

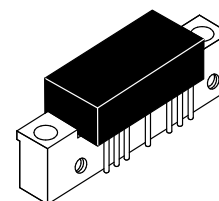
## The RF Line Wideband Linear Amplifier

. . . 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)]**

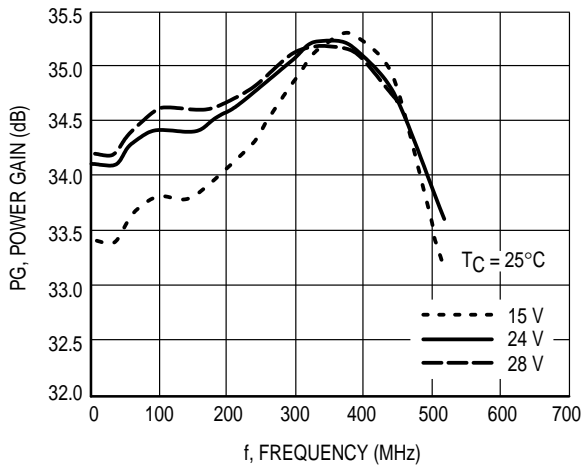
### MAXIMUM RATINGS

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	$^\circ\text{C}$

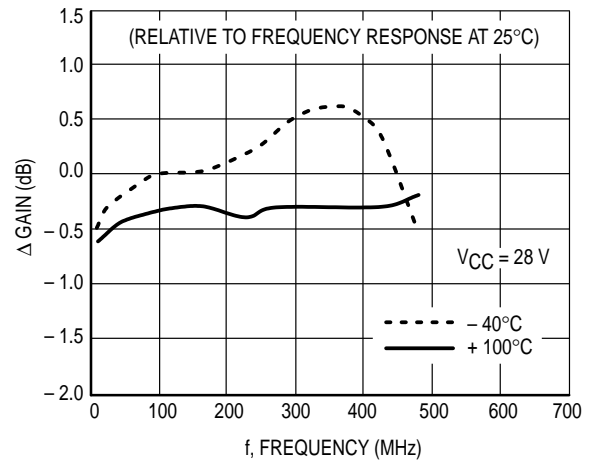
### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ , $V_{CC} = 24\text{ V}$ , 50 $\Omega$ system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	10	—	450	MHz
Gain Flatness ( $f = 10\text{--}450\text{ MHz}$ )	$F_L$	—	—	$\pm 1.5$	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

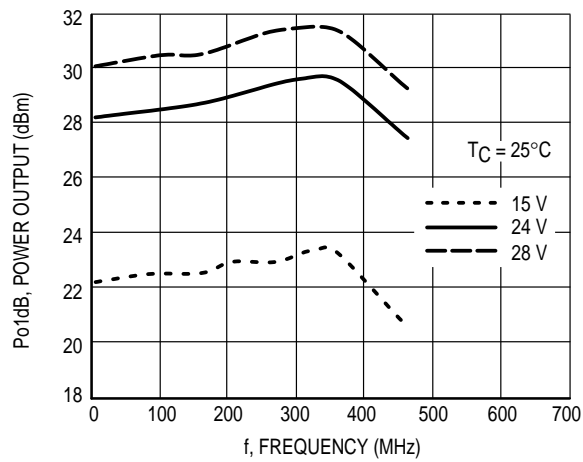
## TYPICAL CHARACTERISTICS



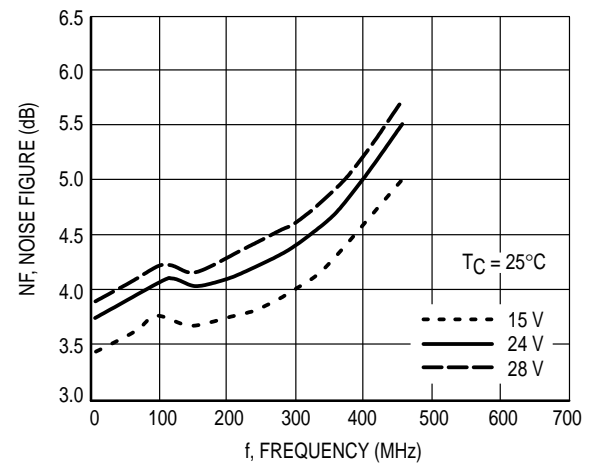
**Figure 1. Power Gain versus Voltage**



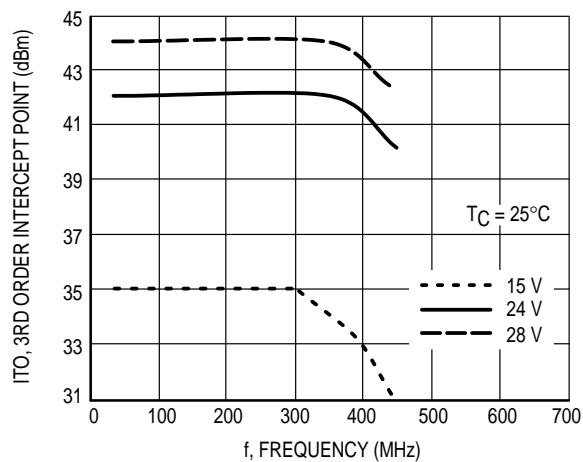
**Figure 2. Relative Power Gain versus Temperature**



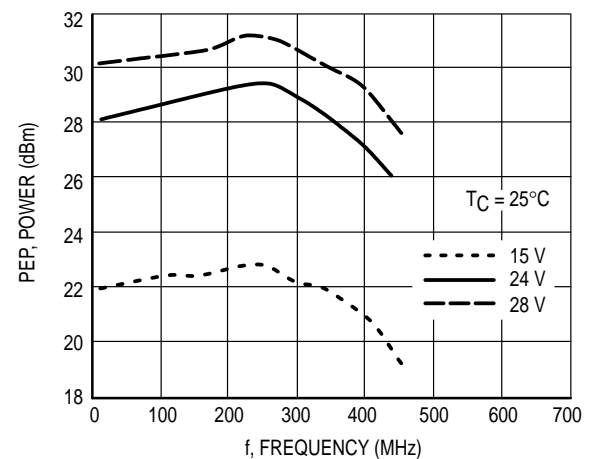
**Figure 3. 1 dB Compression versus Voltage**



**Figure 4. Noise Figure versus Voltage**



**Figure 5. Third Order Intercept versus Voltage**



**Figure 6. Peak Envelope Power versus Voltage**

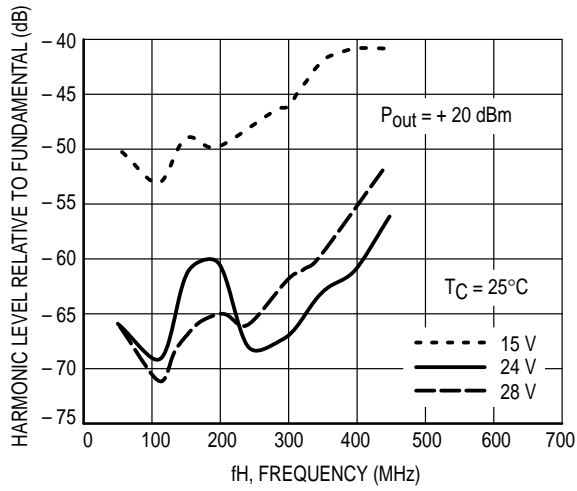


Figure 7. Second Harmonic Distortion versus Voltage

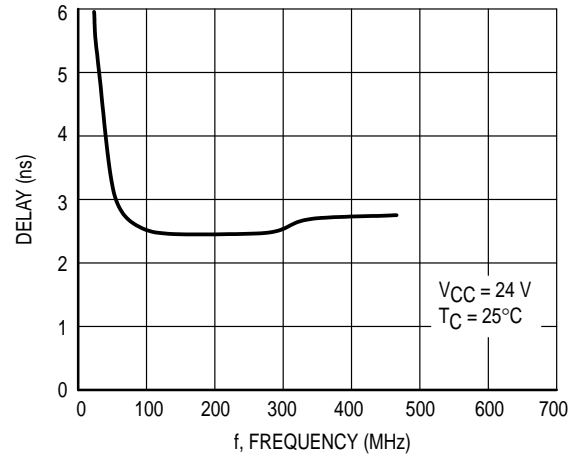


Figure 8. Group Delay versus Frequency

Biased at 24 Volts

T = 25°C Z<sub>o</sub> = 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

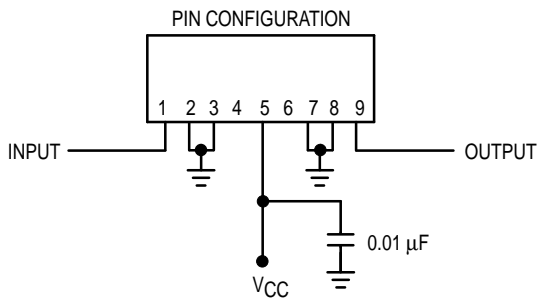


Figure 9. External Connections

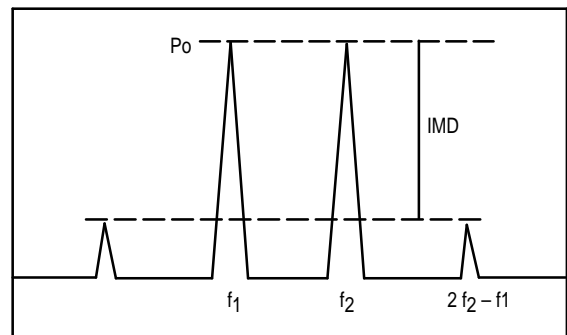
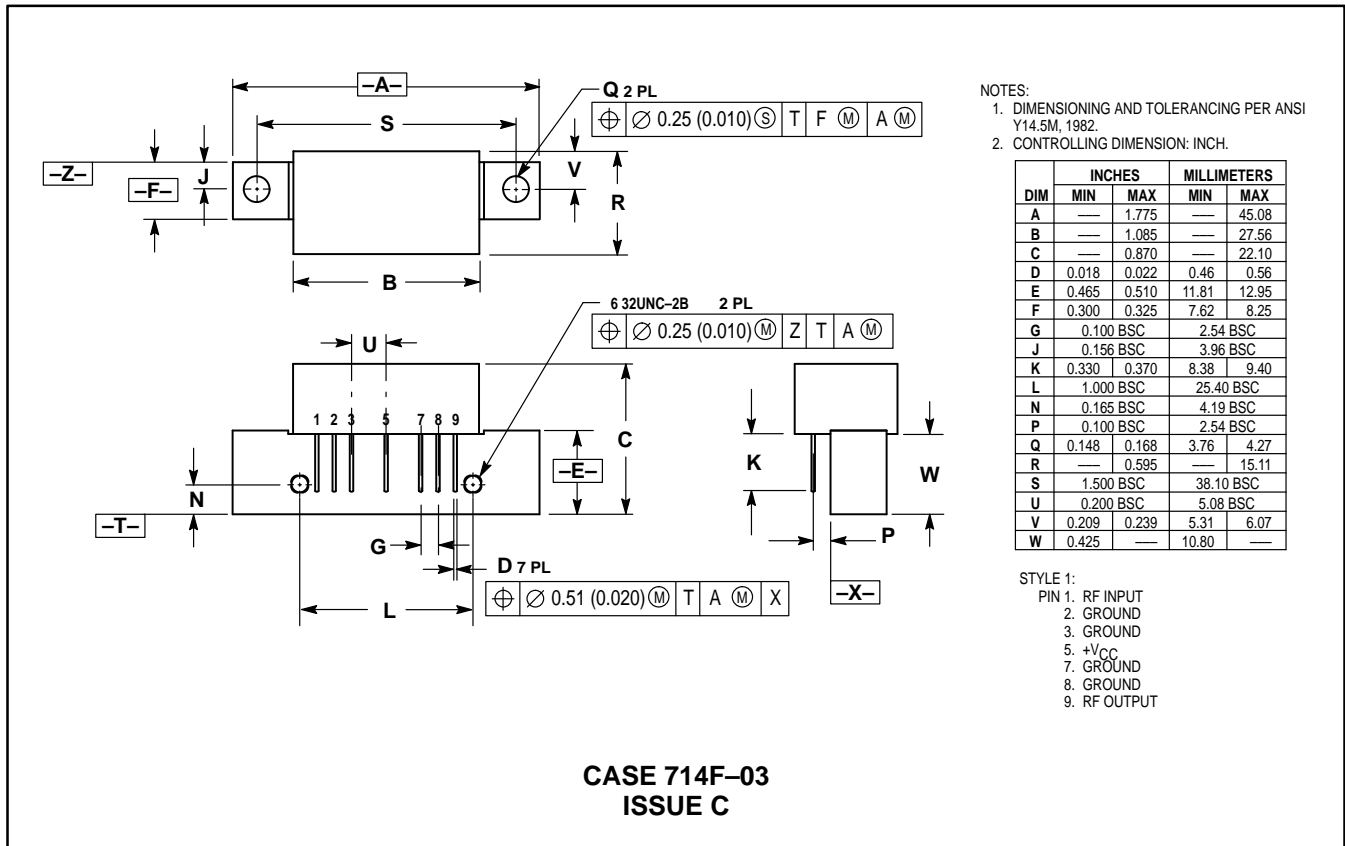


Figure 10. Intermodulation Test

## PACKAGE DIMENSIONS



**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	—	1.775	—	45.08
B	—	1.085	—	27.56
C	—	0.870	—	22.10
D	0.018	0.022	0.46	0.56
E	0.465	0.510	11.81	12.95
F	0.300	0.325	7.62	8.25
G	0.100 BSC	—	2.54 BSC	—
J	0.156 BSC	—	3.96 BSC	—
K	0.330	0.370	8.38	9.40
L	1.000 BSC	—	25.40 BSC	—
N	0.165 BSC	—	4.19 BSC	—
P	0.100 BSC	—	2.54 BSC	—
Q	0.148	0.168	3.76	4.27
R	—	0.595	—	15.11
S	1.500 BSC	—	38.10 BSC	—
U	0.200 BSC	—	5.08 BSC	—
V	0.209	0.239	5.31	6.07
W	0.425	—	10.80	—

**STYLE 1:**

- PIN 1. RF INPUT
2. GROUND
3. GROUND
5. +V<sub>CC</sub>
7. GROUND
8. GROUND
9. RF OUTPUT

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