

QBH-2001

PCS Band Low Noise Amplifier

Revision: A1

FEATURES

- 1800 to 2200 MHz operating frequency
- Usable from 1600 to 2900 MHz
- 0.9 dB Noise Figure typ
- 14 dB Gain typ
- 34 dBm Output IP3 typ
- Surface Mount Package
- High Reliability
- Unconditional Stability

Product Description

The QBH-2001 is a member of the REMEC Mobile Wireless Generation 2 Surface Mount Amplifier Family of products. The Generation Two product line offers a cost effective solution to the most challenging transmit and receive system requirements.

The QBH-2001 is a low noise amplifier designed for the 1800 to 2200 MHz frequency range. Typical performance parameters include 0.9 dB noise figure, a gain of 14 dB, and a +34 dBm third order intercept point. The QBH-2001 is a single ended amplifier simultaneously offering low noise and good input return loss (> 15 dB). Enclosed with a metal cover, the QBH-2001 is a perfect choice to minimize or eliminate the need for isolation covers on transceiver boards.



Specifications @ 25°C

Parameter	Units	Minimum	Typical	Maximum
Frequency Range	MHz	1800		2200
Gain @ 1900 MHz	dB	13		
Gain Flatness	dB			+/- 0.4
Input VSWR	dB		1.5:1	
Output VSWR	dB		1.5:1	
Pout @ 1dB Compression	dBm	17		
Output IP3	dBm	32		
Noise Figure	dB		1.0	
DC Supply Current	mA		66	
DC Supply Voltage	V		5.0	

Test Conditions

- 50 Ω system
- DC supply voltage $\pm 2\%$

Absolute Maximum Ratings

Temperature

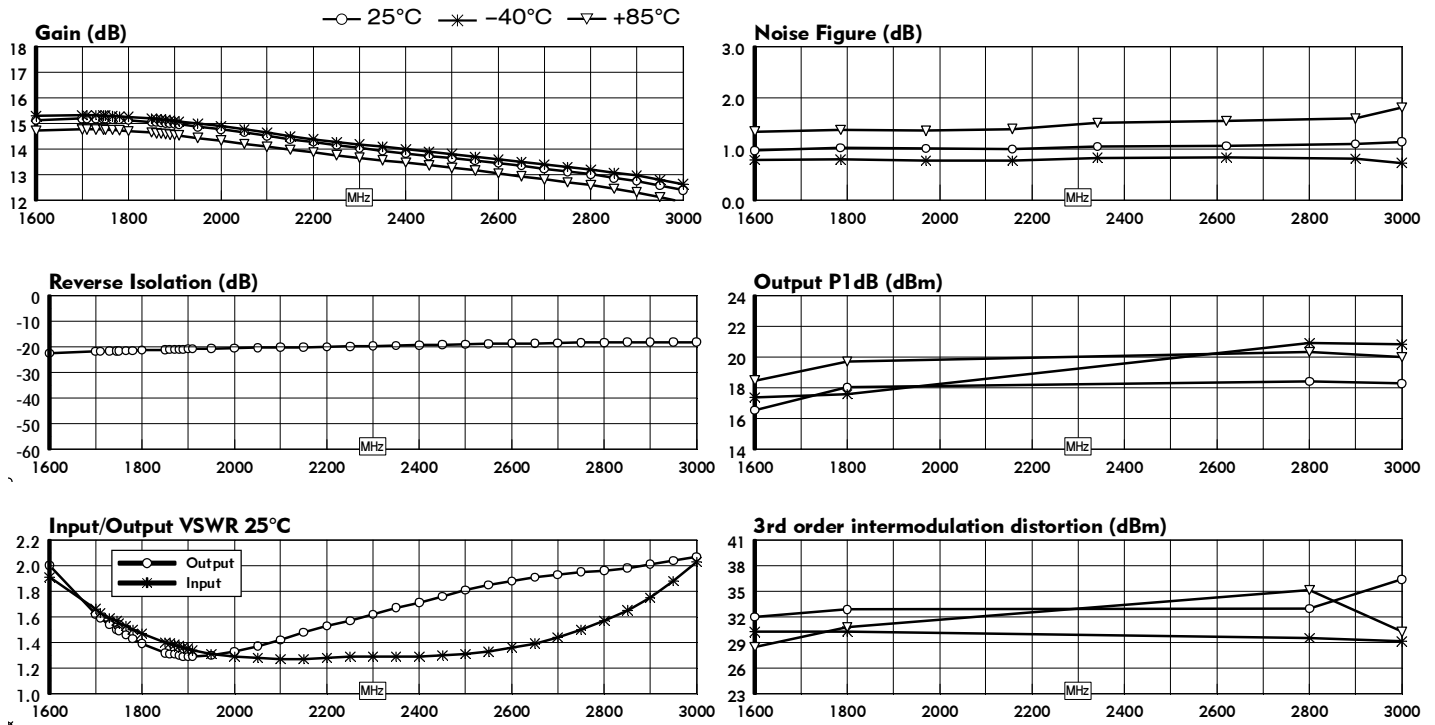
Operating	-40 to +85°C
Storage	-65 to +125°C
Maximum input drive	1.0 Vrms

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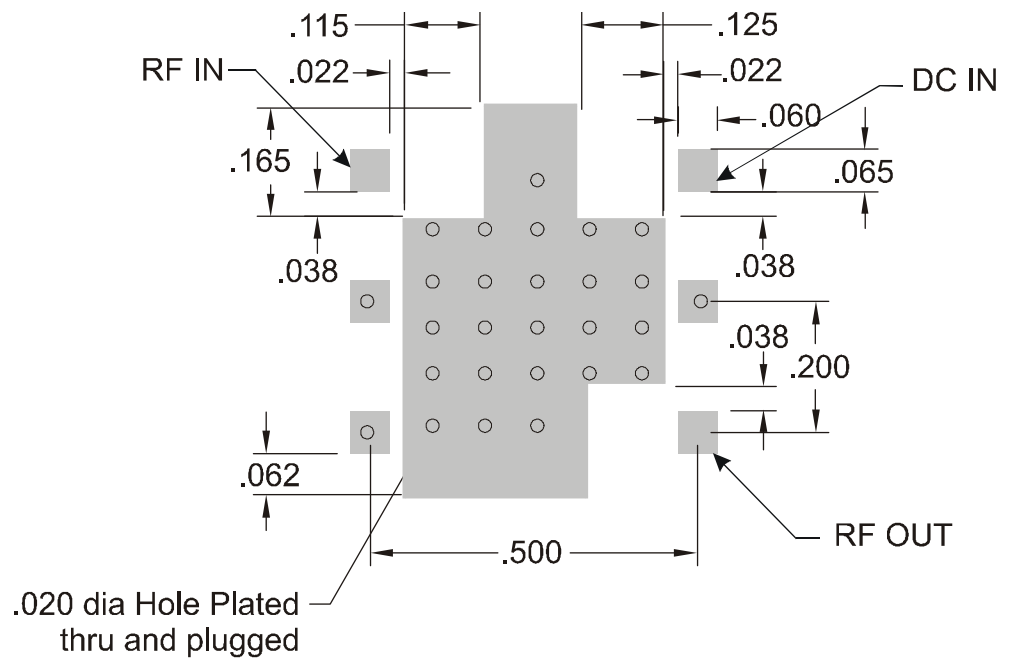
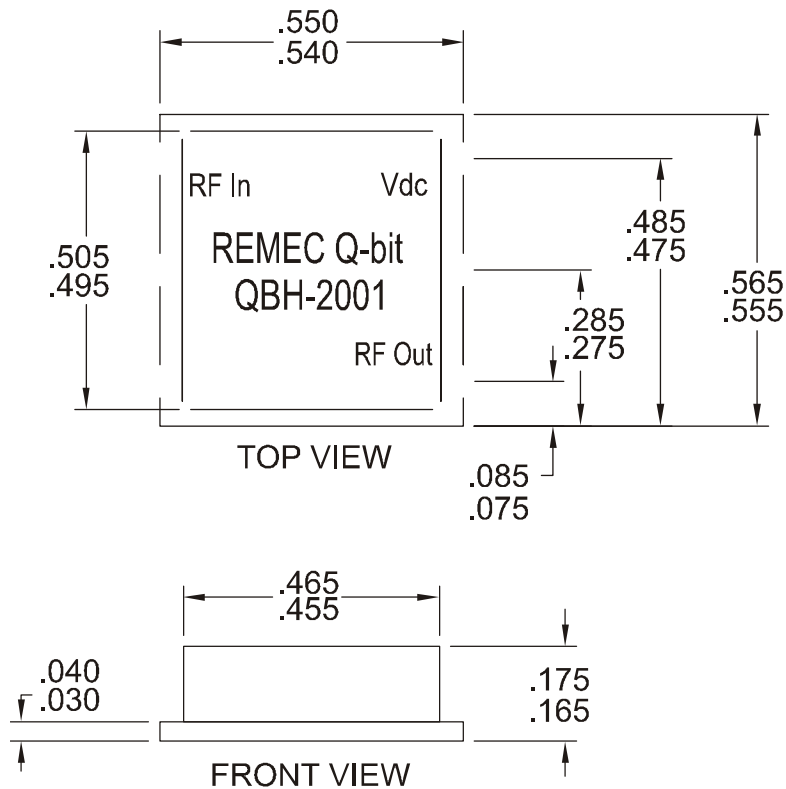
S-Parameter Typical Data

Freq	S11 Input		S21 Gain		S12 Isolation		S22 Output	
	dB	Ang	dB	Ang	dB	Ang	dB	Ang
1600	-10.24	17.06	15.12	-0.38	-22.52	-67.57	-9.81	131.10
1700	-12.36	0.62	15.18	-22.12	-21.87	-84.73	-12.94	119.51
1710	-12.60	-1.04	15.18	-24.29	-21.81	-86.41	-13.28	118.43
1730	-13.08	-4.18	15.17	-28.63	-21.7	-89.85	-13.99	116.55
1750	-13.54	-7.29	15.16	-32.95	-21.59	-93.28	-14.72	115.02
1780	-14.30	-11.57	15.13	-39.37	-21.44	-98.34	-15.76	112.92
1800	-14.74	-14.11	15.12	-43.67	-21.33	-101.79	-16.43	111.85
1850	-15.91	-20.10	15.05	-54.30	-21.12	-110.22	-17.94	110.35
1860	-16.13	-21.24	15.04	-56.40	-21.08	-112.01	-18.18	110.32
1870	-16.32	-22.34	15.02	-58.52	-21.05	-113.55	-18.41	110.32
1880	-16.51	-23.34	15.01	-60.62	-21.00	-115.25	-18.57	110.43
1890	-16.69	-24.26	14.99	-62.73	-20.96	-116.95	-18.72	110.59
1900	-16.86	-25.04	14.97	-64.84	-20.91	-118.68	-18.81	110.76
1910	-17.03	-25.91	14.95	-66.94	-20.88	-120.23	-18.85	110.99
1950	-17.66	-27.48	14.87	-75.28	-20.73	-126.92	-18.58	112.36
2000	-18.37	-23.68	14.76	-85.61	-20.57	-135.24	-17.57	114.52
2050	-19.02	-8.29	14.64	-95.82	-20.4	-143.37	-16.39	116.66
2100	-19.30	21.52	14.52	-105.93	-20.25	-151.33	-15.36	117.7
2150	-18.97	43.33	14.38	-115.9	-20.12	-159.35	-14.47	117.11
2200	-18.56	50.77	14.27	-125.86	-19.98	-167.05	-13.73	115.26
2250	-18.35	52.02	14.15	-135.5	-19.82	-174.71	-13.11	112.31
2300	-18.33	50.57	14.04	-145.07	-19.66	-177.60	-12.58	108.46
2400	-18.55	45.52	13.83	-163.62	-19.34	-161.98	-11.69	99.26
2500	-18.18	40.22	13.63	-178.14	-19.04	-145.92	-10.95	87.61
2600	-17.04	34.22	13.44	-159.81	-18.78	-129.83	-10.44	73.64
2700	-15.25	27.08	13.23	-141.23	-18.53	-113.47	-10.13	57.43
2800	-13.29	18.83	13.00	-122.43	-18.34	-96.97	-9.92	39.46
2900	-11.33	9.92	12.74	-103.22	-18.18	-80.21	-9.64	19.47
3000	-9.40	0.6	12.40	-83.4	-18.10	-62.90	-9.30	-2.40

QBH-2001

Product Outline Drawing

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RECOMMENDED MOUNTING PATTERN

Dimensions are in inches

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Application Note

Figure 1 is the suggested schematic diagram for properly using the QBH-2001. Since the QBH-2001 is a single ended low noise amplifier, it is important the source impedance of the circuit connected to the QBH-2001 RF input port is as close to 50 ohms as possible (source return loss better than 20 dB). Keeping good 50 ohm source impedance is important because good noise figure of the amplifier will be affected if source impedance degrades. Another important factor affecting performance is input circuit losses. A good microwave transmission medium should be chosen and T1 transmission line length should be kept as short as possible to maintain lowest possible noise figure. C1 should be a high Q microwave capacitor to minimize resistive losses.

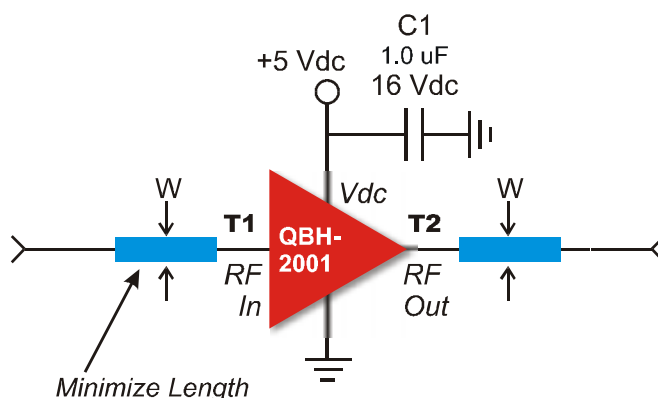


Figure 1

Table 1
Suggested Transmission Line Materials

Material	Manufacturer	Dielectric Material	Material Thickness	T1, T2 Line Width (w)
AR320	Arlon	3.00	0.031	0.078"
TLE	Taconic	2.95	0.031	0.078"
R4003	Rogers	3.38	0.031	0.072"
FR4		4.30	0.031	0.058