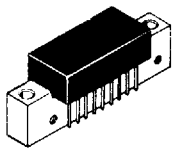
CA4812
CA4812H

The RF Line
Wideband Linear Amplifiers

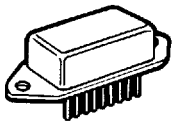
. . . designed for amplifier applications in 50 to 100 ohm systems requiring wide bandwidth, low noise and low distortion. This hybrid provides excellent gain stability with temperature and linear amplification as a result of the push-pull circuit design.

- Specified Characteristics at V_{CC} = 12 V, T_C = 25°C:
  - Frequency Range — 10 to 1000 MHz
  - Output Power — 400 mW Typ @ 1 dB Compression, f = 500 MHz
  - PEP — 320 mW Typ @ −32 dB IMD
  - Noise Figure — 6.5 dB Typ @ f = 500 MHz
  - ITO — 40 dBm @ f = 1000 MHz
- All Gold Metallization for Improved Reliability
- Optimized for 12 Volt Operation

17 dB
10–1000 MHz
400 mWATT
WIDEBAND
LINEAR AMPLIFIERS



CASE 714P-01, STYLE 3
(CA)
CA4812



CASE 826-01, STYLE 7
(SIP)
CA4812H

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
DC Supply Voltage	V_{CC}	14	Vdc
RF Power Input	P_{in}	+14	dBm
Operating Case Temperature Range	T_C	−40 to +100	°C
Storage Temperature Range	T_{stg}	−55 to +125	°C

ELECTRICAL CHARACTERISTICS (T_C = 25°C, V_{CC} = 12 V, 50 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	10	—	1000	MHz
Gain Flatness (f = 10–1000 MHz)	—	—	±0.5	±1	dB
Power Gain (f = 100 MHz)	P_G	16	17	18	dB
Noise Figure, Broadband f = 500 MHz f = 1000 MHz	NF	— —	6.5 7.5	8 9	dB
Power Output — 1 dB Compression (f = 500 MHz)	$P_{O\ 1dB}$	300	400	—	mW
Third Order Intercept (See Figure 11, f_1 = 10–1000 MHz)	ITO	38	40	—	dBm
Input/Output VSWR f = 40–860 MHz f = 10–1000 MHz	VSWR	— —	— —	2:1 2.5:1	—
Second Harmonic Distortion (P_O = 100 mW, f_{2H} = 1000 MHz)	d_{so}	—	−50	−40	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 11) (f = 500 MHz @ −32 dB IMD)	PEP	—	320	—	mW
Supply Current	I_{CC}	360	380	400	mA
Intermodulation Distortion, 3 Tone (Vision Carrier = −8 dB, Sound Carrier = −10 dB, Sideband Signal = −17 dB. See Figure 12. f = 860 MHz, P_{sync} = 200 mW)	IMD	—	−60	—	dB

TYPICAL CHARACTERISTICS

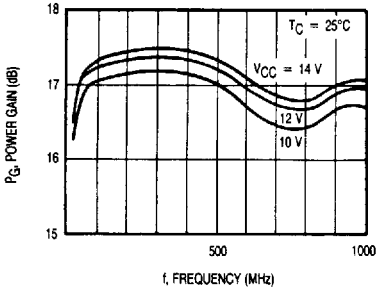


Figure 1. Frequency Response versus Voltage

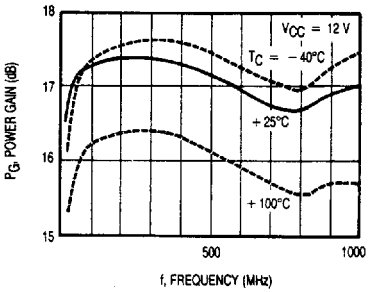


Figure 2. Frequency Response versus Temperature

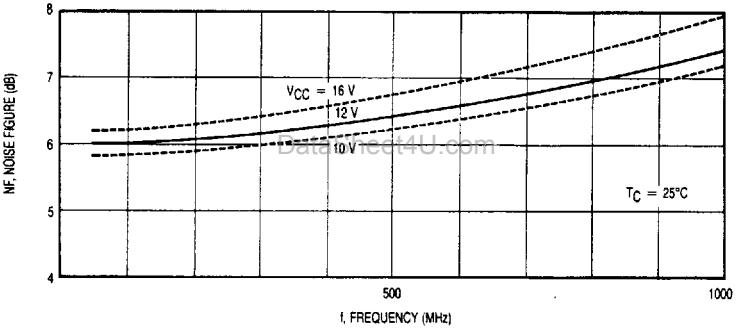


Figure 3. Noise Figure versus Voltage

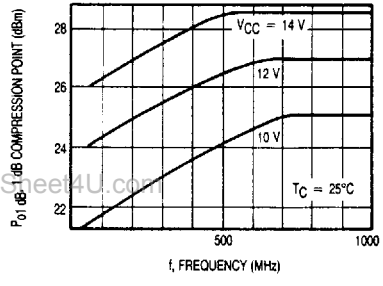


Figure 4. 1 dB Compression versus Voltage

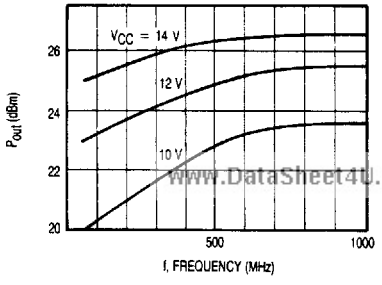


Figure 5. Peak Envelope Power versus Voltage

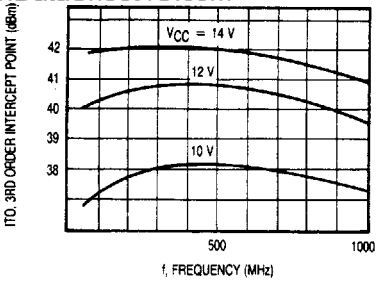


Figure 6. Third Order Intercept versus Voltage

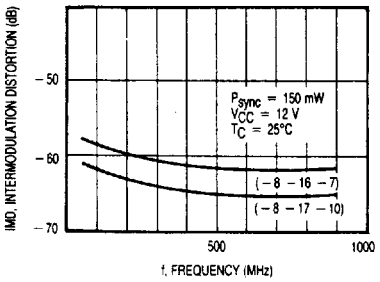


Figure 7. Intermodulation: TV Test

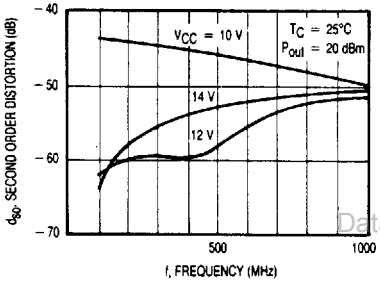


Figure 8. Second Harmonic Distortion versus Frequency

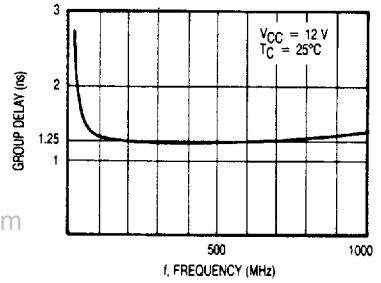
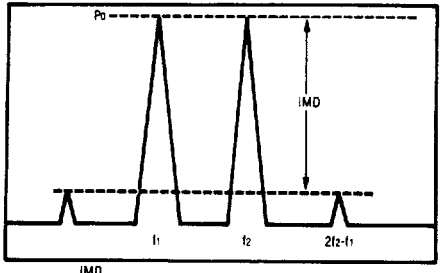


Figure 9. Group Delay versus Frequency

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	– 17.29	– 15.6	3.422
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

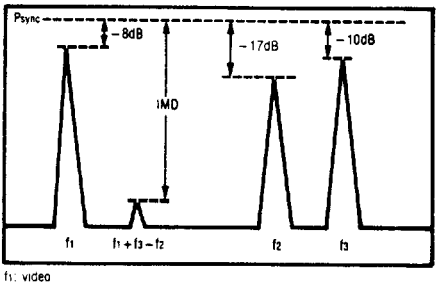
Figure 10. S-Parameters



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

PEP = 4X Po @ IMD = −32dB

Figure 11. 2-Tone Intermodulation Test



f1: video
f2: sideband
f3: sound

Figure 12. 3-Tone TV Intermodulation Test

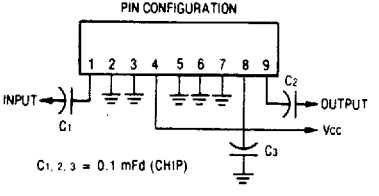


Figure 13. External Connections