

The RF Line

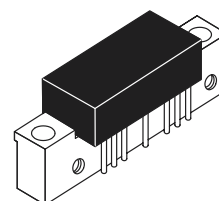
Wideband Linear Amplifiers

... 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 $V_{CC} = 24\text{ V}$, $T_C = 25^\circ\text{C}$:
 - Frequency Range — 5 to 200 MHz
 - Output Power — 800 mW Typ @ 1 dB Compression, $f = 200\text{ MHz}$
 - Power Gain — 34.5 dB Typ @ $f = 100\text{ MHz}$
 - PEP — 800 mW Typ @ -32 dB IMD
 - Noise Figure — 4.7 dB Typ @ $f = 200\text{ MHz}$
 - ITO — 46 dBm @ $f = 200\text{ MHz}$
- All Gold Metallization for Improved Reliability
- Unconditional Stability Under All Load Conditions

CA2830C

34.5 dB
5–200 MHz
800 mWATT
WIDEBAND
LINEAR AMPLIFIERS



CASE 714F-03, STYLE 1
(CA)

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	5	—	200	MHz
Gain Flatness ($f = 5\text{--}200\text{ MHz}$)	—	—	± 0.5	± 1	dB
Power Gain ($f = 100\text{ MHz}$)	P_G	33.5	34.5	35.5	dB
Noise Figure, Broadband ($f = 200\text{ MHz}$)	NF	—	4.7	5.5	dB
Power Output — 1 dB Compression ($f = 5\text{--}200\text{ MHz}$)	$P_{o\ 1dB}$	630	800	—	mW
Power Output — 1 dB Compression ($f = 5\text{--}200\text{ MHz}$, $V_{CC} = 28\text{ V}$)	$P_{o\ 1dB}$	1000	1260	—	mW
Third Order Intercept (See Figure 10, $f_1 = 200\text{ MHz}$)	ITO	44	46	—	dBm
Input/Output VSWR ($f = 5\text{--}200\text{ MHz}$)	VSWR	—	1.5:1	2:1	—
Second Harmonic Distortion (Tone at 100 mW, $f_{2H} = 150\text{ MHz}$)	d_{so}	—	-60	-50	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 10) ($f = 5\text{--}200\text{ MHz}$ @ -32 dB IMD)	PEP	600	800	—	mW
Supply Current	I_{CC}	270	300	330	mA

TYPICAL CHARACTERISTICS

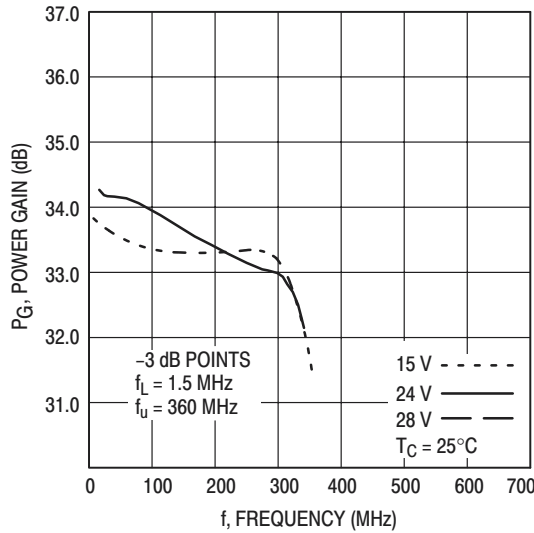


Figure 1. Power Gain versus Frequency

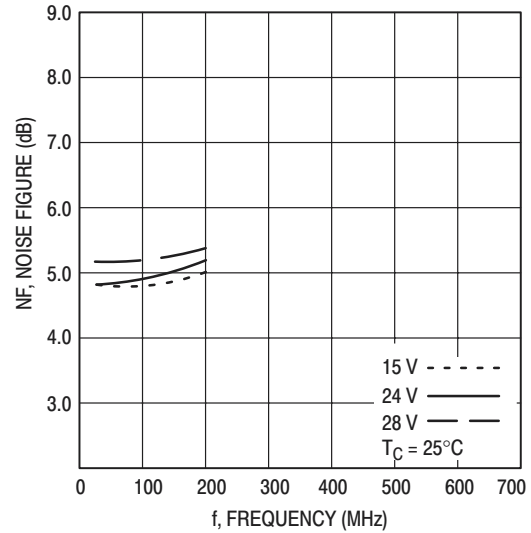


Figure 4. Noise Figure versus Voltage

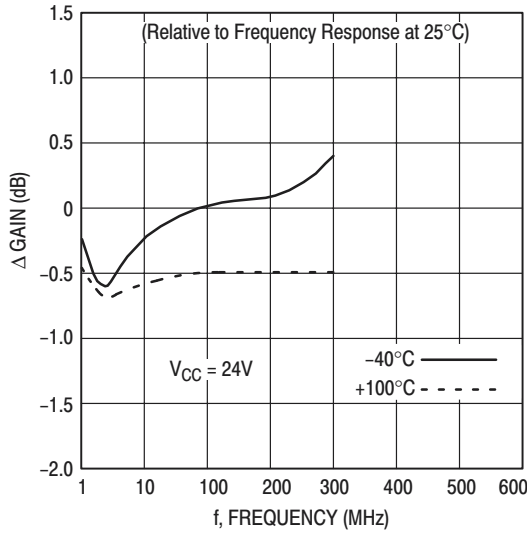


Figure 2. Relative Power Gain versus Temperature

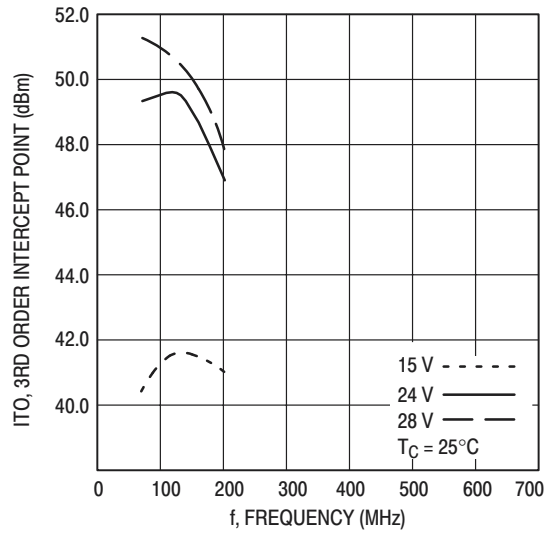


Figure 5. Third Order Intercept versus Voltage

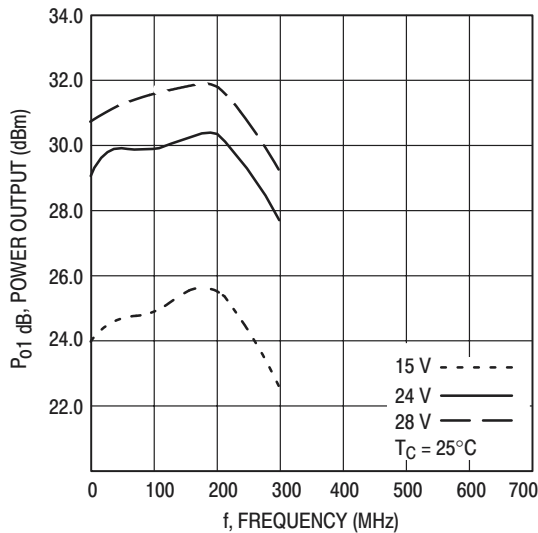


Figure 3. 1 dB Gain Compression versus Voltage

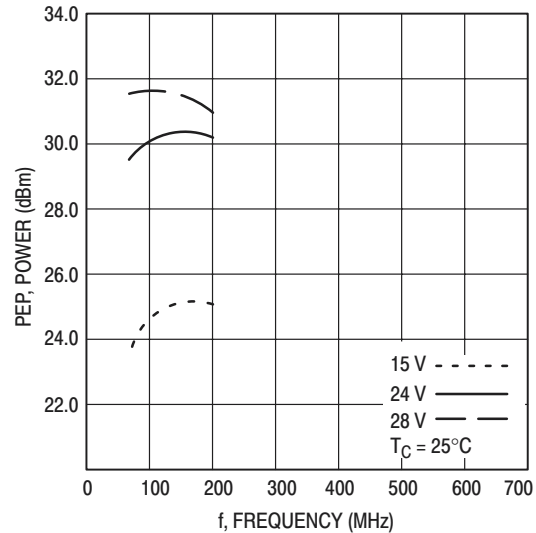


Figure 6. Peak Envelope Power versus Voltage

Freescale Semiconductor, Inc. ARCHIVE INFORMATION

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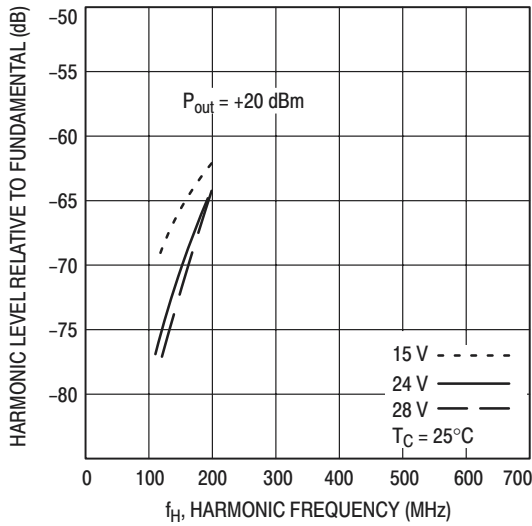


Figure 7. Second Harmonic Distortion versus Voltage

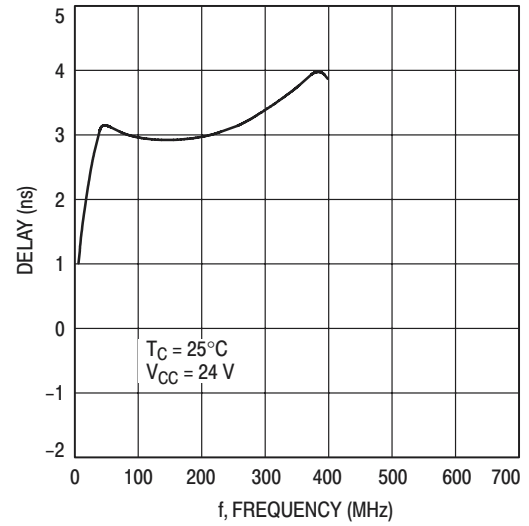


Figure 8. Group Delay versus Frequency

Biased at 24 Volts

T = 25°C Zo = 50Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
5	-18.3	66.2	34.6	15.2	-47.0	17.7	-9.8	87.4
10	-19.3	45.5	34.6	-0.6	-47.0	2.3	-14.5	76.8
50	-15.6	35.0	34.2	-56.7	-47.5	-30.3	-12.6	45.0
100	-13.2	34.4	33.9	-114	-47.9	-62.9	-10.8	10.7
200	-11.1	30.1	33.5	134	-48.3	-128	-14.9	-42.6

Magnitude in dB, Phase Angle in degrees.

Table 1. S-Parameters

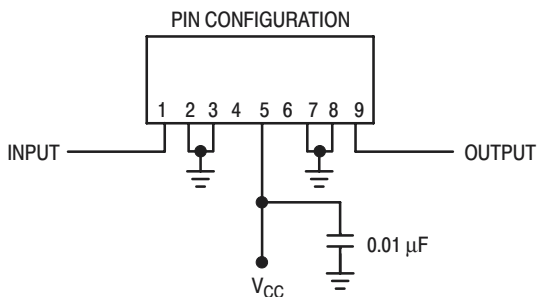
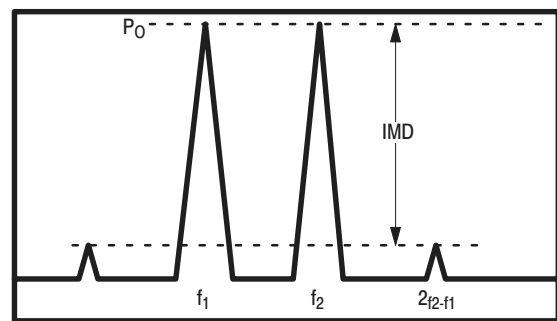


Figure 9. External Connections

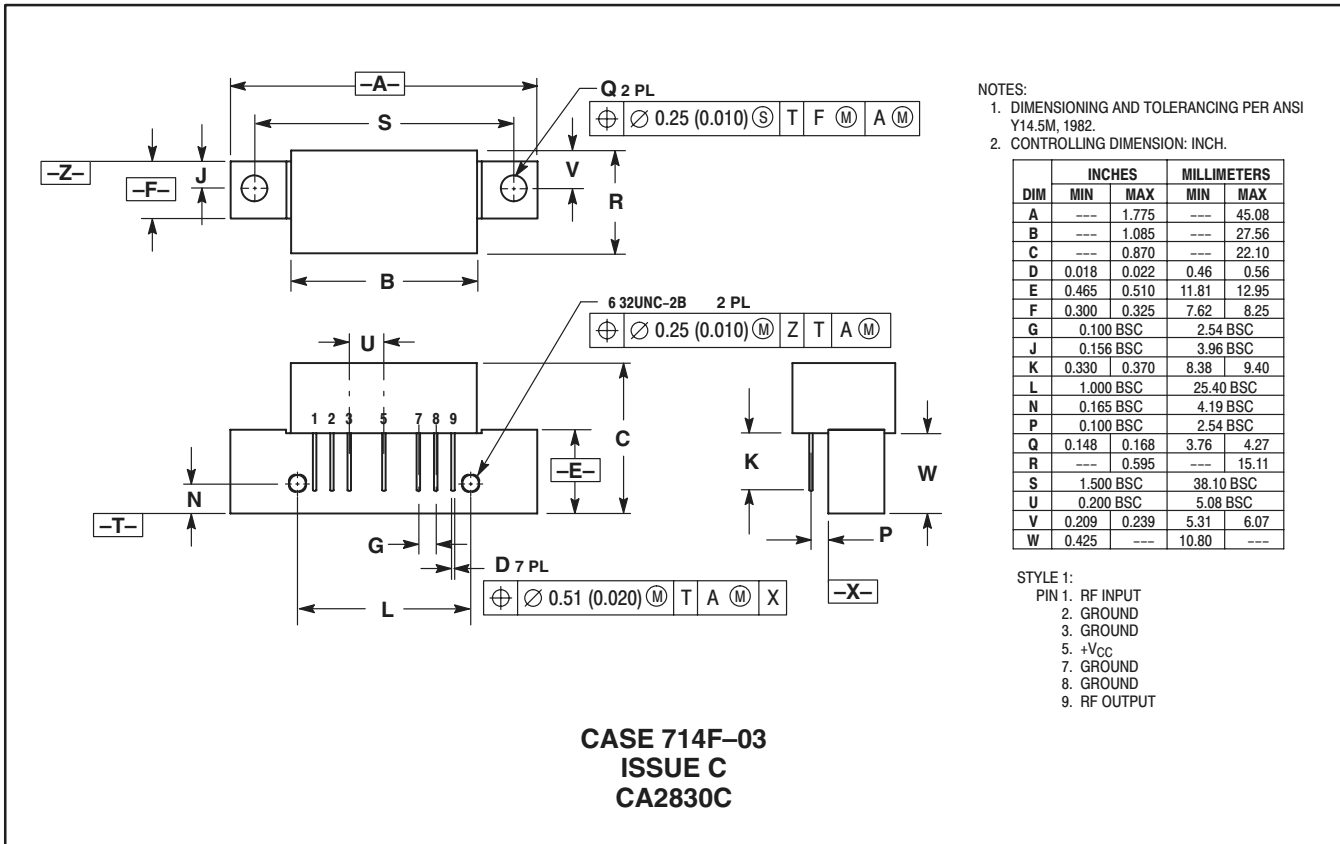


$$ITO = P_0 + \frac{IMD}{2} @ IMD > 60dB$$

$$PEP = 4X P_0 @ IMD = -32dB$$

Figure 10. Intermodulation Test

PACKAGE DIMENSIONS



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