

silicon transistor $\mu PA800T$

HIGH-FREQUENCY LOW NOISE AMPLIFIER NPN SILICON EPITAXIAL TRANSISTOR (WITH BUILT-IN 2 ELEMENTS) MINI MOLD

The μ PA800T has built-in 2 low-voltage transistors which are designed to amplify low noise in the VHF band to the UHF band.

FEATURES

- Low Noise
 NF = 1.9 dB TYP. @ f = 2 GHz, VcE = 1 V, Ic = 3 mA
- High Gain $|S_{21e}|^2 = 6.5 \text{ dB TYP.} @ f = 2 \text{ GHz}, Vce = 1 V, Ic = 3 mA$
- · A Mini Mold Package Adopted
- Built-in 2 Transistors (2 × 2SC4228)

ORDERING INFORMATION

PART NUMBER	QUANTITY	PACKING STYLE
μΡΑ800Τ	Loose products (50 PCS)	Embossed tape 8 mm wide. Pin 6 (Q1 Base), Pin 5 (Q2 Base), Pin 4 (Q2 Emitter) face to perforation side of the tape.
μPA800T-T1	Taping products (3 KPCS/Reel)	

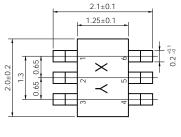
Remark If you require an evaluation sample, please contact an NEC Sales Representative. (Unit sample quantity is 50 pcs.)

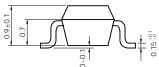
ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

PARAMETER	SYMBOL	RATING	UNIT
Collector to Base Voltage	Vсво	20	V
Collector to Emitter Voltage	VCEO	10	V
Emitter to Base Voltage	V _{EBO}	1.5	V
Collector Current	Ic	35	mA
Total Power Dissipation	Рт	150 in 1 element 200 in 2 elements ^{Note}	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-65 to +150	°C

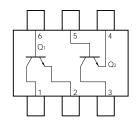
Note 110 mW must not be exceeded in 1 element.

PACKAGE DRAWINGS (Unit: mm)





PIN CONFIGURATION (Top View)



PIN CONNECTIONS

1. Collector (Q1) 2. Emitter (Q1) 3. Collector (Q2)

4. Emitter (Q2) 5. Base (Q2) 6. Base (Q1)

The information in this document is subject to change without notice.



ELECTRICAL CHARACTERISTICS (TA = 25 °C)

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cutoff Current	Ісво	Vcb = 10 V, IE = 0			1.0	μΑ
Emitter Cutoff Current	ІЕВО	V _{EB} = 1 V, I _C = 0			1.0	μΑ
DC Current Gain	hfe	$V_{CE} = 3 \text{ V, Ic} = 5 \text{ mA}^{\text{Note 1}}$	80		200	
Gain Bandwidth Product	f⊤	VcE = 3 V, Ic = 5 mA	5.5	80		GHz
Feed-back Capacitance	Cre	$V_{CB} = 3 V$, $I_E = 0$, $f = 1 MHz^{Note 2}$			0.7	рF
Insertion Power Gain (1)	S _{21e} ²	Vce = 1 V, Ic = 3 mA, f = 2 GHz	4.5	6.5		dB
Insertion Power Gain (2)	S _{21e} ²	VcE = 3 V, Ic = 5 mA, f = 2 GHz	5.5	7.5		dB
Noise Figure (1)	NF	Vce = 1 V, Ic = 3 mA, f = 2 GHz		1.9	3.2	dB
Noise Figure (2)	NF	$V_{CE} = 3 \text{ V}, \text{ Ic} = 5 \text{ mA}, \text{ f} = 2 \text{ GHz}$		1.9	3.2	dB

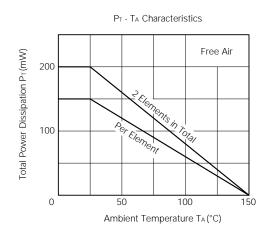
Notes 1. Pulse Measurement: Pw \leq 350 μ s, Duty cycle \leq 2 %

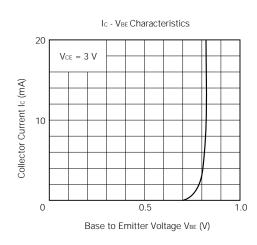
2. Measured with 3-pin bridge, emitter and case should be connected to guard pin of bridge.

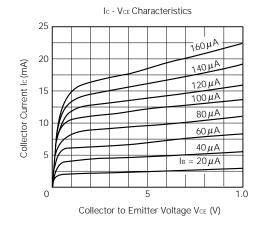
hfe CLASSIFICATION

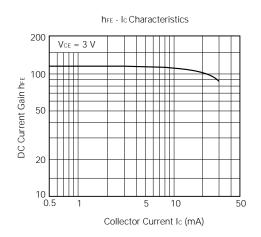
Rank	КВ
Marking	RL
h _{FE} Value	80 to 200

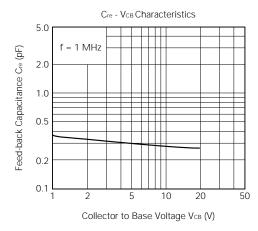
TYPICAL CHARACTERISTICS (TA = 25 °C)

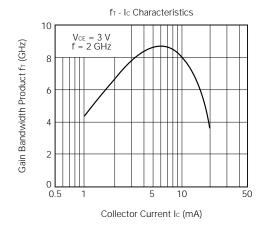


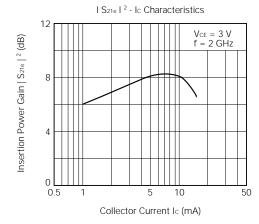


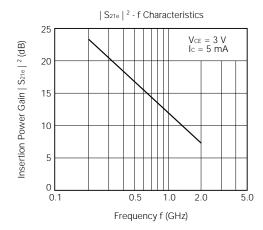


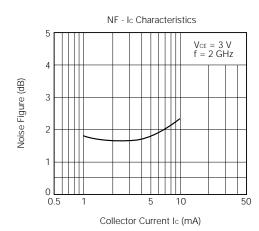














S-PARAMETERS

FREQUENCY	S	511	S	21	S	12	S	22
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100.00	.875	-18.6	14.087	161.1	.018	78.2	.958	-10.
200.00	.762	-35.0	12.290	145.1	.034	68.6	.888	-17.
300.00	.677	-47.2	10.888	133.6	.048	66.6	.800	-24.
400.00	.565	-59.4	9.275	123.6	.055	65.8	.719	-26.
500.00	.495	-67.5	8.300	115.7	.063	63.5	.669	-28.
600.00	.425	-76.1	7.184	108.9	.074	61.1	.610	-30.
700.00	.372	-81.6	6.454	104.8	.084	63.8	.600	-30.
800.00	.327	-88.5	5.818	99.5	.089	62.7	.560	-31.
900.00	.289	-93.6	5.231	95.5	.092	64.6	.543	-30.
1000.00	.255	-100.5	4.820	92.0	.104	62.8	.519	-33.
1100.00	.236	-105.2	4.444	88.8	.105	64.2	.512	-31.
1200.00	.214	-112.2	4.142	85.3	.113	64.2	.497	-33.
1300.00	.195	-117.6	3.842	83.2	.122	63.6	.476	-33.
1400.00	.182	-123.8	3.554	79.3	.127	65.0	.481	-34.
1500.00	.165	-129.9	3.343	77.4	.139	64.1	.467	-34.
1600.00	.153	-137.4	3.218	75.3	.140	64.5	.466	-34.
1700.00	.145	-144.3	3.091	73.6	.152	65.4	.458	-37.
1800.00	.139	-151.8	2.857	70.4	.162	64.3	.456	-36.
1900.00	.134	-157.0	2.764	68.7	.168	62.3	.451	-38.
2000.00 = 3 V, Ic = 3 r	.129 nA, Zo =	-164.7 50 Ω	2.624	66.4	.176	64.8	.445	- 39.
= 3 V, Ic = 3 r	nA, Z o = S	50 Ω 511	S.	21	s	12	S.	22
= 3 V, Ic = 3 r FREQUENCY MHz	mA, Zo = S MAG	50 Ω 511 ANG	S: MAG	21 ANG	S MAG	12 ANG	S: MAG	22 AN(
= 3 V, Ic = 3 r FREQUENCY MHz 100.00	mA, Zo = S MAG .943	50 Ω 511 ANG -13.4	S: MAG 9.384	21 ANG 165.9	S MAG .020	12 ANG 84.1	S: MAG .969	22 AN0 -7.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00	MAG .943 .868	50 Ω 511 ANG -13.4 -26.6	S: MAG 9.384 8.668	21 ANG 165.9 152.8	S MAG .020 .038	12 ANG 84.1 77.2	S: MAG .969 .936	22 ANG -7. -13.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00	MAG .943 .868 .815	50 Ω ANG -13.4 -26.6 -37.7	S: MAG 9.384 8.668 8.165	21 ANG 165.9 152.8 142.9	S MAG .020 .038 .051	12 ANG 84.1 77.2 67.9	S: MAG .969 .936 .876	22 ANG -7. -13. -20.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00	MAG .943 .868 .815 .717	50 Ω ANG -13.4 -26.6 -37.7 -48.9	S: MAG 9.384 8.668 8.165 7.279	21 ANG 165.9 152.8 142.9 132.9	S MAG .020 .038 .051 .062	12 ANG 84.1 77.2 67.9 63.9	S: MAG .969 .936 .876 .804	22 AN0 -7. -13. -20. -23.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00	mA, Zo = S MAG .943 .868 .815 .717 .655	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8	S: MAG 9.384 8.668 8.165 7.279 6.780	21 ANG 165.9 152.8 142.9 132.9 125.5	S MAG .020 .038 .051 .062 .075	ANG 84.1 77.2 67.9 63.9 63.9	S: MAG .969 .936 .876 .804	22 AN0 -7. -13. -20. -23. -26.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00	MAG .943 .868 .815 .717 .655	50 Ω 511 ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061	ANG 165.9 152.8 142.9 132.9 125.5 118.0	S MAG .020 .038 .051 .062 .075	ANG 84.1 77.2 67.9 63.9 63.9 60.0	S: MAG .969 .936 .876 .804 .764	22 AN0 -7. -13. -20. -23. -26. -29.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00	MAG .943 .868 .815 .717 .655 .577	50 Ω 511 ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8	S MAG .020 .038 .051 .062 .075 .084	ANG 84.1 77.2 67.9 63.9 60.0 59.7	S: MAG .969 .936 .876 .804 .764 .708	22 AN0 -7. -13. -20. -23. -26. -29.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00	MAG .943 .868 .815 .717 .655 .577 .518	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7	S MAG .020 .038 .051 .062 .075 .084 .091 .098	ANG 84.1 77.2 67.9 63.9 60.0 59.7 57.0	S: MAG .969 .936 .876 .804 .764 .708 .685	22 ANN -7. -13. -20. -23. -26. -29. -31. -32.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8	S MAG .020 .038 .051 .062 .075 .084 .091 .098	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0	S: MAG .969 .936 .876 .804 .764 .708 .685 .639	ANV -7. -13. -20. -23. -26. -29. -31. -32.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6	Si MAG .969 .936 .876 .804 .764 .708 .685 .639 .611	222 ANV -71320232629313232.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00 1000.00 1100.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8	S: MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592	ANV -7. -13. -20. -23. -26. -29. -31. -32. -32. -35.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00 1000.00 1100.00 1200.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0	S: MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579	222 ANV -7132023262931323534.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00 1100.00 1200.00 1300.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344 .321	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6 -105.9	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717 3.485	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5 87.6	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112 .121	ANG 84.1 77.2 67.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0 58.7	S: MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579 .551	22 ANN -713202326293132353535.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00 1000.00 1100.00 1200.00 1300.00 1400.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344 .321 .291 .273	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6 -105.9 -111.7	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717 3.485 3.306	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5 87.6 84.3	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112 .121 .128 .135	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0 58.7 59.8	Si MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579 .551 .532	22 ANN -71320232629313235353535.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00 1100.00 1200.00 1300.00 1400.00 1500.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344 .321 .291 .273 .250	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6 -105.9 -111.7 -117.2	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717 3.485 3.306 3.134	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5 87.6 87.6 884.3 80.7	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112 .121 .128 .135 .140	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0 58.7 59.8 58.0	Si MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579 .551 .532 .535	ANV -713202326293132353435353637.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 1000.00 1100.00 1200.00 1300.00 1400.00 1500.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344 .321 .291 .273 .250 .228	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6 -105.9 -111.7 -117.2 -122.4	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717 3.485 3.306 3.134 2.959	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5 87.6 84.3 80.7 79.0	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112 .121 .128 .135 .140	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0 58.7 59.8 58.0 59.5	Si MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579 .551 .532 .535 .511	ANV -7132023262931323534353537.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 1000.00 1200.00 1400.00 1500.00 1600.00 1700.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344 .321 .291 .273 .250 .228 .219	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6 -105.9 -111.7 -117.2 -122.4 -128.5	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717 3.485 3.306 3.134 2.959 2.819	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5 87.6 84.3 80.7 79.0 76.0	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112 .121 .128 .135 .140 .145	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0 58.7 59.8 58.0 59.5 59.0	Si MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579 .551 .532 .535 .511	222 ANN -71320232629313235343535363737.
FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 1000.00 1100.00 1200.00 1400.00 1500.00 1600.00 1700.00 1800.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344 .321 .291 .273 .250 .228 .219 .199	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6 -105.9 -111.7 -117.2 -122.4 -128.5 -135.3	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717 3.485 3.306 3.134 2.959 2.819 2.699	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5 87.6 84.3 80.7 79.0 76.0 73.9	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112 .121 .128 .135 .140 .145 .153 .161	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0 58.7 59.8 58.0 59.5 59.0 58.4	Si MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579 .551 .532 .535 .511	ANC -7132023262931323535343535373739.
= 3 V, Ic = 3 r FREQUENCY MHz 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 1000.00 1100.00 1200.00 1300.00 1400.00 1500.00 1600.00 1700.00	MAG .943 .868 .815 .717 .655 .577 .518 .468 .420 .380 .344 .321 .291 .273 .250 .228 .219	50 Ω ANG -13.4 -26.6 -37.7 -48.9 -56.8 -65.5 -71.2 -78.1 -83.7 -90.6 -94.8 -101.6 -105.9 -111.7 -117.2 -122.4 -128.5	S: MAG 9.384 8.668 8.165 7.279 6.780 6.061 5.504 5.074 4.632 4.340 3.951 3.717 3.485 3.306 3.134 2.959 2.819	ANG 165.9 152.8 142.9 132.9 125.5 118.0 112.8 106.7 102.8 98.3 94.8 90.5 87.6 84.3 80.7 79.0 76.0	S MAG .020 .038 .051 .062 .075 .084 .091 .098 .102 .105 .112 .121 .128 .135 .140 .145	ANG 84.1 77.2 67.9 63.9 63.9 60.0 59.7 57.0 59.0 56.6 57.8 59.0 58.7 59.8 58.0 59.5 59.0	Si MAG .969 .936 .876 .804 .764 .708 .685 .639 .611 .592 .579 .551 .532 .535 .511	222 ANN -71320232629313235343535363737.

٧	CE	=	3	V	,	lc	=	1	m/	٩,	Zc	=	5() (()
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FREQUENCY	S11		S	21	S	12	S22		
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	
100.00	1.023	-7.6	3.505	172.1	.025	86.4	.995	-4.6	
200.00	.983	-16.1	3.400	163.3	.039	79.3	.986	-7.8	
300.00	.975	-22.4	3.368	157.3	.061	74.6	.976	-12.8	
400.00	.922	-31.8	3.219	149.1	.075	70.7	.936	-15.1	
500.00	.899	-36.9	3.186	143.3	.093	66.4	.922	-18.8	
600.00	.849	-44.7	3.046	135.7	.105	62.2	.885	-22.5	
700.00	.812	-50.6	2.905	131.1	.113	61.7	.880	-24.4	
800.00	.774	-57.1	2.830	124.4	.128	55.7	.846	-27.2	
900.00	.727	-62.9	2.694	119.2	.134	55.6	.808	-28.8	
1000.00	.680	-69.3	2.597	114.1	.146	53.7	.790	-31.8	
1100.00	.651	-74.1	2.479	109.3	.146	50.3	.766	-32.8	
1200.00	.616	-79.8	2.392	104.8	.155	49.8	.741	-34.9	
1300.00	.575	-85.2	2.302	101.1	.155	46.2	.714	-35.9	
1400.00	.546	-90.6	2.207	96.0	.160	46.7	.708	-36.8	
1500.00	.512	-95.8	2.110	92.1	.168	43.6	.685	-38.4	
1600.00	.481	-100.6	2.034	88.8	.165	45.5	.676	-40.1	
1700.00	.463	-106.3	1.989	85.5	.176	45.3	.667	-41.8	
1800.00	.440	-111.8	1.903	82.2	.173	43.8	.649	-42.3	
1900.00	.419	-116.4	1.854	78.9	.174	43.5	.633	-44.2	
2000.00	.394	-121.2	1.779	75.5	.173	43.7	.630	-45.2	

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