_{21}|}, \Delta = S_{11} S_{22} - S_{21} S_{12}$$

- CCB measurement employs a three-terminal capacitance bridge incorporating a guard circuit. The emitter terminal shall be connected to the guard terminal.

ABSOLUTE MAXIMUM RATINGS¹ ($T_A = 25^\circ\text{C}$)

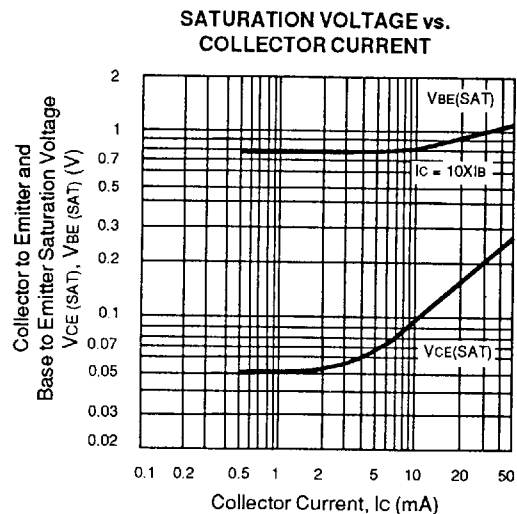
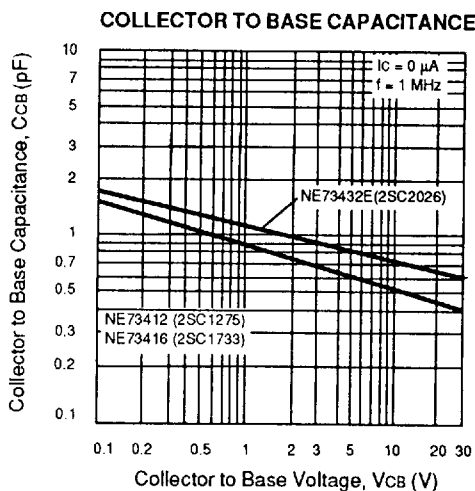
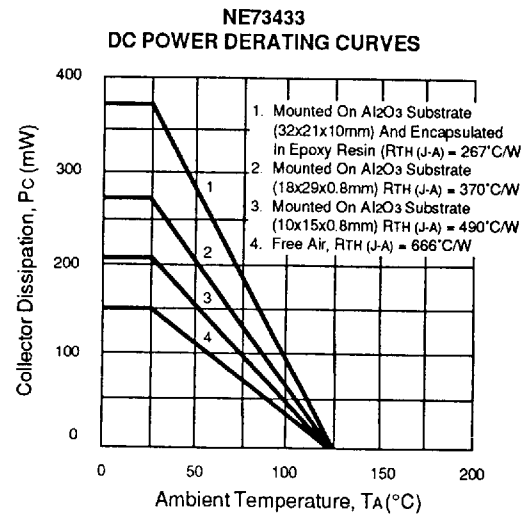
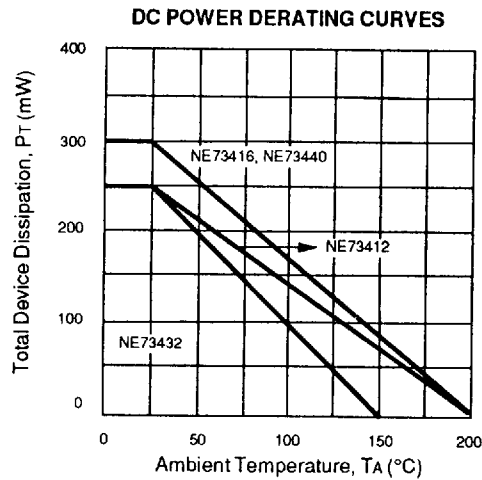
SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CB0}	Collector to Base Voltage	V	30
V_{CE0}	Collector to Emitter Voltage	V	14
V_{EB0}	Emitter to Base Voltage	V	3
I_C	Collector Current	mA	50
T_J	Junction Temperature	$^\circ\text{C}$	200 ²
T_{STG}	Storage Temperature	$^\circ\text{C}$	-65 to +200 ³

Notes:

- Operation in excess of any one of these parameters may result in permanent damage.
- Maximum Junction Temperature for the NE73430, NE73432, NE73433 and NE73439 is 150°C .
- Maximum Storage Temperature for the NE73430, NE73432, NE73433, NE73435 Grade D and the NE73439 is 150°C .

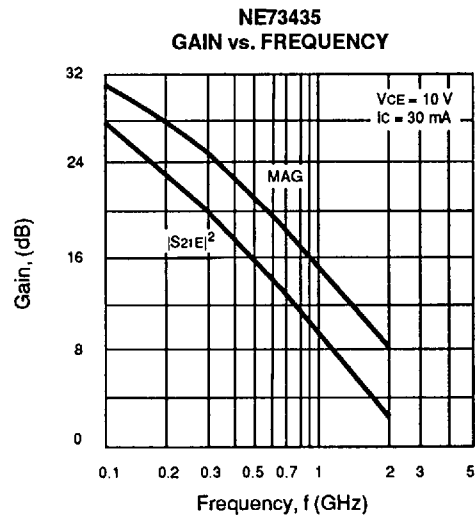
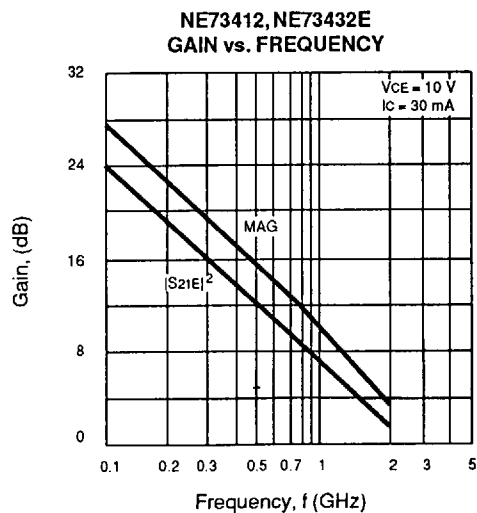
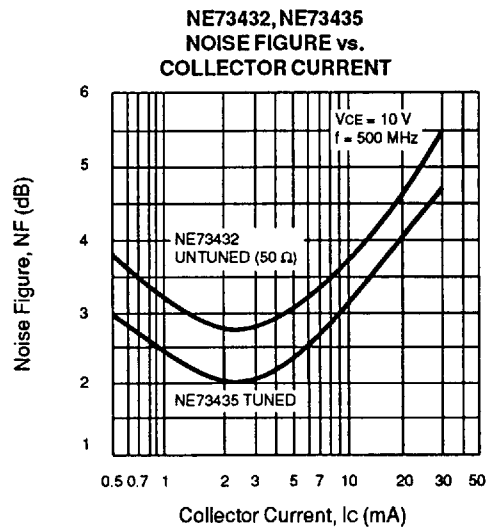
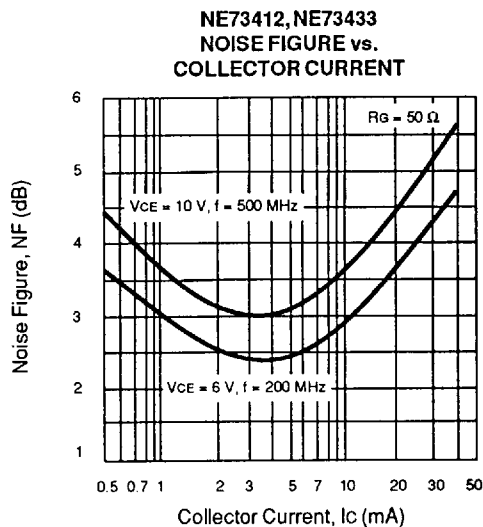
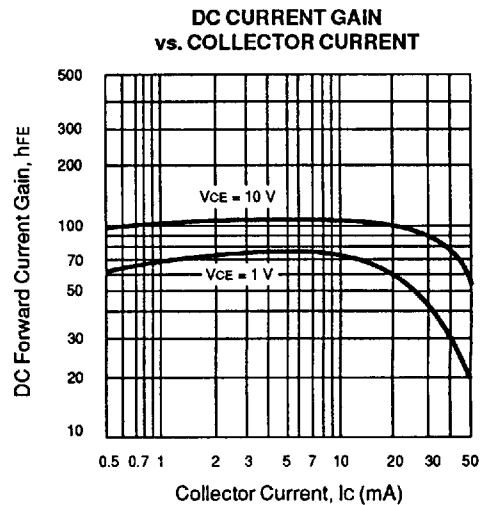
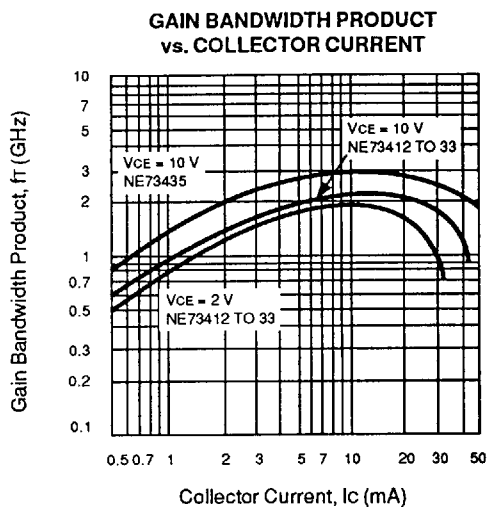
NE73435**TYPICAL NOISE PARAMETERS** ($T_A = 25^\circ\text{C}$)

FREQ. (MHz)	NF _{OPT} (dB)	GA (dB)	Γ _{OPT}		Rn/50
			MAG	ANG	
V _{CE} = 10 V, I _c = 3 mA					
500	2.0	16.1	0.30	80	0.63
1000	3.1	11.2	0.43	126	0.33
1500	4.2	9.2	0.54	168	0.19
2000	5.1	7.1	0.56	178	0.20
V _{CE} = 10 V, I _c = 15 mA					
500	3.3	17.5	0.34	120	0.36
1000	4.7	13.5	0.47	168	0.27
1500	6.5	10.8	0.67	-174	0.13
2000	7.4	9.2	0.64	-163	0.46

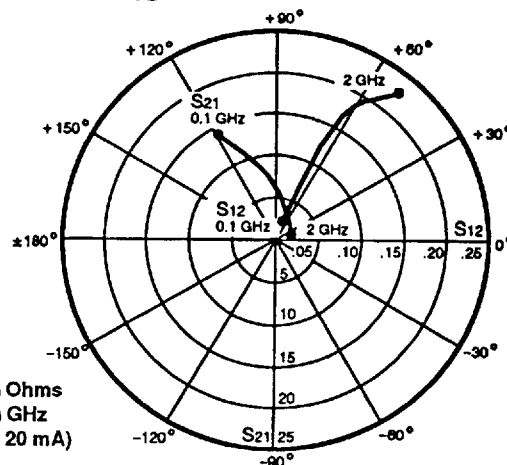
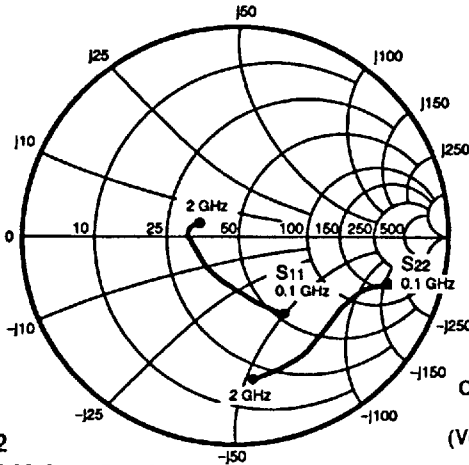
TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)

NE734 SERIES

TYPICAL PERFORMANCE CURVES (TA = 25°C)



TYPICAL COMMON EMITTER SCATTERING PARAMETERS



Coordinates in Ohms
Frequency in GHz
(VCE = 10 V, IC = 20 mA)

NE73412

VCE = 10 V, IC = 5 mA

FREQUENCY (MHz)	S11		S21		S12		S22		K	MAG ¹ (dB)
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
50	0.843	-18.0	11.367	160.6	0.013	77.7	0.961	-9.0	0.22	29.4
100	0.762	-36.2	10.158	145.0	0.025	71.0	0.904	-14.9	0.31	26.1
200	0.576	-65.5	7.898	122.0	0.042	64.1	0.776	-21.6	0.54	22.7
400	0.377	-99.1	4.802	97.1	0.063	65.4	0.682	-27.2	0.83	18.8
600	0.310	-121.1	3.358	82.4	0.086	65.7	0.648	-33.7	0.94	15.9
800	0.280	-135.4	2.578	71.8	0.106	67.6	0.641	-40.7	1.00	13.9
1000	0.269	-147.3	2.074	62.5	0.125	68.2	0.640	-48.8	1.04	11.0
1200	0.254	-158.4	1.721	54.5	0.144	67.9	0.641	-57.8	1.08	9.0
1400	0.247	-167.1	1.439	46.6	0.158	67.4	0.636	-67.8	1.19	7.0
1600	0.237	-176.2	1.181	41.5	0.168	68.4	0.617	-79.1	1.43	4.6

VCE = 10 V, IC = 10 mA

50	0.726	-25.1	18.263	153.3	0.012	76.9	0.925	-11.5	0.30	31.8
100	0.599	-48.1	14.893	133.9	0.022	69.7	0.831	-17.2	0.48	28.3
200	0.404	-76.9	9.749	111.3	0.037	67.3	0.700	-21.3	0.74	24.2
400	0.272	-105.4	5.340	91.2	0.060	71.7	0.637	-25.1	0.95	19.5
600	0.241	-125.6	3.661	78.7	0.086	70.8	0.612	-31.7	1.00	16.3
800	0.230	-138.7	2.781	69.2	0.110	71.1	0.612	-38.6	1.02	13.2
1000	0.231	-149.8	2.229	60.3	0.131	70.3	0.615	-46.7	1.03	11.2
1200	0.224	-159.9	1.845	52.6	0.150	69.2	0.617	-55.8	1.07	9.3
1400	0.220	-168.3	1.539	44.8	0.165	67.8	0.614	-65.7	1.16	7.3
1600	0.210	-177.1	1.264	40.2	0.176	67.3	0.602	-76.9	1.35	5.0

VCE = 10 V, IC = 20 mA

50	0.585	-34.3	24.773	145.0	0.011	74.1	0.882	-13.5	0.43	33.5
100	0.441	-60.7	17.843	124.0	0.020	70.4	0.767	-17.7	0.63	29.5
200	0.296	-89.3	10.384	104.4	0.033	71.1	0.656	-19.7	0.88	25.0
400	0.225	-116.9	5.447	87.2	0.059	74.9	0.618	-23.5	1.00	19.7
600	0.220	-136.0	3.685	75.7	0.085	73.0	0.602	-30.0	1.03	15.3
800	0.225	-148.0	2.792	66.6	0.109	73.3	0.600	-37.2	1.04	12.9
1000	0.234	-159.1	2.239	58.3	0.129	72.4	0.605	-45.8	1.05	11.0
1200	0.230	-170.2	1.838	50.9	0.150	71.0	0.614	-55.1	1.07	9.3
1400	0.228	-178.4	1.540	43.5	0.165	69.7	0.612	-64.8	1.15	7.4
1600	0.219	-172.3	1.261	38.7	0.179	69.1	0.597	-76.4	1.34	5.0

VCE = 10 V, IC = 30 mA

50	0.500	-42.1	26.236	139.8	0.010	75.0	0.859	-13.8	0.50	34.2
100	0.369	-71.1	17.626	119.0	0.018	70.2	0.747	-16.3	0.73	29.9
200	0.261	-101.5	9.845	101.1	0.032	72.2	0.658	-17.7	0.93	24.9
400	0.226	-129.0	5.088	85.0	0.057	76.0	0.633	-22.1	1.03	18.4
600	0.236	-147.0	3.447	73.9	0.082	74.4	0.619	-29.1	1.05	14.9
800	0.248	-158.7	2.596	65.2	0.105	74.8	0.623	-37.2	1.05	12.6
1000	0.260	-169.1	2.079	56.7	0.126	74.4	0.629	-46.1	1.05	10.8
1200	0.258	-179.8	1.705	49.5	0.148	73.8	0.632	-55.3	1.07	9.0
1400	0.257	-170.8	1.423	42.1	0.165	72.7	0.627	-65.9	1.17	6.9
1600	0.252	-160.5	1.177	38.0	0.181	72.7	0.609	-77.6	1.35	4.6

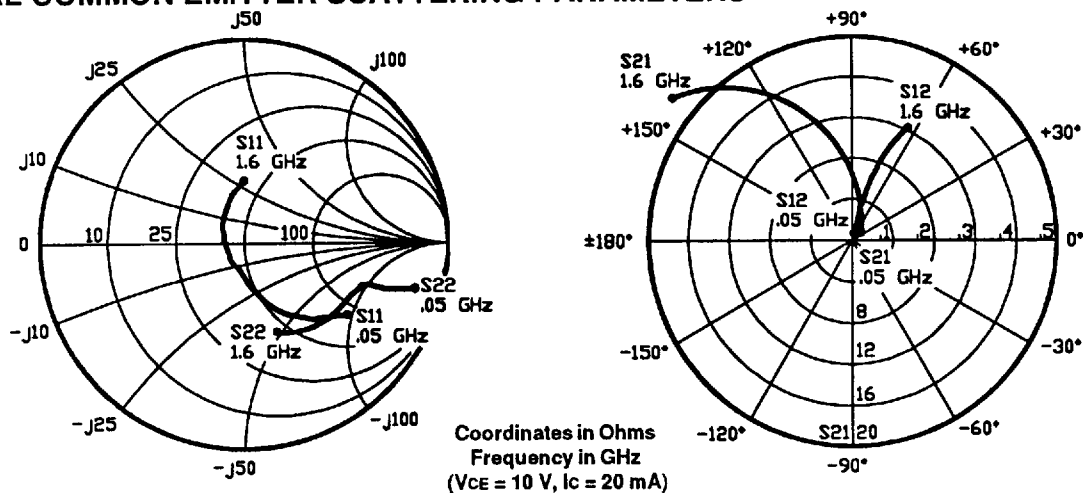
Note:

1. Gain Calculations:

$$\text{MAG} = \frac{|S_{21}|}{|S_{12}|} (K \pm \sqrt{K^2 - 1}). \text{ When } K \leq 1, \text{ MAG is undefined and MSG values are used. } \text{MSG} = \frac{|S_{21}|}{|S_{12}|}, K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2 |S_{12} S_{21}|}, \Delta = S_{11} S_{22} - S_{21} S_{12}$$

NE734 SERIES

TYPICAL COMMON EMITTER SCATTERING PARAMETERS



NE73416

VCE = 10 V, IC = 3 mA

FREQUENCY (MHz)	S11		S21		S12		S22		K	MAG ¹ (dB)
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
50	0.910	-14.1	7.512	163.5	0.017	80.2	0.971	-7.9	0.17	26.5
100	0.842	-28.4	6.878	149.0	0.035	73.8	0.928	-13.8	0.27	22.9
200	0.661	-53.7	5.767	126.9	0.059	65.3	0.806	-21.8	0.48	19.9
400	0.372	-87.8	3.842	98.7	0.090	64.4	0.687	-27.7	0.79	16.3
600	0.238	-116.8	2.778	81.5	0.121	64.0	0.634	-33.7	0.94	13.6
800	0.165	-147.4	2.179	69.6	0.152	65.8	0.607	-39.9	1.01	11.0
1000	0.150	175.6	1.794	59.1	0.185	65.9	0.586	-47.4	1.05	8.5
1200	0.168	141.9	1.528	50.8	0.220	65.3	0.563	-55.3	1.07	6.8
1400	0.215	118.4	1.324	43.3	0.255	64.0	0.533	-64.7	1.11	5.1
1600	0.277	99.8	1.154	38.4	0.296	62.0	0.496	-74.5	1.15	3.6

VCE = 10 V, IC = 10 mA

50	0.744	-25.8	17.660	150.7	0.016	77.3	0.908	-12.8	0.32	30.4
100	0.573	-47.3	13.874	129.5	0.028	71.2	0.795	-18.2	0.54	27.0
200	0.340	-70.1	8.609	106.8	0.048	71.0	0.663	-21.0	0.81	22.5
400	0.172	-91.9	4.621	87.5	0.084	74.4	0.602	-23.9	0.98	17.4
600	0.107	-123.4	3.193	75.0	0.123	72.0	0.568	-29.7	1.02	13.3
800	0.083	-166.9	2.459	65.5	0.160	71.1	0.552	-36.1	1.03	10.8
1000	0.104	151.8	2.012	56.5	0.197	69.3	0.535	-43.9	1.04	8.9
1200	0.148	123.3	1.711	49.1	0.235	67.2	0.514	-51.6	1.04	7.4
1400	0.204	106.2	1.487	42.2	0.271	64.7	0.486	-60.6	1.06	5.9
1600	0.266	90.7	1.298	36.8	0.314	61.8	0.451	-69.9	1.09	4.3

VCE = 10 V, IC = 20 mA

50	0.606	-34.9	22.847	141.5	0.014	76.1	0.860	-14.8	0.44	32.1
100	0.417	-57.2	15.640	119.7	0.026	72.3	0.736	-17.7	0.69	27.8
200	0.237	-77.7	8.746	100.6	0.045	74.1	0.634	-18.3	0.91	22.9
400	0.125	-102.5	4.545	84.0	0.083	76.9	0.597	-21.6	1.01	16.8
600	0.091	-145.7	3.129	72.4	0.121	73.8	0.570	-27.9	1.03	13.1
800	0.098	171.3	2.397	63.1	0.159	72.8	0.558	-34.9	1.03	10.7
1000	0.136	141.6	1.949	54.5	0.195	70.9	0.542	-42.8	1.04	8.8
1200	0.185	118.3	1.662	47.0	0.234	68.8	0.522	-51.1	1.03	7.5
1400	0.242	104.0	1.436	40.5	0.272	66.5	0.493	-60.2	1.05	5.9
1600	0.309	89.8	1.248	36.1	0.317	63.3	0.457	-69.7	1.08	4.2

Note:

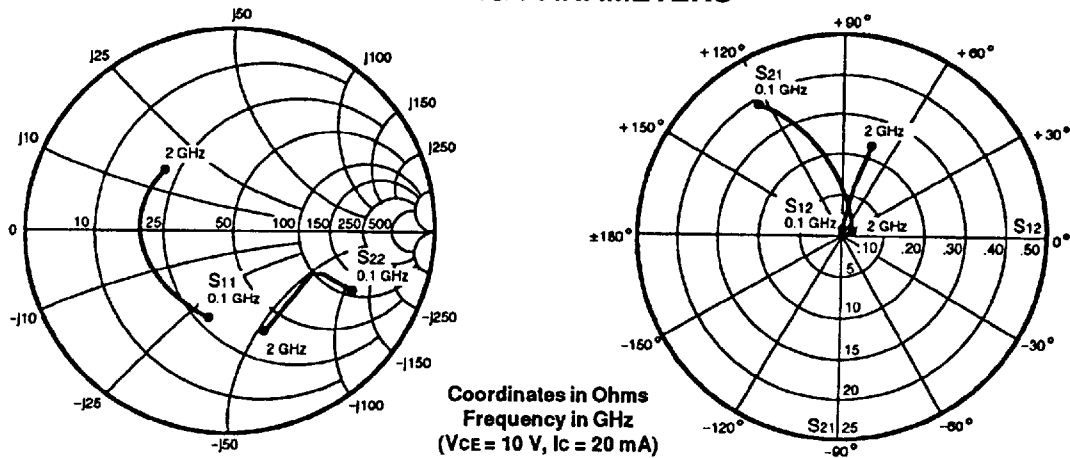
1. Gain Calculations:

$$MAG = \frac{|S_{21}|}{|S_{12}|} (K \pm \sqrt{K^2 - 1}). \text{ When } K \leq 1, \text{ MAG is undefined and MSG values are used. } MSG = \frac{|S_{21}|}{|S_{12}|}, K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2 |S_{12}| |S_{21}|}, \Delta = S_{11} S_{22} - S_{21} S_{12}$$

MAG = Maximum Available Gain

MSG = Maximum Stable Gain

TYPICAL COMMON EMITTER SCATTERING PARAMETERS



NE73432E

V_{CE} = 10 V, I_C = 5 mA

FREQUENCY	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
(MHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	.73	-51	12.00	143	.03	71	.86	-20
200	.57	-87	8.36	119	.04	56	.69	-29
500	.41	-141	4.13	89	.09	58	.51	-36
1000	.37	-178	2.20	61	.13	59	.50	-48
1500	.36	157	1.56	42	.19	65	.49	-63
2000	.36	133	1.21	26	.25	61	.51	-77

V_{CE} = 10 V, I_C = 10 mA

100	.58	-75	16.56	132	.03	71	.74	-25
200	.46	-112	10.15	109	.03	54	.57	-30
500	.40	-157	4.57	84	.07	67	.45	-32
1000	.38	179	2.37	60	.13	66	.47	-43
1500	.38	161	1.68	43	.18	73	.48	-57
2000	.36	140	1.28	28	.25	67	.52	-72

V_{CE} = 10 V, I_C = 20 mA

100	.44	-101	19.27	122	.03	65	.66	-26
200	.39	-136	10.79	102	.03	64	.52	-26
500	.40	-169	4.62	81	.07	72	.44	-27
1000	.40	172	2.36	57	.13	72	.47	-40
1500	.41	153	1.65	41	.19	75	.49	-57
2000	.40	134	1.25	26	.25	71	.53	-71

V_{CE} = 10 V, I_C = 30 mA

100	.42	-120	19.34	117	.03	69	.62	-24
200	.40	-150	10.48	99	.03	68	.51	-23
500	.42	-174	4.41	78	.06	77	.46	-25
1000	.43	167	2.25	55	.12	75	.49	-40
1500	.44	150	1.54	39	.18	79	.52	-56
2000	.44	129	1.17	25	.26	75	.54	-72

Note:

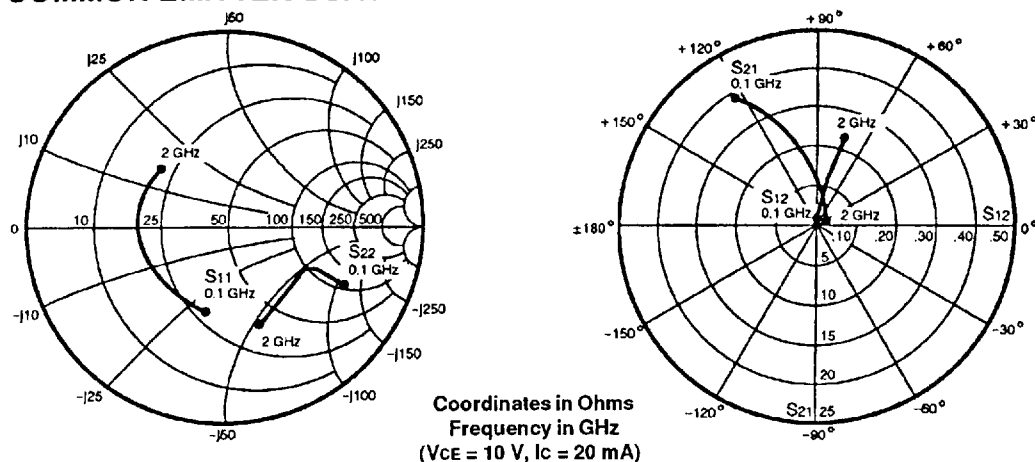
1. Gain Calculation:

$$\text{MAG} = \frac{|S_{21}|}{|S_{12}|} \left(K \pm \sqrt{K^2 - 1} \right). \text{ When } K \leq 1, \text{ MAG is undefined and MSG values are used. } \text{MSG} = \frac{|S_{21}|}{|S_{12}|}, K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2 |S_{12} S_{21}|}, \Delta = S_{11} S_{22} - S_{21} S_{12}$$

MAG = Maximum Available Gain

MSG = Maximum Stable Gain

TYPICAL COMMON EMITTER SCATTERING PARAMETERS



NE73433

V_{CE} = 10 V, I_C = 5 mA

FREQUENCY (MHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG ¹ (dB)
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
100	0.72	-53	11.71	143	0.02	68	0.89	-17	0.21	27.7
200	0.57	-88	8.26	120	0.03	57	0.72	-22	0.66	24.4
500	0.43	-144	4.04	90	0.07	59	0.57	-25	0.93	17.6
1000	0.42	-178	2.17	65	0.11	62	0.55	-33	1.11	10.9
1500	0.44	159	1.55	50	0.17	67	0.52	-45	1.02	8.7
2000	0.49	142	1.23	35	0.22	67	0.51	-60	0.94	7.5

V_{CE} = 10 V, I_C = 10 mA

100	0.57	-71	15.59	132	0.02	66	0.80	-20	0.40	28.9
200	0.44	-109	9.93	110	0.02	57	0.62	-21	1.23	24.1
500	0.39	-157	4.42	86	0.07	68	0.53	-23	0.95	18.0
1000	0.40	175	2.31	63	0.11	67	0.52	-31	1.13	11.0
1500	0.44	156	1.65	48	0.17	70	0.49	-43	1.02	9.0
2000	0.49	138	1.30	33	0.22	69	0.49	-59	0.93	7.7

V_{CE} = 10 V, I_C = 20 mA

100	0.47	-93	18.06	122	0.02	69	0.72	-20	0.51	29.6
200	0.38	-130	10.35	103	0.02	56	0.58	-19	1.34	23.7
500	0.38	-167	4.39	82	0.06	75	0.51	-18	1.15	16.3
1000	0.42	171	2.27	60	0.12	69	0.52	-28	1.03	11.7
1500	0.46	153	1.61	46	0.17	72	0.51	-41	0.97	9.8
2000	0.52	137	1.26	31	0.23	70	0.49	-58	0.87	7.4

V_{CE} = 10 V, I_C = 30 mA

100	0.43	-111	16.72	116	0.02	82	0.70	-19	0.53	29.2
200	0.39	-144	9.20	99	0.02	54	0.60	-16	1.41	22.8
500	0.41	-173	3.85	79	0.06	73	0.56	-17	1.13	15.9
1000	0.46	167	1.99	58	0.11	72	0.57	-28	1.07	11.0
1500	0.51	149	1.41	43	0.17	77	0.55	-42	0.92	9.2
2000	0.57	133	1.10	29	0.23	73	0.53	-60	0.82	6.8

Note:

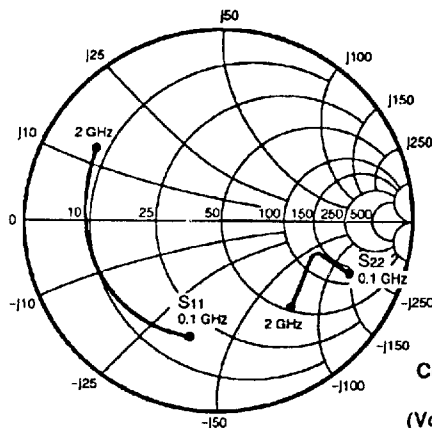
1. Gain Calculation:

$$\text{MAG} = \frac{|S_{21}|}{|S_{12}|} \left(K \pm \sqrt{K^2 - 1} \right), \text{ When } K \leq 1, \text{ MAG is undefined and MSG values are used. } \text{MSG} = \frac{|S_{21}|}{|S_{12}|}, K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2 |S_{12}|^2}, \Delta = S_{11} S_{22} - S_{21} S_{12}$$

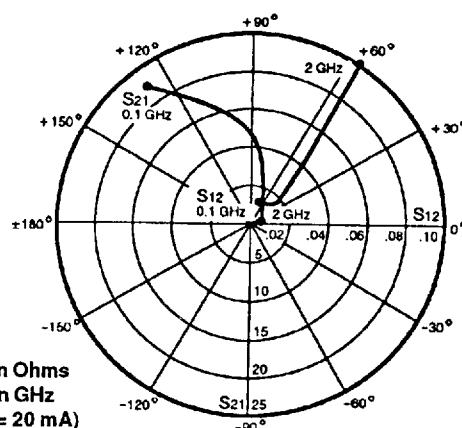
MAG = Maximum Available Gain

MSG = Maximum Stable Gain

TYPICAL COMMON EMITTER SCATTERING PARAMETERS



Coordinates in Ohms
Frequency in GHz
(VCE = 10 V, IC = 20 mA)



NE73435

VCE = 10 V, IC = 5 mA

FREQUENCY (MHz)	S11		S21		S12		S22		K	MAG ¹ (dB)
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
100	0.861	-28.4	6.880	157.0	0.026	70.5	0.960	-11.1	0.19	24.2
200	0.810	-55.0	6.206	139.8	0.047	56.9	0.865	-19.2	0.28	21.2
500	0.676	-115.5	4.323	104.1	0.070	37.3	0.689	-29.0	0.50	17.9
1000	0.616	-156.0	2.494	74.4	0.085	30.5	0.612	-38.3	0.84	14.7
1500	0.607	-175.1	1.709	55.6	0.095	32.2	0.612	-49.8	1.05	11.2
2000	0.610	171.3	1.317	39.0	0.107	32.2	0.616	-62.2	1.16	8.5
2500	0.613	160.0	1.071	25.3	0.118	33.9	0.632	-74.0	1.20	6.9
3000	0.618	149.5	0.896	13.0	0.132	33.5	0.649	-87.3	1.19	5.7
4000	0.630	128.9	0.647	-8.4	0.170	33.7	0.657	-112.9	1.20	3.1

VCE = 10 V, IC = 10 mA

FREQUENCY (MHz)	S11		S21		S12		S22		K	MAG ¹ (dB)
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
100	0.798	-39.0	10.428	151.6	0.025	66.2	0.923	-14.4	0.22	26.2
200	0.733	-74.2	8.974	131.4	0.040	52.9	0.788	-22.4	0.31	23.5
500	0.628	-134.4	5.214	96.8	0.056	37.4	0.613	-28.4	0.62	19.7
1000	0.603	-166.4	2.797	70.8	0.073	37.1	0.563	-36.6	0.94	15.8
1500	0.605	178.1	1.893	53.1	0.088	39.9	0.572	-47.9	1.09	11.5
2000	0.613	166.2	1.442	37.6	0.102	39.9	0.582	-60.5	1.16	9.1
2500	0.621	155.9	1.161	24.2	0.117	41.0	0.604	-72.5	1.15	7.6
3000	0.628	146.0	0.967	12.0	0.133	40.6	0.628	-85.9	1.10	6.7
4000	0.644	126.0	0.690	-9.3	0.176	39.2	0.639	-111.8	1.09	4.1

VCE = 10 V, IC = 20 mA

FREQUENCY (MHz)	S11		S21		S12		S22		K	MAG ¹ (dB)
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
100	0.687	-62.0	16.892	142.1	0.020	59.4	0.846	-19.1	0.26	29.3
200	0.635	-106.6	12.598	118.5	0.031	48.8	0.677	-24.6	0.40	26.1
500	0.603	-153.4	5.959	89.6	0.042	42.9	0.541	-25.9	0.81	21.5
1000	0.607	-175.8	3.063	67.1	0.061	47.2	0.521	-33.7	1.07	15.4
1500	0.621	171.8	2.039	50.5	0.080	48.7	0.541	-45.3	1.12	12.0
2000	0.633	161.4	1.532	35.2	0.096	48.3	0.559	-58.0	1.14	9.8
2500	0.646	151.8	1.220	22.4	0.112	48.3	0.586	-70.7	1.10	8.4
3000	0.652	142.4	1.009	10.4	0.132	47.9	0.612	-84.2	1.02	8.0
4000	0.672	122.6	0.712	-10.1	0.182	44.2	0.627	-111.0	0.96	5.9

VCE = 10 V, IC = 30 mA

FREQUENCY (MHz)	S11		S21		S12		S22		K	MAG ¹ (dB)
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
100	0.584	-94.8	22.708	130.8	0.015	57.7	0.761	-21.6	0.32	31.8
200	0.594	-134.2	14.233	108.5	0.023	48.1	0.599	-23.0	0.55	27.9
500	0.613	-165.6	6.118	84.3	0.034	51.7	0.515	-22.0	0.95	22.6
1000	0.632	178.2	3.061	63.8	0.054	53.6	0.517	-30.8	1.13	15.3
1500	0.650	167.5	2.014	47.5	0.072	55.5	0.545	-43.4	1.14	12.2
2000	0.666	157.8	1.506	32.9	0.089	55.1	0.564	-56.8	1.12	10.2
2500	0.678	148.5	1.190	20.3	0.108	56.1	0.594	-69.8	1.02	9.6
3000	0.686	139.0	0.976	8.7	0.132	55.3	0.621	-83.9	0.91	8.7
4000	0.699	119.3	0.682	-11.2	0.190	49.2	0.634	-111.2	0.86	5.6

Note:

1. Gain Calculation:

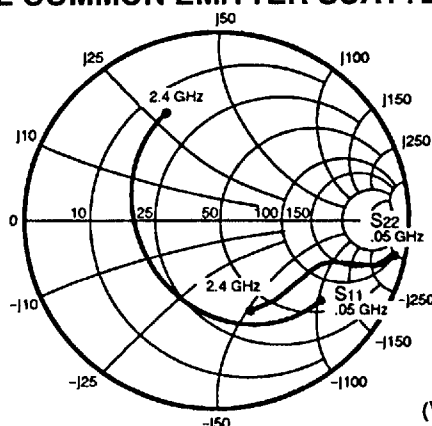
$$MAG = \frac{|S_{21}|}{|S_{12}|} (K \pm \sqrt{K^2 - 1})$$

When $K \leq 1$, MAG is undefined and MSG values are used. $MSG = \frac{|S_{21}|}{|S_{12}|}$, $K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2 |S_{12} S_{21}|}$, $\Delta = S_{11} S_{22} - S_{21} S_{12}$

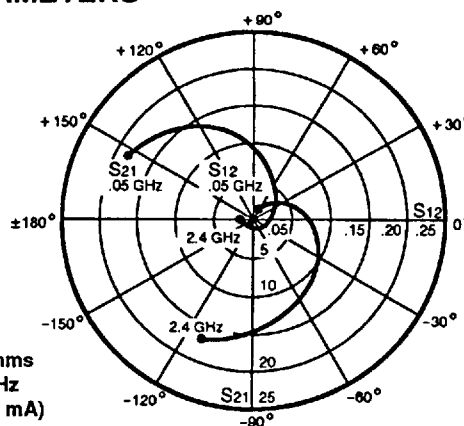
MAG = Maximum Available Gain

MSG = Maximum Stable Gain

TYPICAL COMMON EMITTER SCATTERING PARAMETERS



Coordinates in Ohms
Frequency in GHz
(VCE = 10 V, IC = 10 mA)



NE73439

VCE = 10 V, IC = 5 mA

FREQUENCY	S11		S21		S12		S22		K	MAG ¹
(MHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		(dB)
50	0.81	-23	10.89	158	0.014	73	0.96	-8	0.27	28.9
100	0.75	-44	10.08	140	0.025	59	0.91	-14	0.43	26.1
200	0.63	-83	8.36	111	0.038	40	0.78	-20	0.67	23.4
300	0.55	-111	6.51	88	0.046	28	0.70	-21	0.89	21.5
400	0.50	-132	5.35	71	0.052	20	0.66	-22	1.04	18.9
500	0.48	-147	4.44	56	0.057	13	0.63	-23	1.20	16.2
600	0.47	-158	3.77	42	0.062	7	0.62	-24	1.33	14.4
700	0.47	-167	3.29	29	0.067	1	0.61	-26	1.43	13.0
800	0.47	-176	2.90	17	0.072	-5	0.60	-27	1.53	11.8
900	0.47	177	2.60	5	0.078	-11	0.59	-29	1.60	10.7
1000	0.48	171	2.35	-6	0.083	-18	0.59	-31	1.66	9.8
1200	0.50	160	1.99	-29	0.094	-31	0.58	-35	1.71	8.3
1400	0.51	151	1.72	-50	0.105	-44	0.57	-40	1.74	7.1
1600	0.54	143	1.51	-71	0.117	-58	0.56	-46	1.67	6.3
1800	0.56	136	1.35	-92	0.130	-71	0.55	-62	1.62	5.5
2000	0.58	129	1.22	-112	0.143	-86	0.55	-58	1.42	5.5
2200	0.60	123	1.11	-132	0.157	-100	0.54	-66	1.28	5.3
2400	0.62	118	1.02	-152	0.172	-115	0.53	-73	1.13	5.5

VCE = 10 V, IC = 10 mA

50	0.68	-35	17.95	152	0.012	69	0.93	-12	0.30	31.7
100	0.61	-66	15.51	130	0.021	54	0.83	-18	0.48	28.7
200	0.50	-112	10.91	99	0.030	40	0.68	-20	0.77	25.6
300	0.46	-137	7.91	79	0.037	33	0.62	-20	0.98	23.3
400	0.45	-152	6.14	63	0.043	28	0.59	-20	1.15	19.2
500	0.44	-164	4.99	50	0.049	22	0.58	-21	1.27	17.0
600	0.45	-172	4.20	37	0.056	22	0.58	-22	1.32	15.4
700	0.45	-180	3.63	25	0.062	10	0.56	-23	1.46	13.7
800	0.46	174	3.19	14	0.068	3	0.56	-25	1.53	12.4
900	0.47	169	2.85	2	0.075	-4	0.55	-27	1.59	11.3
1000	0.48	164	2.57	-9	0.081	-11	0.55	-29	1.63	10.4
1200	0.50	155	2.16	-31	0.094	-25	0.54	-33	1.68	8.8
1400	0.52	147	1.85	-52	0.106	-39	0.54	-38	1.68	7.6
1600	0.54	140	1.63	-73	0.119	-53	0.53	-44	1.62	6.8
1800	0.57	133	1.45	-94	0.132	-68	0.52	-50	1.51	6.2
2000	0.59	127	1.31	-114	0.145	-82	0.51	-56	1.38	5.9
2200	0.61	121	1.19	-134	0.160	-97	0.51	-64	1.22	5.9
2400	0.64	116	1.08	-153	0.176	-112	0.5	-72	1.06	6.4

Note:

1. Gain Calculation:

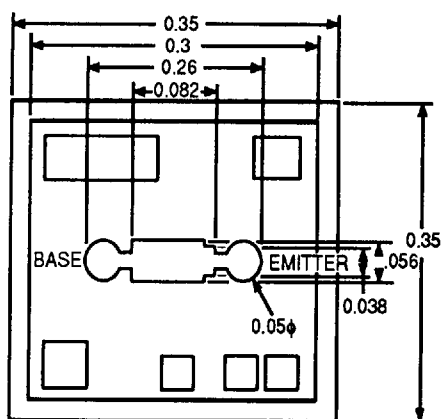
$$MAG = \frac{|S_{21}|}{|S_{12}|} \left(K \pm \sqrt{K^2 - 1} \right). \text{ When } K \leq 1, \text{ MAG is undefined and MSG values are used. } MSG = \frac{|S_{21}|}{|S_{12}|}, K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2 |S_{12}|^2}, \Delta = S_{11} S_{22} - S_{21} S_{12}$$

MAG = Maximum Available Gain

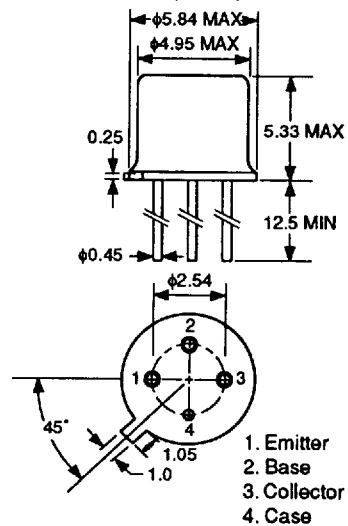
MSG = Maximum Stable Gain

OUTLINE DIMENSIONS (Units in mm)

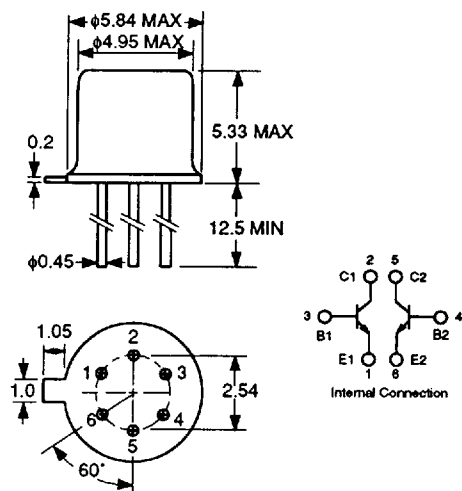
NE73400 (CHIP)
Chip Thickness: 160 μ m TYP



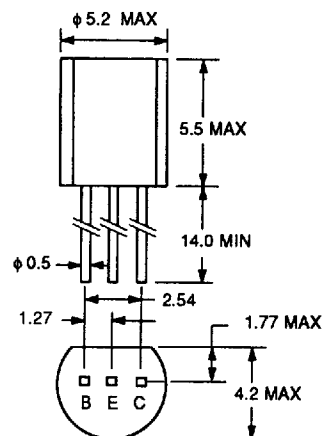
PACKAGE OUTLINE 12
(TO-72)



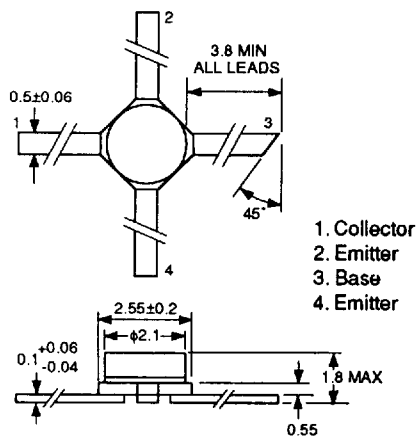
PACKAGE OUTLINE 16



OUTLINE 32
(TO-92)



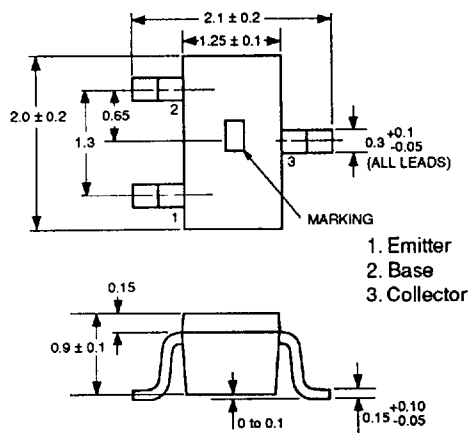
PACKAGE OUTLINE 35
(MICRO-X)



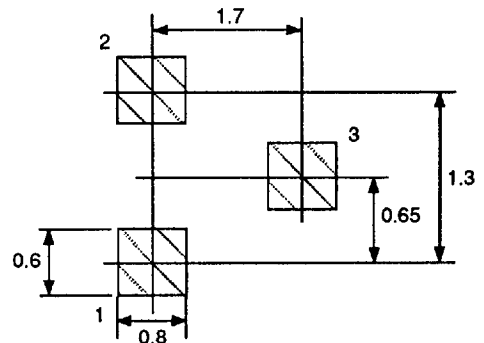
NE734 SERIES

OUTLINE DIMENSIONS (Units in mm)

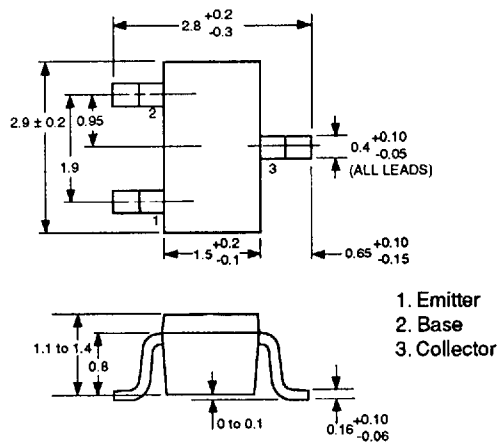
**OUTLINE 30
(SOT-323)**



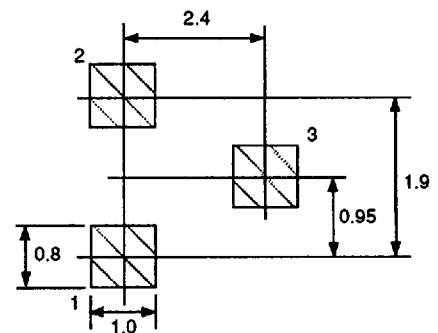
**PACKAGE OUTLINE 30
RECOMMENDED P.C.B. LAYOUT**



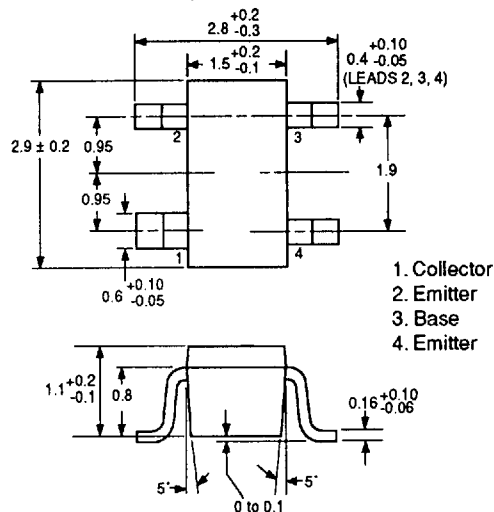
**PACKAGE OUTLINE 33
(SOT-23)**



**PACKAGE OUTLINE 33
RECOMMENDED P.C.B. LAYOUT**



**PACKAGE OUTLINE 39
(SOT-143)**



**PACKAGE OUTLINE 39
RECOMMENDED P.C.B. LAYOUT**

