

The RF Line

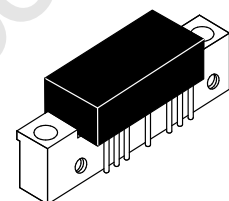
Wideband Linear Amplifier

. . . designed for amplifier applications in 50 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 to 450 MHz
 - Output Power — 1 W Typ @ 1 dB Compression, $f = 200\text{ MHz}$
 - Power Gain — 34 dB Typ @ $f = 50\text{ MHz}$
 - PEP — 400 mW Typ @ -32 dB IMD
 - Noise Figure — 5 dB Max @ $f = 300\text{ MHz}$
- All Gold Metallization for Improved Reliability

CA2810C

34 dB
10–450 MHz
800 mWATT
WIDEBAND
LINEAR AMPLIFIER



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} | +5 | 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 | 10 | — | 450 | MHz |
| Gain Flatness ($f = 10\text{--}450\text{ MHz}$) | F_L | — | — | ± 1.5 | dB |
| Power Gain ($f = 50\text{ MHz}$) | P_G | 33 | 34 | 35 | dB |
| Noise Figure, Broadband ($f = 300\text{ MHz}$) | NF | — | — | 5 | dB |
| Power Output — 1 dB Compression ($f = 200\text{ MHz}$) | $P_{O1\text{ dB}}$ | 800 | 1000 | — | mW |
| Third Order Intercept (See Figure 10, $f_1 = 300\text{ MHz}$) | ITO | — | 43 | — | dBm |
| Input/Output VSWR ($f = 10\text{--}450\text{ MHz}$) | VSWR | — | — | 2:1 | — |
| Second Harmonic Distortion ($P_O = 100\text{ mW}$, $f_{2H} = 10\text{--}300\text{ MHz}$) | d_{so} | — | -55 | -45 | dB |
| Reverse Isolation ($f = 10\text{--}450\text{ MHz}$) | — | — | 40 | — | dB |
| Peak Envelope Power (Two Tone Distortion Test — See Figure 10) ($f = 10\text{--}450\text{ MHz}$ @ -32 dB IMD) | PEP | — | 400 | — | mW |
| Supply Current | I_{CC} | 270 | 310 | 330 | mA |



TYPICAL CHARACTERISTICS

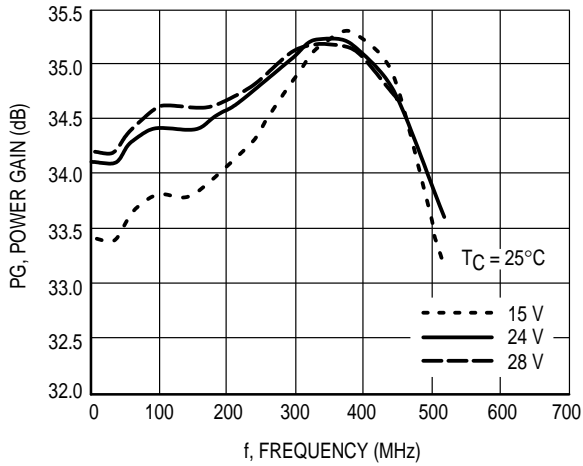


Figure 1. Power Gain versus Voltage

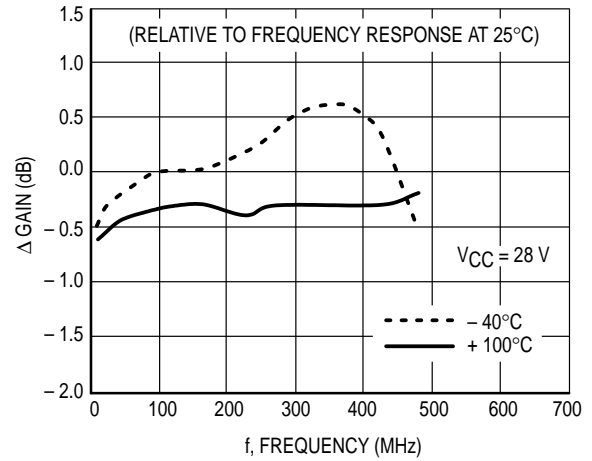


Figure 2. Relative Power Gain versus Temperature

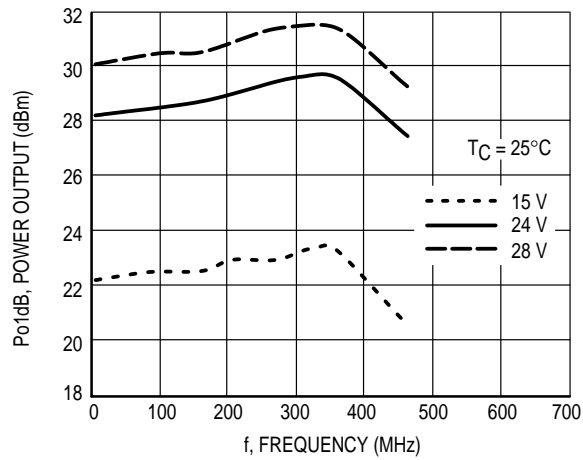


Figure 3. 1 dB Compression versus Voltage

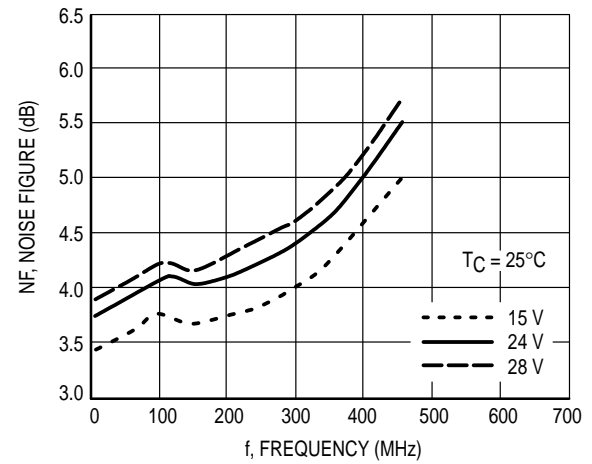


Figure 4. Noise Figure versus Voltage

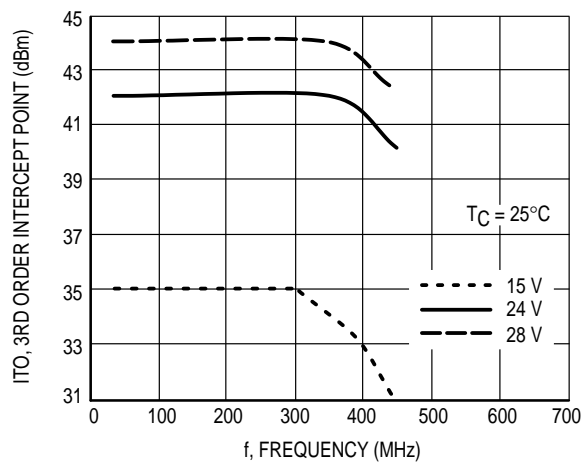


Figure 5. Third Order Intercept versus Voltage

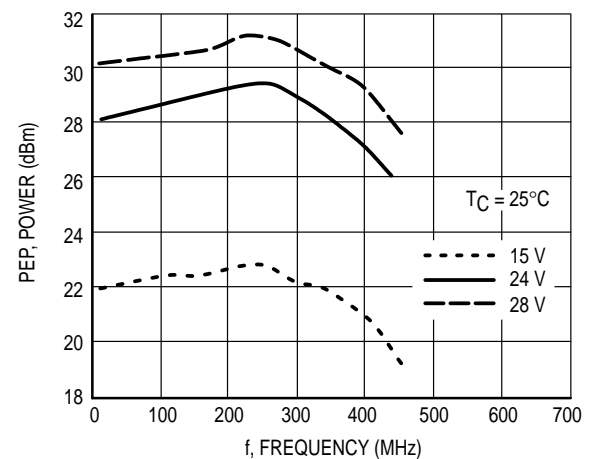


Figure 6. Peak Envelope Power versus Voltage

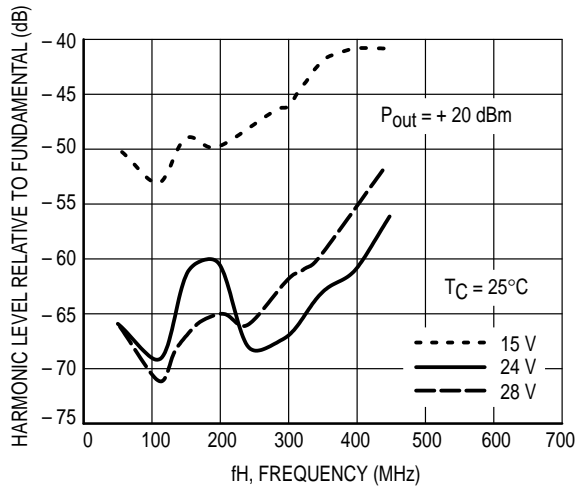


Figure 7. Second Harmonic Distortion versus Voltage

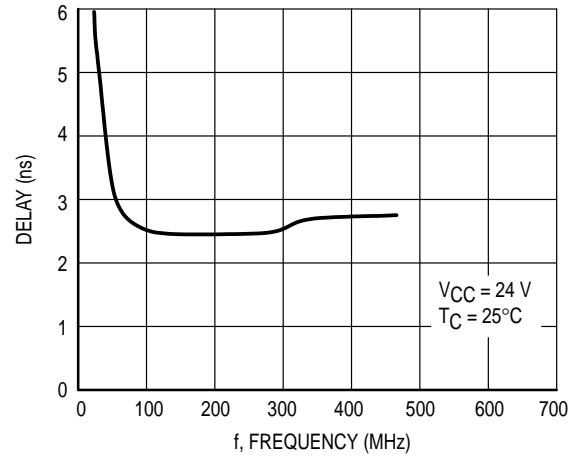


Figure 8. Group Delay versus Frequency

Biased at 24 Volts

T = 25°C Z_o = 50Ω

| Frequency (MHz) | S11 | | S21 | | S12 | | S22 | |
|-----------------|-------|------|------|------|-----|------|-------|------|
| | Mag | Ang | Mag | Ang | Mag | Ang | Mag | Ang |
| 10 | -13.8 | 3.5 | 34.2 | -145 | -46 | -131 | -13.5 | 8.2 |
| 50 | -16.0 | -3.0 | 34.2 | 150 | -47 | -172 | -18.5 | 4.6 |
| 100 | -14.4 | -14 | 34.4 | 88 | -48 | 102 | -14.5 | -9.2 |
| 200 | -13.2 | -50 | 34.6 | 2 | -42 | 35 | -13.2 | -80 |
| 300 | -13.9 | -79 | 35.0 | -80 | -46 | 65 | -16.7 | -49 |
| 400 | -14.1 | -115 | 35.0 | -80 | -48 | -44 | -14.2 | 11 |
| 450 | -16.2 | -122 | 34.6 | 120 | -53 | -82 | -13.8 | -46 |

Magnitude in dB, Phase Angle in degrees.

Table 1. S-Parameters

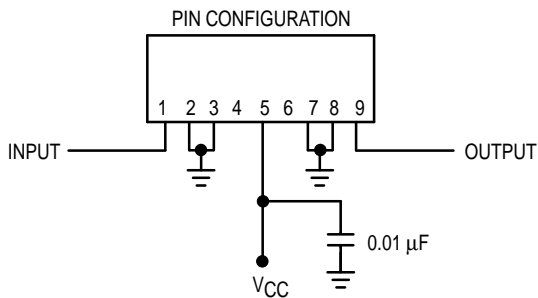


Figure 9. External Connections

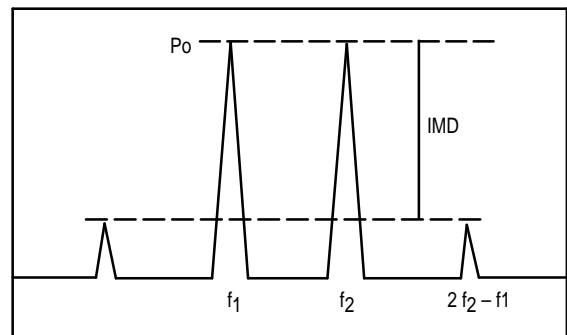
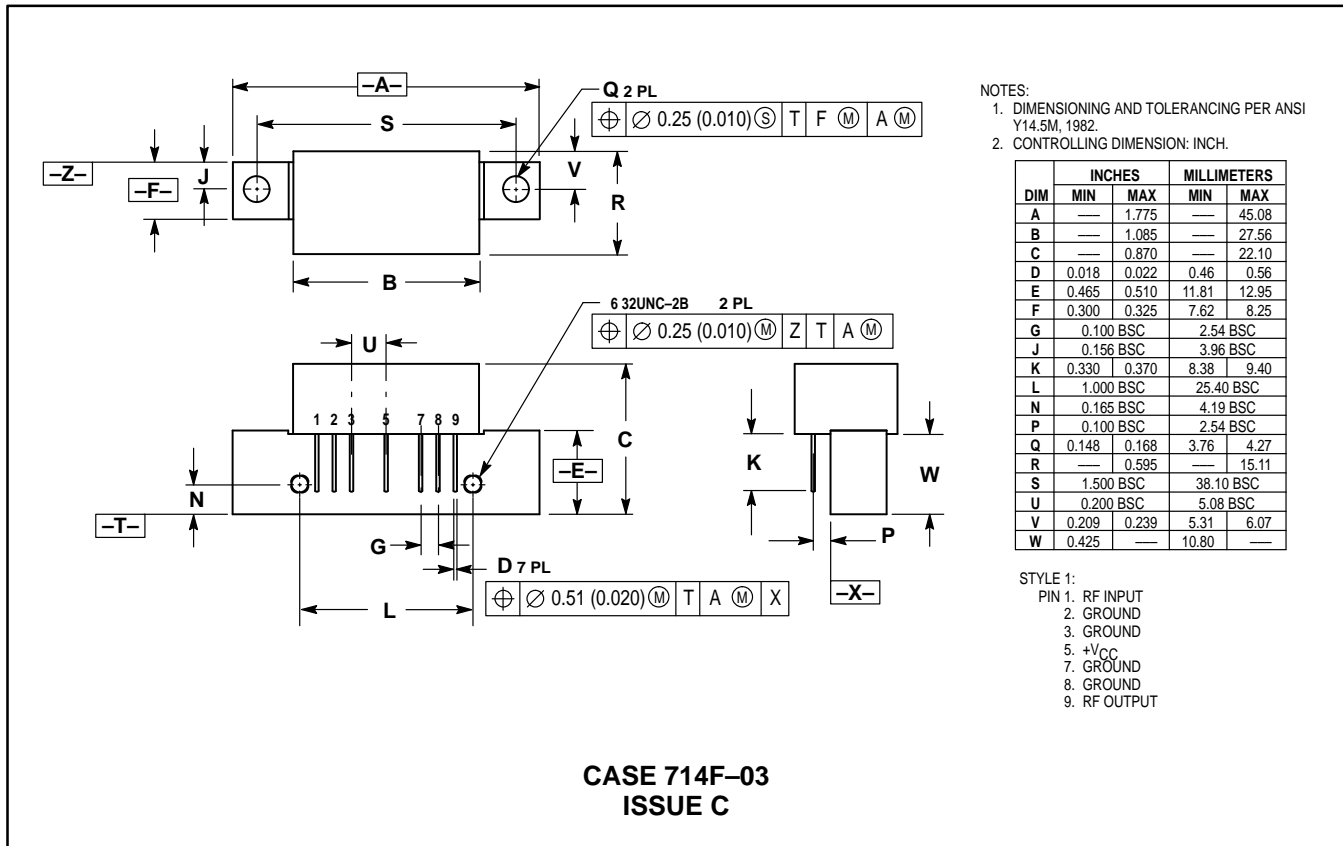


Figure 10. Intermodulation Test

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

CASE 714F-03 ISSUE C

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