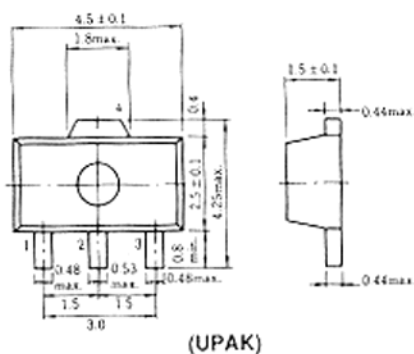


2SC4422

SILICON NPN EPITAXIAL
VHF/UHF WIDE BAND AMPLIFIER

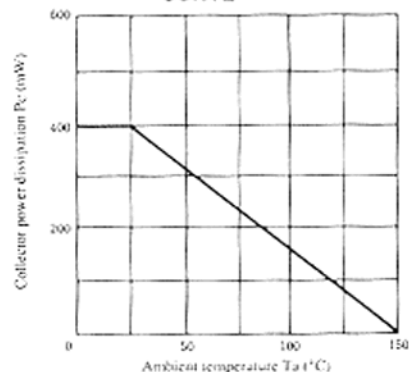


1. Base
 2. Collector
 3. Emitter
 4. Collector
- (Dimensions in mm)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	2SC4422	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	11	V
Emitter to base voltage	V_{EBO}	2	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	400	mW
Junction temperature	T_J	150	°C
Storage temperature	T_{U2}	-55 to +150	°C

MAXIMUM COLLECTOR DISSIPATION CURVE

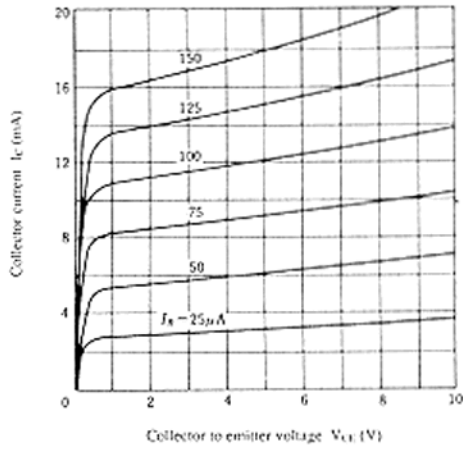


■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

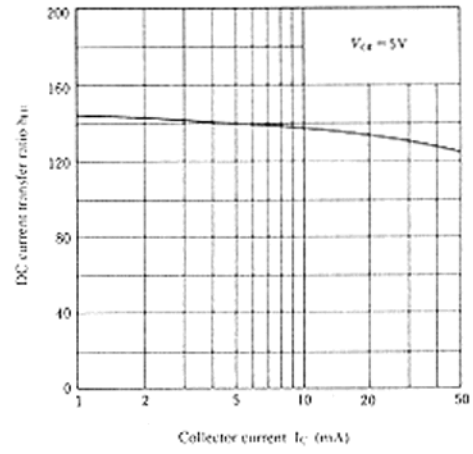
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Collector to base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu A, I_E = 0$	15	—	—	V
Collector cutoff current	I_{CBO}	$V_{CB} = 12V, I_E = 0$	—	—	1	μA
	I_{CEO}	$V_{CE} = 10V, R_{BE} = \infty$	—	—	1	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 1V, I_C = 0$	—	—	1	μA
DC current transfer ratio	h_{FE}	$V_{CE} = 5V, I_C = 20mA$	50	—	250	
Collector output capacitance	C_{ob}	$V_{CB} = 5V, I_E = 0, f = 1MHz$	—	1.2	1.6	pF
Gain bandwidth product	f_T	$V_{CE} = 5V, I_C = 20mA$	4.5	6.0	—	GHz
Power gain	PG	$V_{CE} = 5V, I_C = 20mA, f = 900MHz$	7.0	9.0	—	dB
Noise figure	NF	$V_{CE} = 5V, I_C = 5mA, f = 900MHz$	—	1.6	3.0	dB

• Marking is [CR].

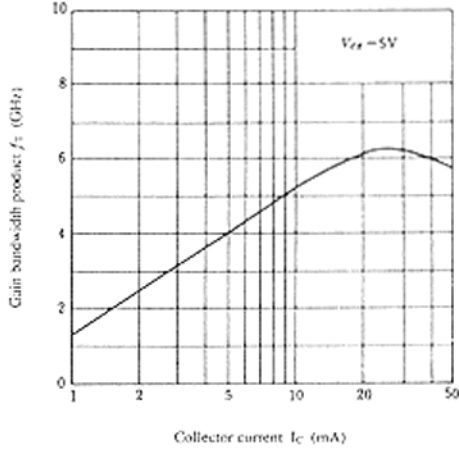
TYPICAL OUTPUT CHARACTERISTICS



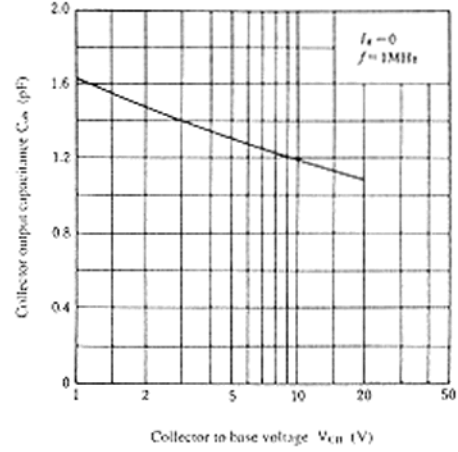
DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT



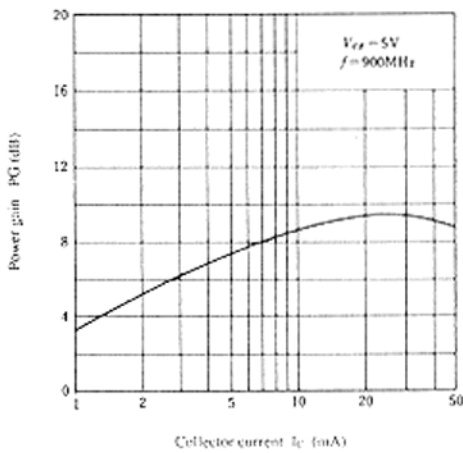
GAIN BANDWIDTH PRODUCT VS. COLLECTOR CURRENT



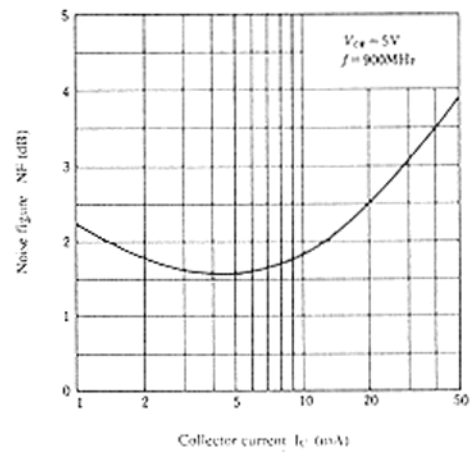
COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



POWER GAIN VS. COLLECTOR CURRENT



NOISE FIGURE VS. COLLECTOR CURRENT

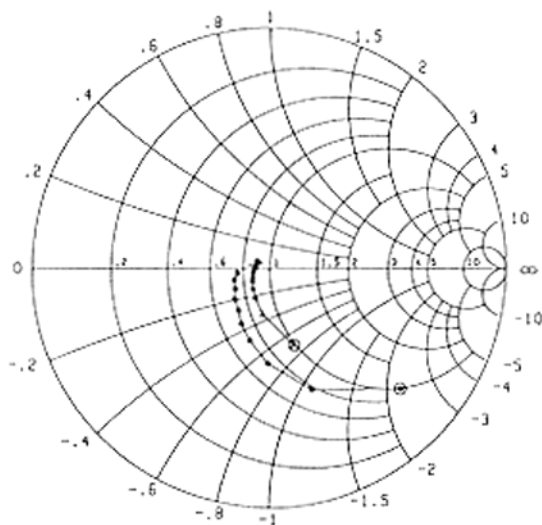


2SC4422

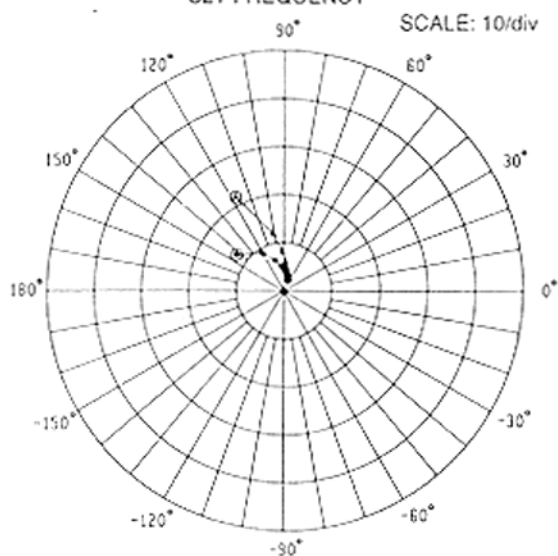
■ S PARAMETERS (Emitter Common)

Test Condition: $V_{CE} = 5V$ 100MHz to 1000MHz (100MHz STEP)
 $I_C = 5mA$ ● —————→
 $I_C = 10mA$ ⊙ —————→
 $Z_0 = 50\Omega$

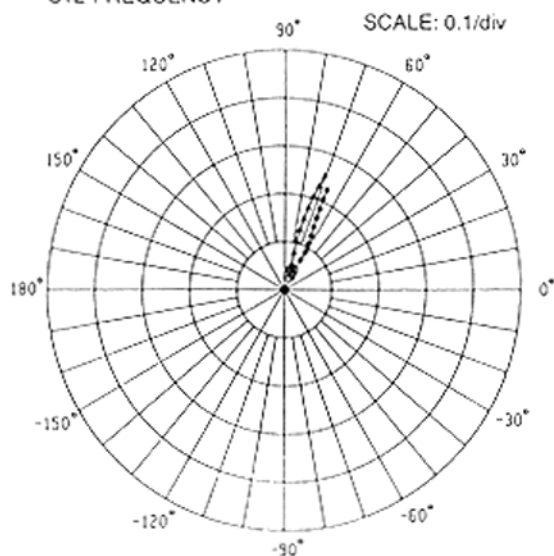
S11-FREQUENCY



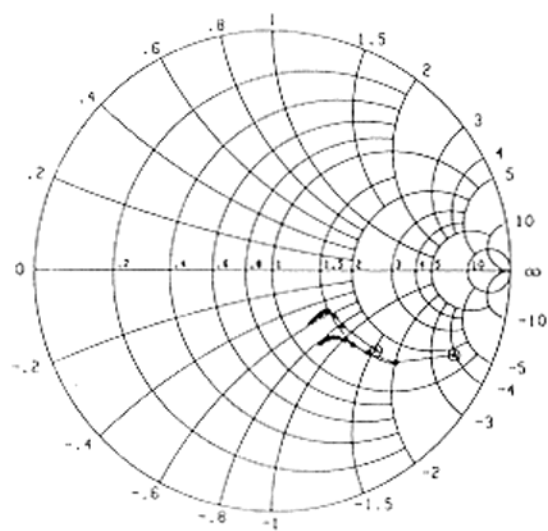
S21-FREQUENCY



S12-FREQUENCY



S22-FREQUENCY



■ S PARAMETERS (Emitter Common)

Test Condition: $V_{CE} = 5V$, $I_C = 5mA$, $Z_0 = 50\Omega$

FREQ. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	0.747	-42.0	12.471	143.1	0.044	69.5	0.840	-24.6
200	0.534	-70.3	8.958	119.9	0.071	62.3	0.640	-36.3
300	0.394	-91.0	6.624	106.1	0.090	61.2	0.522	-40.4
400	0.310	-105.3	5.194	96.8	0.108	62.5	0.456	-42.4
500	0.258	-117.0	4.280	89.7	0.126	64.1	0.417	-43.7
600	0.216	-126.9	3.636	84.0	0.145	65.1	0.391	-45.4
700	0.193	-139.0	3.170	79.0	0.165	65.9	0.376	-47.5
800	0.167	-149.6	2.824	74.5	0.185	66.5	0.368	-50.0
900	0.157	-162.3	2.543	70.2	0.206	66.9	0.363	-53.1
1000	0.136	-171.9	2.326	66.6	0.227	67.0	0.362	-56.3

Test Condition: $V_{CE} = 5V$, $I_C = 20mA$, $Z_0 = 50\Omega$

FREQ. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	0.333	-71.6	21.905	117.7	0.031	71.9	0.547	-37.3
200	0.192	-98.5	12.026	100.7	0.054	74.6	0.378	-37.6
300	0.135	-116.1	8.123	92.4	0.079	75.8	0.322	-35.5
400	0.107	-130.9	6.151	86.7	0.104	76.2	0.297	-35.7
500	0.088	-145.2	4.967	82.3	0.129	75.5	0.285	-36.6
600	0.078	-155.4	4.174	78.2	0.153	74.8	0.275	-38.8
700	0.069	-170.6	3.616	74.7	0.178	73.8	0.271	-42.0
800	0.060	176.2	3.201	71.1	0.203	72.8	0.268	-45.3
900	0.063	162.6	2.876	67.9	0.227	71.7	0.268	-49.3
1000	0.051	147.4	2.624	65.0	0.251	70.5	0.271	-53.5

■ Y PARAMETERS (Emitter Common)

Test Condition: $V_{CE} = 5V$, $I_C = 5mA$

FREQ. (MHz)	Yie (mS)		Yfe (mS)		Yre (mS)		Yoe (mS)	
	REAL	IMAG.	REAL	IMAG.	REAL	IMAG.	REAL	IMAG.
100	1.949	3.563	147.837	-43.785	-0.001	-0.544	0.175	0.922
200	3.994	5.961	120.026	-75.352	0.005	-1.122	0.218	1.731
300	6.433	7.295	89.506	-98.131	0.006	-1.711	0.206	2.618
400	8.206	7.536	62.937	-90.892	0.017	-2.299	0.250	3.531
500	9.403	7.501	43.528	-87.146	0.043	-2.877	0.295	4.395
600	10.179	7.259	29.375	-81.334	0.058	-3.445	0.421	5.324
700	10.910	7.124	19.483	-75.831	0.098	-4.063	0.387	6.235
800	11.193	6.776	11.803	-70.096	0.127	-4.642	0.413	7.209
900	11.543	6.593	6.205	-65.171	0.192	-5.302	0.338	8.218
1000	11.387	6.328	2.208	-60.095	0.249	-5.855	0.401	9.171

Test Condition: $V_{CE} = 5V$, $I_C = 20mA$

FREQ. (MHz)	Yie (mS)		Yfe (mS)		Yre (mS)		Yoe (mS)	
	REAL	IMAG.	REAL	IMAG.	REAL	IMAG.	REAL	IMAG.
100	5.863	2.308	276.917	-268.988	0.000	-0.552	0.244	0.751
200	7.022	2.660	109.913	-221.759	0.005	-1.121	0.309	1.637
300	7.375	2.861	50.698	-167.756	0.006	-1.713	0.305	2.507
400	7.527	3.094	26.179	-133.425	0.024	-2.302	0.363	3.373
500	7.607	3.429	14.053	-110.501	0.025	-2.885	0.394	4.282
600	7.562	3.893	7.198	-94.442	0.056	-3.477	0.463	5.156
700	7.537	4.211	2.859	-82.874	0.079	-4.077	0.478	6.093
800	7.383	4.635	-0.221	-73.836	0.124	-4.674	0.506	7.046
900	7.403	5.047	-2.127	-67.183	0.180	-5.312	0.444	8.018
1000	7.074	5.411	-3.292	-61.241	0.246	-5.871	0.509	8.943