

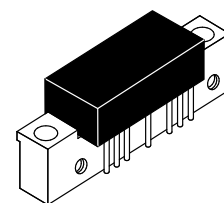
## The RF Line Wideband Linear Amplifier

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)]**

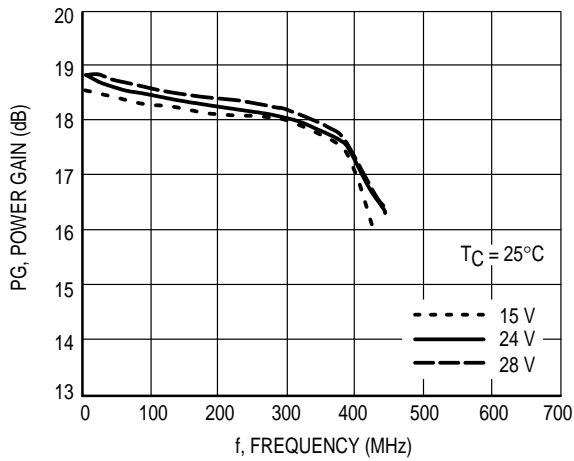
### MAXIMUM RATINGS

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	$^\circ\text{C}$

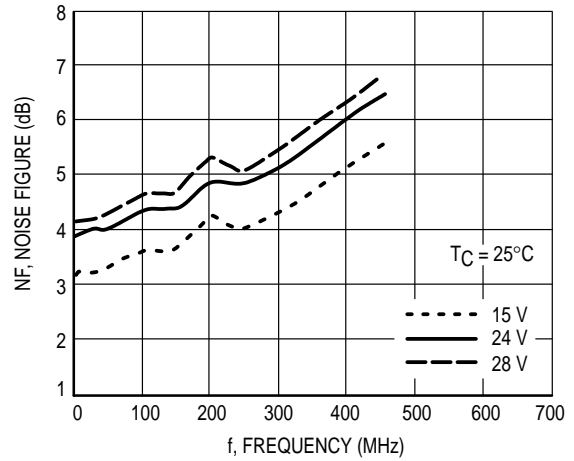
### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ , $V_{CC} = 24\text{ V}$ , 50 $\Omega$ system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	0.35	—	400	MHz
Gain Flatness ( $f = 0.35\text{--}400\text{ MHz}$ )	$F_L$	—	$\pm 0.5$	$\pm 1$	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

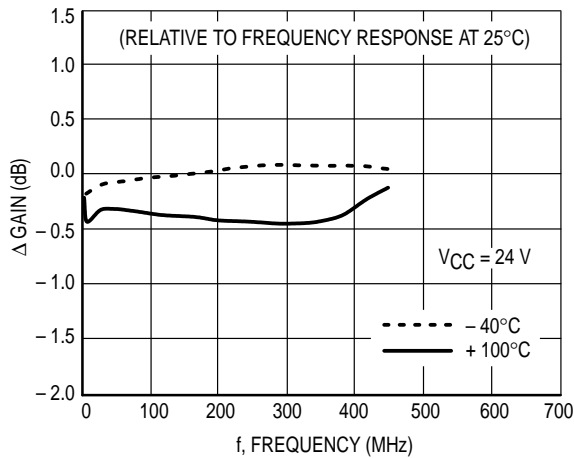
## TYPICAL CHARACTERISTICS



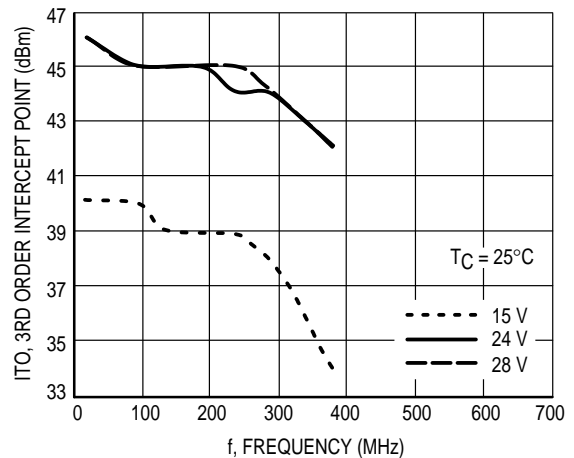
**Figure 1. Power Gain versus Voltage**



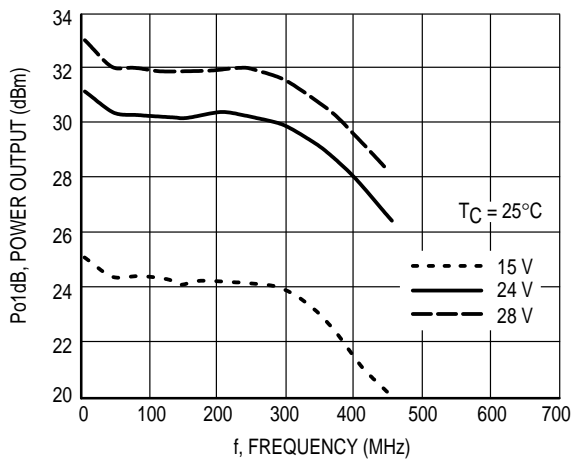
**Figure 4. Noise Figure versus Voltage**



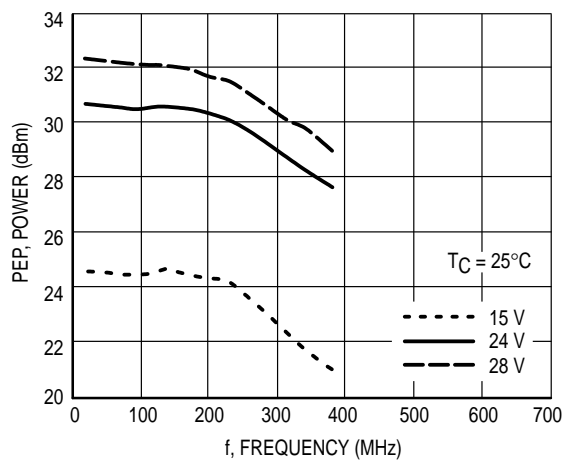
**Figure 2. Relative Power Gain versus Temperature**



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



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



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

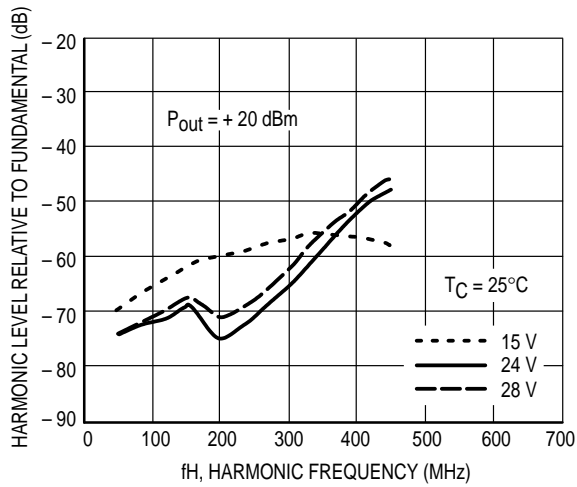


Figure 7. Second Harmonic Distortion versus Voltage

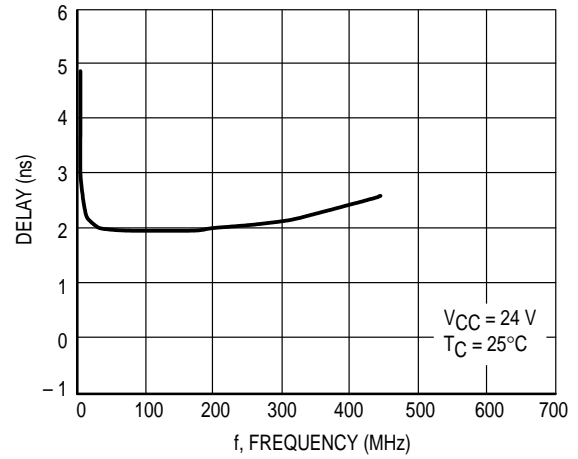


Figure 8. Group Delay versus Frequency

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

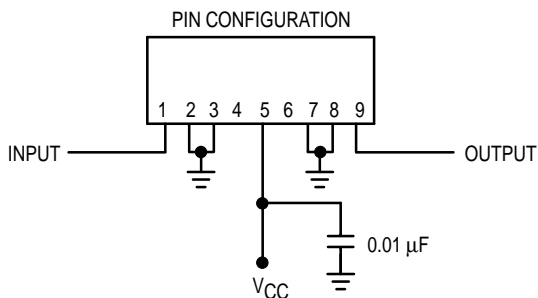
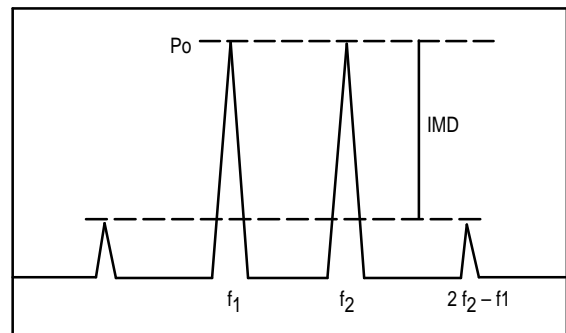


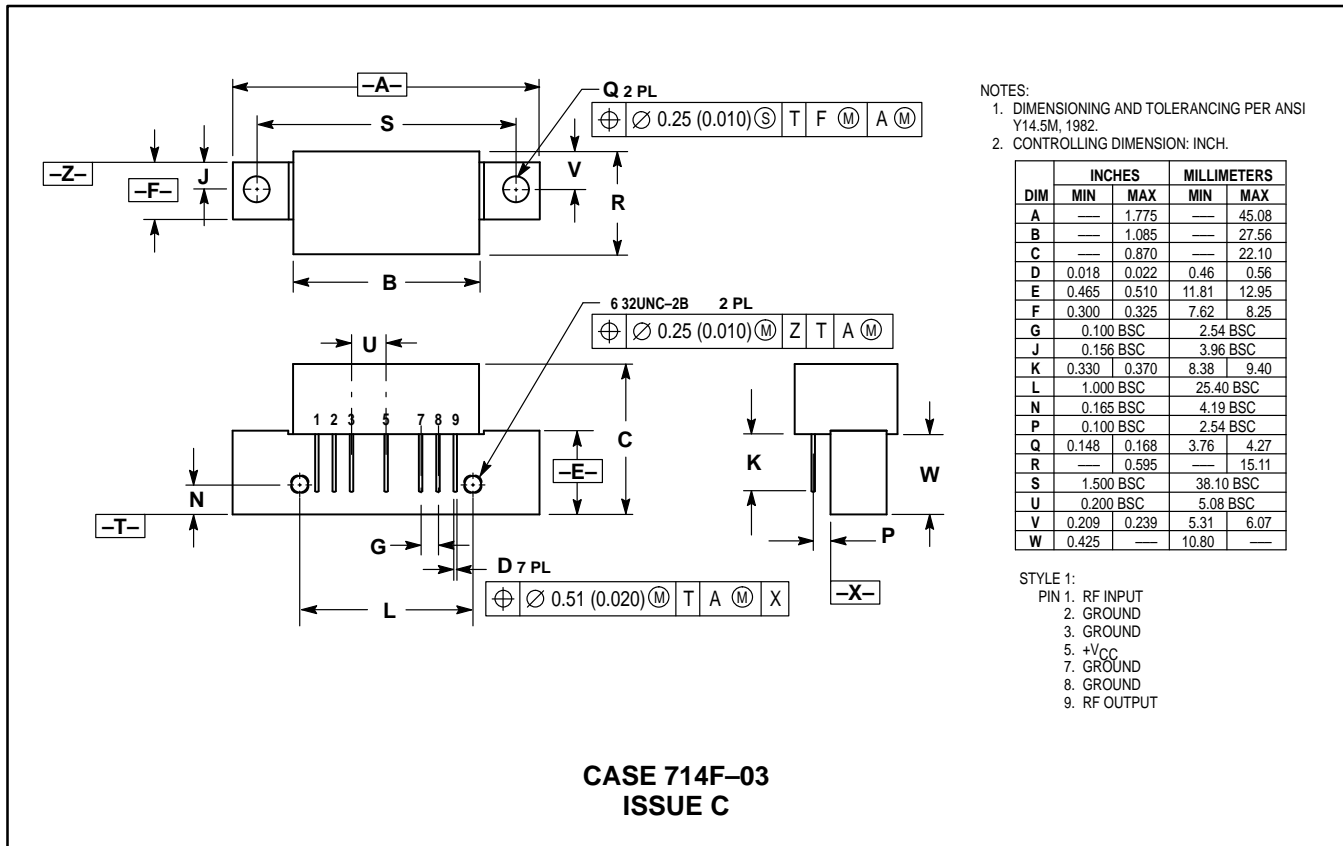
Figure 9. Functional Schematic



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<sub>CC</sub>  
 7. GROUND  
 8. GROUND  
 9. RF OUTPUT

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