

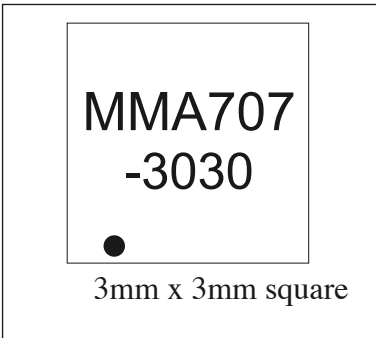


# MMA707

## 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



**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.

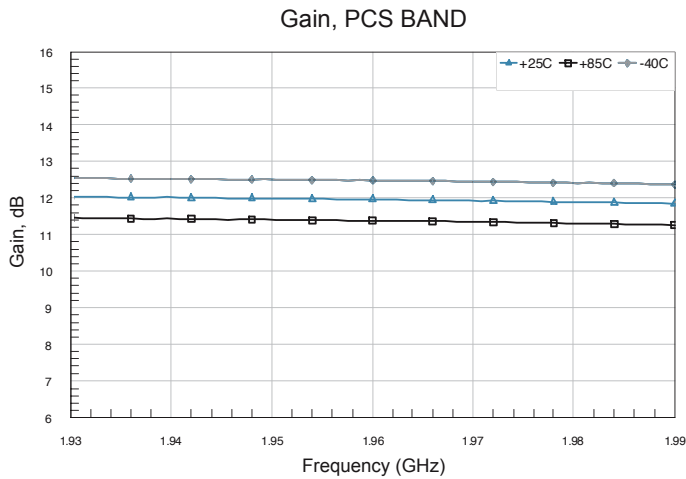


Figure 2.

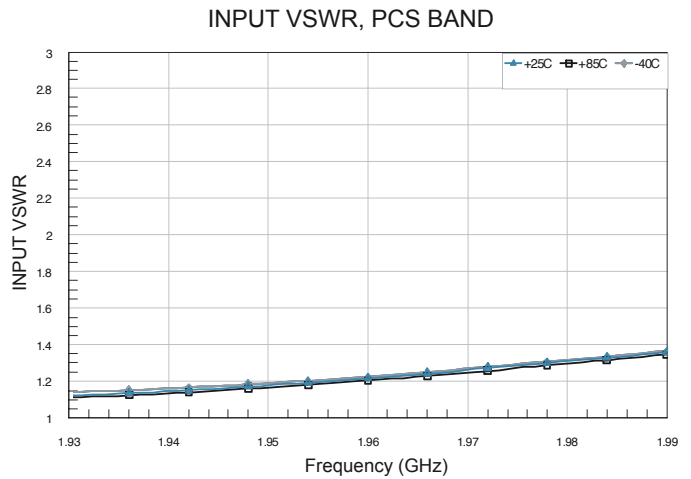


Figure 3.

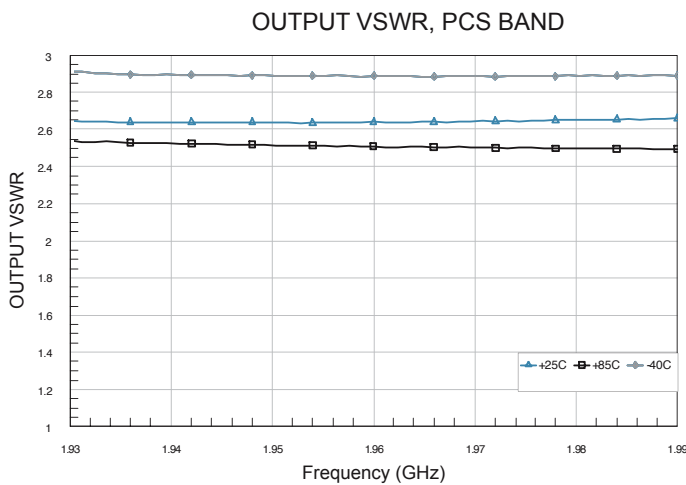
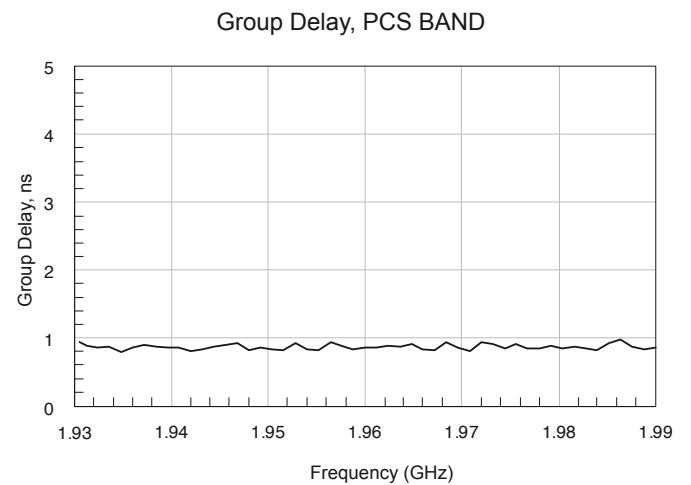


Figure 4.



# MMA707

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### MMA 707-3030, PCS Band Data

Figure 5.

Pout, PCS BAND

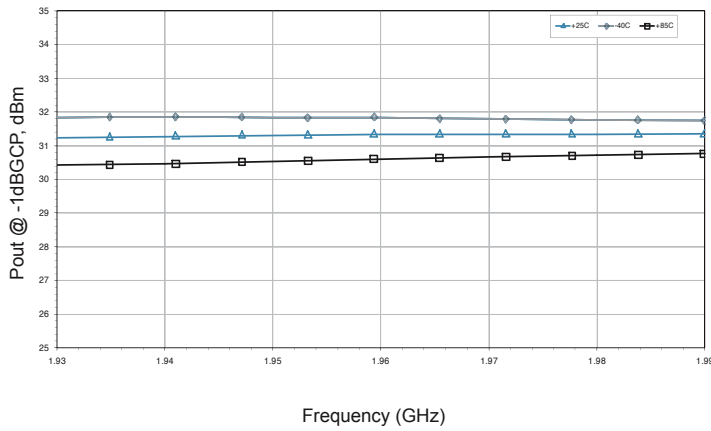


Figure 6.

IP3, PCS BAND

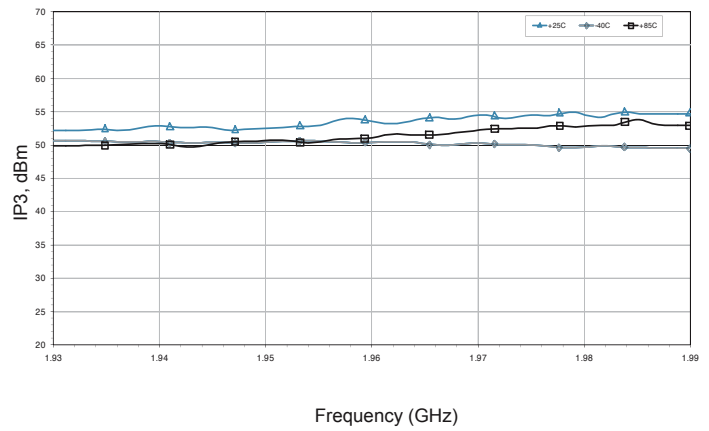


Figure 7.

Noise Figure, PCS BAND

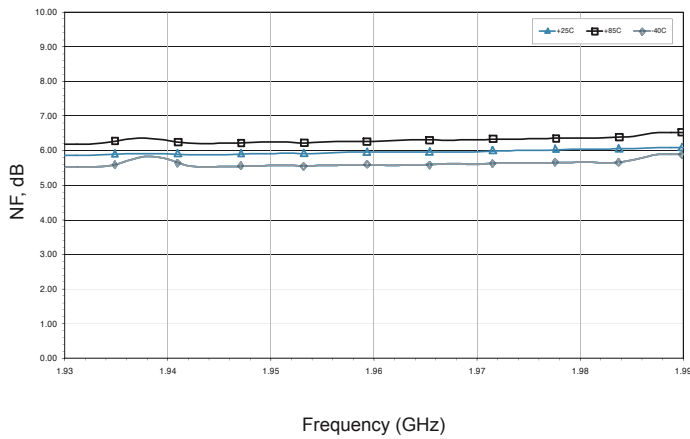
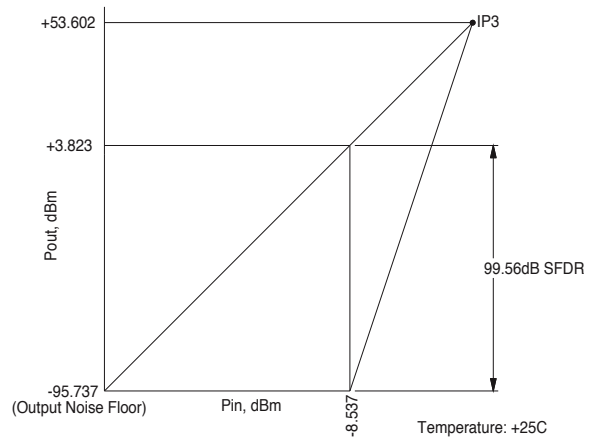


Figure 8.

SFDR, PCS BAND



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

Figure 9.

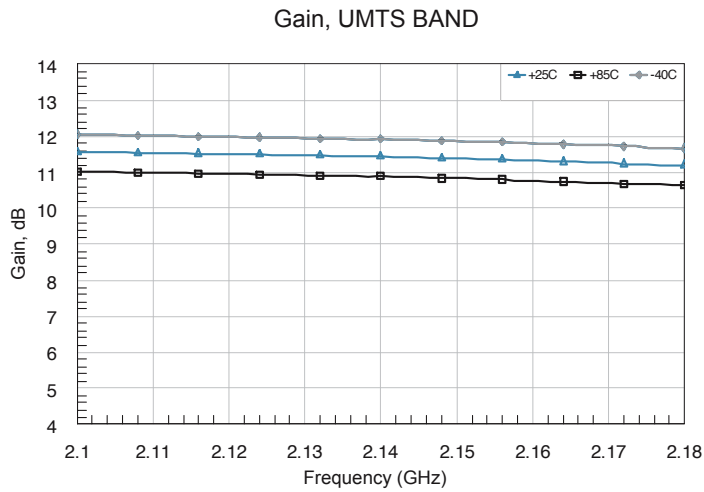


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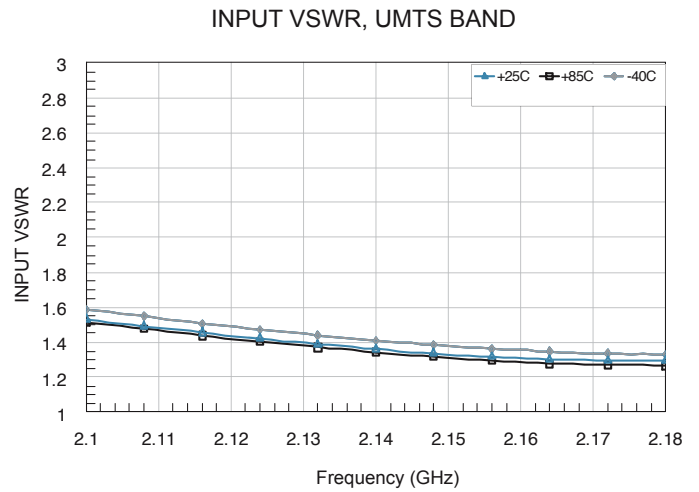


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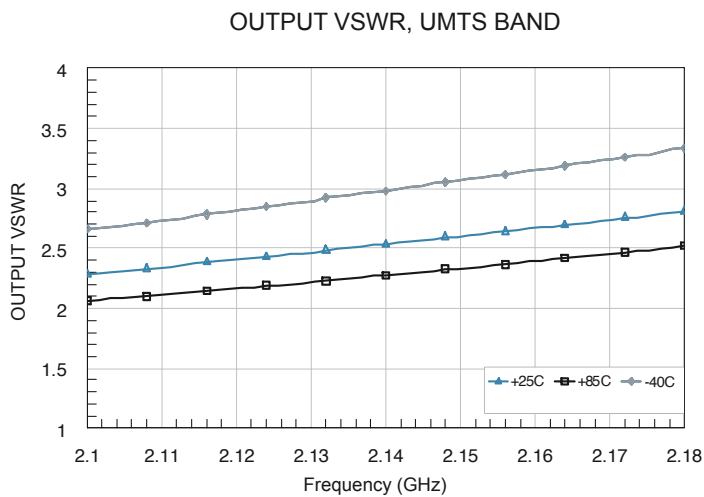
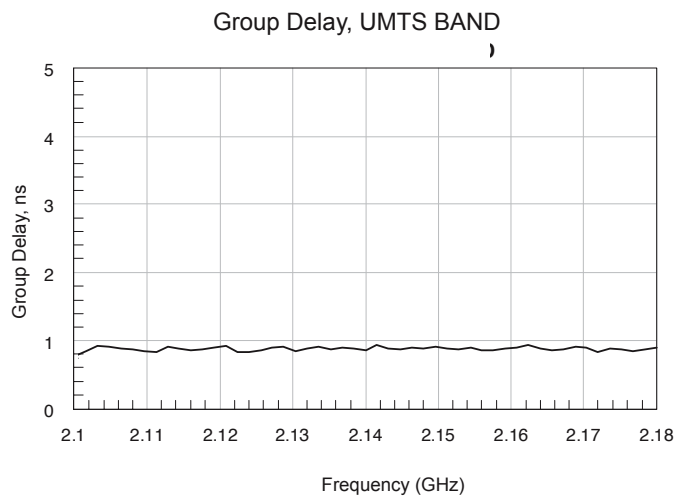


Figure 12.



# MMA707

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### MMA 707-3030, UMTS Band Data

Figure 13.

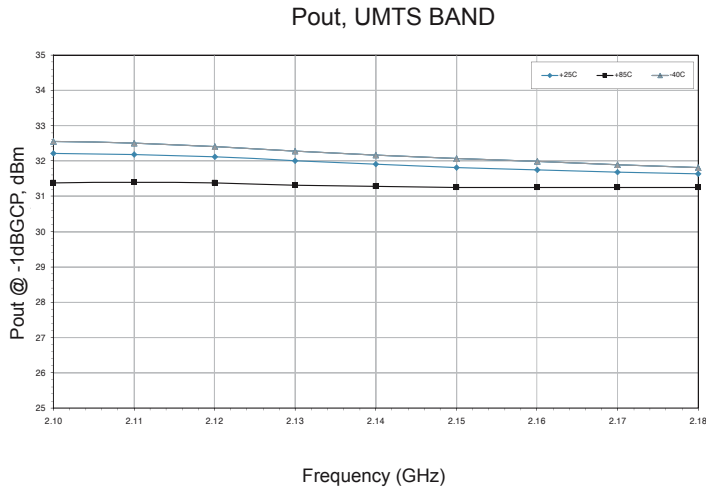


Figure 14.

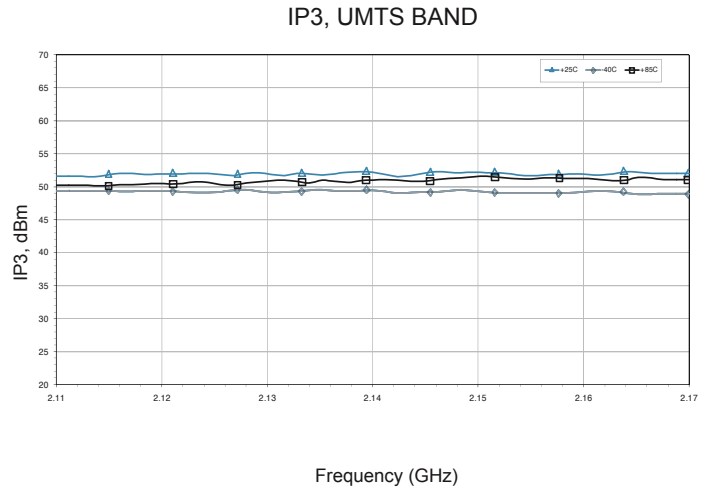


Figure 15.

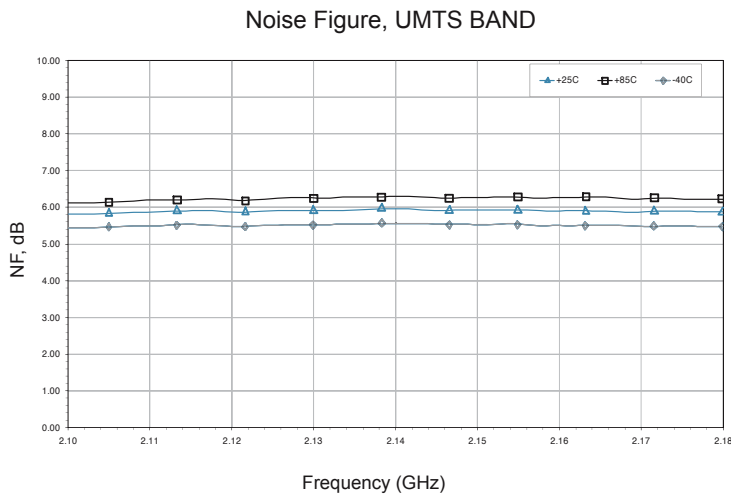
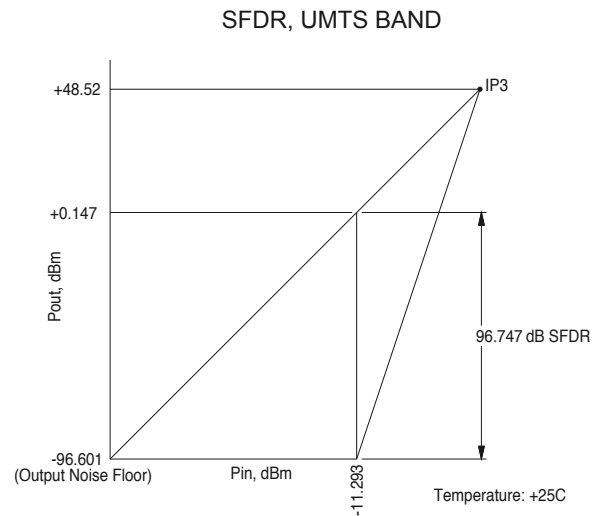
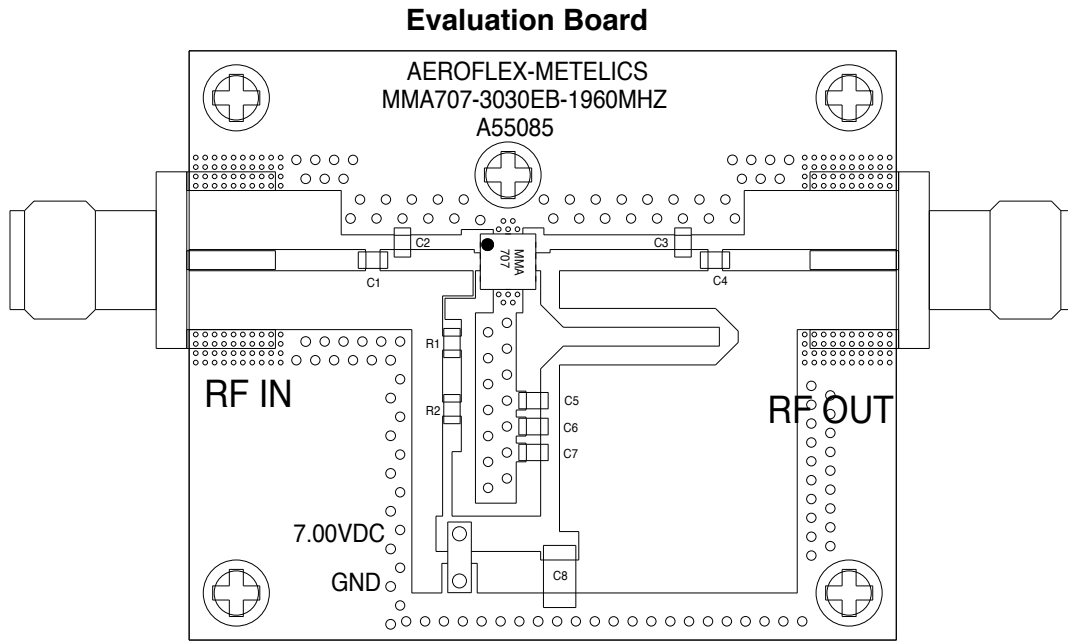


Figure 16.



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

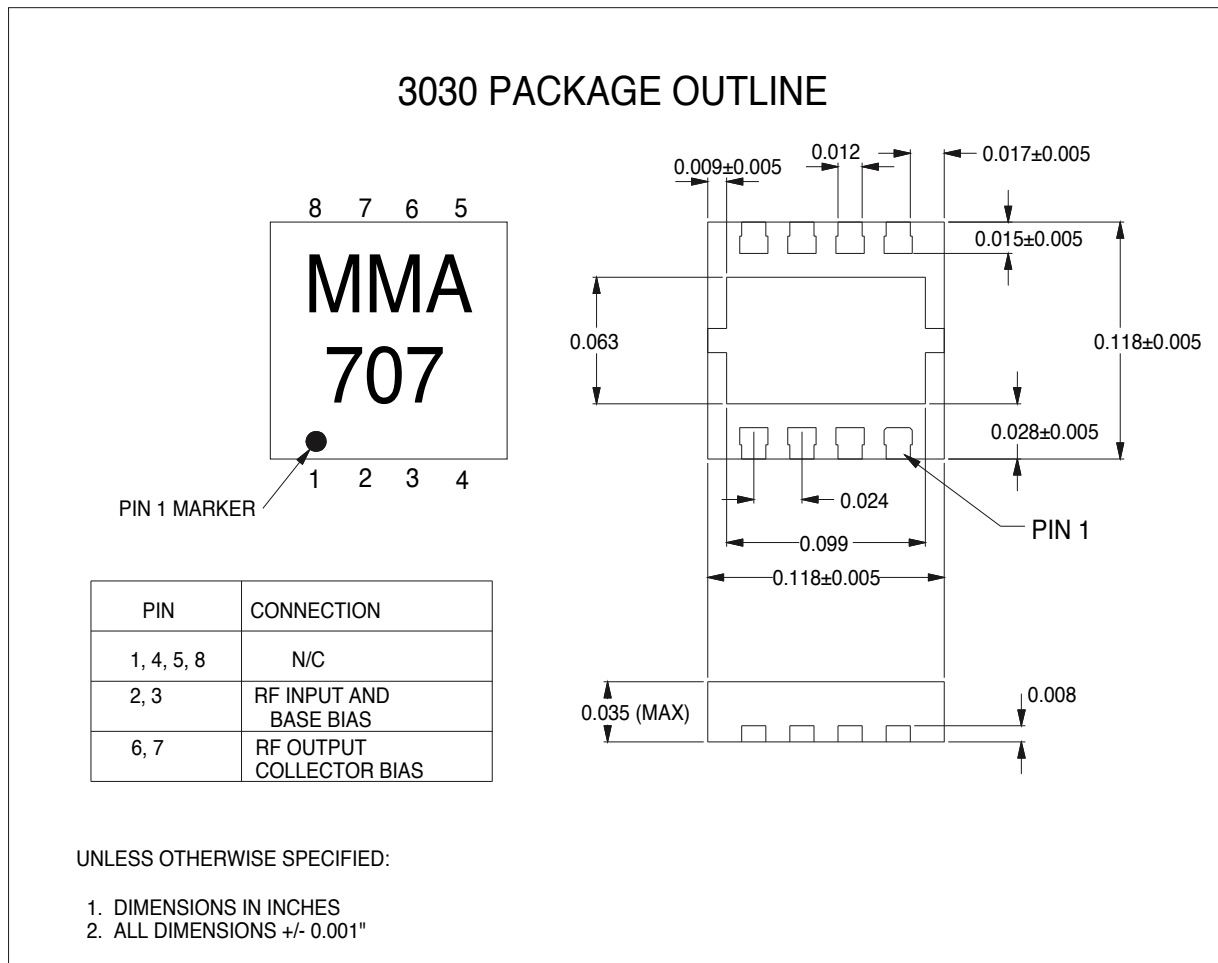
0.020" thick, 1oz Copper both sides.

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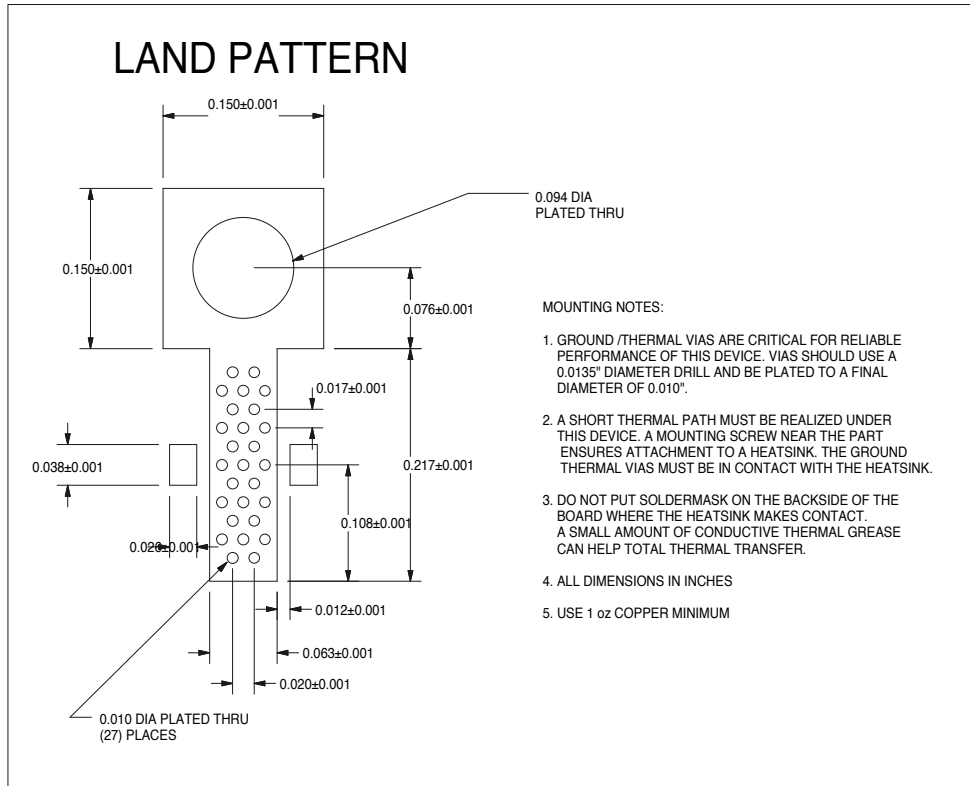
### MMA707-3030 Package Outline

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)

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