

Replaced by MHPA21010N. There are no form, fit or function changes with this part replacement. N suffix added to part number to indicate transition to lead-free terminations.

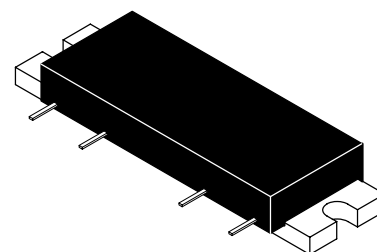
## UMTS Band RF Linear LDMOS Amplifier

Designed for Class AB amplifier applications in 50 ohm systems operating in the UMTS frequency band. A silicon FET design provides outstanding linearity and gain. In addition, the excellent group delay and phase linearity characteristics are ideal for digital modulation systems.

- Typical W-CDMA Performance for  $V_{DD} = 28$  Volts,  $V_{bias} = 8$  Volts,  $I_{DQ} = 550$  mA, Channel Bandwidth = 3.84 MHz, Adjacent Channels at  $\pm 5$  MHz, ACPR Measured in 3.84 MHz Bandwidth. Peak/Avg. = 8.5 dB @ 0.01% Probability on CCDF, 3GPP Test Model 1, 64 DTCH.
- Adjacent Channel Power: -50 dBc @ 30 dBm, 5 MHz Channel Spacing
- Power Gain: 23.7 dB Min (@  $f = 2140$  MHz)
- Excellent Phase Linearity and Group Delay Characteristics
- 0.2 dB Typical Gain Flatness
- Ideal for Feedforward Base Station Applications

**MHPA21010**

**2110-2170 MHz  
10 W, 23.7 dB  
RF HIGH POWER LDMOS AMPLIFIER**



CASE 301AP-02, STYLE 3

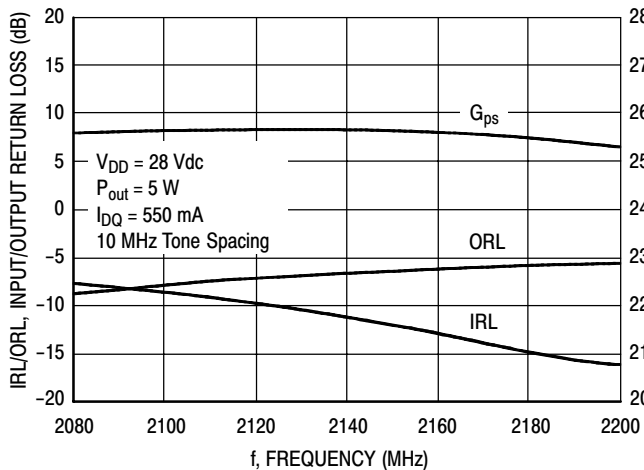
**Table 1. Maximum Ratings** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Rating	Symbol	Value	Unit
DC Supply Voltage	$V_{DD}$	30	Vdc
RF Input Power (Single Carrier CW)	$P_{in}$	+20	dBm
Storage Temperature Range	$T_{stg}$	-40 to +100	$^\circ\text{C}$
Operating Case Temperature Range	$T_C$	-20 to +100	$^\circ\text{C}$
Quiescent Bias Current	$I_{DQ}$	750	mA

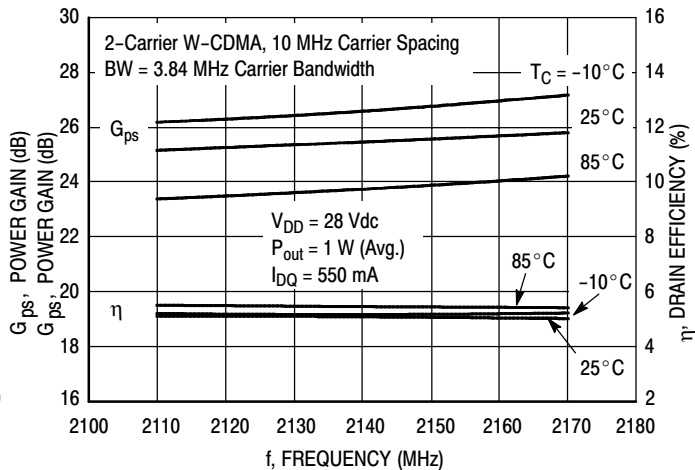
**Table 2. Electrical Characteristics** ( $V_{DD} = 28$  Vdc,  $V_{BIAS} = 8$  V Set for Supply Current of 550 mA,  $T_C = 25^\circ\text{C}$ , 50  $\Omega$  System)

Characteristic	Symbol	Min	Typ	Max	Unit
Supply Current	$I_{DD}$	—	550	—	mA
Power Gain (f = 2140 MHz)	$G_p$	23.7	25	—	dB
Gain Flatness (f = 2110 - 2170 MHz)	$G_F$	—	0.2	0.6	dB
Power Output @ 1 dB Comp. (f = 2140 MHz)	$P_{1dB}$	—	41.5	—	dBm
Input VSWR (f = 2110 - 2170 MHz)	$VSWR_{in}$	—	1.5:1	2:1	
Noise Figure (f = 2140 MHz)	NF	—	—	10	dB
Adjacent Channel Power Rejection @ 30 dBm Avg., 3.84 MHz BW, 5 MHz Channel Spacing	ACPR	—	-55	-50	dBc

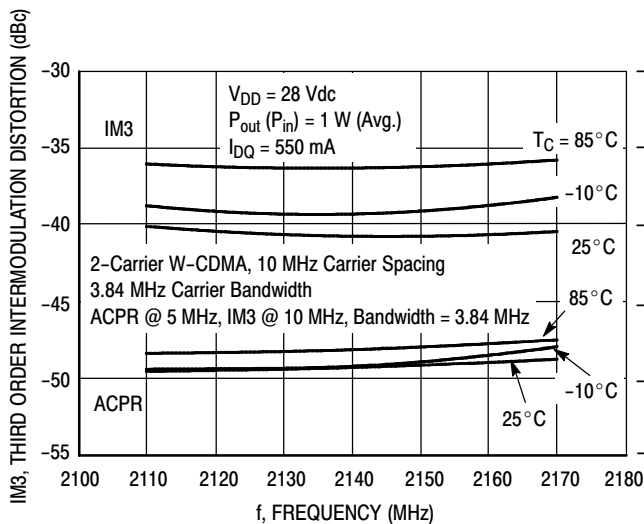
### TYPICAL CHARACTERISTICS



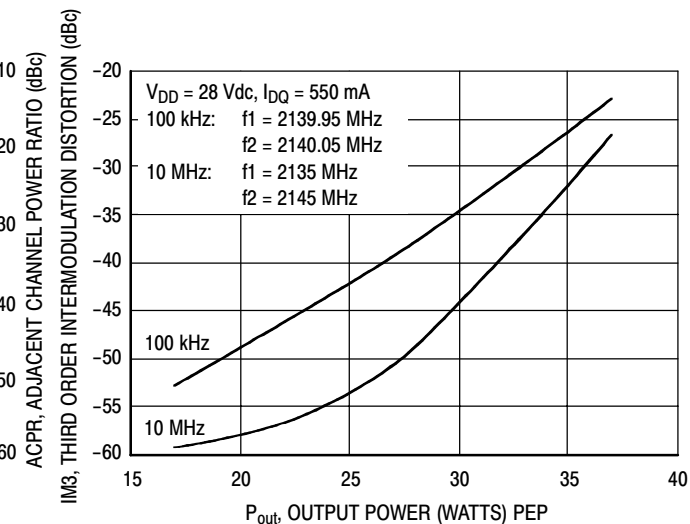
**Figure 1. Two-Tone Power Gain, Input Return Loss and Output Return Loss versus Frequency**



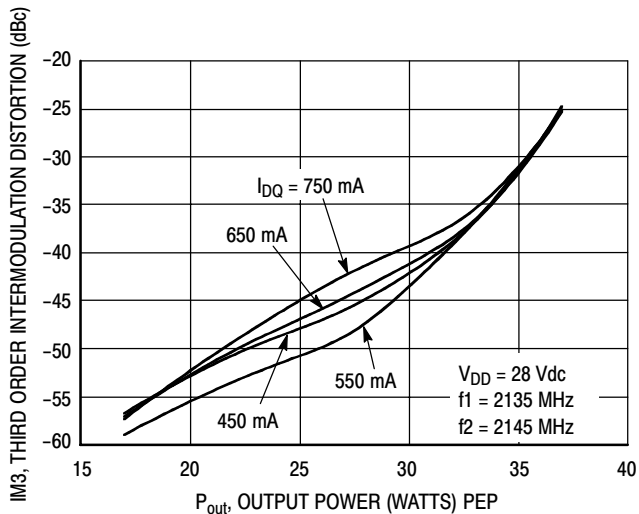
**Figure 2. 2-Carrier W-CDMA Power Gain and Efficiency versus Frequency**



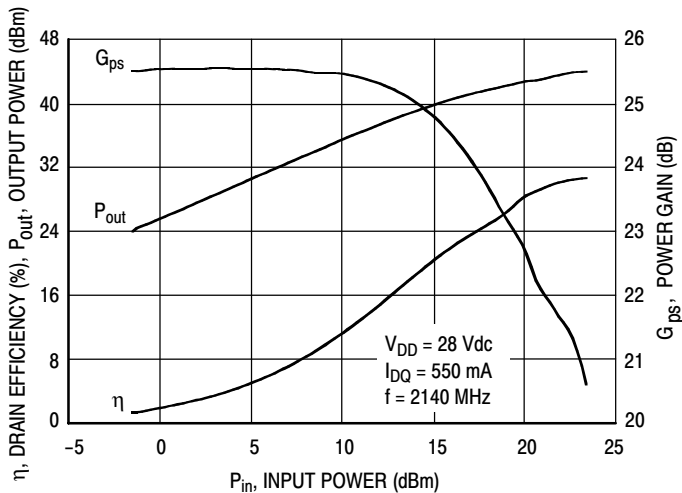
**Figure 3. 2-Carrier W-CDMA IM3 and ACPR versus Frequency**



**Figure 4. Two-Tone W-CDMA IM3 versus Output Power**



**Figure 5. Third Order Intermodulation Distortion versus Output Power**

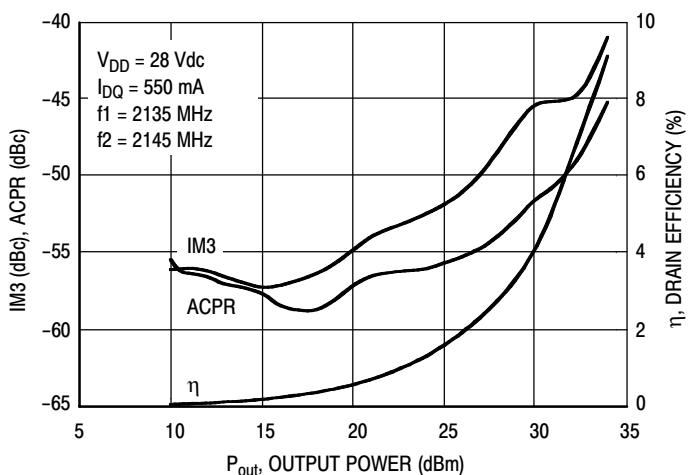


**Figure 6. CW Output Power, Efficiency and Gain versus Input Power**

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### TYPICAL CHARACTERISTICS



**Figure 7.2 - Carrier W-CDMA ACPR, IM3 and Efficiency versus Output Power**

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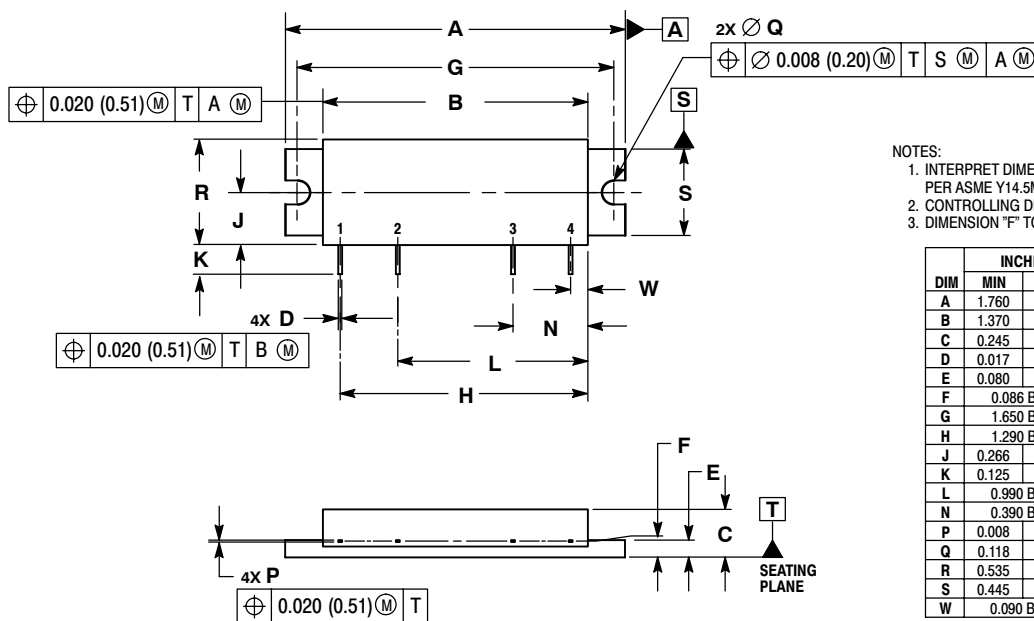
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### PACKAGE DIMENSIONS



- 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 3:
- PIN 1. RF INPUT
  - VBIAS
  - VDD
  - RF OUTPUT
- CASE: GROUND

### CASE 301AP-02 ISSUE C

Note:  $V_{DD}$  (Pin 3) should always be applied before  $V_{BIAS}$  (Pin 2).

**How to Reach Us:**

**Home Page:**  
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**E-mail:**  
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**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  
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