



# MMA707

## 1 Watt InGaP HBT Amplifier



### FEATURES

- High Output Power: +31 dBm (Typ)
- High 3<sup>rd</sup> Order IP: +50 dBm (Typ)
- High Dynamic Range: 97 dB (Typ)
- 3mm square QFN plastic package

MMA707  
-3030



3mm x 3mm square

### DESCRIPTION

The MMA707-3030 is a Power InGaP HBT device that is designed to provide moderate power levels from 100 MHz to 2.5 GHz. Best operation is obtained across narrow bandwidths, typically 10%. The device is characterized in Class A operation. The device is assembled in a low profile plastic package that is a 3mm square QFN style that has eight leads. The backside of the package is DC/RF/Thermal ground.

### ELECTRICAL CHARACTERISTICS (Ambient Temperature, T<sub>A</sub>, = +25°C)

Item	Symbol	Condition	1960 MHz			2140 MHz			Unit
			MIN	TYP	MAX	MIN	TYP	MAX	
Gain	SSG	1, 2	11	12		10.5	11.5	13.5	dB
Output Power	P-1dB	1, 2	+29.5	+31		+29.5	+31		dBm
3 <sup>rd</sup> Order IP	IP3	1, 2, 3	+47	+50		+47	+50		dBm
Input VSWR		1, 2			2:1			2:1	
Noise Figure	NF	1, 2		5.8	6.5		6.0	7.0	dB
Spur Free Dynamic Range	SFDR		95	97		95	97		dB
Thermal Resistance	θ <sub>JC</sub>	2						25	°C/W

#### NOTES:

- 1) All measurements from device evaluation boards.
- 2) V<sub>supply</sub> = 7.00 V, I<sub>cc</sub>=350 mA.
- 3) IP3: Power output per tone = +15 dBm, separation = 1.2288 MHz

### ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Minimum	Maximum	Unit
Operating Temperature Range	T <sub>op</sub>	-40	+85	°C
Storage Temperature Range	T <sub>stor</sub>	-54	+125	°C
Breakdown Voltage, Collector to Emitter	BV <sub>ceo</sub>	14.5		V
DC Collector current	I <sub>cc</sub>		576	mA
Operating Junction Temperature	T <sub>J</sub>		150	°C

CONTACT THE FACTORY WHEN USING OTHER THAN 7 VOLTS.



Revision Date: 03/01/04

**MMA 707-3030, PCS Band Data**

Figure 1.

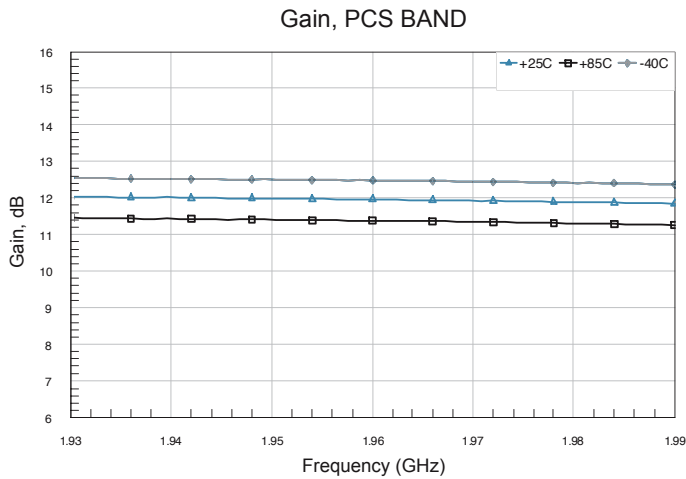


Figure 2.

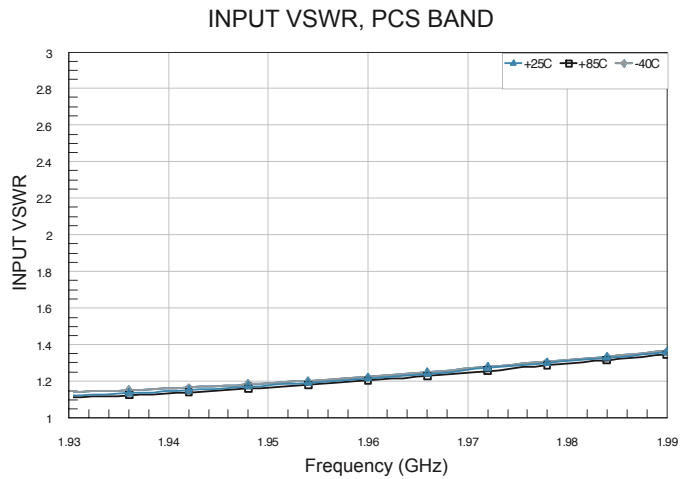


Figure 3.

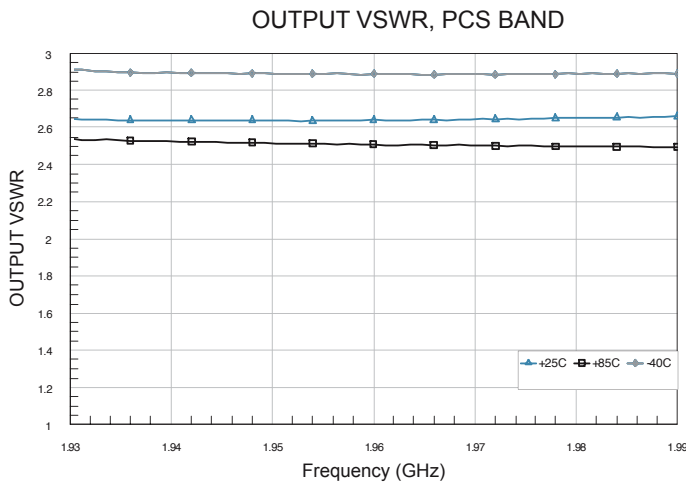
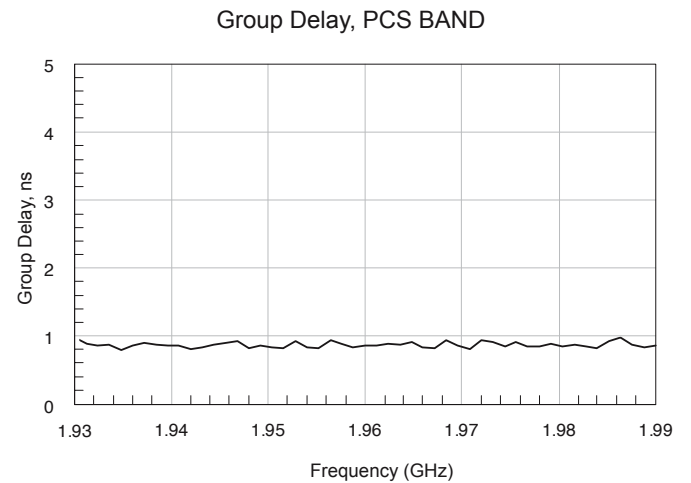


Figure 4.



# MMA707

## 1 Watt InGaP HBT Amplifier



### MMA 707-3030, PCS Band Data

Figure 5.

Pout, PCS BAND

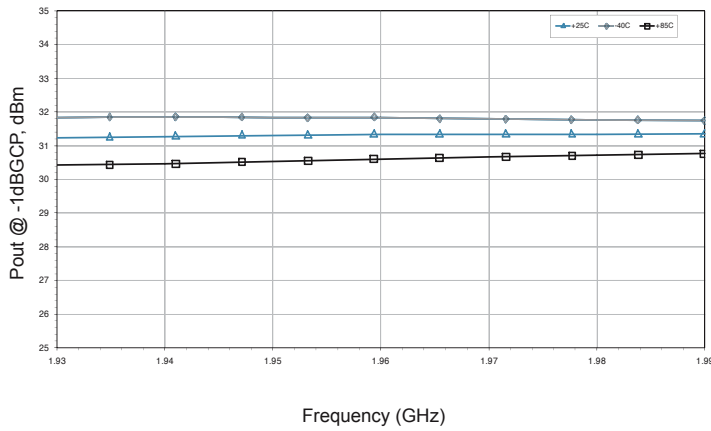


Figure 6.

IP3, PCS BAND

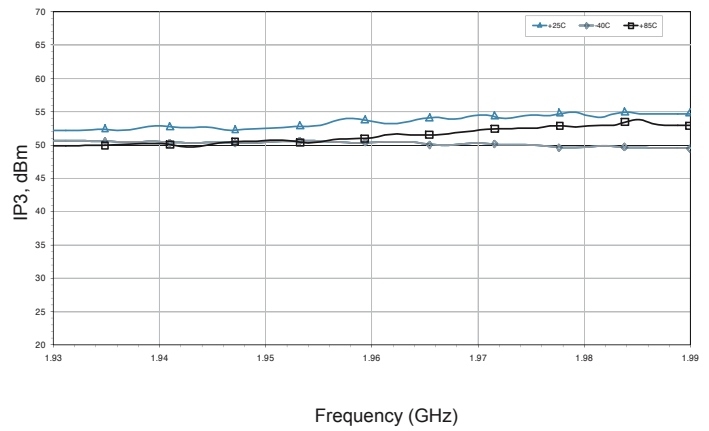


Figure 7.

Noise Figure, PCS BAND

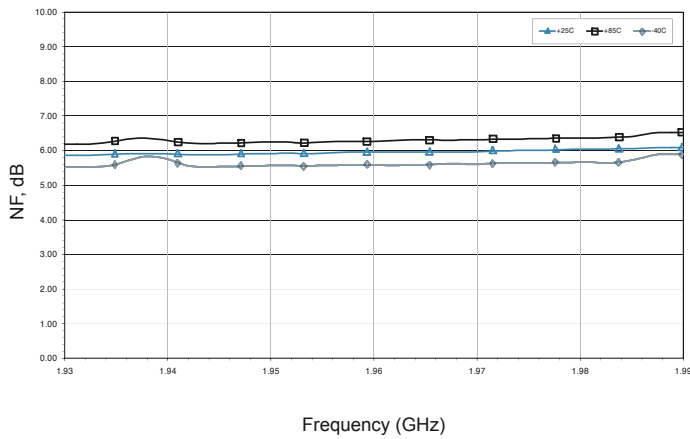
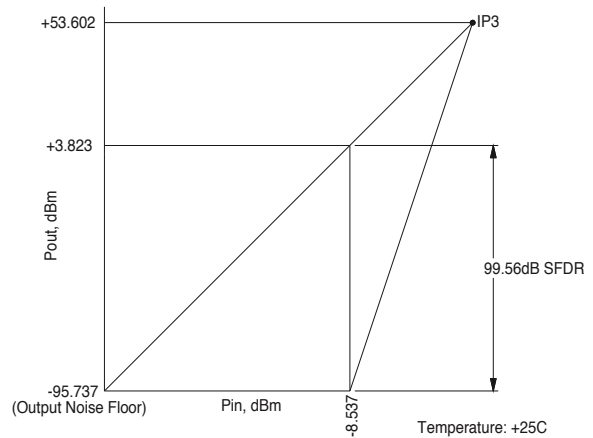


Figure 8.

SFDR, PCS BAND



MMA 707-3030, UMTS Band Data

Figure 9.

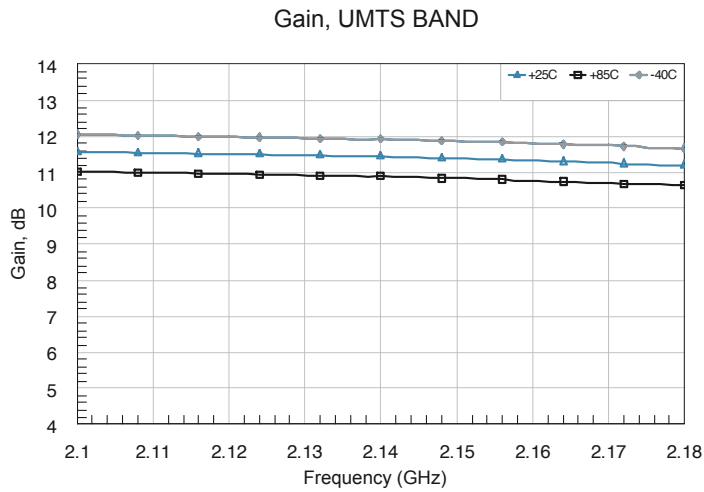


Figure 10.

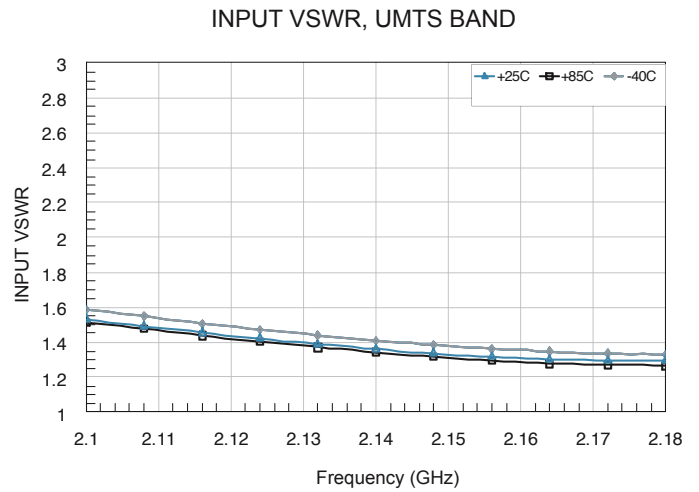


Figure 11.

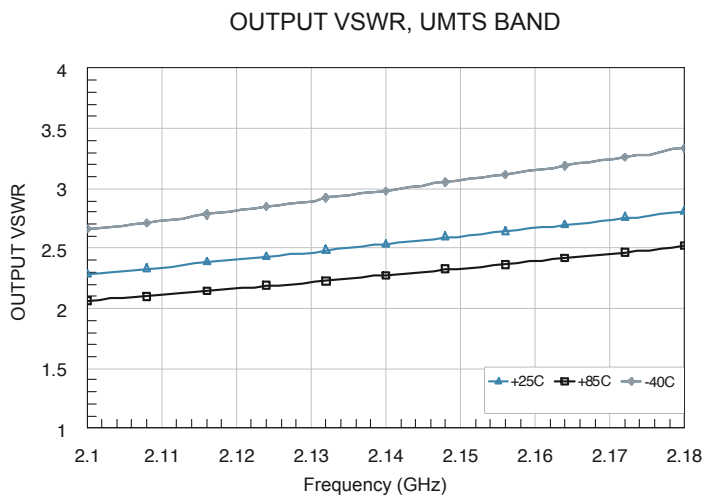
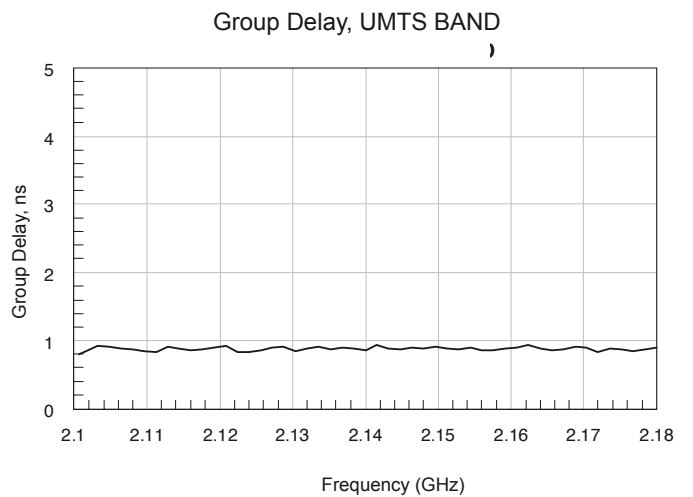


Figure 12.



# MMA707

## 1 Watt InGaP HBT Amplifier



### MMA 707-3030, UMTS Band Data

Figure 13.

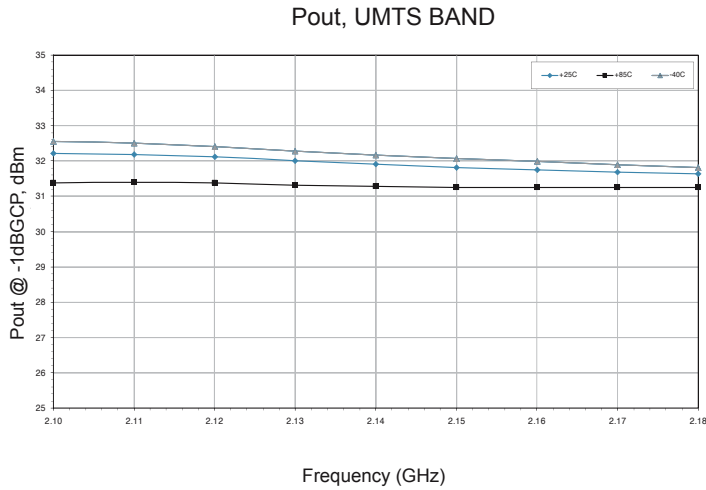


Figure 14.

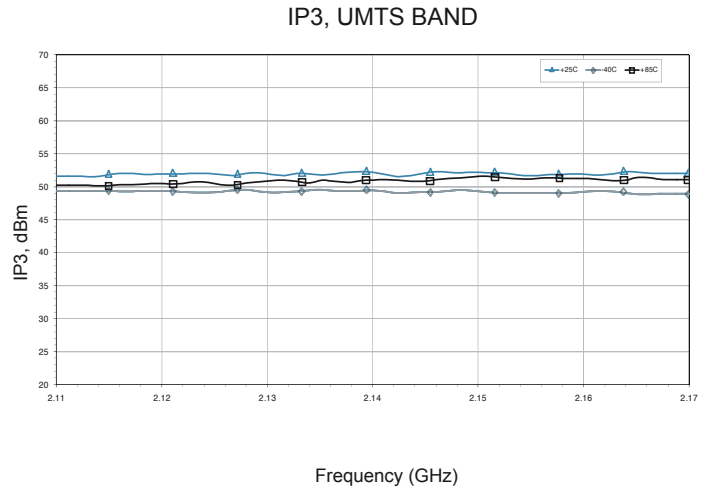


Figure 15.

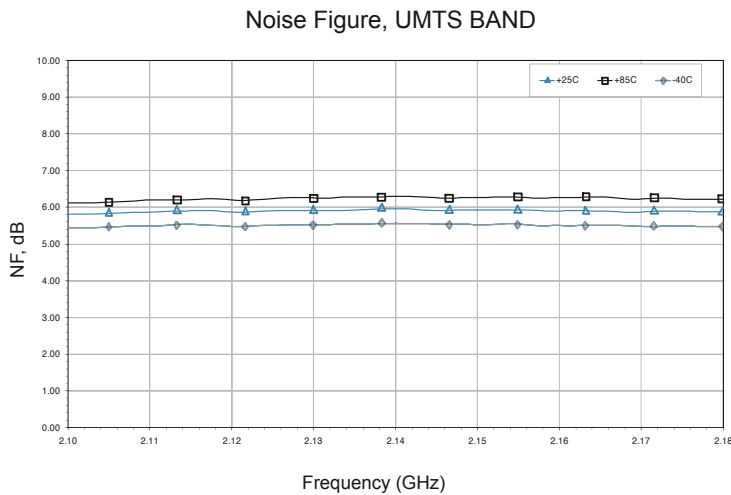
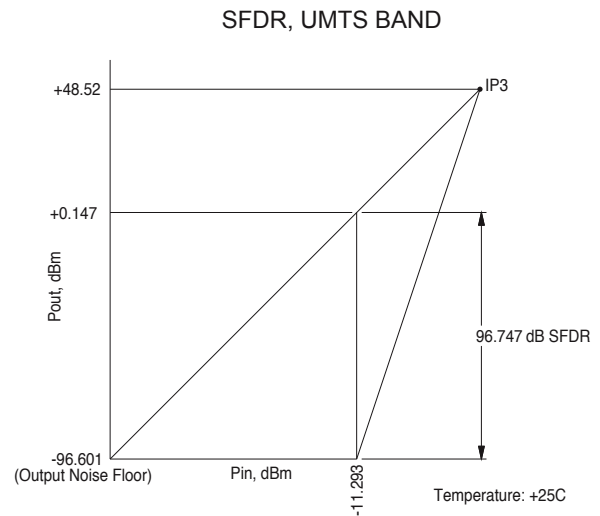
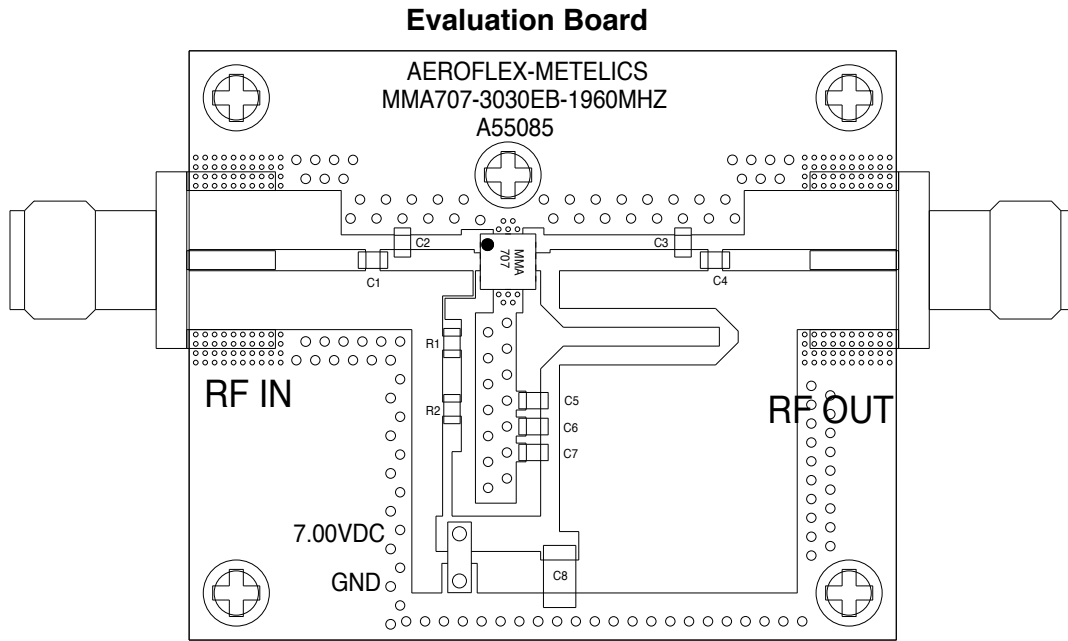


Figure 16.



**PCS, UMTS Evaluation Board**

Figure 17.



Reference	Units	1960MHz PCS	2140MHz UMTS	Manufacturer/Series
C1	pF	3.3	1.5	ATC 600S
C2	pF	2.2	1.5	ATC 600S
C3	pF	0.6	1.0	ATC 600S
C4	pF	1.8	1.8	American Technical Ceramics / ATC600S1R8AT250*T
C5	pF	33	33	American Technical Ceramics / ATC600S330KT250*T
C6	pF	220	220	MuRata / GRM39COG221J050AD
C7	uF	0.1	0.1	MuRata / GRM39Y5V104025AD
C8	uF	4.7	4.7	MuRata / GRM230Y5V475016AL
R1	Ohm	1.1k	1.1k	KOA / RM73B1J112J
R2	Ohm	390	390	KOA / RM73B1J391J

Board Material:

Rogers Corporation RO4003

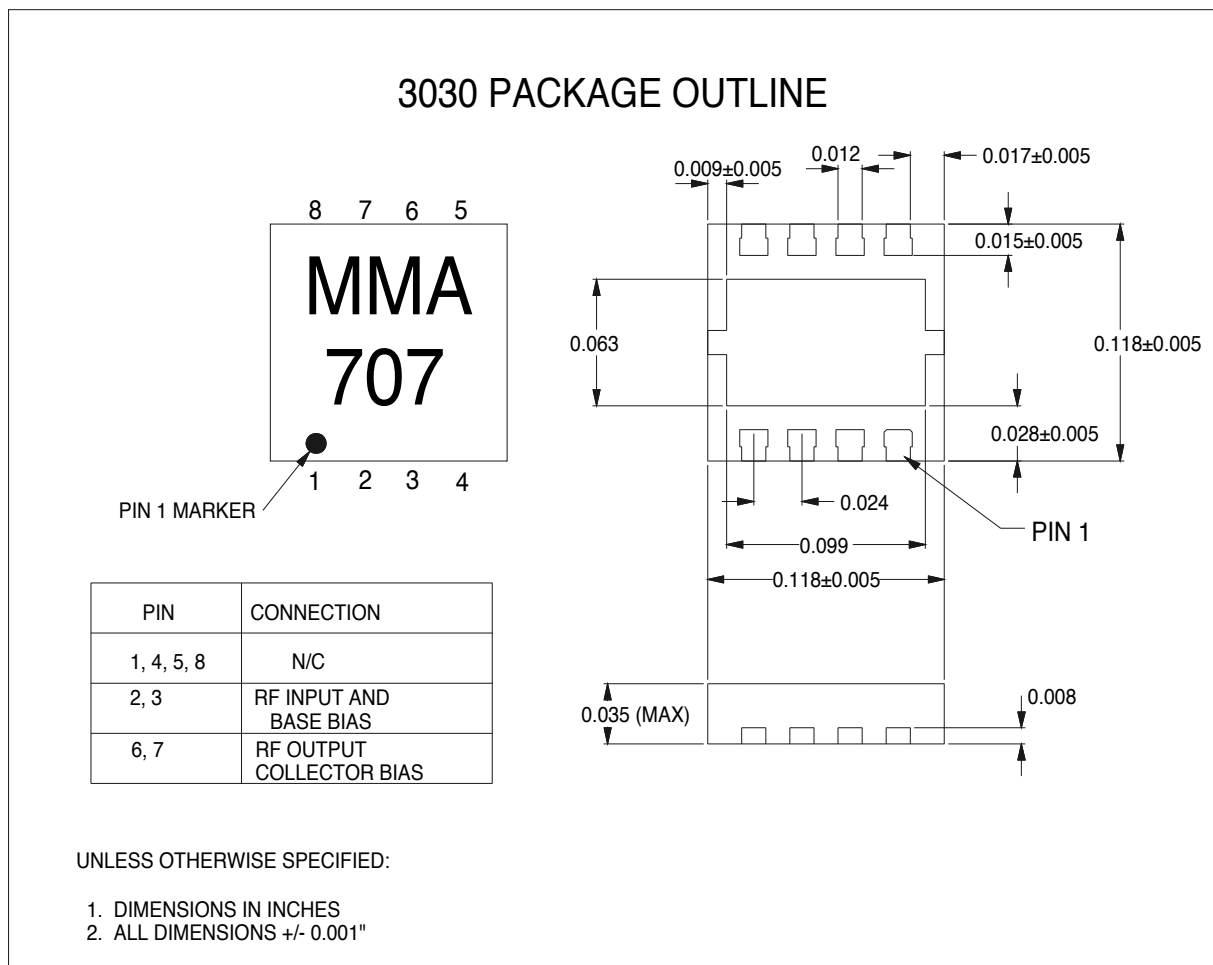
0.020" thick, 1oz Copper both sides.

# MMA707

## 1 Watt InGaP HBT Amplifier

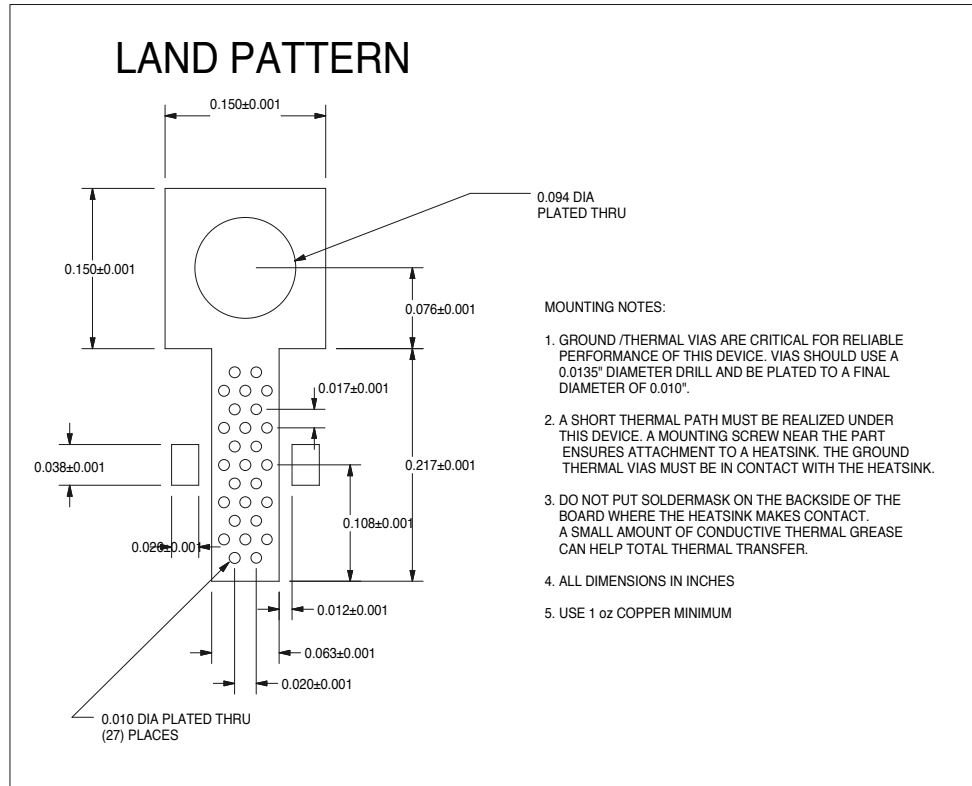
### MMA707-3030 Package Outline

Figure 18.



MMA707-3030 Land Pattern

Figure 19.



**Aeroflex / Metelics**  
Aeroflex Microelectronic Solutions  
975 Stewart Drive, Sunnyvale, CA 94085  
TEL: 408-737-8181  
Fax: 408-733-7645

[www.aeroflex-metelics.com](http://www.aeroflex-metelics.com)    [sales@eroflex-metelics.com](mailto:sales@eroflex-metelics.com)

Aeroflex / Metelics, Inc. reserves the right to make changes to any products and services herein at any time without notice. Consult Aeroflex or an authorized sales representative to verify that the information in this data sheet is current before using this product. Aeroflex does not assume any responsibility or liability arising out of the application or use of any product or service described herein, except as expressly agreed to in writing by Aeroflex; nor does the purchase, lease, or use of a product or service from Aeroflex convey a license under any patent rights, copyrights, trademark rights, or any other of the intellectual rights of Aeroflex or of third parties. Copyright 2003 Aeroflex / Metelics. All rights reserved.



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.