

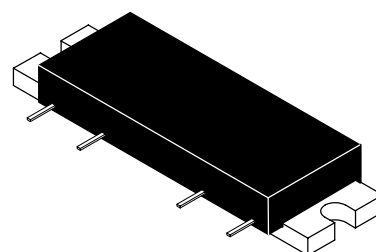
# Cellular Band RF Linear LDMOS Amplifier

Designed for ultra-linear amplifier applications in 50 ohm systems operating in the cellular 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 the most demanding analog or digital modulation systems, such as TDMA, CDMA or QPSK.

- Third Order Intercept: 47 dBm Typ
- Power Gain: 30.5 dB Typ (@ f = 880 MHz)
- Input and Output VSWR  $\leq$  1.5:1

## Features

- Excellent Phase Linearity and Group Delay Characteristics
- Ideal for Feedforward Base Station Applications
- For Use in TDMA, CDMA, QPSK or Analog Systems
- N Suffix Indicates Lead-Free Terminations

**MHL9236N**
**800 - 960 MHz  
2.5 W, 30.5 dB  
RF LINEAR LDMOS AMPLIFIER**

**CASE 301AP-02, STYLE 1**
**Table 1. Absolute Maximum Ratings** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

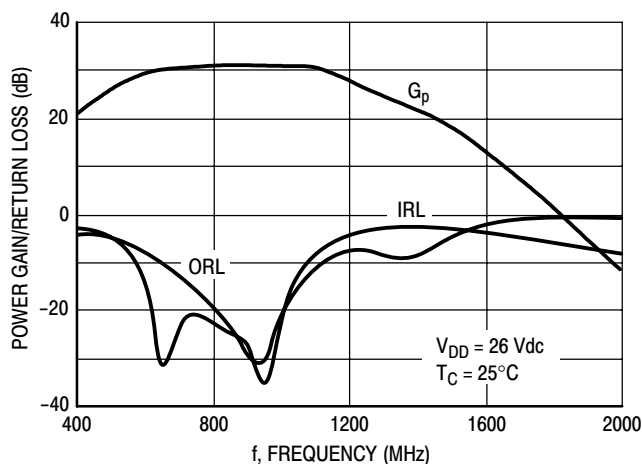
Rating	Symbol	Value	Unit
DC Supply Voltage	$V_{DD}$	30	Vdc
RF Input Power	$P_{in}$	+10	dBm
Storage Temperature Range	$T_{stg}$	- 40 to +100	$^\circ\text{C}$
Operating Case Temperature Range	$T_C$	- 20 to +100	$^\circ\text{C}$

**Table 2. Electrical Characteristics** ( $V_{DD} = 26 \text{ Vdc}$ ,  $T_C = 25^\circ\text{C}$ ; 50  $\Omega$  System)

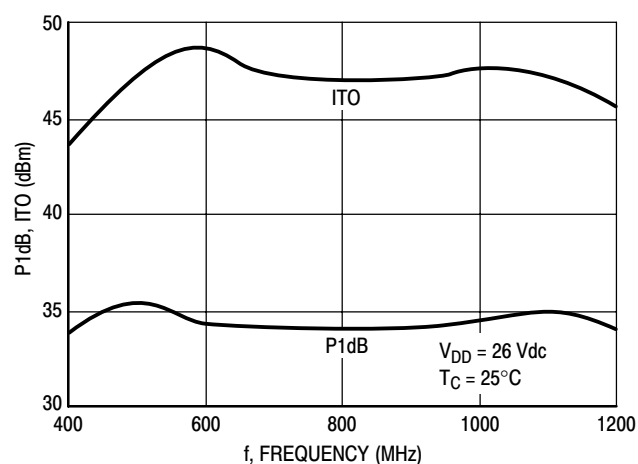
Characteristic	Symbol	Min	Typ	Max	Unit
Supply Current	$I_{DD}$	—	550	620	mA
Power Gain (f = 880 MHz)	$G_p$	29	30.5	32	dB
Gain Flatness (f = 800 - 960 MHz)	$G_F$	—	0.1	0.3	dB
Power Output @ 1 dB Compression (f = 880 MHz)	$P_{1dB}$	33	34	—	dBm
Third Order Intercept (f1 = 879 MHz, f2 = 884 MHz)	ITO	46	47	—	dBm
Noise Figure (f = 800-960 MHz)	NF	—	3.5	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.

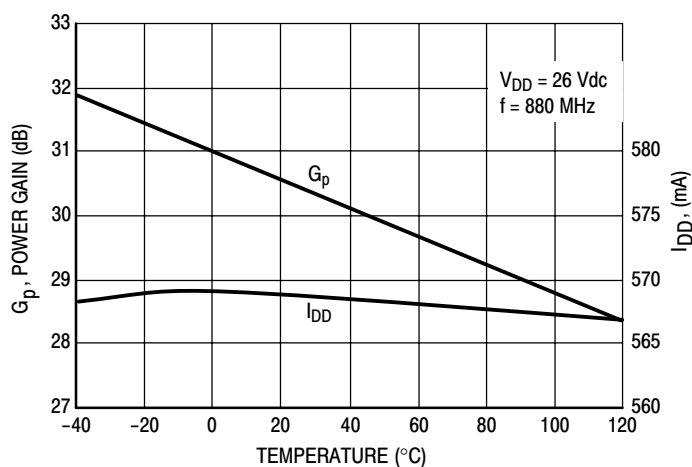
## TYPICAL CHARACTERISTICS



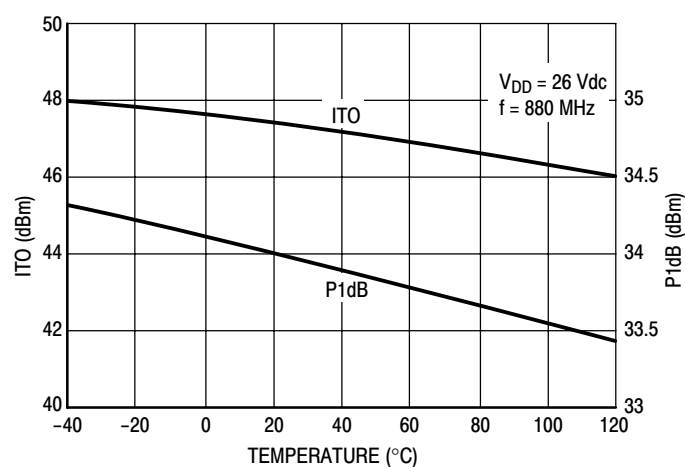
**Figure 1. Power Gain, Input Return Loss, Output Return Loss versus Frequency**



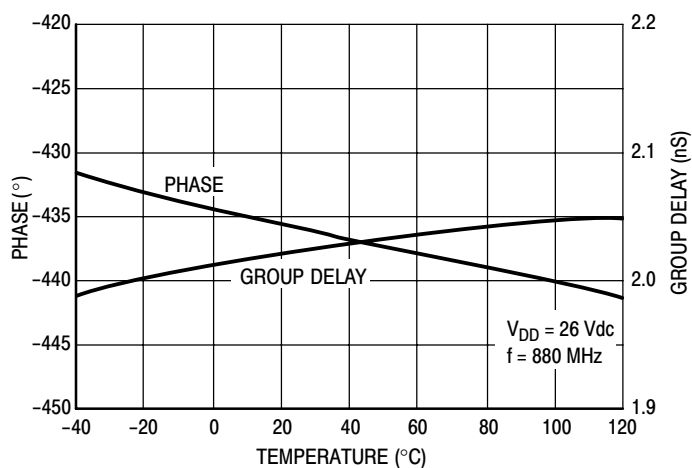
**Figure 2. P1dB, ITO versus Frequency**



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

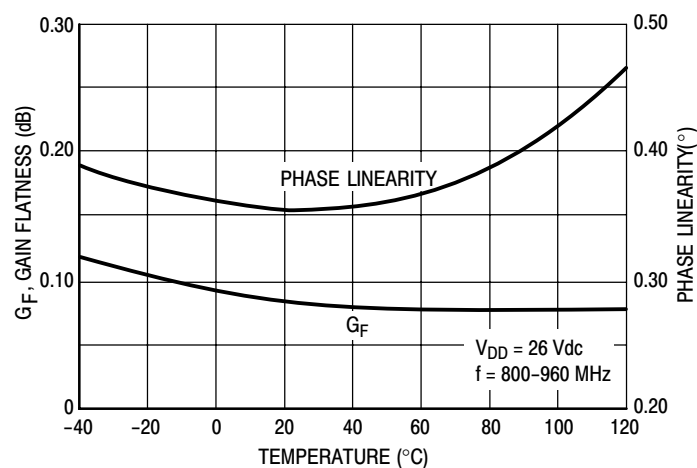


**Figure 4. ITO, P1dB versus Temperature**



**Figure 5. Phase<sup>(1)</sup>, Group Delay<sup>(1)</sup> versus Temperature**

1. In Production Test Fixture



**Figure 6. Gain Flatness, Phase Linearity versus Temperature**

## TYPICAL CHARACTERISTICS

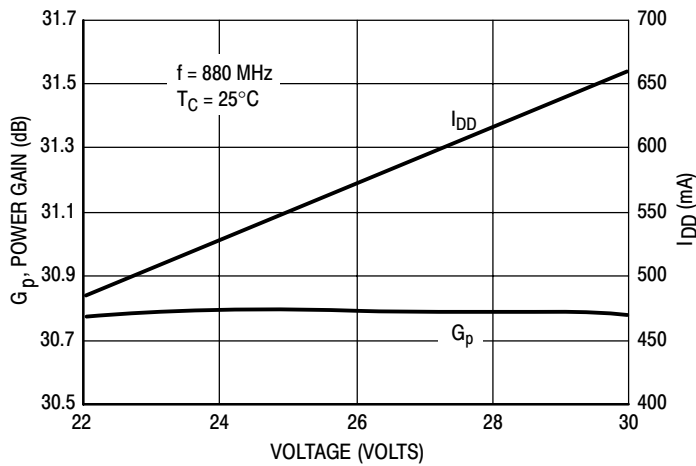


Figure 7. Power Gain,  $I_{DD}$  versus Voltage

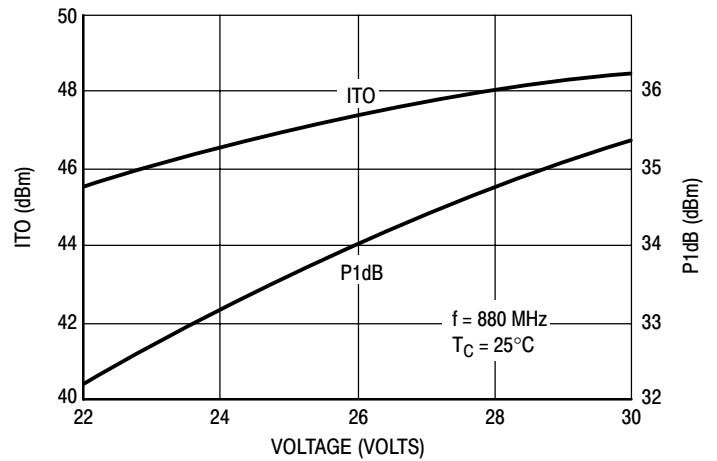


Figure 8. ITO, P1dB versus Voltage

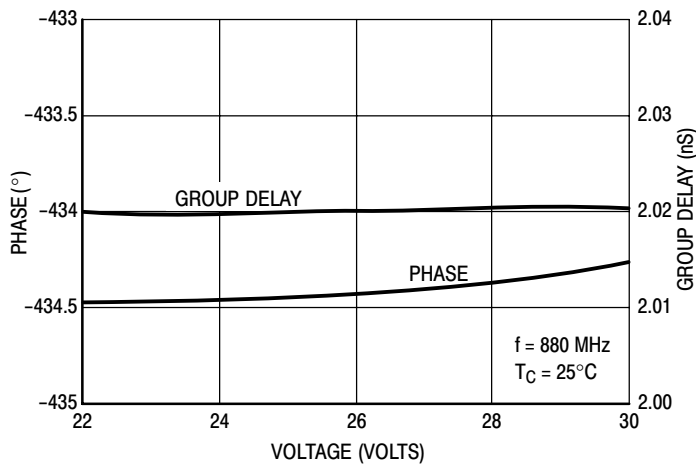


Figure 9. Phase<sup>(1)</sup>, Group Delay<sup>(1)</sup> versus Voltage

1. In Production Test Fixture

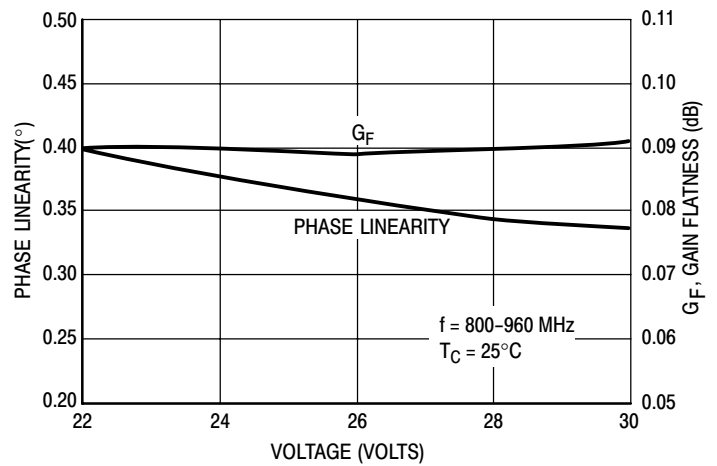
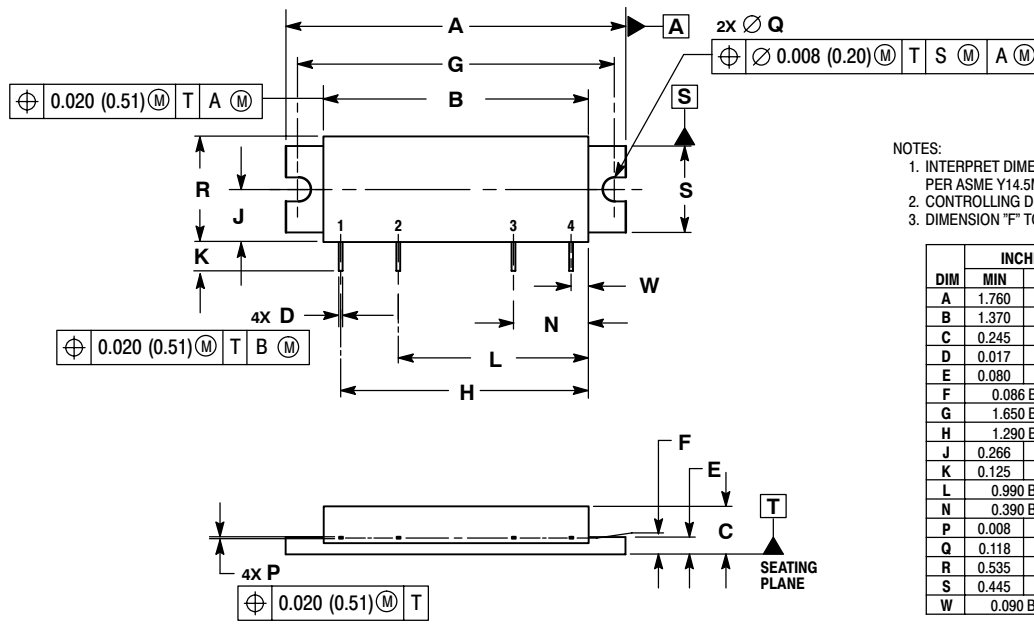


Figure 10. Phase Linearity, Gain Flatness versus Voltage

# PACKAGE DIMENSIONS



- NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION "F" TO CENTER OF LEADS.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.760	1.780	44.70	45.21
B	1.370	1.390	34.80	35.31
C	0.245	0.265	6.22	6.73
D	0.017	0.023	0.43	0.58
E	0.080	0.100	2.03	2.54
F	0.086 BSC		2.18 BSC	
G	1.650 BSC		41.91 BSC	
H	1.290 BSC		32.77 BSC	
J	0.266	0.280	6.76	7.11
K	0.125	0.165	3.18	4.19
L	0.990 BSC		25.15 BSC	
N	0.390 BSC		9.91 BSC	
P	0.008	0.013	0.20	0.33
Q	0.118	0.132	3.00	3.35
R	0.535	0.555	13.59	14.10
S	0.445	0.465	11.30	11.81
W	0.090 BSC		2.29 BSC	

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

CASE 301AP-02  
ISSUE E

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