Freescale Semiconductor
Technical Data

Document Number: MHL19936N
Rev. 7, 8/2006

PCS Band
RF Linear LDMOS Amplifier

Designed for ultra-linear amplifier applications in 50 ohm systems operating in the PCS frequency band. A silicon FET Class A design provides outstanding linearity and gain. In addition, the excellent group delay and phase linearity characteristics are ideal for digital modulation systems, such as TDMA and CDMA.

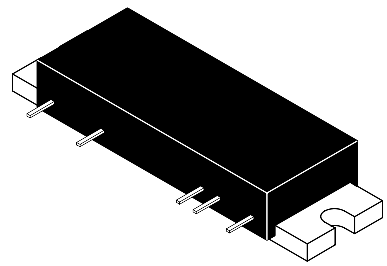
- Third Order Intercept: 49.5 dBm Typ
- Power Gain: 29 dB Typ (@ f = 1960 MHz)
- Input VSWR ≤ 1.5:1

Features

- Excellent Phase Linearity and Group Delay Characteristics
- Ideal for Feedforward Base Station Applications
- Replaced MHL19936. There are no form, fit or function changes with this part replacement.
- N Suffix Indicates Lead-Free Terminations

MHL19936N

1900-2000 MHz
12 W, 29 dB
RF LINEAR LDMOS AMPLIFIER



CASE 301AY-01, STYLE 1

Table 1. Absolute Maximum Ratings (T_C = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
DC Supply Voltage	V_{DD}	30	Vdc
RF Input Power	P_{in}	+16	dBm
Storage Temperature Range	T_{stg}	-40 to +100	°C
Operating Case Temperature Range	T_C	-20 to +100	°C

Table 2. Electrical Characteristics (V_{DD} = 26 Vdc, T_C = 25°C; 50 Ω System)

Characteristic		Symbol	Min	Typ	Max	Unit
Supply Current		I_{DD}	—	1.4	1.45	A
Power Gain	(f = 1960 MHz)	G_p	27.5	29	30.5	dB
Gain Flatness	(f = 1900 - 2000 MHz)	G_F	—	0.2	0.4	dB
Power Output @ 1 dB Compression	(f = 1950 MHz)	P1dB	40	41	—	dBm
Third Order Intercept	(f1 = 1950 MHz, f2 = 1955 MHz)	ITO	49	49.5	—	dBm
Noise Figure	(f = 2000 MHz)	NF	—	4.2	4.5	dB

NOTE - **CAUTION** - MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.

TYPICAL CHARACTERISTICS

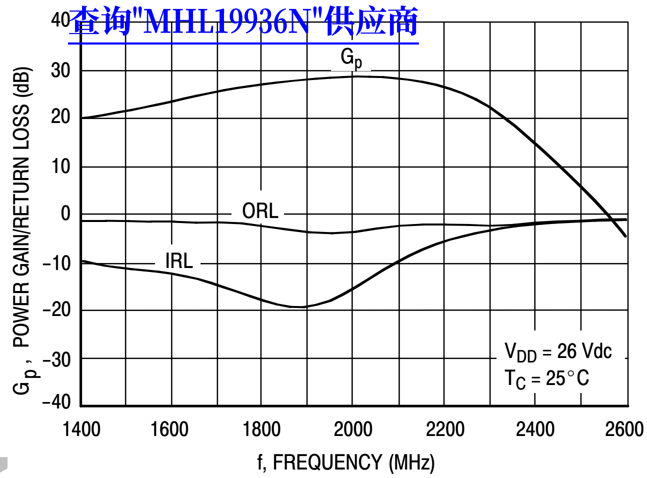


Figure 1. Power Gain, Input Return Loss, Output Return Loss versus Frequency

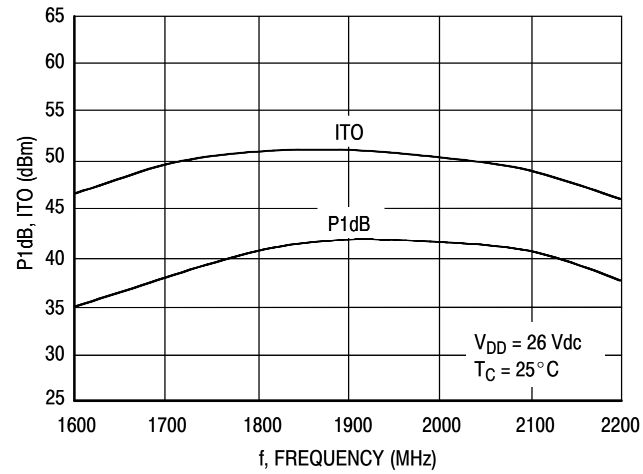


Figure 2. P1dB, ITO versus Frequency

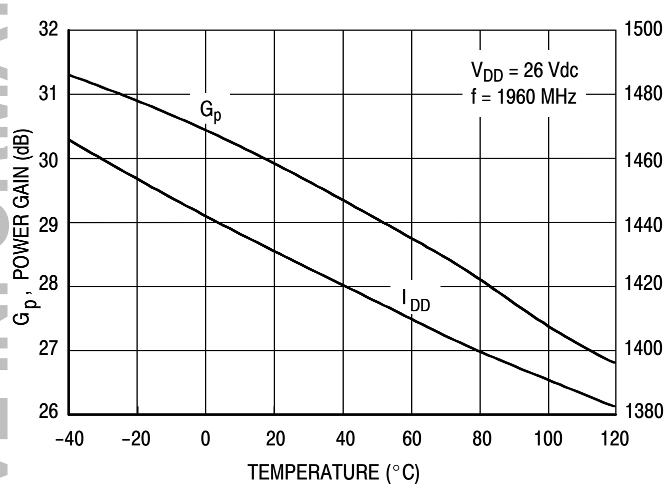


Figure 3. Power Gain, I_{DD} versus Temperature

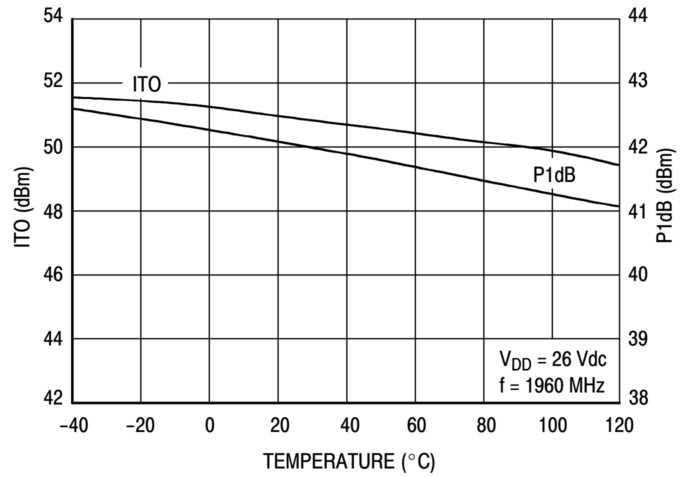


Figure 4. ITO, P1dB versus Temperature

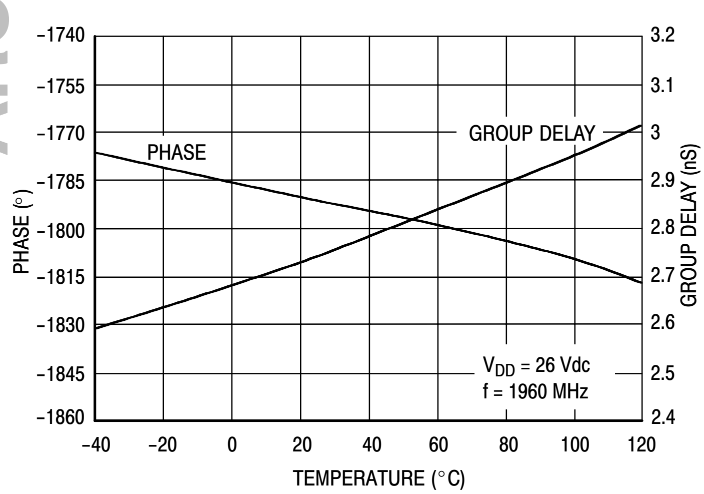


Figure 5. Phase[(1)], Group Delay[(1)] versus Temperature

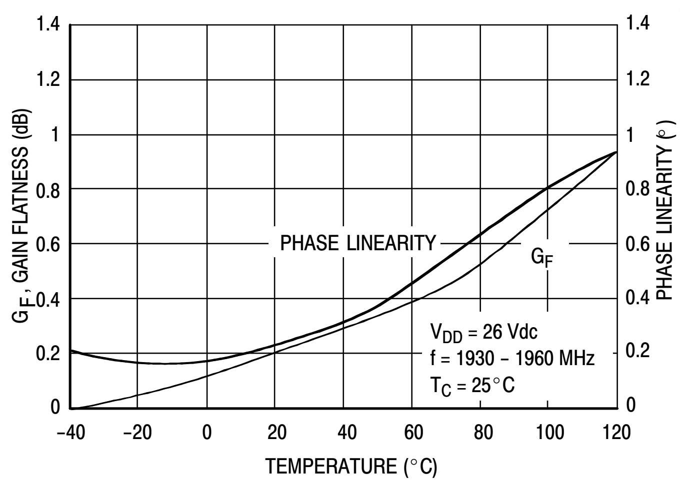


Figure 6. Gain Flatness, Phase Linearity versus Temperature

1. In Production Test Fixture

ARCHIVE INFORMATION

TYPICAL CHARACTERISTICS

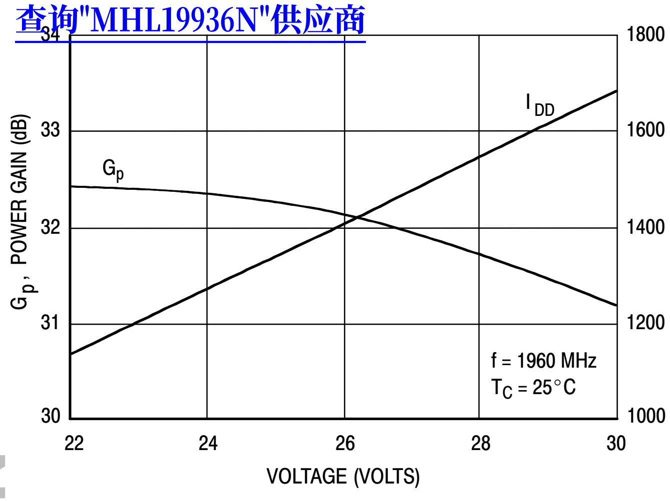


Figure 7. Power Gain, I_{DD} versus Voltage

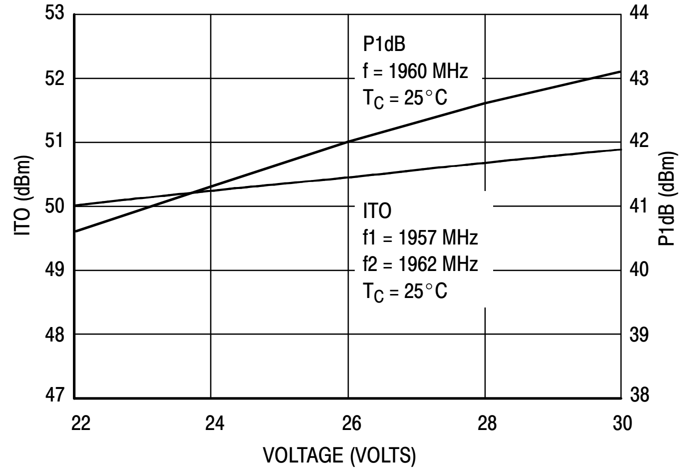


Figure 8. ITO, P1dB versus Voltage

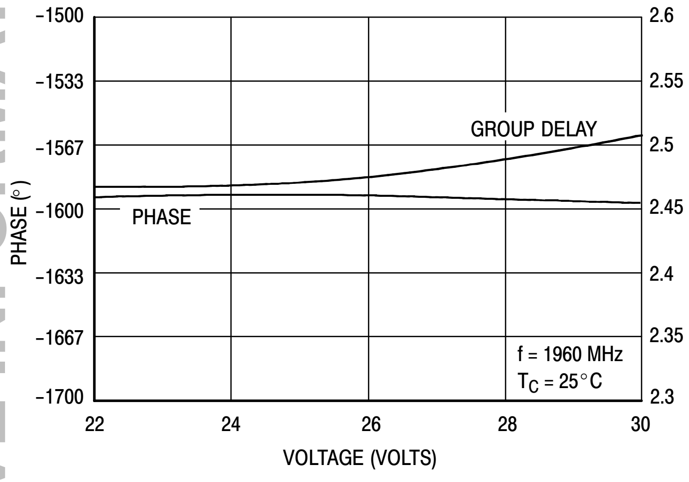


Figure 9. Phase[(1)], Group Delay[(1)] versus Voltage

1. In Production Test Fixture

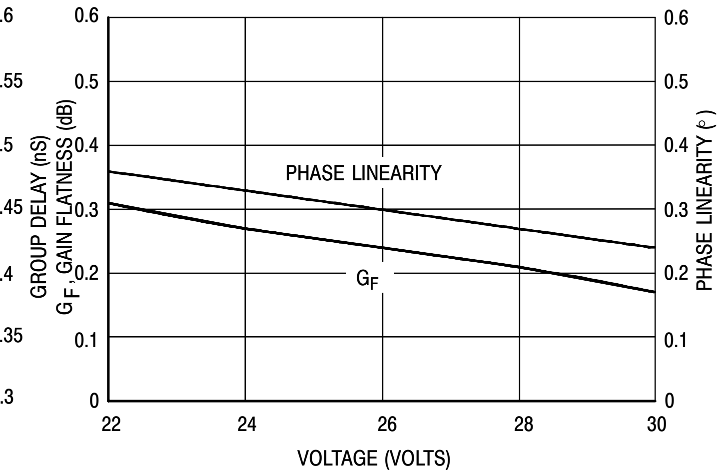
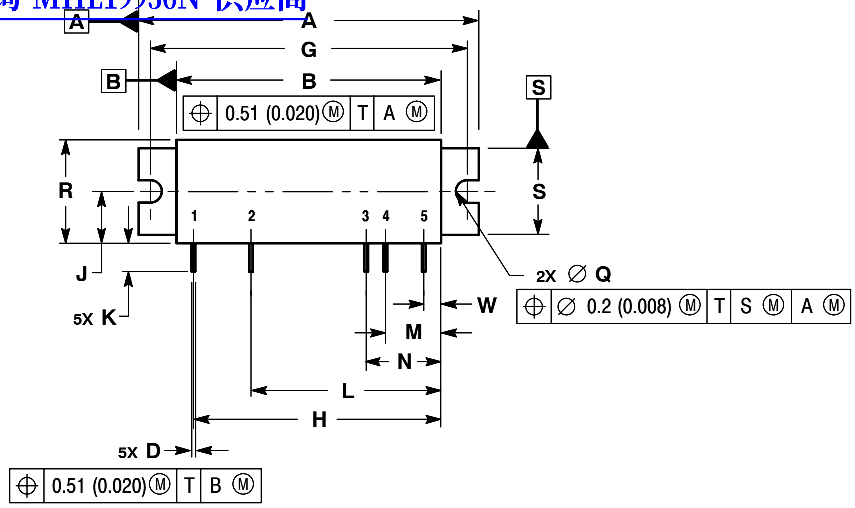
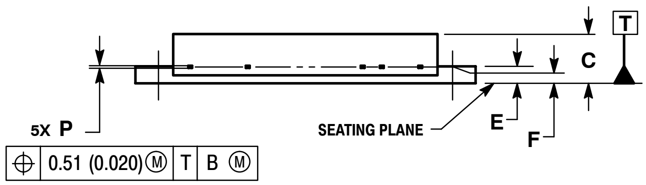


Figure 10. Phase Linearity, Gain Flatness versus Voltage

PACKAGE DIMENSIONS





NOTES:
1. CONTROLLING DIMENSION: MILLIMETER.
2. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M, 1982.
3. DIMENSION F TO CENTER LINE OF LEADS.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	44.7	45.21	1.760	1.780
B	34.8	35.31	1.370	1.390
C	6.22	6.73	0.245	0.265
D	0.43	0.58	0.017	0.023
E	2.03	2.54	0.080	0.100
F	2.18 BSC		0.086 BSC	
G	41.91 BSC		1.650 BSC	
H	32.77 BSC		1.290 BSC	
J	6.76	7.11	0.266	0.280
K	3.18	4.19	0.125	0.165
L	25.15 BSC		0.990 BSC	
M	7.37 BSC		0.290 BSC	
N	9.91 BSC		0.390 BSC	
P	0.2	0.33	0.008	0.013
Q	3	3.35	0.118	0.132
R	13.59	14.1	0.535	0.555
S	11.3	11.81	0.445	0.465
W	2.29 BSC		0.090 BSC	

STYLE 1:
PIN 1. RF INPUT
2. VDD1
3. VDD2
4. VDD3
5. RF OUTPUT
CASE: GROUND

CASE 301AY-01
ISSUE A

ARCHIVE INFORMATION

How to Reach Us:

Home Page:
www.freescale.com

E-mail:
support@freescale.com

USA/Europe or Locations Not Listed:
Freescale Semiconductor
Technical Information Center, CH370
1300 N. Alma School Road
Chandler, Arizona 85224
+1-800-521-6274 or +1-480-768-2130
support@freescale.com

Europe, Middle East, and Africa:
Freescale Halbleiter Deutschland GmbH
Technical Information Center
Schatzbogen 7
81829 Muenchen, Germany
+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
+33 1 69 35 48 48 (French)
support@freescale.com

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064
Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
Freescale Semiconductor Hong Kong Ltd.
Technical Information Center
2 Dai King Street
Tai Po Industrial Estate
Tai Po, N.T., Hong Kong
+800 2666 8080
support.asia@freescale.com

For Literature Requests Only:
Freescale Semiconductor Literature Distribution Center
P.O. Box 5405
Denver, Colorado 80217
1-800-441-2447 or 303-675-2140
Fax: 303-675-2150
LDCForFreescaleSemiconductor@hibbertgroup.com

ARCHIVE INFORMATION

Document Number: MHL19936N
Rev. 7, 8/2006