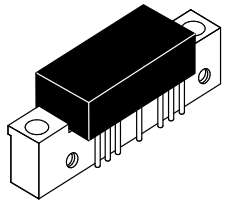
The RF Line
Wideband Linear Amplifier

CA2818C

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

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

TYPICAL CHARACTERISTICS

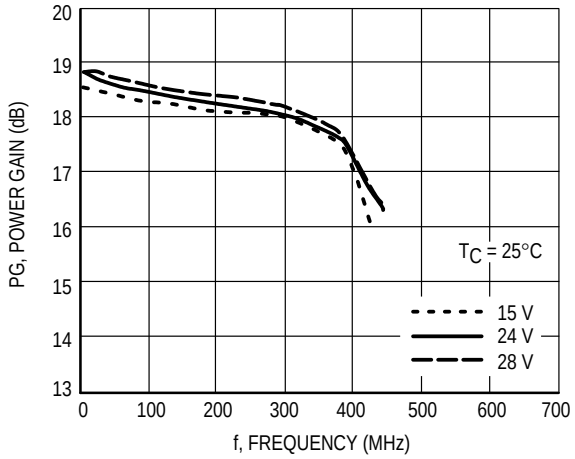


Figure 1. Power Gain versus Voltage

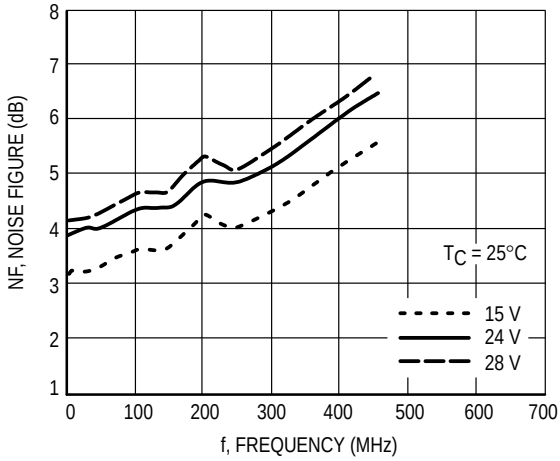


Figure 4. Noise Figure versus Voltage

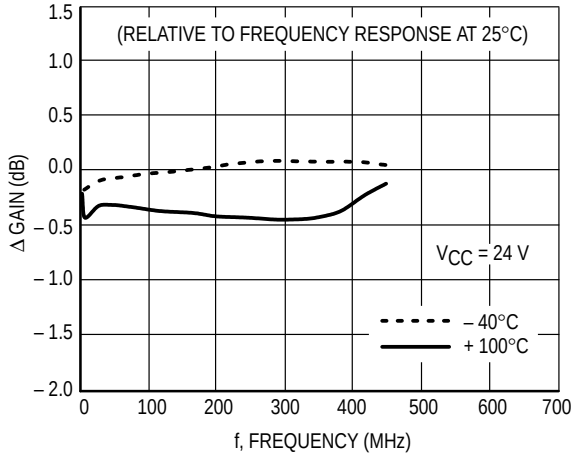


Figure 2. Relative Power Gain versus Temperature

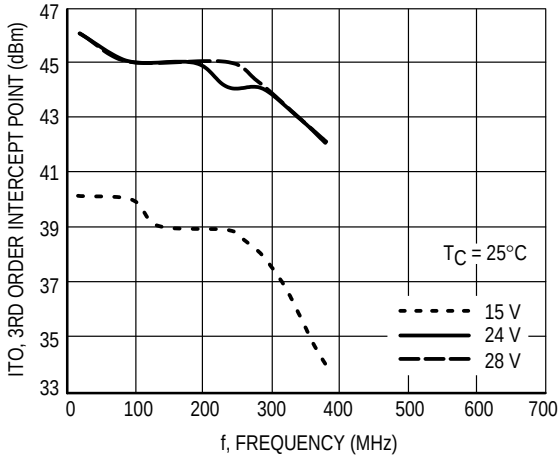


Figure 5. Third Order Intercept versus Voltage

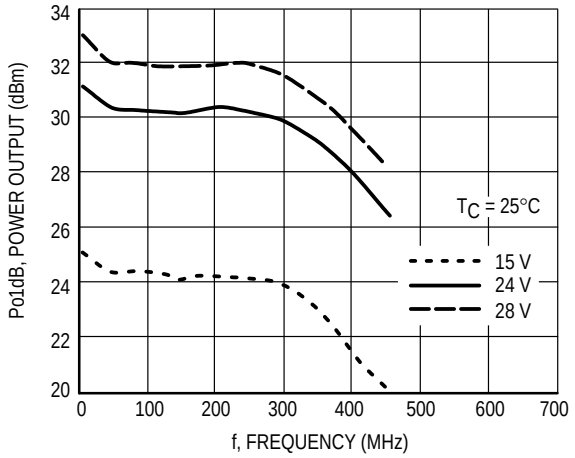


Figure 3. 1 dB Compression versus Voltage

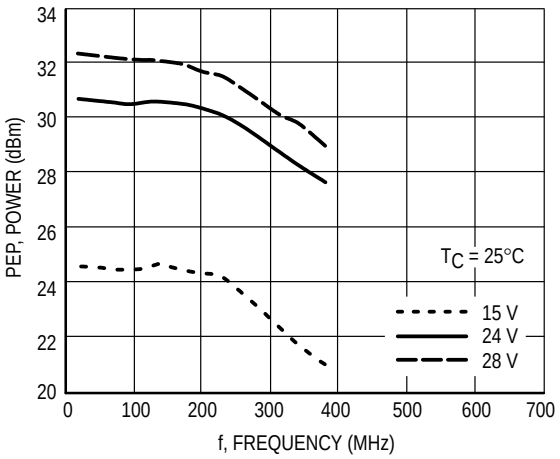


Figure 6. Peak Envelope Power versus Voltage

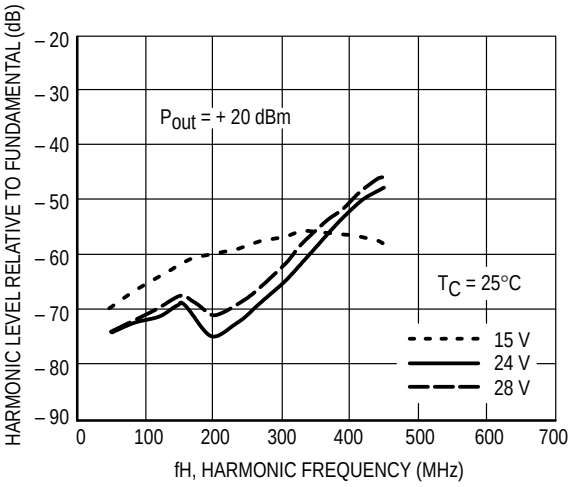


Figure 7. Second Harmonic Distortion versus Voltage

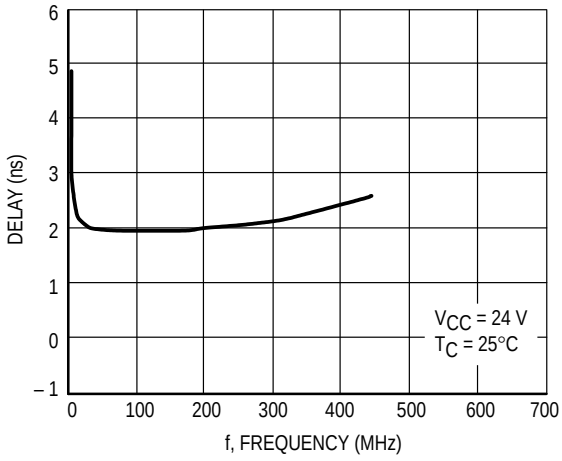


Figure 8. Group Delay versus Frequency

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

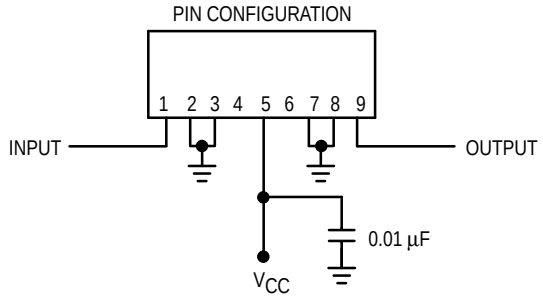
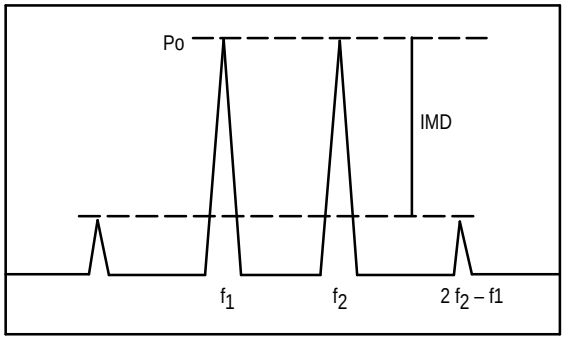


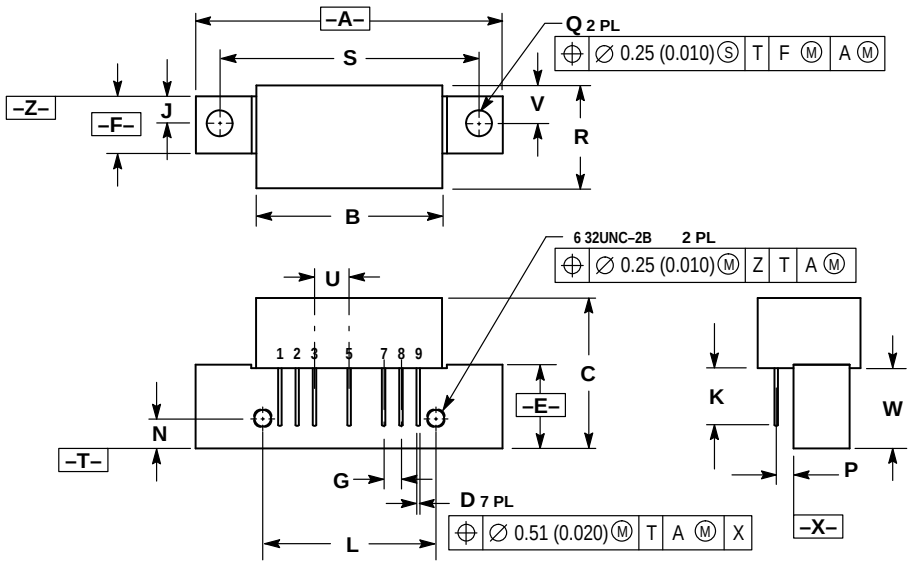
Figure 9. Functional Schematic



ITO = 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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