

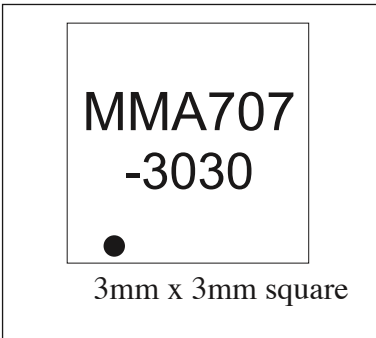


# MMA707

## 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.



### MMA 707-3030, PCS Band Data

Figure 1.

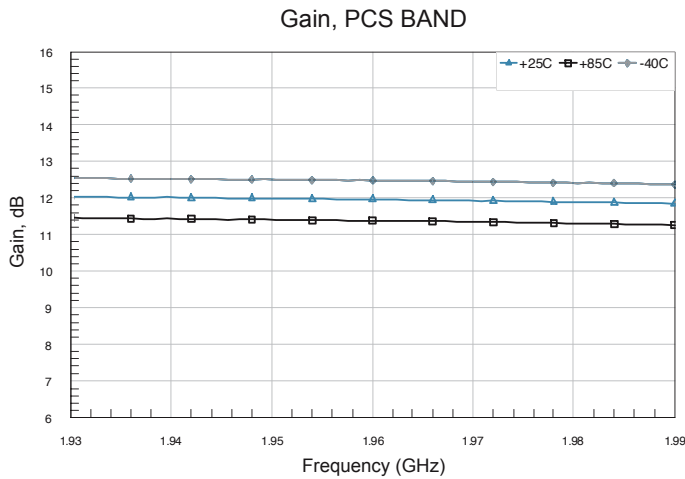


Figure 2.

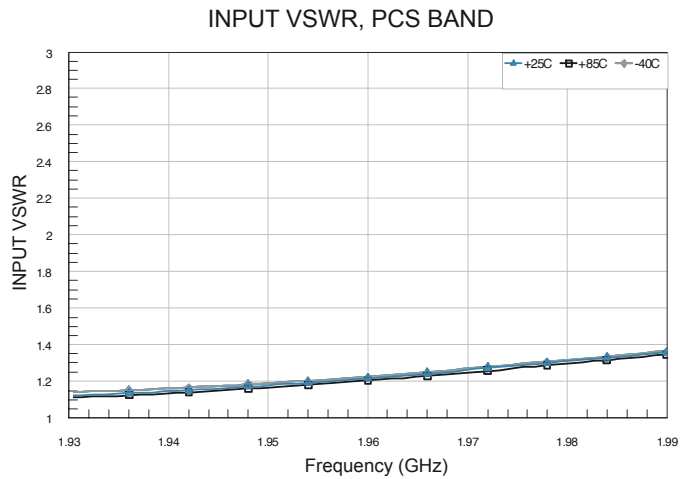


Figure 3.

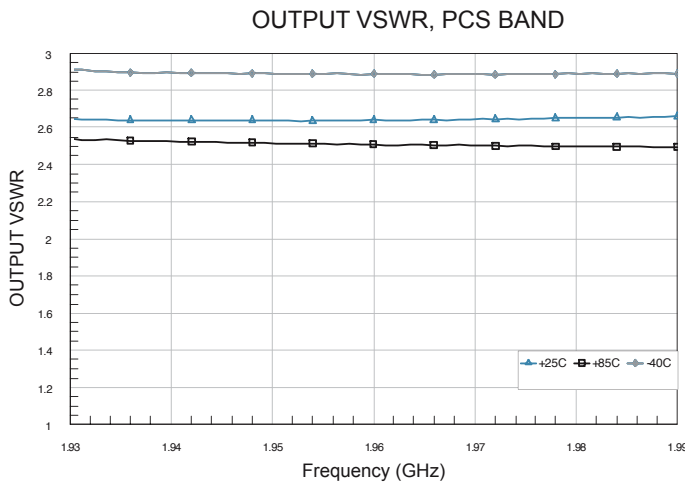
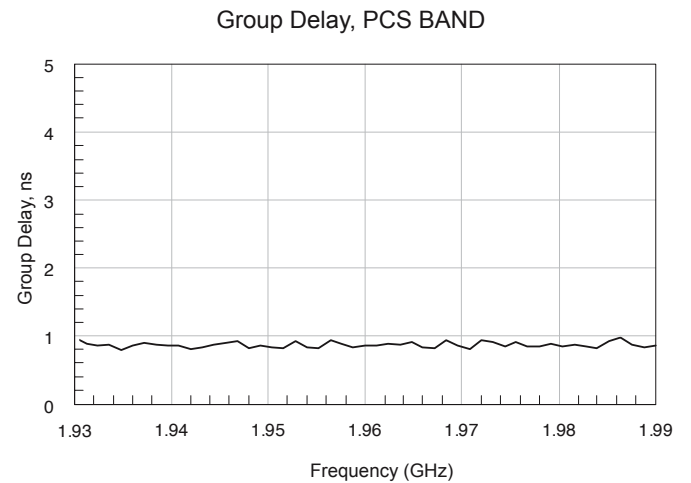


Figure 4.



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### MMA 707-3030, PCS Band Data

Figure 5.

Pout, PCS BAND

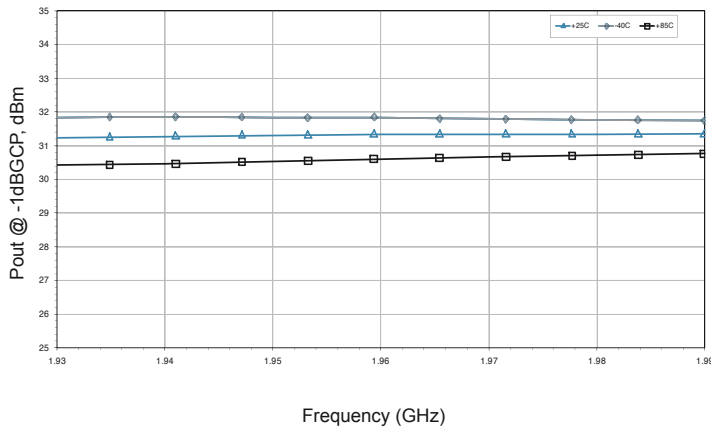


Figure 6.

IP3, PCS BAND

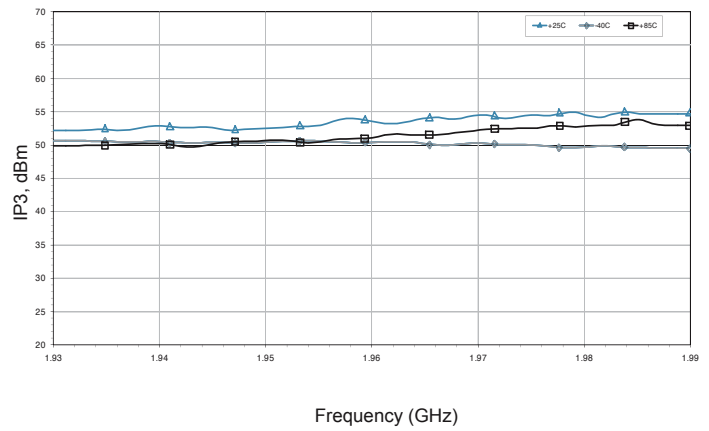


Figure 7.

Noise Figure, PCS BAND

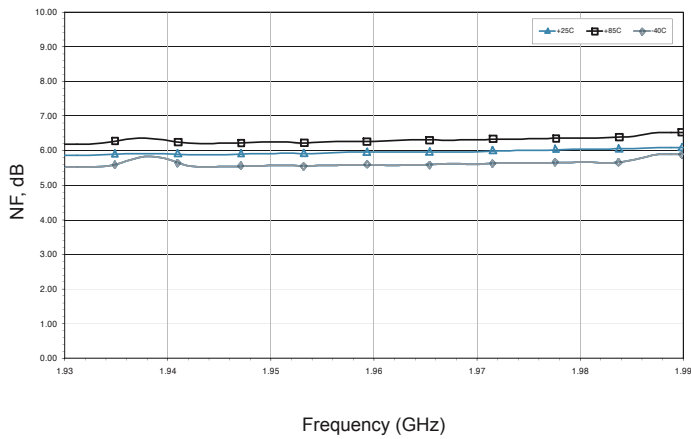
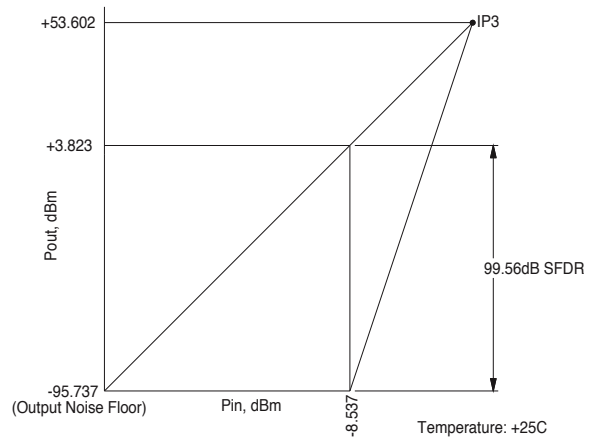


Figure 8.

SFDR, PCS BAND



### MMA 707-3030, UMTS Band Data

Figure 9.

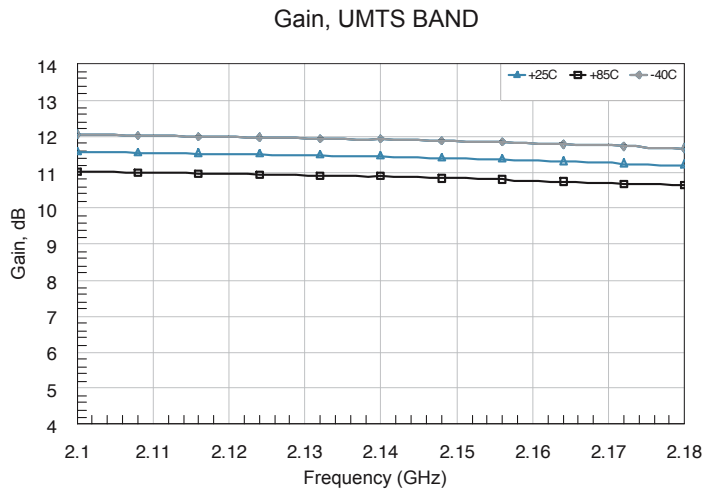


Figure 10.

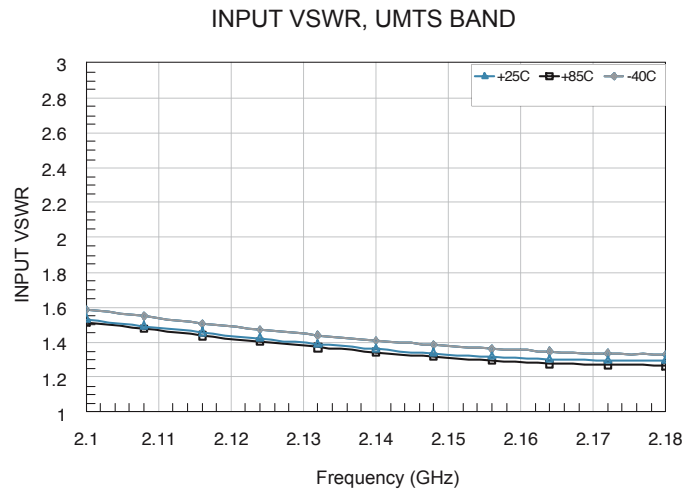


Figure 11.

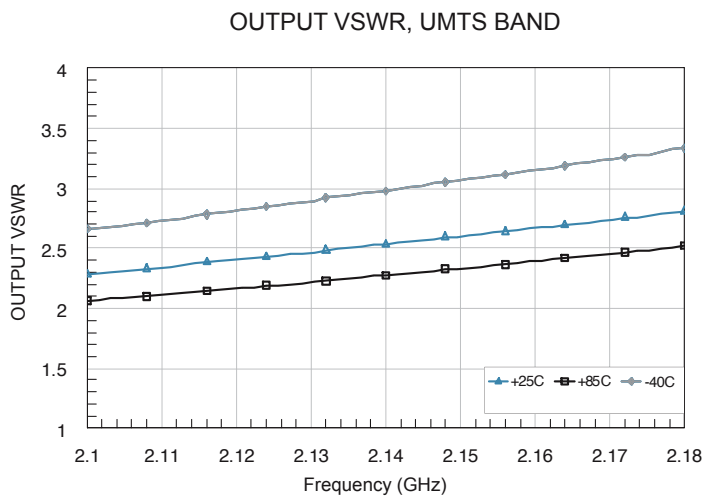
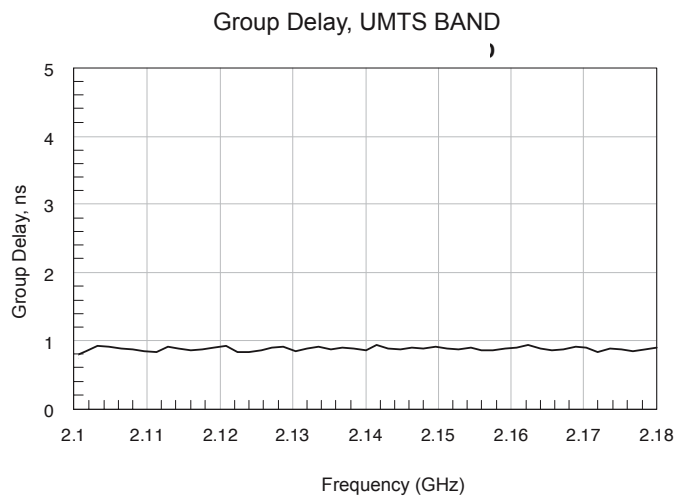


Figure 12.



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### MMA 707-3030, UMTS Band Data

Figure 13.

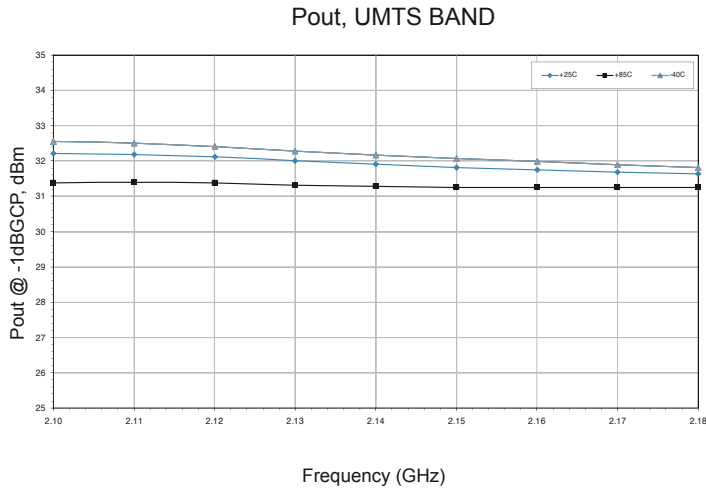


Figure 14.

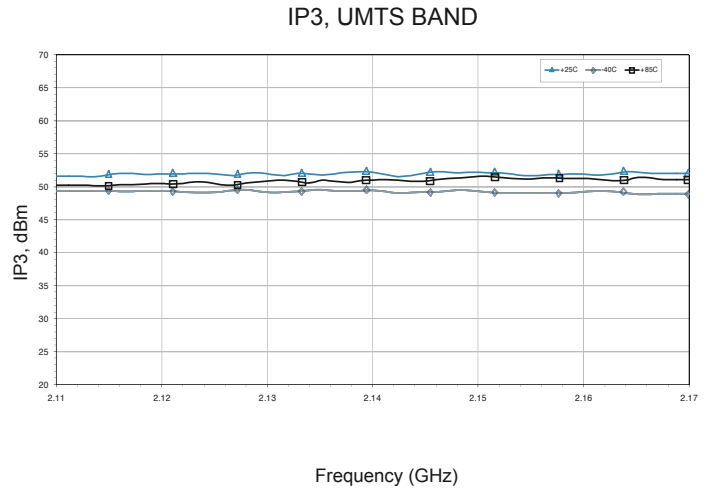


Figure 15.

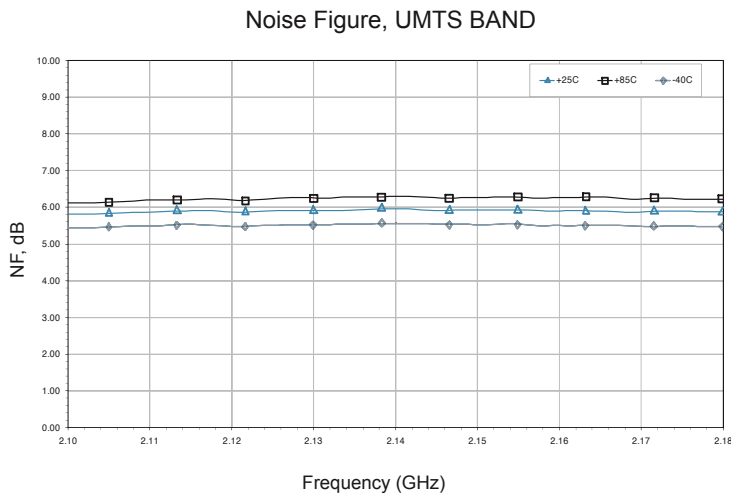
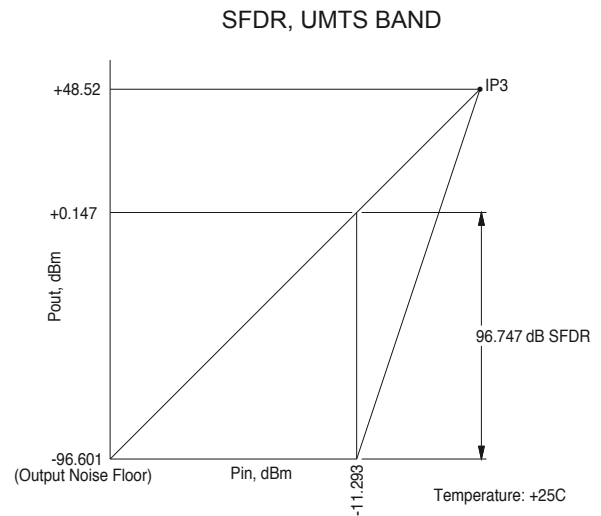
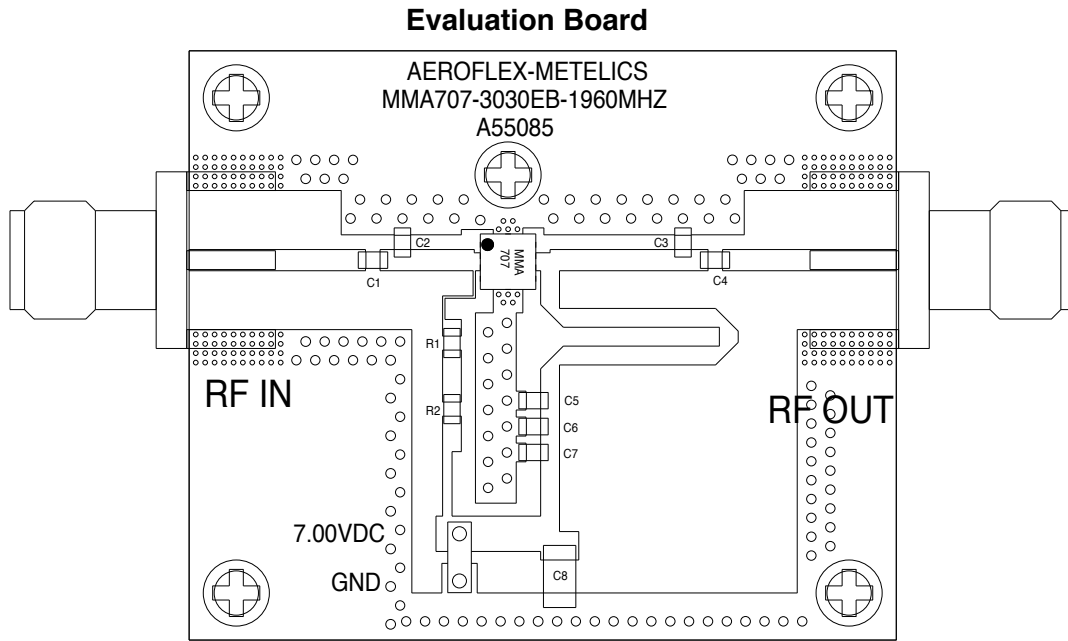


Figure 16.



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.

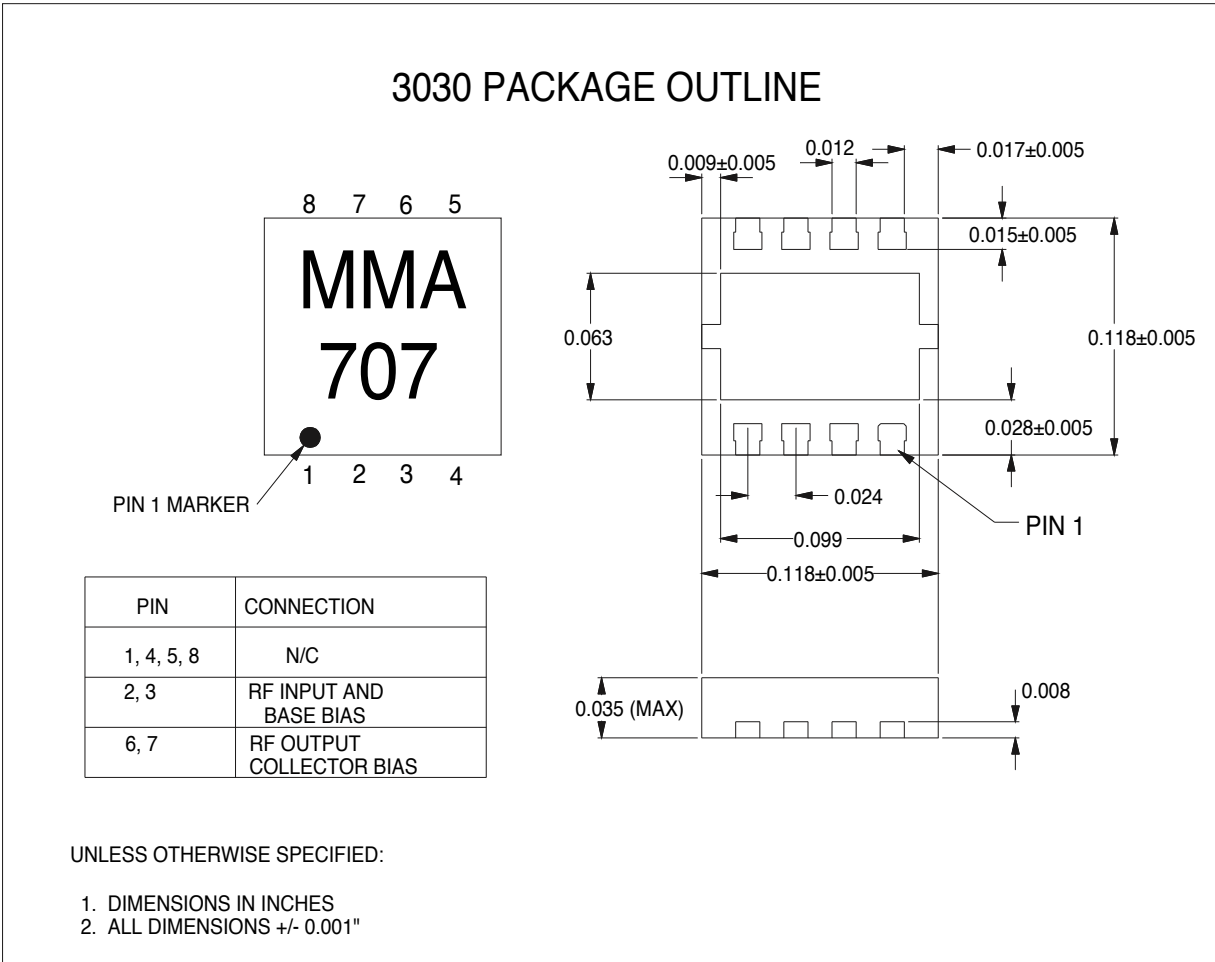
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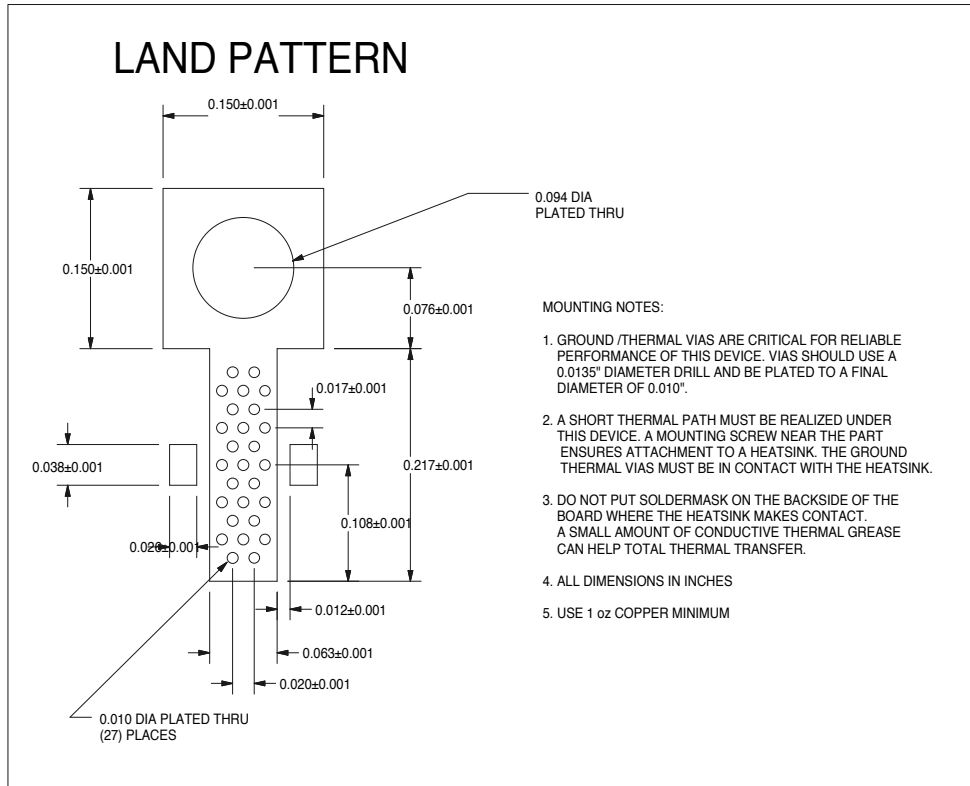
### MMA707-3030 Package Outline

Figure 18.



MMA707-3030 Land Pattern

Figure 19.



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