

The RF Line

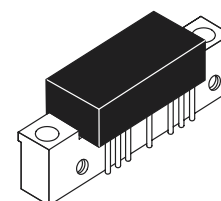
Wideband Linear Amplifier

... designed for amplifier applications in 50 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 $V_{CC} = 24\text{ V}$, $T_C = 25^\circ\text{C}$:
- Frequency Range — 10 to 450 MHz
 - Output Power — 1 W Typ @ 1 dB Compression, $f = 200\text{ MHz}$
 - Power Gain — 34 dB Typ @ $f = 50\text{ MHz}$
 - PEP — 400 mW Typ @ -32 dB IMD
 - Noise Figure — 5 dB Max @ $f = 300\text{ MHz}$
- All Gold Metallization for Improved Reliability

CA2810C

34 dB
 10–450 MHz
 800 mWATT
 WIDEBAND
 LINEAR AMPLIFIER



CASE 714F-03, STYLE 1
 [CA (POS. SUPPLY)]

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 +100	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +100	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, $V_{CC} = 24\text{ V}$, 50 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	10	—	450	MHz
Gain Flatness ($f = 10\text{--}450\text{ MHz}$)	F_L	—	—	± 1.5	dB
Power Gain ($f = 50\text{ MHz}$)	P_G	33	34	35	dB
Noise Figure, Broadband ($f = 300\text{ MHz}$)	NF	—	—	5	dB
Power Output — 1 dB Compression ($f = 200\text{ MHz}$)	$P_{o1\text{ dB}}$	800	1000	—	mW
Third Order Intercept (See Figure 10, $f_1 = 300\text{ MHz}$)	ITO	—	43	—	dBm
Input/Output VSWR ($f = 10\text{--}450\text{ MHz}$)	VSWR	—	—	2:1	—
Second Harmonic Distortion ($P_o = 100\text{ mW}$, $f_{2H} = 10\text{--}300\text{ MHz}$)	d_{so}	—	-55	-45	dB
Reverse Isolation ($f = 10\text{--}450\text{ MHz}$)	—	—	40	—	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 10) ($f = 10\text{--}450\text{ MHz}$ @ -32 dB IMD)	PEP	—	400	—	mW
Supply Current	I_{CC}	270	310	330	mA

Freescale Semiconductor, Inc.

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TYPICAL CHARACTERISTICS

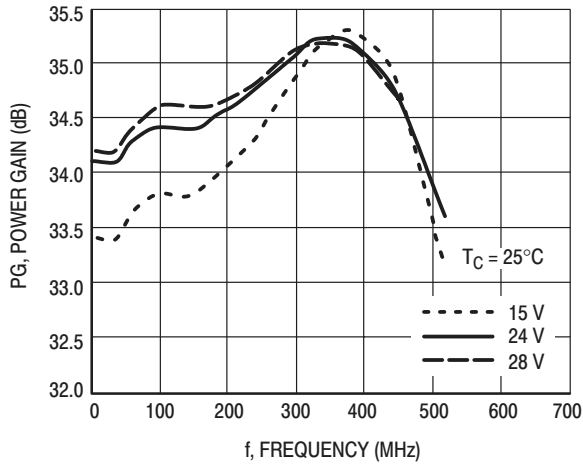


Figure 1. Power Gain versus Voltage

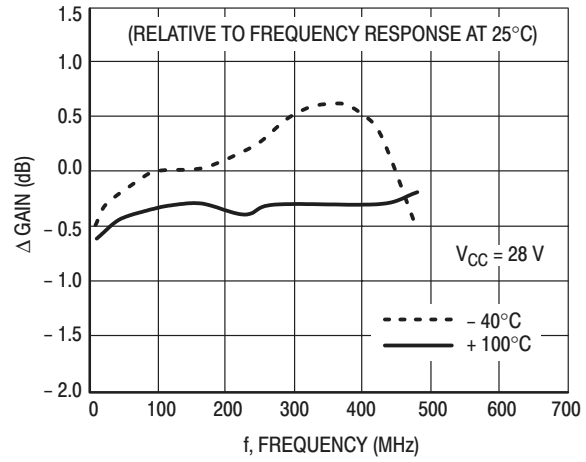


Figure 2. Relative Power Gain versus Temperature

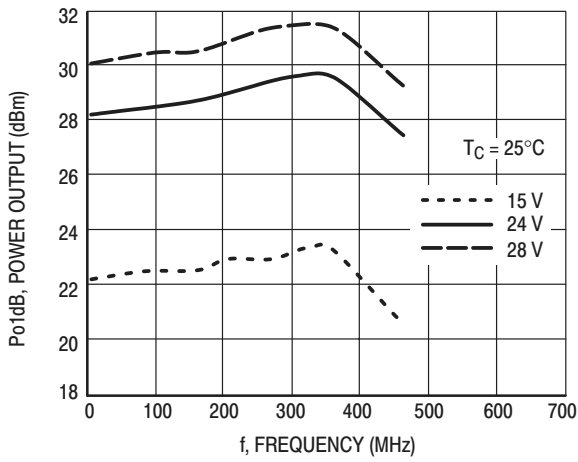


Figure 3. 1 dB Compression versus Voltage

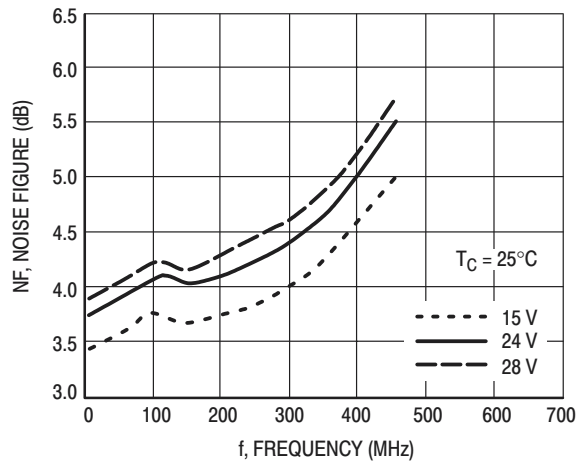


Figure 4. Noise Figure versus Voltage

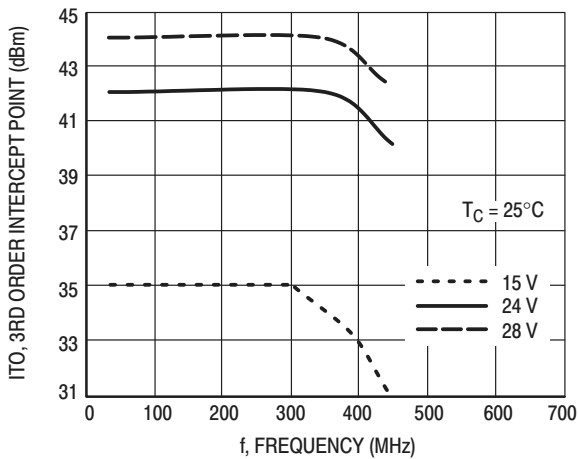


Figure 5. Third Order Intercept versus Voltage

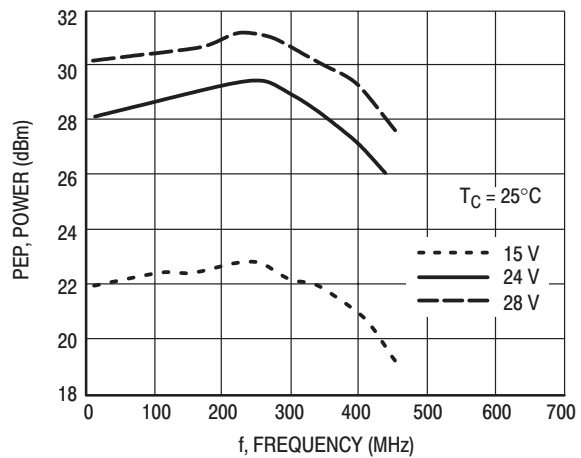


Figure 6. Peak Envelope Power versus Voltage

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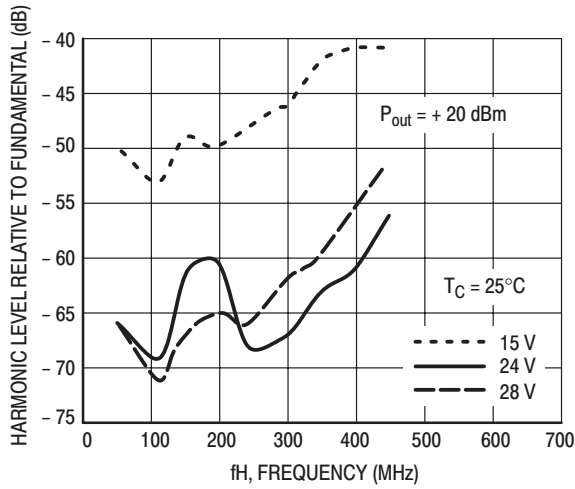


Figure 7. Second Harmonic Distortion versus Voltage

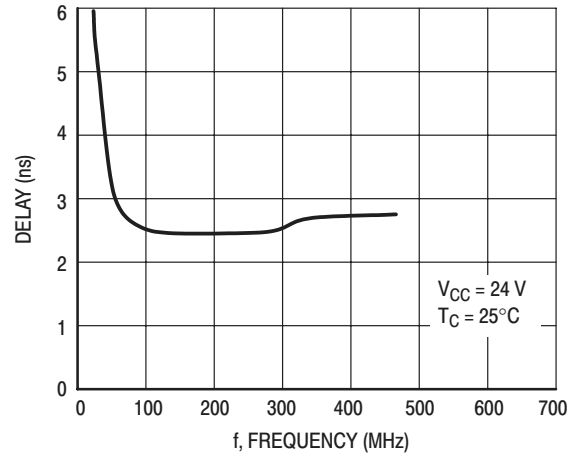


Figure 8. Group Delay versus Frequency

Biased at 24 Volts

T = 25°C Zo = 50Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
10	-13.8	3.5	34.2	-145	-46	-131	-13.5	8.2
50	-16.0	-3.0	34.2	150	-47	-172	-18.5	4.6
100	-14.4	-14	34.4	88	-48	102	-14.5	-9.2
200	-13.2	-50	34.6	2	-42	35	-13.2	-80
300	-13.9	-79	35.0	-80	-46	65	-16.7	-49
400	-14.1	-115	35.0	-80	-48	-44	-14.2	11
450	-16.2	-122	34.6	120	-53	-82	-13.8	-46

Magnitude in dB, Phase Angle in degrees.

Table 1. S-Parameters

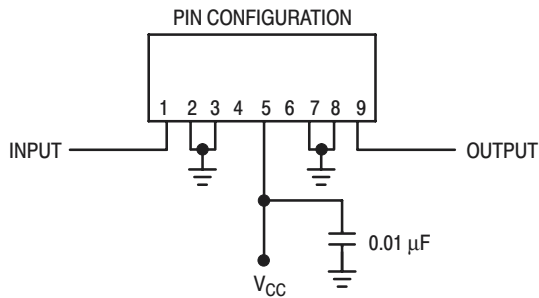


Figure 9. External Connections

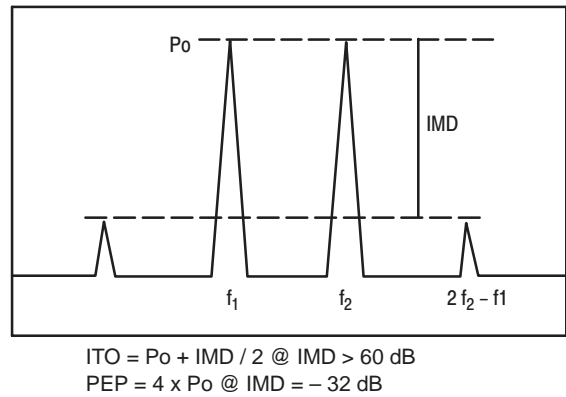


Figure 10. Intermodulation Test

