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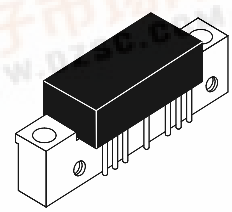
The RF Line
Wideband Linear Amplifier

CA2842C

22 dB
10–400 MHz
1.2 WATTS
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 V, T_C = 25°C:
  Frequency Range — 10–400 MHz
  Output Power — 1580 mW Typ @ 1 dB Compression, f = 200 MHz, V_{CC} = 28 V
  Power Gain — 22 dB Typ @ f = 100 MHz
  PEP — 650 mW Min @ –32 dB IMD
  Noise Figure — 4 dB Typ @ f = 100 MHz
  ITO — 46 dBm @ f = 300 MHz
- All Gold Metallization for Improved Reliability
- Unconditional Stability Under All Load Conditions



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}	+14	dBm
Operating Case Temperature Range	T_C	–20 to +100	°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	—	400	MHz
Gain Flatness (f = 10–400 MHz)	—	—	±0.5	±1	dB
Power Gain (f = 100 MHz)	P_G	21	22	23	dB
Noise Figure, Broadband (f = 100 MHz)	NF	—	4	5	dB
Power Output — 1 dB Compression (f = 10–200 MHz, V_{CC} = 28 V)	$P_{o1\ dB}$	1260	1580	—	mW
Power Output — 1 dB Compression (f = 200–400 MHz, V_{CC} = 28 V)	$P_{o1\ dB}$	630	—	—	mW
Third Order Intercept (See Figure 10, f_1 = 10–400 MHz, See Fig. 10)	ITO	42	44	—	dBm
Input/Output VSWR (f = 10–400 MHz)	VSWR	—	1.3:1	1.5:1	—
Second Harmonic Distortion (P_o = 100 mW, f_{2H} = 300 MHz)	d_{so}	—	—	–50	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 10) (f = 200 MHz @ –32 dB IMD)	PEP	650	1000	—	mW
Supply Current	I_{CC}	200	230	250	mA

TYPICAL CHARACTERISTICS

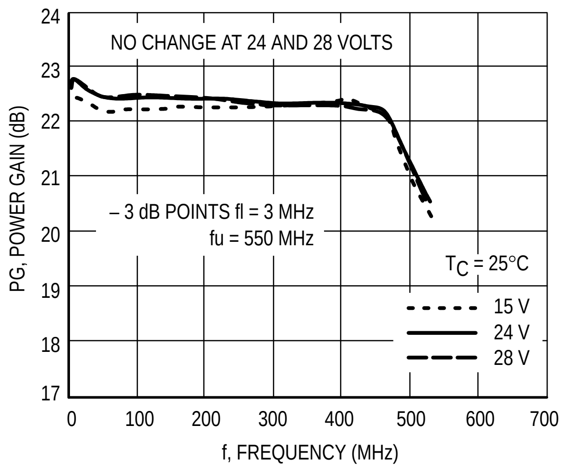


Figure 1. Power Gain versus Voltage

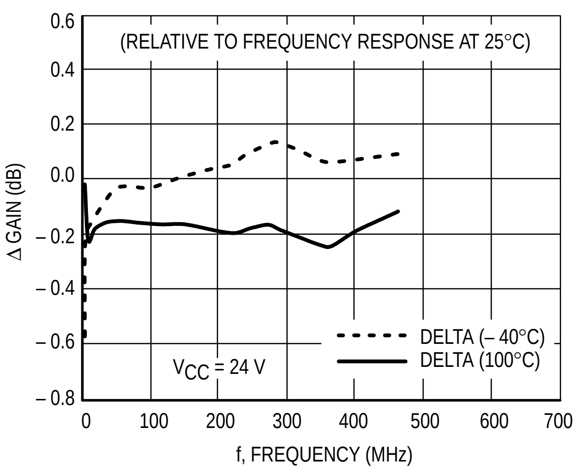


Figure 2. Relative Power Gain versus Temperature

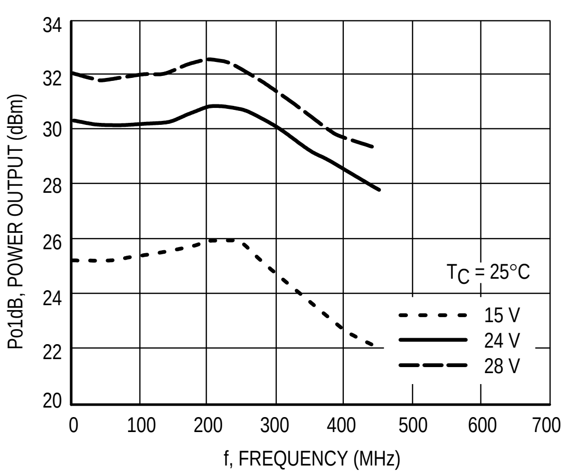


Figure 3. 1 dB Compression versus Voltage

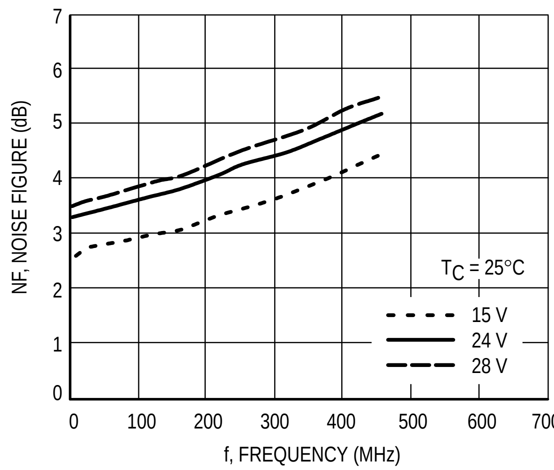


Figure 4. Noise Figure versus Voltage

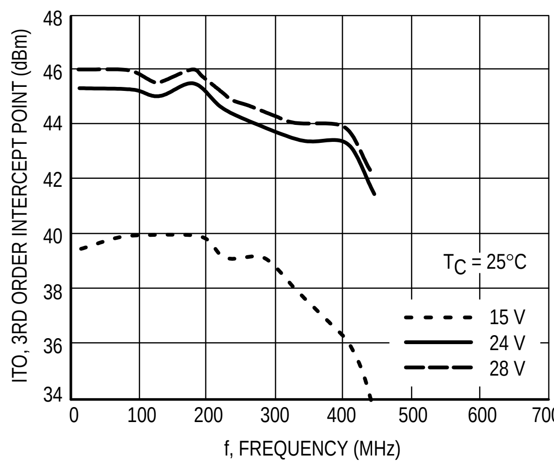


Figure 5. Third Order Intercept versus Voltage

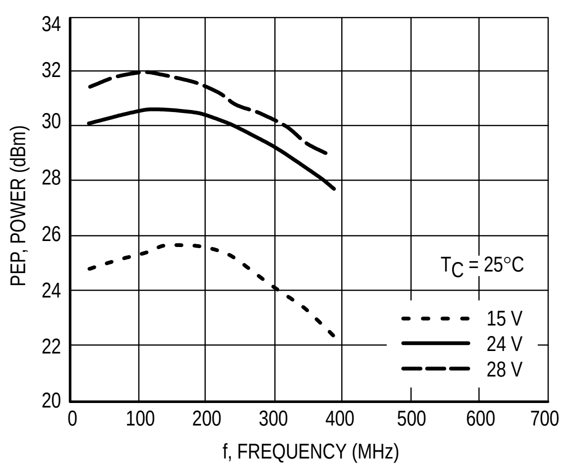


Figure 6. Peak Envelope Power versus Voltage

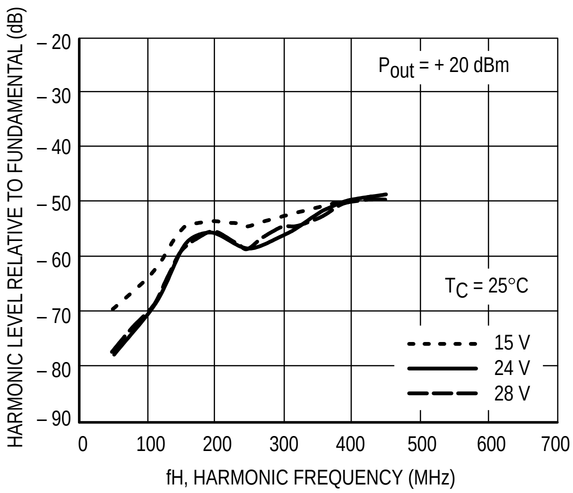


Figure 7. Second Harmonic Distortion versus Voltage

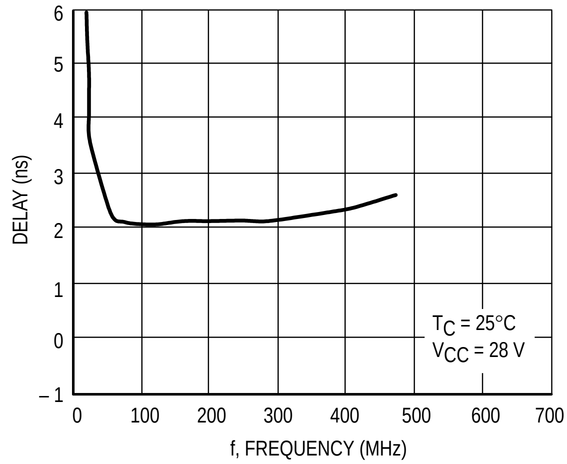


Figure 8. Group Delay versus Frequency

Biased at 24 Volts **T_C = 25°C Zo = 50Ω**

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

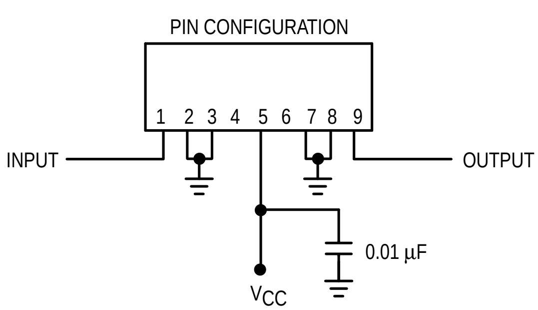
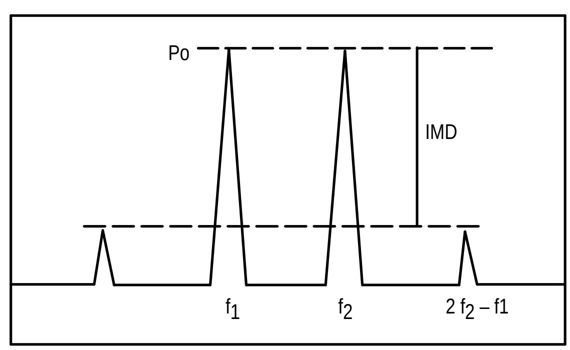


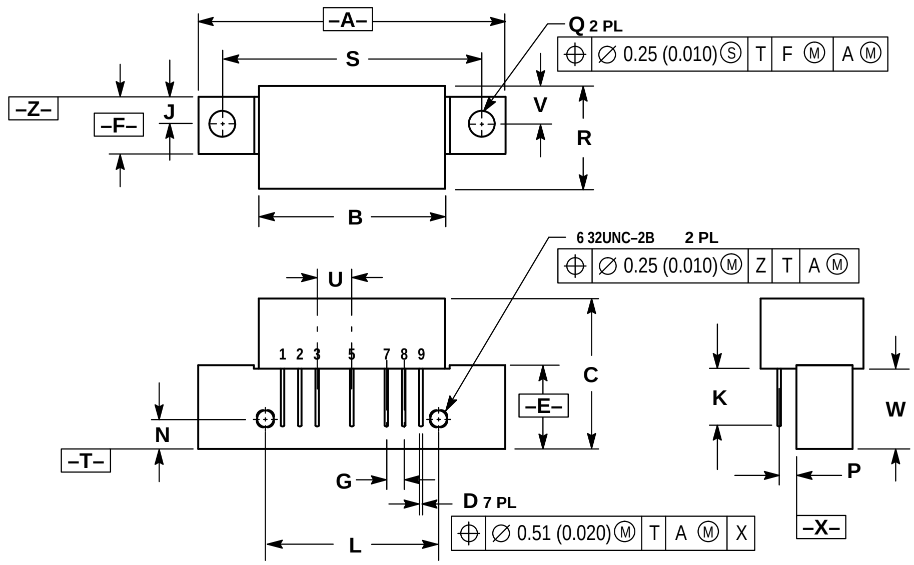
Figure 9. External Connections



ITO = Po + IMD / 2 @ IMD > 60 dB
PEP = 4 x Po @ IMD = – 32 dB

Figure 10. Intermodulation Test

PACKAGE DIMENSIONS



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

	INCHES		MILLIMETERS	
DIM	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. $+V_{CC}$
7. GROUND
8. GROUND
9. RF OUTPUT

CASE 714F–03
ISSUE C

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