

## The RF Line Wideband Linear Amplifier

... 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 — 10–400 MHz  
 Output Power — 1580 mW Typ @ 1 dB Compression,  $f = 200\text{ MHz}$ ,  
 $V_{CC} = 28\text{ V}$   
 Power Gain — 22 dB Typ @  $f = 100\text{ MHz}$   
 PEP — 650 mW Min @ –32 dB IMD  
 Noise Figure — 4 dB Typ @  $f = 100\text{ MHz}$   
 ITO — 46 dBm @  $f = 300\text{ MHz}$
- All Gold Metallization for Improved Reliability
- Unconditional Stability Under All Load Conditions

### MAXIMUM RATINGS

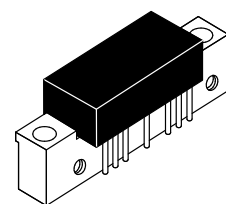
Rating	Symbol	Value	Unit
DC Supply Voltage	$V_{CC}$	28	Vdc
RF Power Input	$P_{in}$	+14	dBm
Operating Case Temperature Range	$T_C$	–20 to +100	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	–40 to +100	$^\circ\text{C}$

### 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	—	400	MHz
Gain Flatness ( $f = 10\text{--}400\text{ MHz}$ )	—	—	$\pm 0.5$	$\pm 1$	dB
Power Gain ( $f = 100\text{ MHz}$ )	$P_G$	21	22	23	dB
Noise Figure, Broadband ( $f = 100\text{ MHz}$ )	NF	—	4	5	dB
Power Output — 1 dB Compression ( $f = 10\text{--}200\text{ MHz}$ , $V_{CC} = 28\text{ V}$ )	$P_{o1\text{ dB}}$	1260	1580	—	mW
Power Output — 1 dB Compression ( $f = 200\text{--}400\text{ MHz}$ , $V_{CC} = 28\text{ V}$ )	$P_{o1\text{ dB}}$	630	—	—	mW
Third Order Intercept (See Figure 10, $f_1 = 10\text{--}400\text{ MHz}$ , See Fig. 10)	ITO	42	44	—	dBm
Input/Output VSWR ( $f = 10\text{--}400\text{ MHz}$ )	VSWR	—	1.3:1	1.5:1	—
Second Harmonic Distortion ( $P_o = 100\text{ mW}$ , $f_{2H} = 300\text{ MHz}$ )	$d_{so}$	—	—	–50	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 10) ( $f = 200\text{ MHz}$ @ –32 dB IMD)	PEP	650	1000	—	mW
Supply Current	$I_{CC}$	200	230	250	mA

**CA2842C**

22 dB  
10–400 MHz  
1.2 WATTS  
WIDEBAND  
LINEAR AMPLIFIER



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

## TYPICAL CHARACTERISTICS

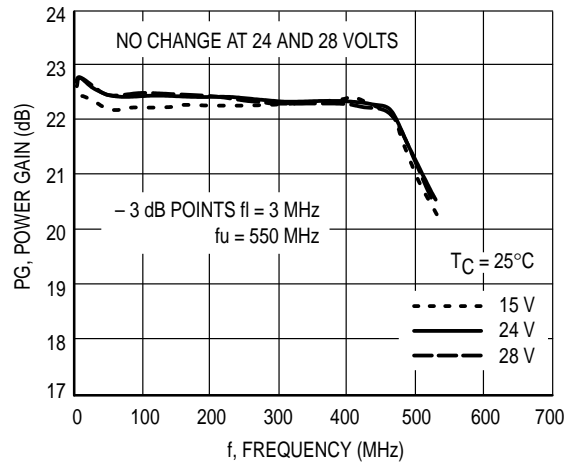


Figure 1. Power Gain versus Voltage

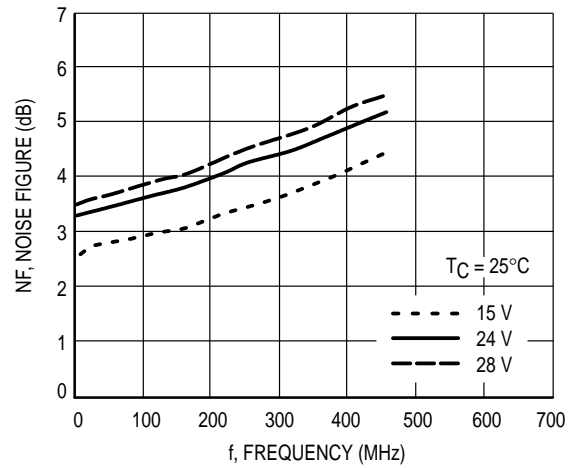


Figure 4. Noise Figure versus Voltage

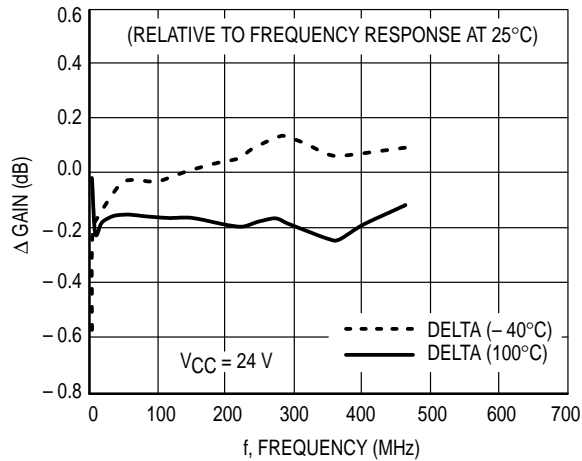


Figure 2. Relative Power Gain versus Temperature

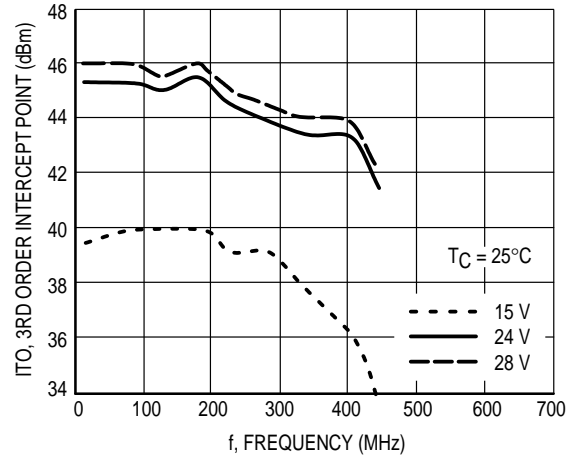


Figure 5. Third Order Intercept versus Voltage

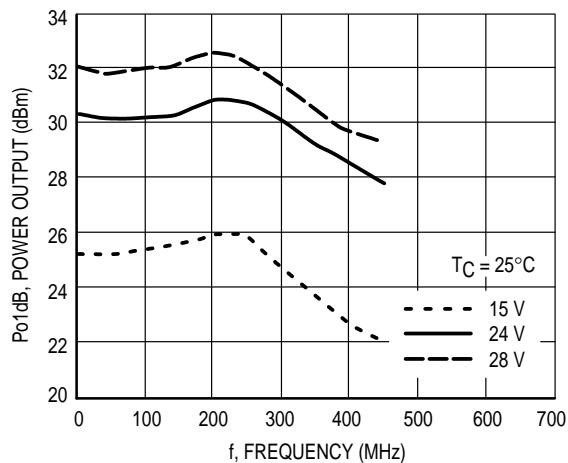


Figure 3. 1 dB Compression versus Voltage

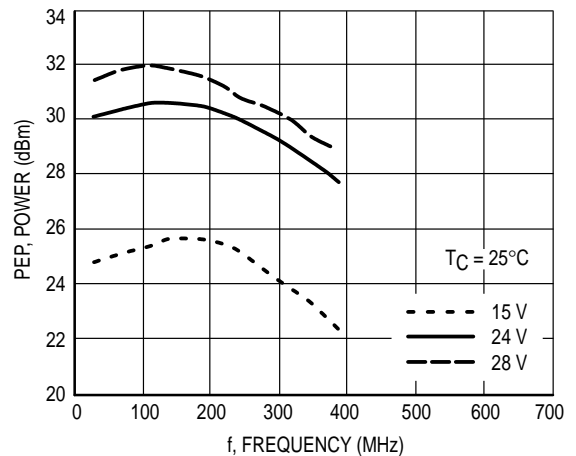


Figure 6. Peak Envelope Power versus Voltage

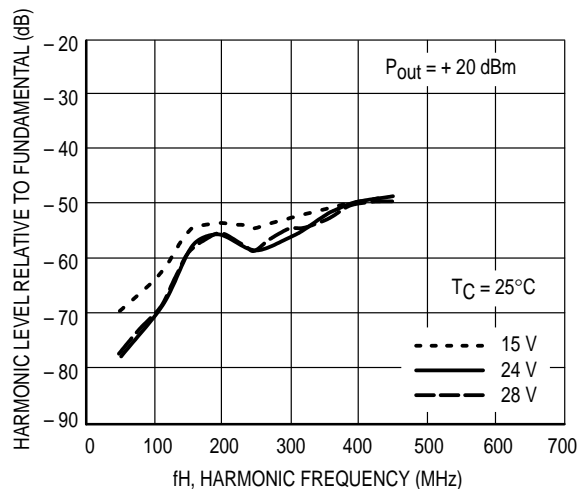


Figure 7. Second Harmonic Distortion versus Voltage

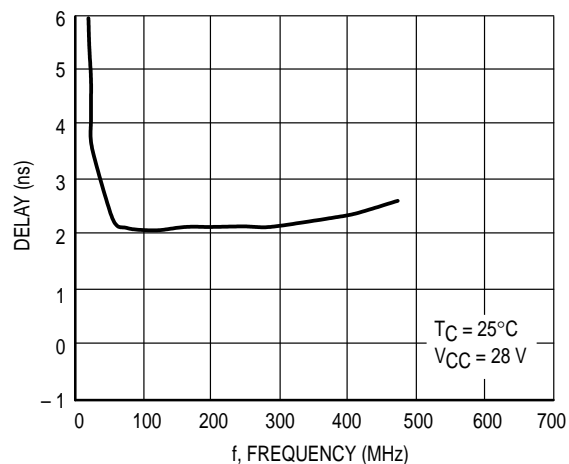


Figure 8. Group Delay versus Frequency

Biased at 24 Volts

$T_C = 25^\circ\text{C}$   $Z_o = 50\Omega$

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
10	-15.8	62	22.8	-168	-27	15	-20.2	29
50	-26.5	20	22.5	146	-27	-25	-24	15
100	-25.5	25	22.5	111	-27.5	-56	-22.5	-16
200	-20.5	-7	22.5	26	-27.9	-117	-18.1	-73
300	-17.2	-48	22.5	-51	-28.5	-170	-16.5	-125
400	-18.8	-129	22.4	-126	-28.3	114	-22.5	156

Magnitude in dB, Phase Angle in degrees.

Table 1. S-Parameters

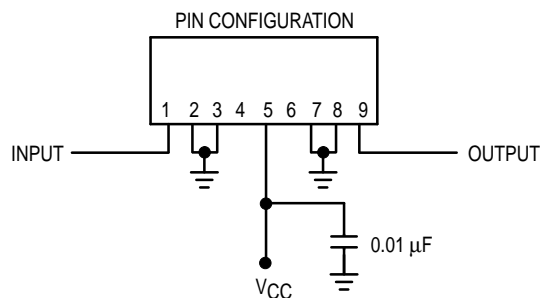
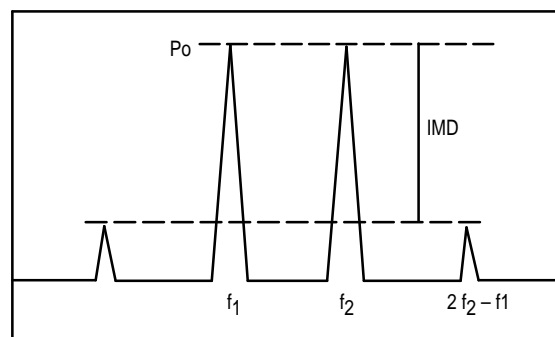


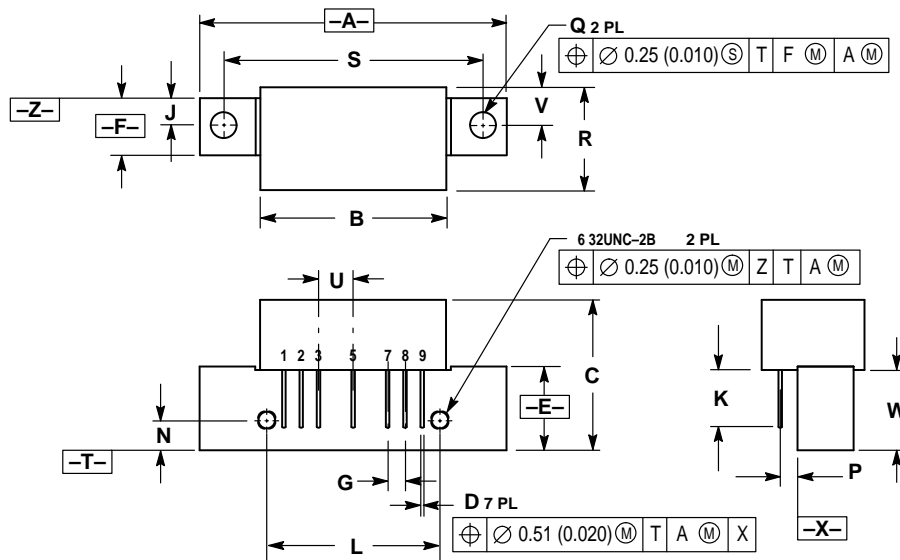
Figure 9. External Connections



$ITO = P_o + IMD / 2$  @  $IMD > 60$  dB  
 $PEP = 4 \times P_o$  @  $IMD = -32$  dB

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
  - GROUND
  - GROUND
  - +V<sub>CC</sub>
  - GROUND
  - GROUND
  - RF OUTPUT

### CASE 714F-03 ISSUE C

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