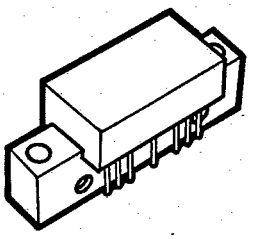
RF Devices Division
TRW Electronic Components Group

T-74-09.01

CA2812

CA2812 Wide Bandwidth Linear Hybrid Amplifier

- **Optimized For 12 Volt Operation**
- **Instantaneous Bandwidth, 1-520MHz**
- **30dB Gain**
- **Power Output, 250mW Minimum**
- **Low Cost Single Ended Design**
- **Unconditional Stability Under All Mismatch Conditions**



CA

The CA2812 is a high-reliability thin-film hybrid amplifier utilizing an all gold metallization system. Units are designed for widest bandwidth linear operation in 50 ohm systems. The linear class A bias enables the CA2812 to drive highly reactive loads at large signal levels over its frequency range. Low end frequency response can be extended to 500KHz by increasing the value of the external RF chokes. This module is recommended for wide bandwidth, low cost and linear applications in 25 to 75 ohm systems over a wide range of supply voltages.

Absolute Maximum Ratings

V_{CC}	RF Power Input	Storage Temperature	Operating Temperature (Case)
18 Volts	+10dBm	−55°C to +125°C	−40°C to +100°C

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

Symbol	Characteristic	Conditions	Min.	Typ.	Max.	Units
P_G	Power Gain	f = 100MHz	29	30	31	dB
NF	Noise Figure, Broadband	f = 30MHz f = 500MHz	— —	5.5 8	7 10	dB
I_{TO}	Third Order Intercept, See Figure 1	f = 520MHz	+32	+34	—	dBm
VSWR	Input VSWR for 50 Ohm Systems Output VSWR for 50 Ohm Systems	f = 1-520MHz	—	1.5:1 1.8:1	2.0:1 2.0:1	N/A
I_{CC}	Supply Current	12V	300	330	360	mA
P_O	Power Output — 1dB Compression	f = 1-520MHz	250	300	—	mW
P_{RI}	Reverse Isolation	f = 1-520MHz	49	52	—	dB
F_R	Frequency Response	f = 1-520MHz	—	±0.8	±1.5	dB
dso	Second Harmonic Distortion	P_O = 10mW f_{2H} = 1-520MHz	−40	−50	—	dB

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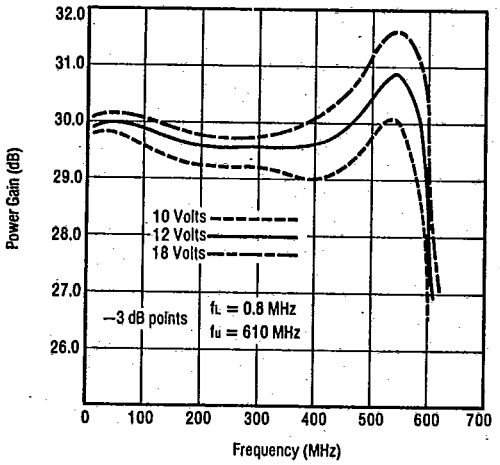
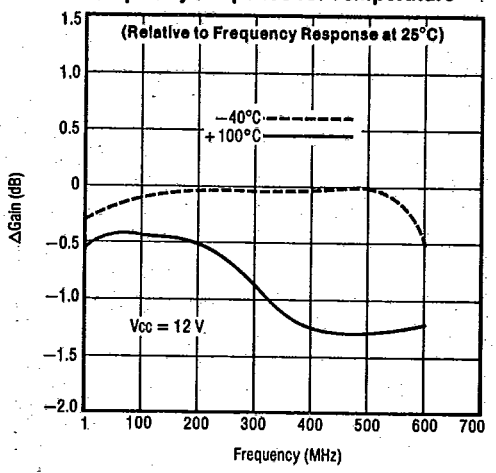
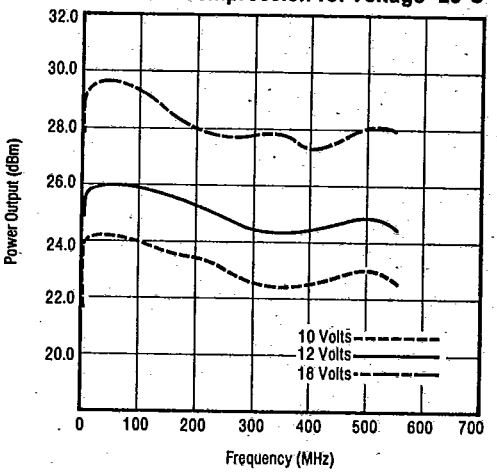
Frequency Response 25°C



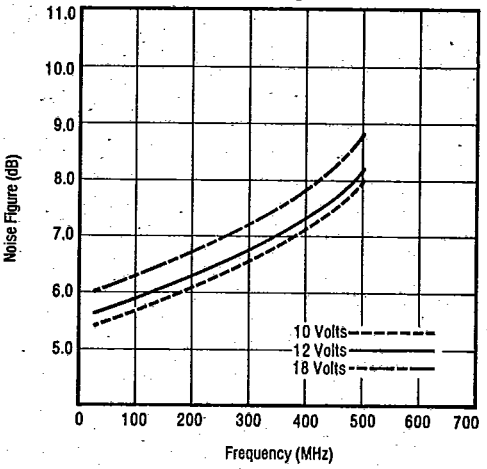
Frequency Response vs. Temperature



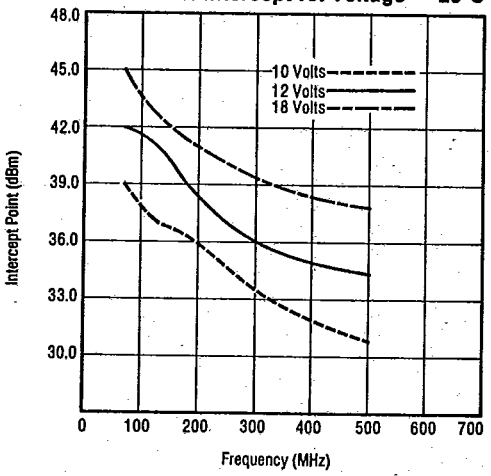
1 dB Gain Compression vs. Voltage 25°C



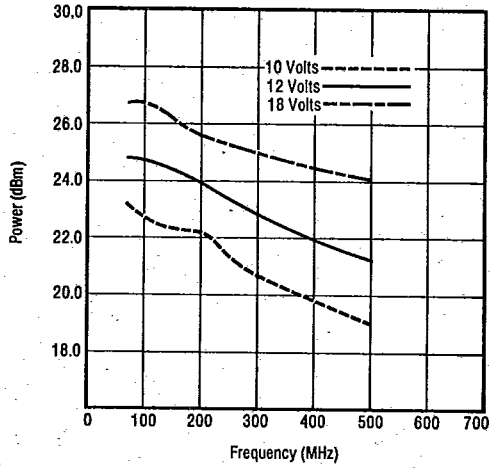
Noise Figure vs. Voltage 25°C



Third Order Intercept vs. Voltage 25°C



Peak Envelope Power vs. Voltage 25°C



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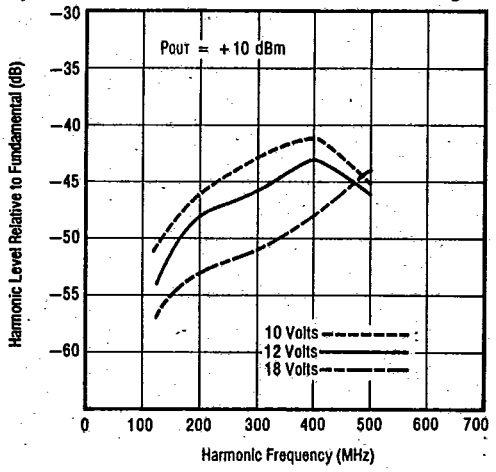
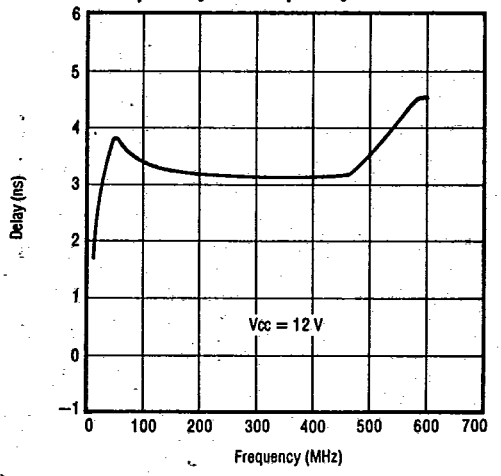
Second Harmonic Distortion vs. Voltage 25°C



Group Delay vs. Frequency 25°C



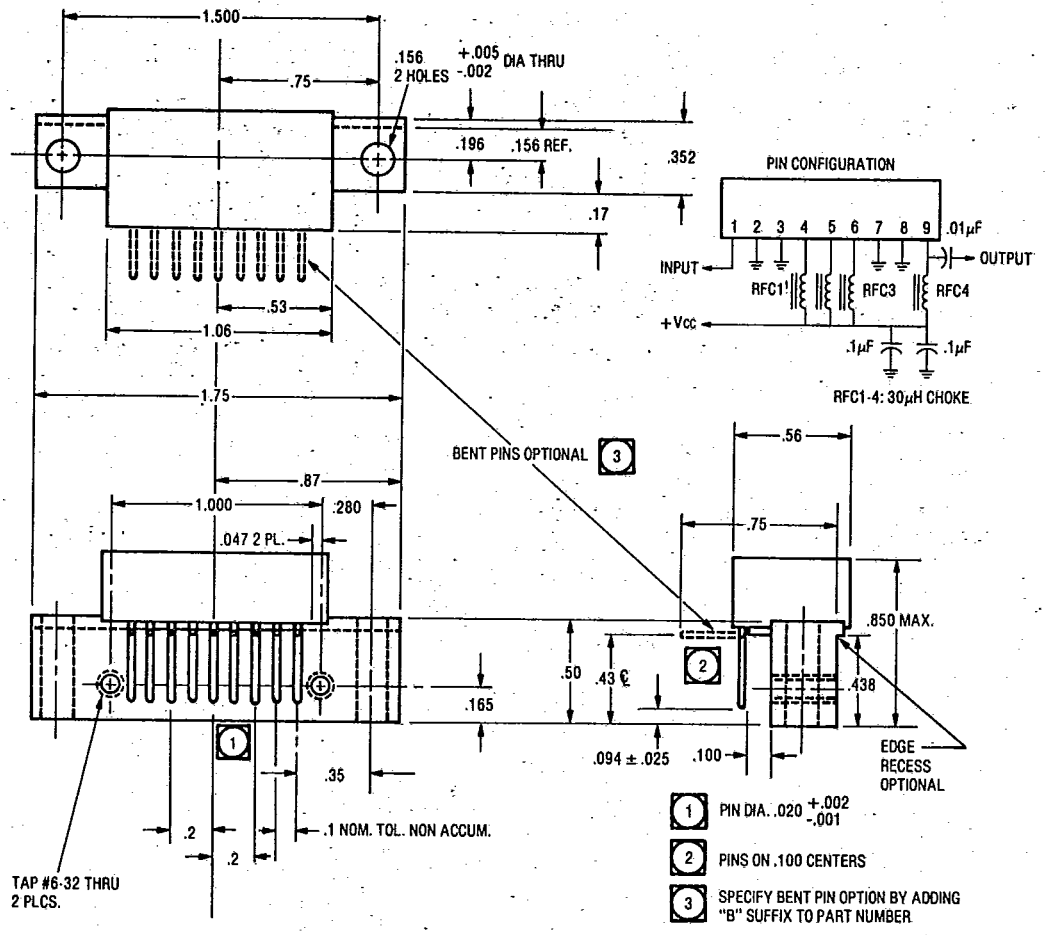
S-Parameters

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.

PACKAGE OUTLINE



FUNCTIONAL SCHEMATIC

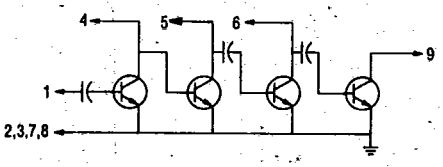
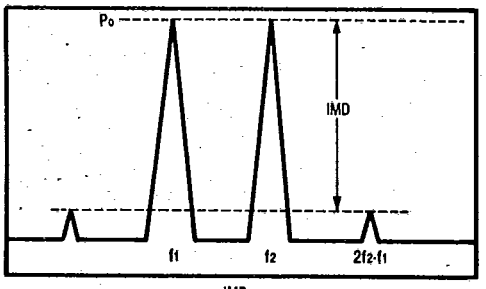


FIGURE 1. INTERMODULATION TEST



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

PEP = 4X Po @ IMD = -32dB