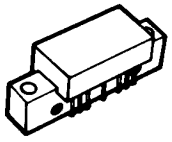
CA2840
CA2840H

22 dB
30–300 MHz
1 WATT
WIDEBAND
LINEAR AMPLIFIERS

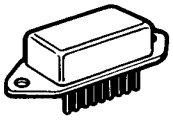
The RF Line
Wideband Linear Amplifiers

. . . 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} = 24 V, T_C = 25°C:
  - Frequency Range — 30 to 300 MHz
  - Output Power — 1000 mW Typ @ 1 dB Compression, f = 200 MHz
  - Power Gain — 22 dB Typ @ f = 100 MHz
  - PEP — 650 mW Typ @ −32 dB IMD
  - Noise Figure — 5 dB Typ @ f = 100 MHz
- All Gold Metallization for Improved Reliability
- Available in Bent Lead Option and Hermetic Package
- Refer to CATV Equivalent Model CA2301 for 75 Ohm Performance Data
- Unconditional Stability Under All Load Conditions



CA
CASE 714F-01, STYLE 1
CA2840



SIP
CASE 826-01, STYLE 1
CA2840H

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
DC Supply Voltage	V_{CC}	28	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

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ELECTRICAL CHARACTERISTICS (T_C = 25°C, V_{CC} = 24 V, 50 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	30	—	300	MHz
Gain Flatness (f = 30–300 MHz)	—	—	±0.5	±1	dB
Power Gain (f = 100 MHz)	P_G	21	22	23	dB
Noise Figure, Broadband (f = 100 MHz)	NF	—	5	6	dB
Power Output — 1 dB Compression (f = 30–200 MHz)	$P_{o\ 1dB}$	800	1000	—	mW
Power Output — 1 dB Compression (f = 30–200 MHz, V_{CC} = 28 V)	$P_{o\ 1dB}$	1000	1260	—	mW
Third Order Intercept (See Figure 10, f_1 = 30–300 MHz)	ITO	43	46	—	dBm
Input/Output VSWR (f = 30–300 MHz, 175 Ohm System)	VSWR	—	1.2:1	1.3:1	—
Second Harmonic Distortion (Tone at 100 mW, f_{2H} = 300 MHz)	d_{so}	—	—	−50	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 10) (f = 200 MHz @ −32 dB IMD)	PEP	550	650	—	mW
Supply Current	I_{CC}	210	230	250	mA

Note: Bent lead option for CA2840 is available in Case 714J-01 (Style 1).

TYPICAL CHARACTERISTICS

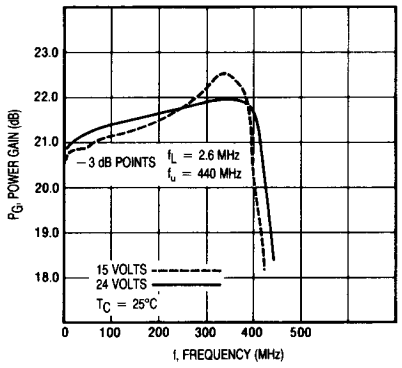

Figure 1. Power Gain versus Frequency

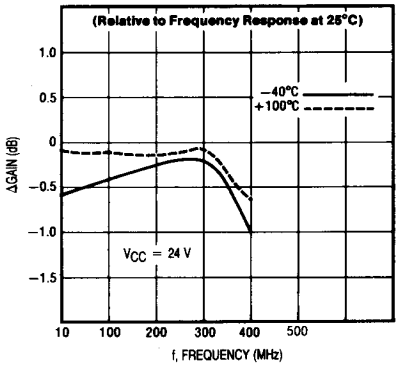

Figure 2. Relative Power Gain versus Temperature

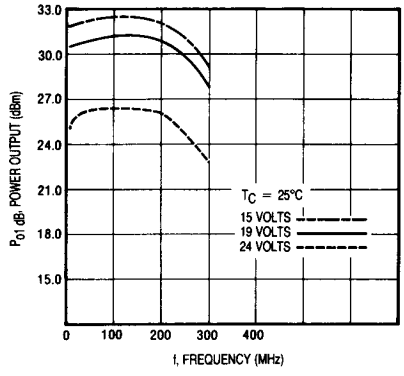

Figure 3. 1 dB Gain Compression versus Voltage

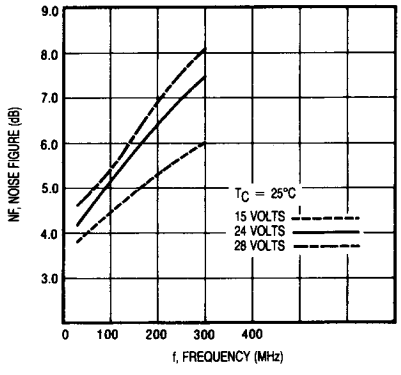

Figure 4. Noise Figure versus Voltage

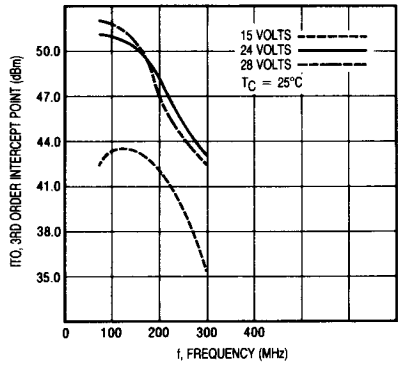

Figure 5. Third Order Intercept versus Voltage

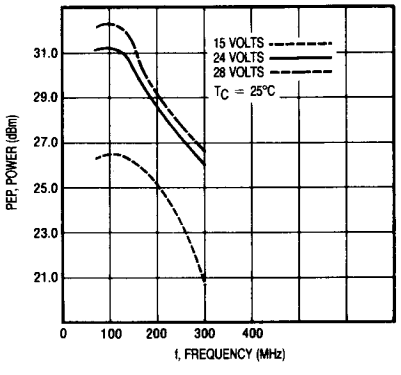

Figure 6. Peak Envelope Power versus Voltage

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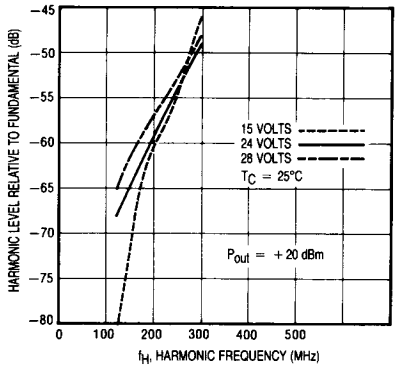


Figure 7. Second Harmonic Distortion versus Voltage

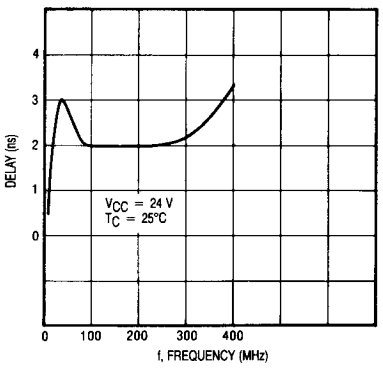


Figure 8. Group Delay versus Frequency

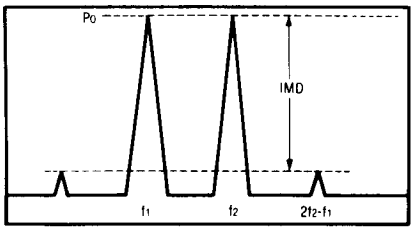
Biased at 24 Volts

T = 25°C Zo = 50Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
10	-8.21	21.5	20.9	11.4	-27.1	-168	-9.34	21.5
50	-10.8	-8.5	21.1	-33.1	-27.1	156	-11.3	-9.0
100	-13.5	-12.2	21.4	-73.3	-26.9	125	-14.7	-35.8
200	-12.6	40.9	21.5	-152	-27.5	65.5	-15.4	47.9
300	-10.6	10.7	21.9	123	-29.1	-0.2	-12.4	20.6

Magnitude in dB, Phase Angle in degrees.

Figure 9. S-Parameters



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

PEP = 4X P_o @ IMD = -32dB

Figure 10. Intermodulation Test

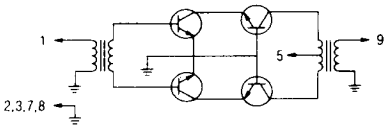


Figure 11. Functional Schematic