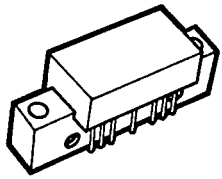
VHF-UHF Linear Amplifier 10-1000 MHz, 400 mW Output Power

- **Wide Bandwidth: 10MHz–1000MHz**
- **17dB Gain**
- **Wide Dynamic Range: 7dB Noise Figure**
- **40dBm Third Order Intercept**
- **Low Second Order Distortion: Push Pull Circuitry**
- **Optimized for 12V Power Supply**



CA Package

The CA4812 RF amplifier is a low cost, push-pull hybrid circuit offering low second and third harmonic distortion. Production techniques used in the CA4812 have been proven in the manufacture of millions of TRW CATV amplifiers.

Uses include IF and preamplifier service for Electronic Counter Measures (ECM), Radar and communications, a "total coverage" TV preamplifier, cable driver, driver for TV transposers, general instrumentation, broad band sweep generators, plus numerous other applications requiring 17 dB of gain, 400mW power output and low distortion over the 10-1000 MHz bandwidth.

For Military and other special applications, the CA4812 is available in a hermetic package (CA4812H).

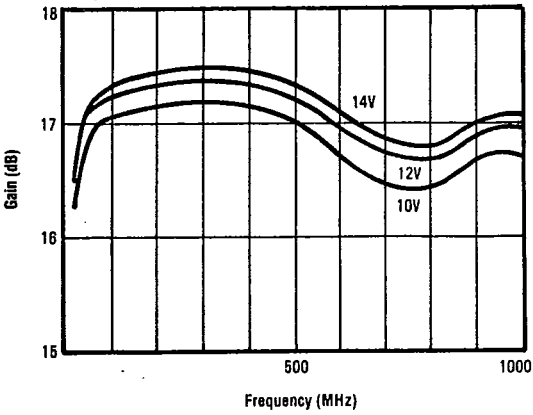
Electrical Characteristics For 50Ω Systems (T_{CASE} = 25°C and 12V Supply)

Symbol	Characteristics	Conditions	Min.	Typ.	Max.	Units
P_G	Power Gain	f = 100MHz	16	17	18	dB
F_R	Frequency Response	10-1000MHz		±0.5	±1	dB
P_o	Power Output, 1dB Compression	f = 500MHz	300	400		mW
I_{TO}	Third Order Intercept see Figure 1	10-1000MHz	+38	+40		dBm
dso	Second Harmonic Suppression	P_o = 100mW f_{2h} = 1000MHz	−40	−50	dB	
N_F	Noise Figure	f = 500MHz f = 1000MHz		6.5 7.5	8 9	dB
VSWR	Input/Output (50Ω)	40-860MHz 10-1000MHz			2:1 2.5:1	N/A
I_{CC}	Supply Current	+12V	360	380	400	mA
PEP	Peak Envelope Power — For 2 Tone Distortion Test, see Fig. 1	f = 500MHz		+25		dBm
IMD	Intermodulation Distortion TV Test (−8 −17 −10) See Fig. 2	f = 860MHz P_{sync} = 200mW		−60		dB

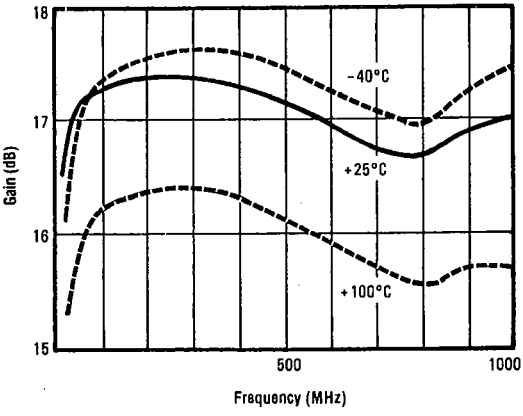
Absolute Maximum Ratings

Supply Voltage	RF Power Input	Storage Temperature	Case Operating Temp.
+14 Volts	+14dBm	−55°C to +125°C	−40°C to +100°C

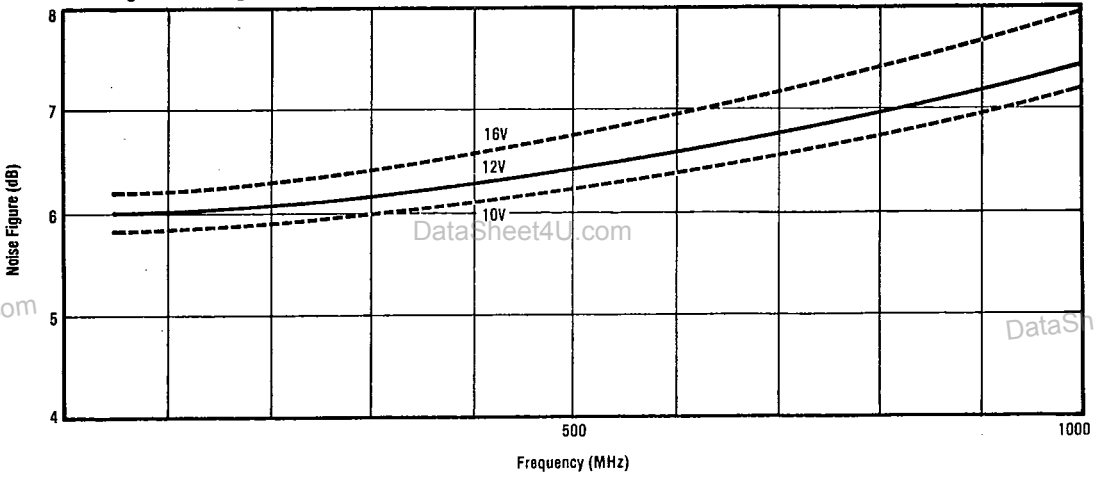
Frequency Response vs. Voltage (+25°C)



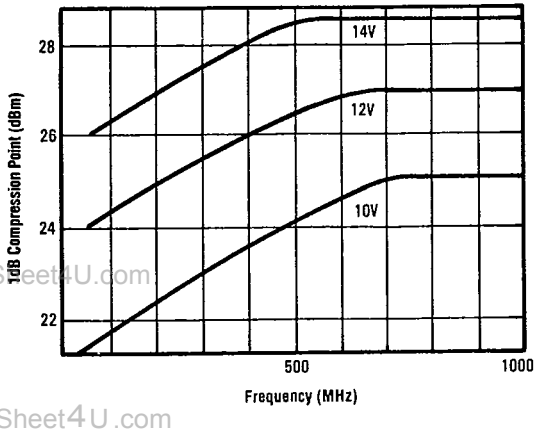
Frequency Response vs. Temperature (+12V)



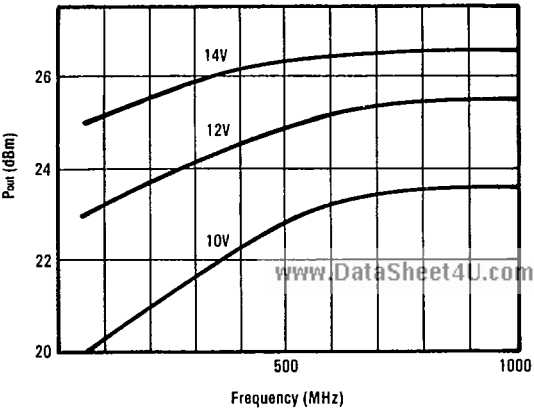
Noise Figure vs. Voltage (+25°C)



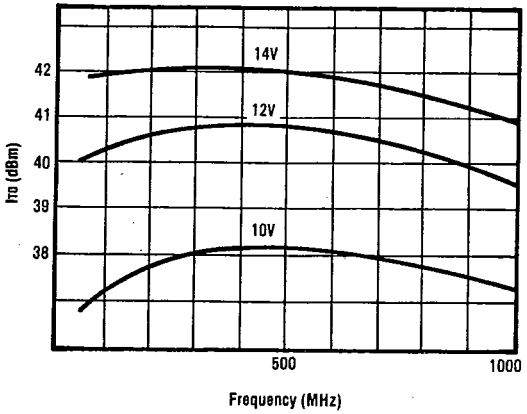
1dB Compression vs. Voltage (+25°C)



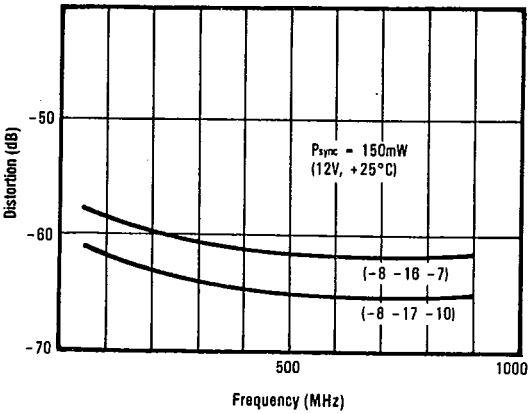
Peak Envelope Power vs. Voltage (+25°C)



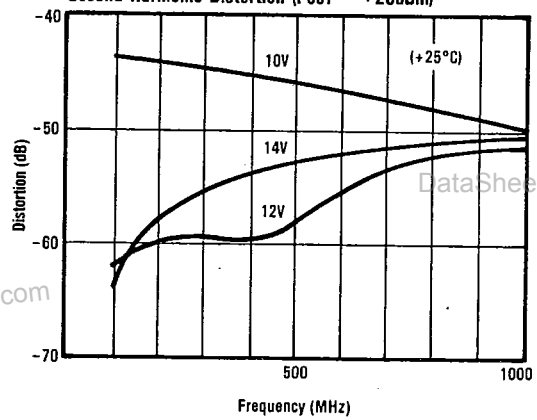
Third Order Intercept vs. Voltage (+25°C)



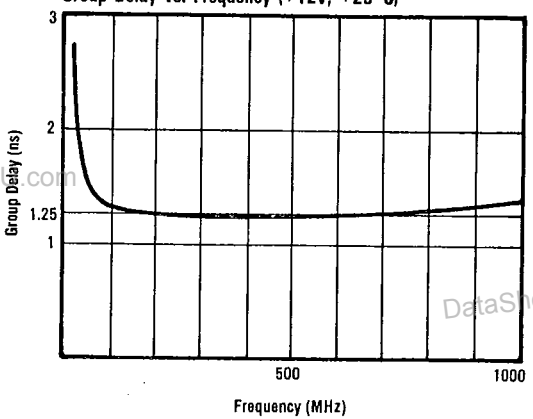
Intermodulation: TV Test



Second Harmonic Distortion (POUT = +20dBm)



Group Delay vs. Frequency (+12V, +25°C)



CA4812 S PARAMETERS

Biased at 12 Volts
378mA
Zo = 50 Ohms

Frequency (MHz)	S11		S21		S12		S22		k
10	– 26.45	120.1	16.50	14.2	– 43.49	16.8	– 11.58	98.1	10.425
110	– 39.42	132.5	17.24	– 47.2	– 42.25	– 0.5	– 18.18	39.2	8.802
210	– 31.22	133.7	17.15	– 92.3	– 41.15	– 4.7	– 16.72	29.3	7.787
310	– 27.72	118.8	17.39	– 138.6	– 39.61	– 13.4	– 16.22	20.5	6.325
410	– 27.24	119.2	17.33	176.2	– 37.91	– 24.1	– 16.30	– 13.6	5.249
510	– 24.56	139.6	17.22	130.5	– 36.08	– 38.2	– 16.64	– 5.6	4.329
610	– 19.41	136.4	16.97	86.1	– 34.27	– 55.2	– 17.26	– 6.6	3.622
710	– 15.98	113.6	16.76	41.6	– 32.16	– 74.7	– 19.19	– 27.0	2.926
810	– 14.04	76.9	16.66	– 1.7	– 30.01	– 95.6	– 25.19	– 55.8	2.339
910	– 11.66	31.1	16.93	– 46.4	– 27.63	– 120.2	– 25.82	119.3	1.728
1010	– 7.98	– 24.7	16.99	– 97.3	– 25.33	– 150.7	– 13.13	66.2	1.208

Package Outline

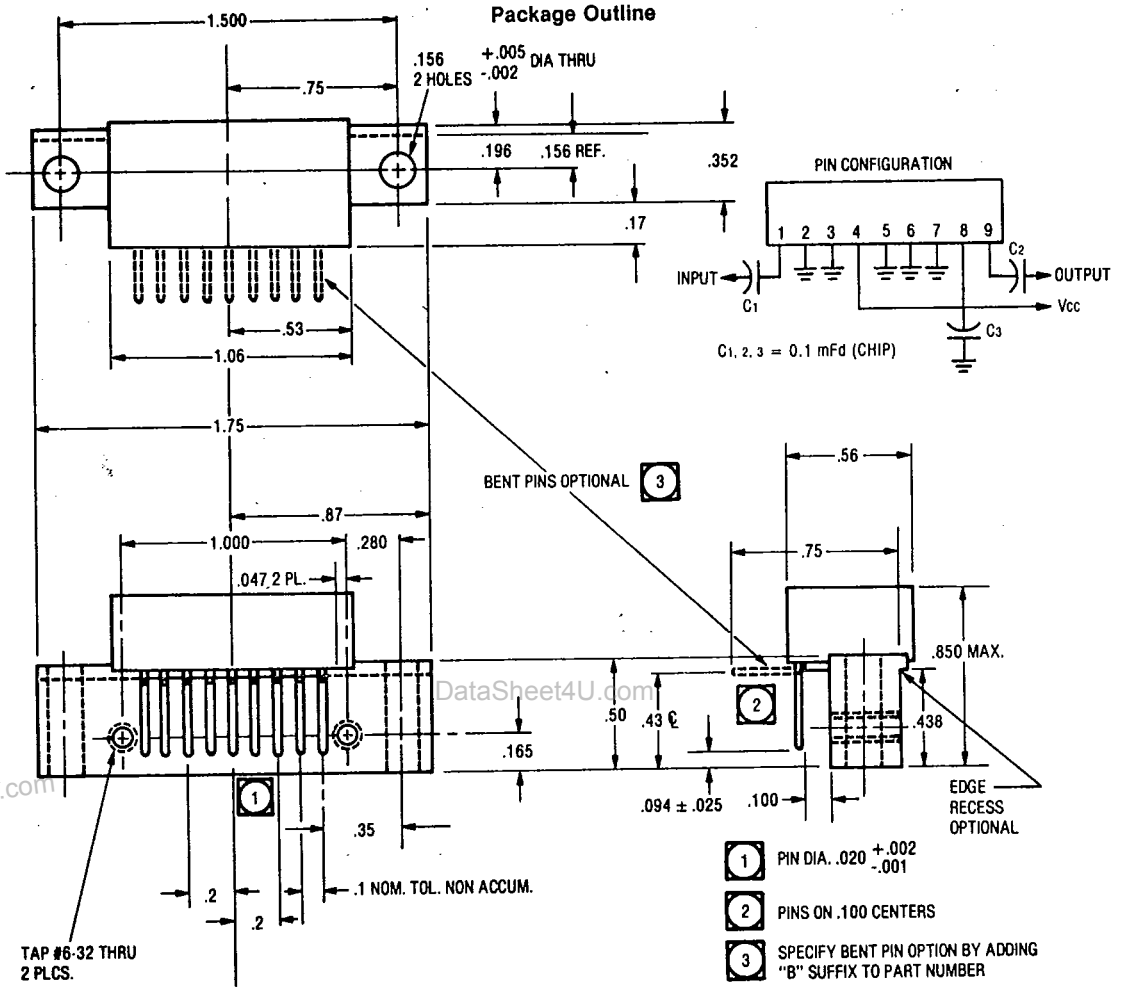
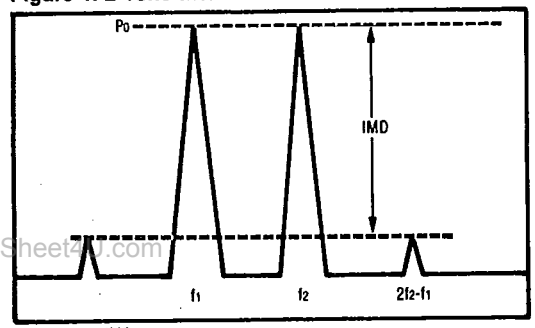


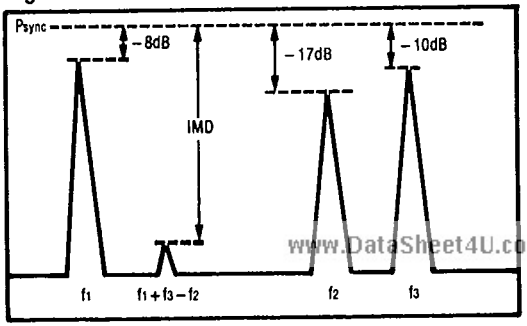
Figure 1: 2 Tone Intermodulation Test



$ITO = Po + \frac{IMD}{2}$ @ IMD > 60dB

PEP = 4X Po @ IMD = −32dB

Figure 2: 3 Tone TV Intermodulation Test



f1: video
f2: sideband
f3: sound