MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

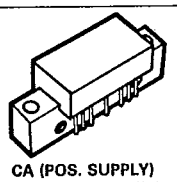
CA2810
CA2810B
CA2810H

33 dB
10–350 MHz
800 mWATT
WIDEBAND
LINEAR AMPLIFIERS

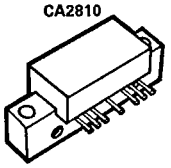
The RF Line
Wideband Linear Amplifiers

. . . 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.

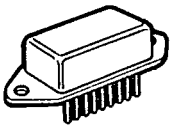
- Specified Characteristics at V_{CC} = 24 V, T_C = 25°C:
- Frequency Range — 10 to 350 MHz
  Output Power — 800 mW Typ @ 1 dB Compression, f = 200 MHz
  Power Gain — 33 dB @ f = 50 MHz
  PEP — 400 mW Typ @ −32 dB IMD
  Noise Figure — 8 dB Max @ f = 300 MHz
- All Gold Metallization for Improved Reliability



CA (POS. SUPPLY)
CASE 714F-01, STYLE 1
CA2810



CA (POS. BENT PIN OPTION)
CASE 714J-01, STYLE 1
CA2810B



SIP
CASE 826-01, STYLE 1
CA2810H

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
DC Supply Voltage	V_{CC}	28	Vdc
RF Power Input	P_{in}	+5	dBm
Operating Case Temperature Range	T_C	−20 to +90	°C
Storage Temperature Range	T_{stg}	−40 to +100	°C

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	10	—	350	MHz
Gain Flatness (f = 30–300 MHz) (f = 10–350 MHz)	—	— —	— —	±1 ±1.5	dB
Power Gain (f = 50 MHz)	P_G	32	33	34	dB
Noise Figure, Broadband (f = 60 MHz) (f = 300 MHz)	NF	— —	4.5 —	— 8	dB
Power Output — 1 dB Compression (f = 200 MHz)	$P_{o1\ dB}$	800	—	—	mW
Third Order Intercept (See Figure 11, f_1 = 300 MHz)	ITO	—	43	—	dBm
Input/Output VSWR (f = 10–350 MHz)	VSWR	—	2:1	—	—
Second Harmonic Distortion (Tone at 10 mW, f_{2H} = 10–300 MHz)	d_{so}	—	−66	—	dB
Reverse Isolation (f = 10–350 MHz)	—	—	40	—	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 11) (f = 10–300 MHz @ −32 dB IMD)	PEP	—	400	—	mW
Supply Current	I_{CC}	—	—	330	mA

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TYPICAL CHARACTERISTICS

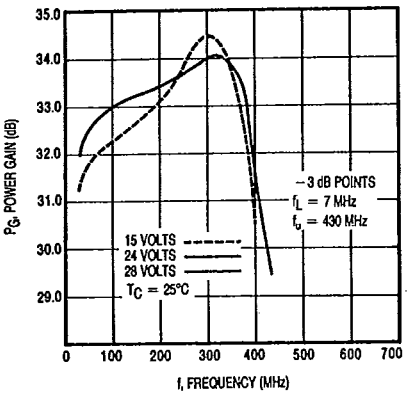

Figure 1. Power Gain versus Frequency

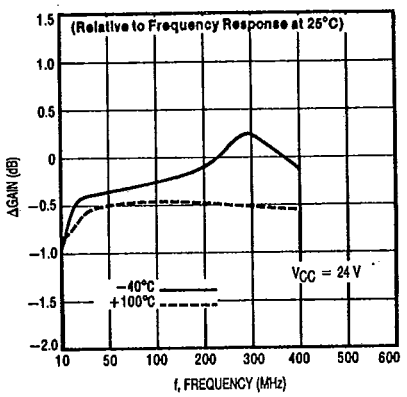

Figure 2. Relative Power Gain versus Temperature

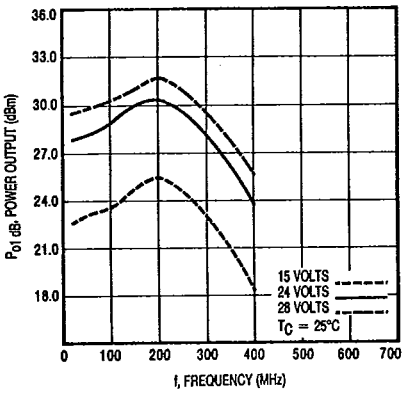

Figure 3. 1 dB Gain Compression versus Voltage

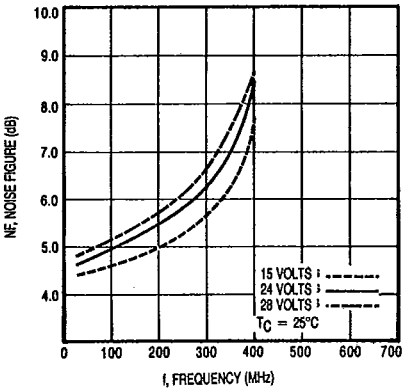

Figure 4. Noise Figure versus Voltage

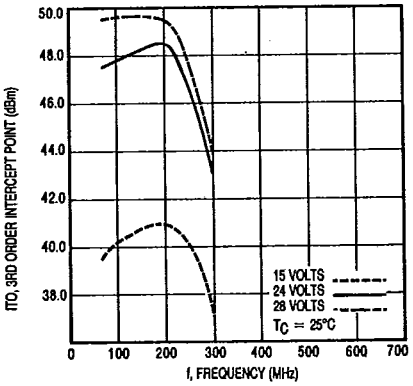

Figure 5. Third Order Intercept versus Voltage

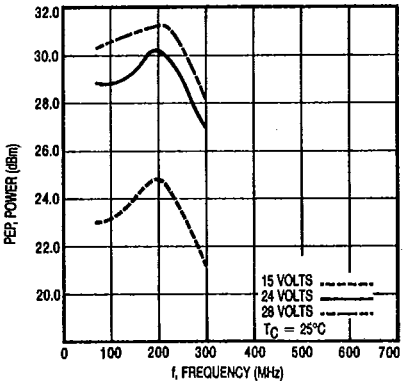

Figure 6. Peak Envelope Power versus Voltage

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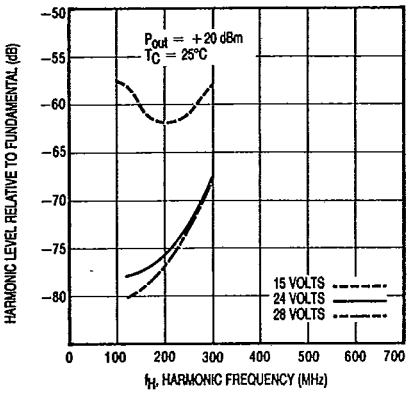


Figure 7. Second Harmonic Distortion versus Voltage

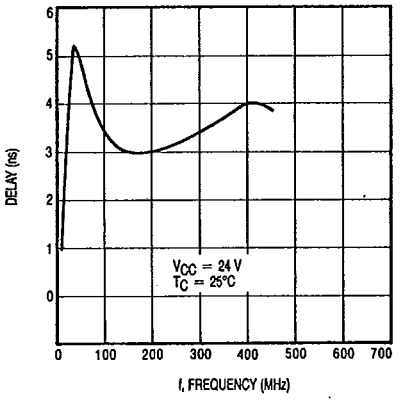


Figure 8. Group Delay versus Frequency

Biased at 24 Volts

T = 25°C Zo = 50Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
30	-13.7	-1.5	31.9	-10.5	-49.0	2.7	-14.2	10.5
50	-14.0	3.6	32.4	-39.9	-48.6	-16.6	-13.9	19.0
100	-13.3	5.8	32.9	-100	-48.4	-53.7	-11.8	11.3
200	-18.7	-3.7	33.4	147	-48.2	-123	-14.1	-1.7
300	-15.2	39.4	34.0	20.9	-47.7	154	-13.2	65.3

Magnitude in dB, Phase Angle in degrees.

Figure 9. S-Parameters

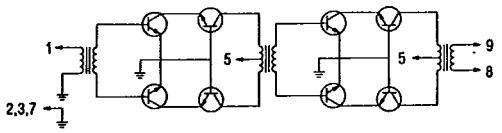
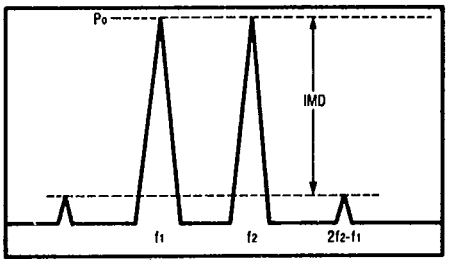


Figure 10. Functional Schematic



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

PEP = 4X Po @ IMD = -32dB

Figure 11. Intermodulation Test