CA2812
CA2812H

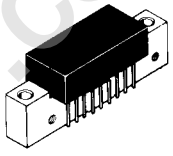
The RF Line
Wideband Linear Amplifiers

30 dB
1–520 MHz
300 mWATT
WIDEBAND
LINEAR AMPLIFIERS

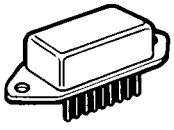
. . . designed for amplifier applications in 50 to 100 ohm systems requiring wide bandwidth, low noise and low distortion. This hybrid provides excellent gain stability with temperature and linear amplification as a result of the push-pull circuit design.

The linear class A bias enables the CA2812 to drive highly reactive loads at large signal levels. Low end frequency response can be extended to 500 kHz by increasing the values of the external RF chokes.

- Optimized for 12 Volt Operation
- Specified Characteristics at V_{CC} = 12 V, T_C = 25°C:
  - Frequency Range — 1 to 520 MHz
  - Output Power — 300 mW Typ @ f = 1–520 MHz
  - Power Gain — 30 dB Typ @ f = 100 MHz
  - Noise Figure — 8 dB Typ @ f = 500 MHz
- All Gold Metallization for Improved Reliability
- Available in Bent Lead Option and Hermetic Package
- Unconditional Stability Under All Mismatch Conditions



CA
CASE 714P-01, STYLE 1
CA2812



SIP
CASE 826-01, STYLE 5
CA2812H

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
DC Supply Voltage	V_{CC}	18	Vdc
RF Power Input	P_{in}	+10	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	1	—	520	MHz
Gain Flatness (f = 1–520 MHz)	—	—	±0.8	±1.5	dB
Power Gain	P_G	29	30	31	dB
Noise Figure, Broadband f = 30 MHz f = 500 MHz	NF	— —	5.5 8	7 10	dB
Power Output — 1 dB Compression (f = 1–520 MHz)	$P_{o\ 1dB}$	250	300	—	mW
Third Order Intercept (See Figure 10, f_1 = 520 MHz)	ITO	32	34	—	dBm
Input/Output VSWR (f = 1–520 MHz) Input Output	VSWR	— —	1.5:1 1.8:1	2:1 2:1	—
Second Harmonic Distortion (Tone at 10 mW, f_{2H} = 1–520 MHz)	d_{so}	—	−50	−40	dB
Reverse Isolation (f = 1–520 MHz)	—	49	52		dB
Supply Current	I_{CC}	300	330	360	mA

Note: Bent lead option for CA2812 is available in Case 714R-01 (Style 1).

TYPICAL CHARACTERISTICS

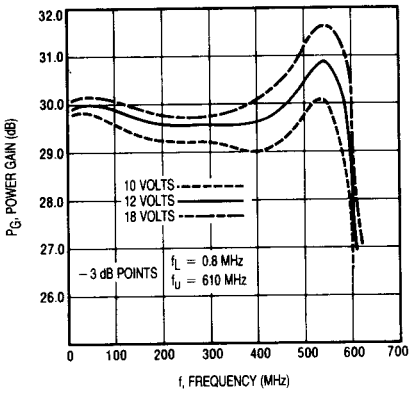


Figure 1. Power Gain versus Frequency

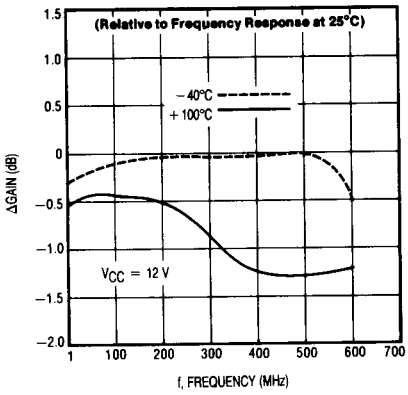


Figure 2. Relative Power Gain versus Temperature

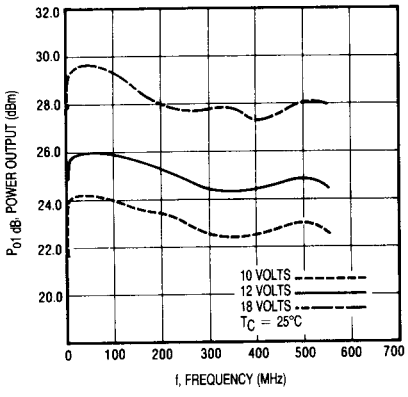


Figure 3. 1 dB Gain Compression versus Voltage

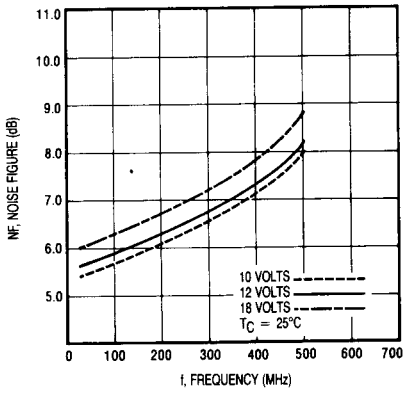


Figure 4. Noise Figure versus Voltage

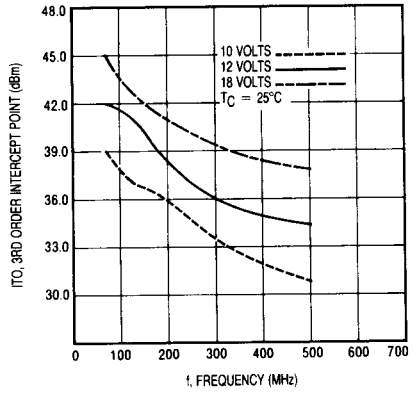


Figure 5. Third Order Intercept versus Voltage

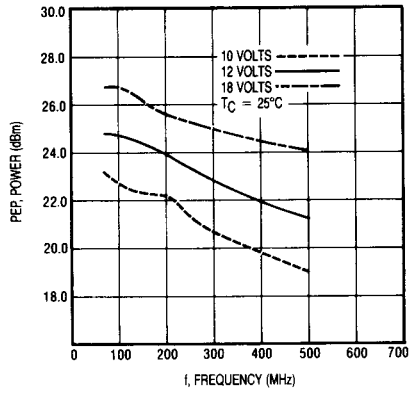


Figure 6. Peak Envelope Power versus Voltage

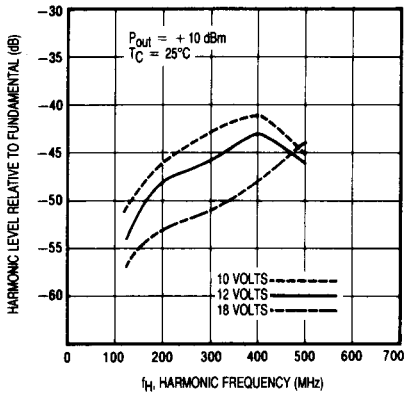


Figure 7. Second Harmonic Distortion versus Voltage

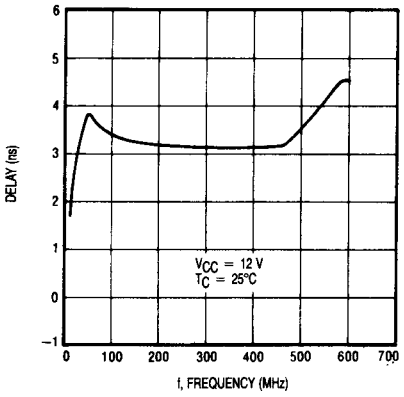


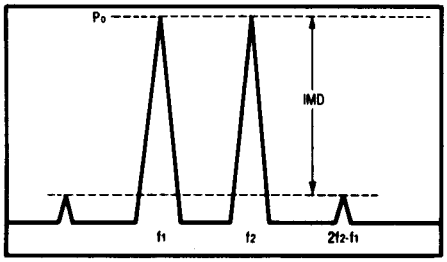
Figure 8. Group Delay versus Frequency

Biased at 12 Volts — T = 25°C Zo = 50Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
1	-9.0	-52.7	29.7	170	-50.2	167	-4.0	145
10	-25.0	-26.0	29.9	3.7	-54.5	8.6	-25.5	54.0
100	-20.8	-12.0	29.9	-122	-55.5	-36.8	-22.2	59.0
200	-17.0	-53.7	29.5	117	-58.0	-77.8	-14.8	37.0
300	-14.7	-99	29.5	-6.4	-60.4	-140	-16.8	26.0
400	-14.5	-159	29.5	-131	-56.9	151	-13.1	2.8
500	-17.6	111	30.1	98.2	-51.7	93	-19.9	-135
600	-17.5	-83	27.5	-79.9	-56.2	17.9	-3.1	82

Magnitude in dB, Phase Angle in degrees.

Figure 9. S-Parameters



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

PEP = 4X Po @ IMD = -32dB

Figure 10. Intermodulation Test

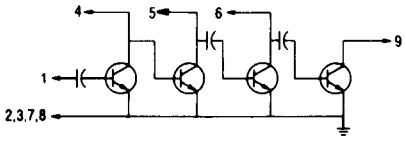


Figure 11. External Connections

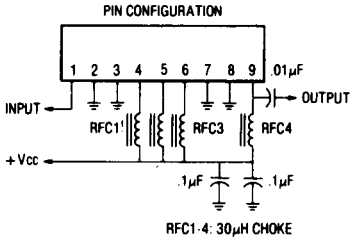


Figure 12. External Connections