

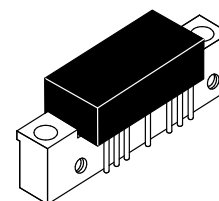
The RF Line Wideband Linear Amplifier

. . . 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

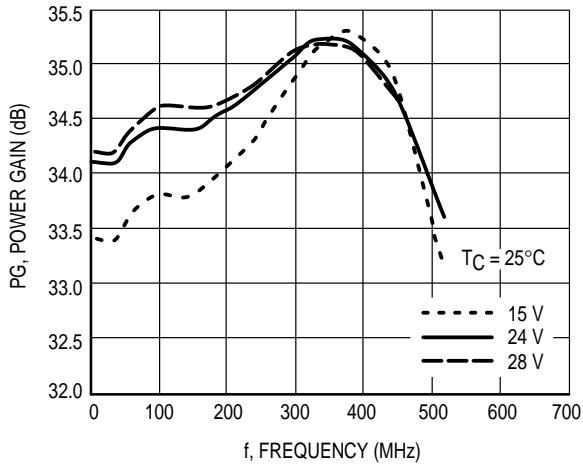


Figure 1. Power Gain versus Voltage

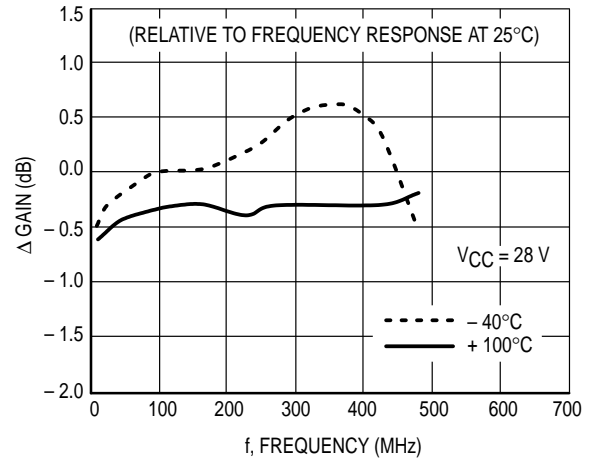


Figure 2. Relative Power Gain versus Temperature

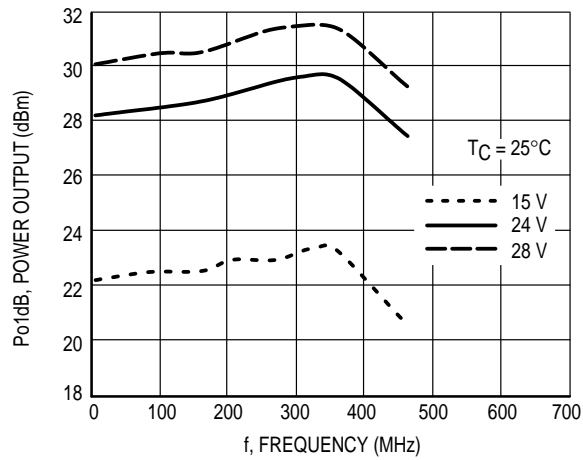


Figure 3. 1 dB Compression versus Voltage

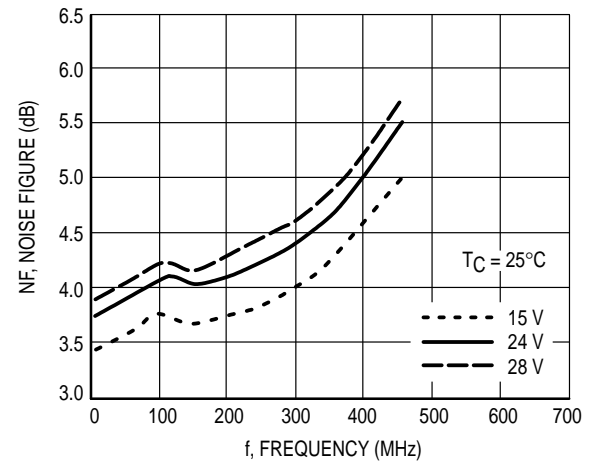


Figure 4. Noise Figure versus Voltage

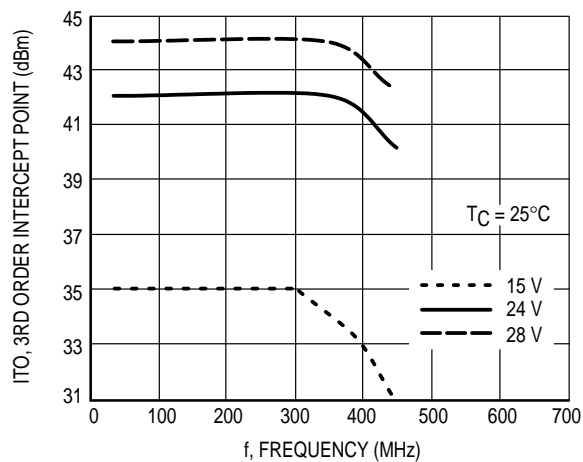


Figure 5. Third Order Intercept versus Voltage

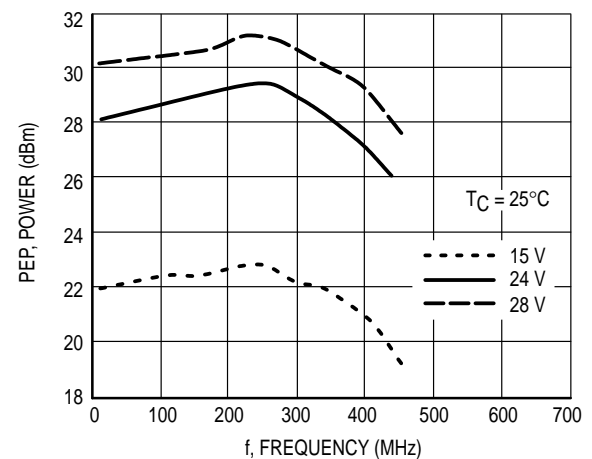


Figure 6. Peak Envelope Power versus Voltage

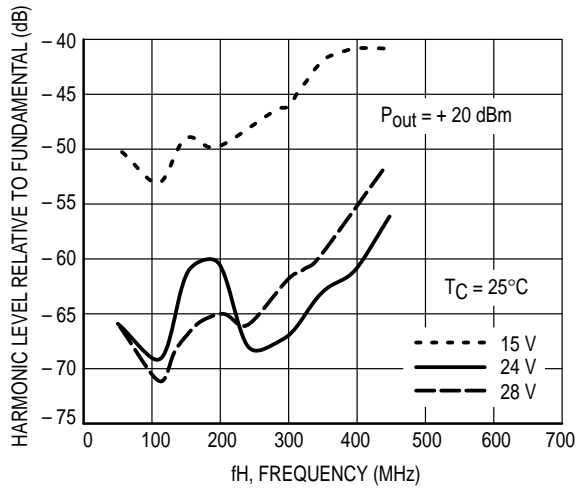


Figure 7. Second Harmonic Distortion versus Voltage

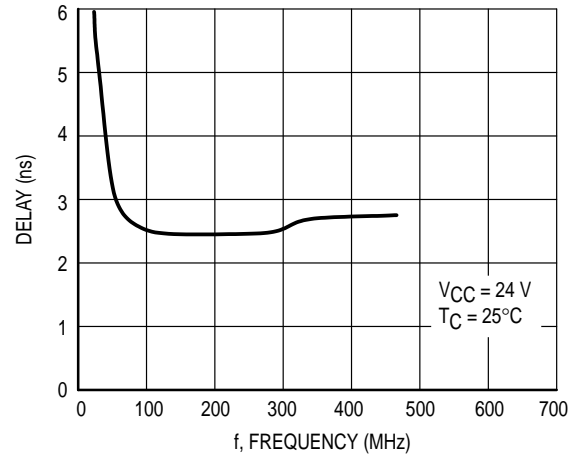


Figure 8. Group Delay versus Frequency

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

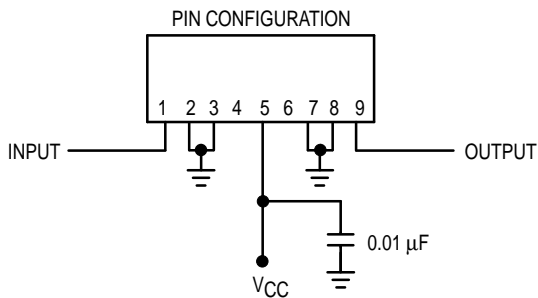


Figure 9. External Connections

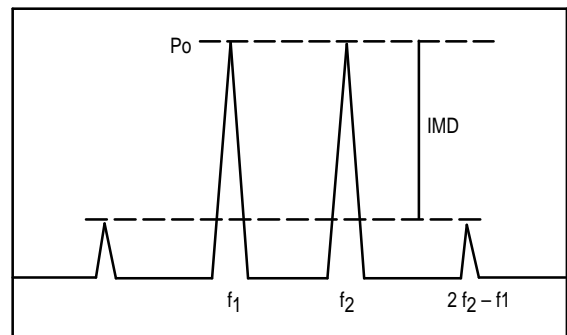
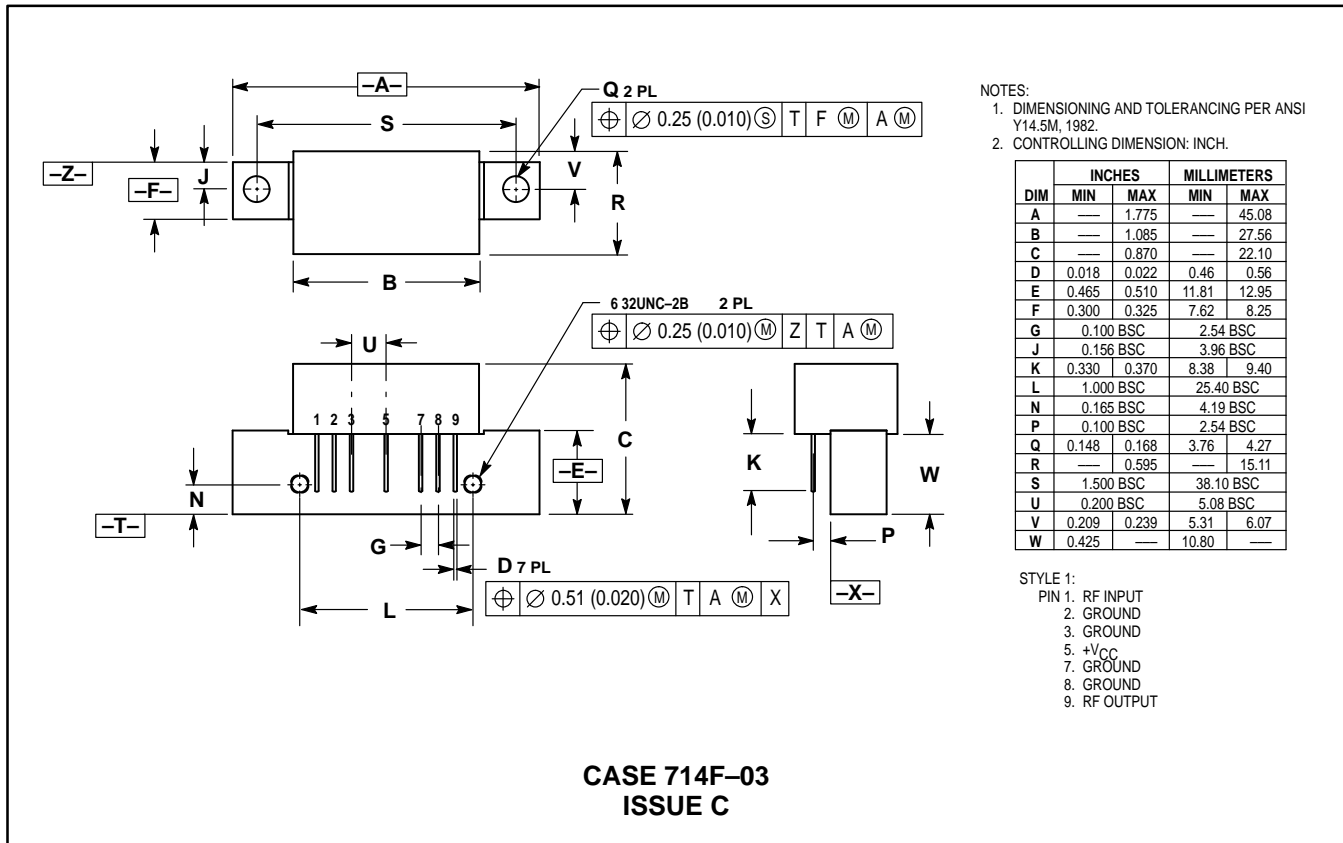


Figure 10. Intermodulation Test


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

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Literature Distribution Centers:

USA: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036.
 EUROPE: Motorola Ltd.; European Literature Centre; 88 Tanners Drive, Blakelands, Milton Keynes, MK14 5BP, England.
 JAPAN: Nippon Motorola Ltd.; 4-32-1, Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan.
 ASIA PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Center, No. 2 Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.

