

The RF Line

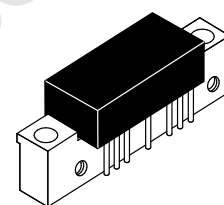
Wideband Linear Amplifier

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 — 0.35 to 400 MHz
 - Output Power — 1000 mW Typ @ 1 dB Compression, $f = 200\text{ MHz}$
 - Power Gain — 18.5 dB Typ @ $f = 50\text{ MHz}$
 - PEP — 1000 mW Typ @ -32 dB IMD, $f = 200\text{ MHz}$
 - Noise Figure — 5 dB Typ @ $f = 200\text{ MHz}$
 - ITO — 47 dBm Typ @ $f = 150\text{ MHz}$
- All Gold Metallization for Improved Reliability
- Unconditional Stability Under All Load Conditions

CA2818C

18.5 dB
0.35–400 MHz
1000 mWATT
WIDEBAND
LINEAR AMPLIFIER



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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
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 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	0.35	—	400	MHz
Gain Flatness ($f = 0.35\text{--}400\text{ MHz}$)	F_L	—	± 0.5	± 1	dB
Power Gain ($f = 50\text{ MHz}$)	P_G	17.75	18.5	19.25	dB
Noise Figure, Broadband ($f = 200\text{ MHz}$)	NF	—	5	6	dB
Power Output — 1 dB Compression ($f = 200\text{ MHz}$)	$P_{O\ 1dB}$	800	1000	—	mW
Third Order Intercept (See Figure 10, $f_1 = 200\text{ MHz}$)	ITO	43	45	—	dBm
Input/Output VSWR ($f = 0.35\text{--}400\text{ MHz}$)	VSWR	—	1.7:1	2:1	—
Second Harmonic Distortion ($P_O = 100\text{ mW}$) $f_{2H} = 0.35\text{--}200\text{ MHz}$ $f_{2H} = 200\text{--}400\text{ MHz}$	d_{so}	—	-65 —	-60 -50	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 10) $f = 0.35\text{--}200\text{ MHz}$ @ -32 dB IMD $f = 200\text{--}400\text{ MHz}$ @ -32 dB IMD	PEP	600	800	—	mW
Supply Current	I_{CC}	190	205	220	mA



TYPICAL CHARACTERISTICS

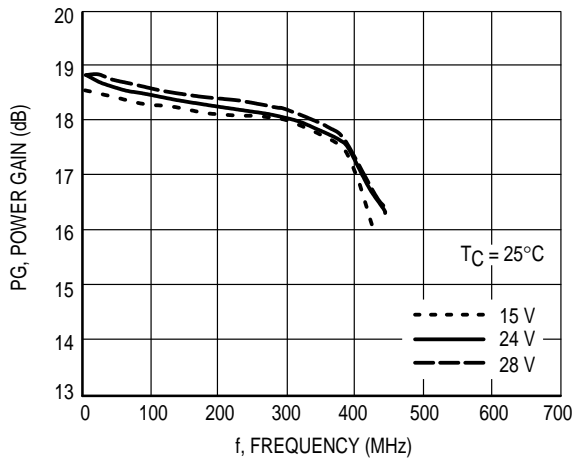


Figure 1. Power Gain versus Voltage

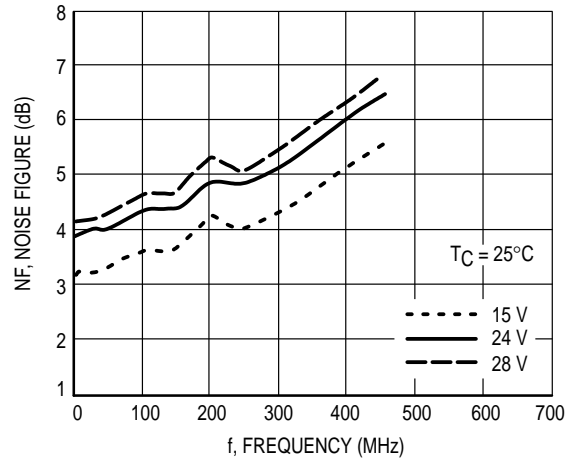


Figure 4. Noise Figure versus Voltage

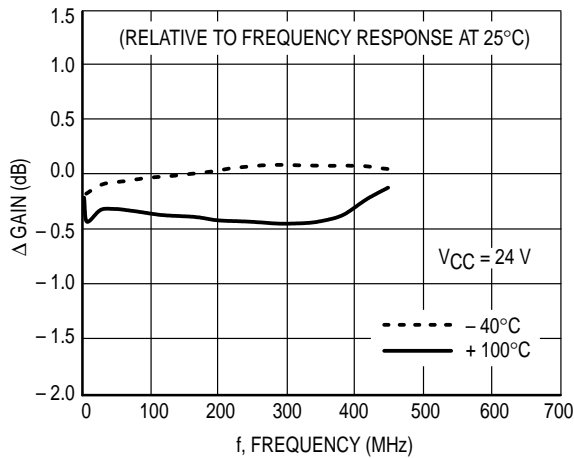


Figure 2. Relative Power Gain versus Temperature

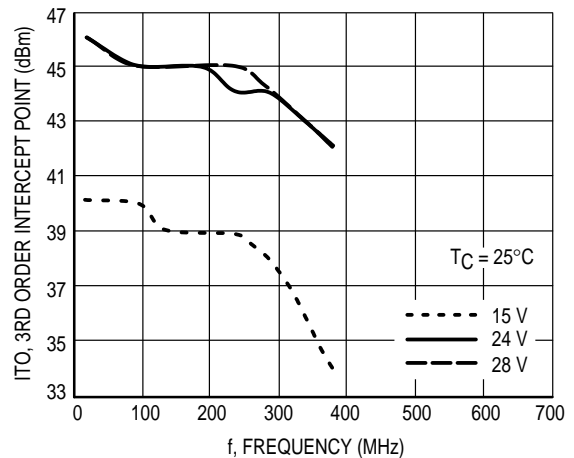


Figure 5. Third Order Intercept versus Voltage

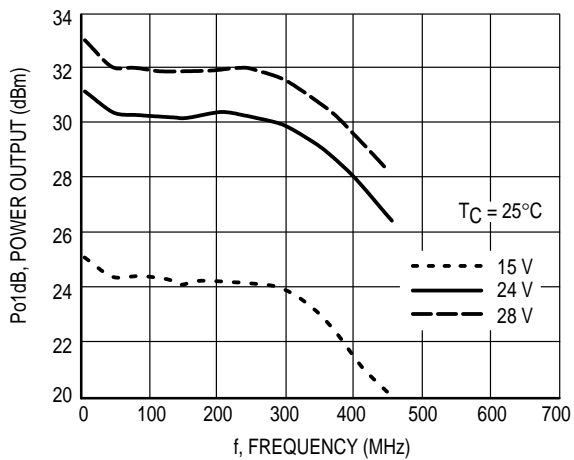


Figure 3. 1 dB Compression versus Voltage

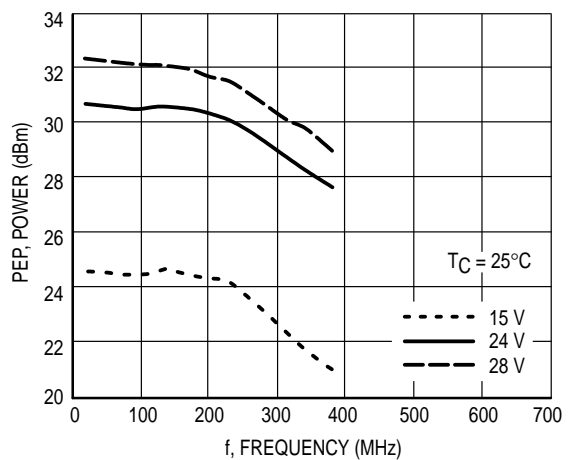


Figure 6. Peak Envelope Power versus Voltage

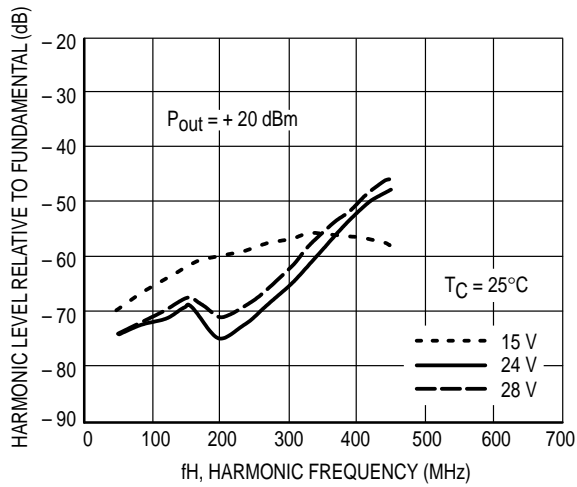


Figure 7. Second Harmonic Distortion versus Voltage

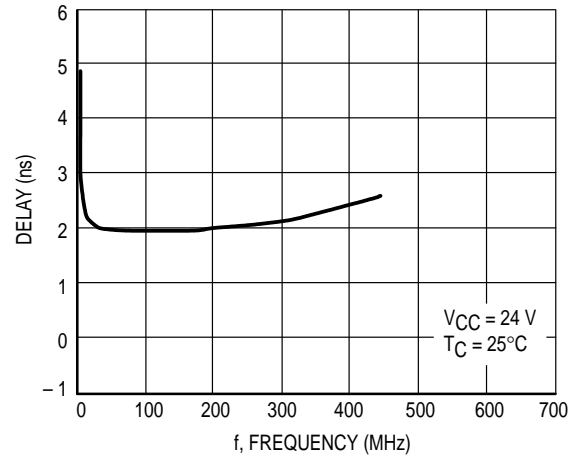


Figure 8. Group Delay versus Frequency

Biased at 24 Volts

T = 25°C Zo = 50Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
0.35	-17.0	18.7	18.4	7.4	-24.1	-169	-16.4	11.1
1	-17.3	10.7	18.6	3.4	-24.0	-175	-16.7	6.5
50	-16.3	-7.6	18.7	-38.8	-23.9	145	-17.0	-38.8
100	-15.6	-15.1	18.5	-70.1	-24.1	117	-18.4	-65.9
200	-14.0	-47.3	18.3	-149	-24.8	47.9	-20.6	-101
300	-14.1	-85	18.1	135	-25.3	-15	-16.6	-142
400	-18.0	-137	17.4	58	-25.9	-84.3	-14.2	134

Magnitude in dB, Phase Angle in degrees.

Table 1. S-Parameters

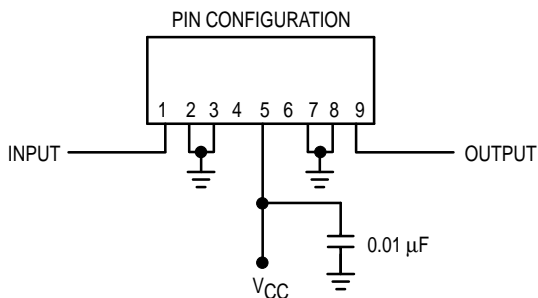
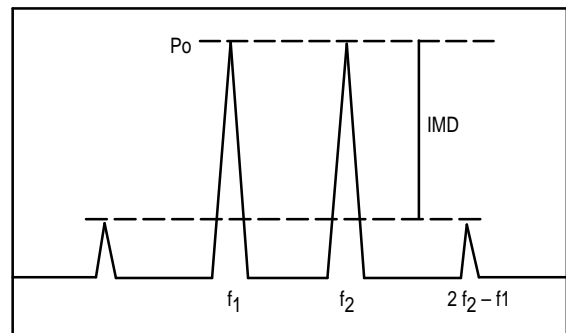


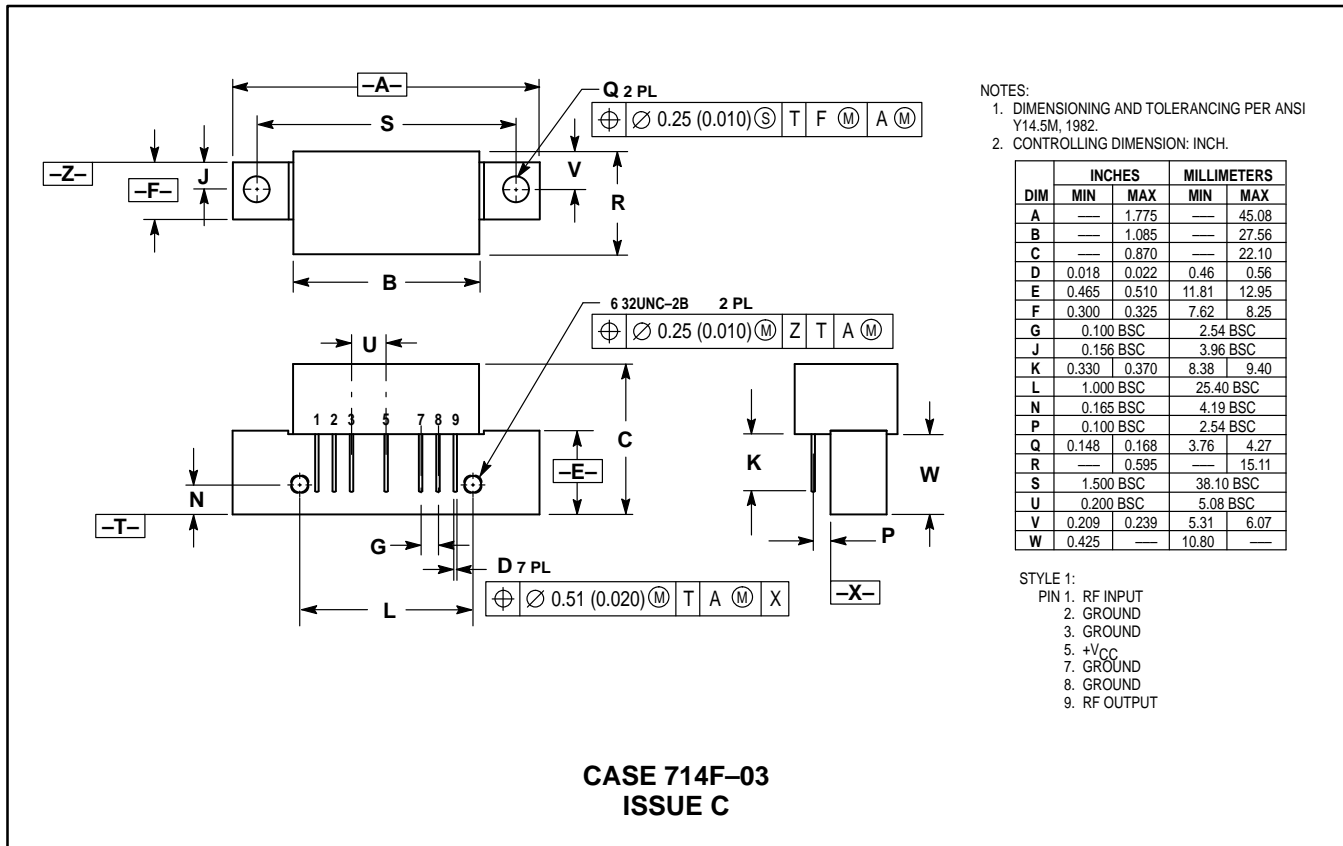
Figure 9. Functional Schematic



ITO = $P_o + \text{IMD} / 2$ @ 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
 2. GROUND
 3. GROUND
 5. +V_{CC}
 7. GROUND
 8. GROUND
 9. RF OUTPUT

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