



MEDIUM POWER, WIDEBAND, HIGH IP3

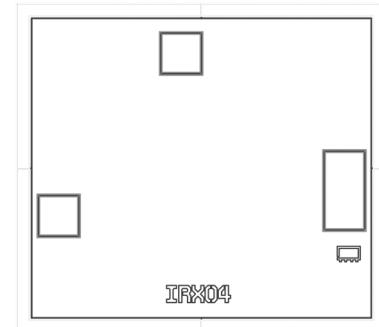
# Monolithic Amplifier

**PMA3-83MP-D+**

50Ω 0.4 to 8 GHz 0.5W

**THE BIG DEAL**

- High Pout, 0.5W to 2GHz
- High IP3, 37.9 dBm Typ.
- Low Noise Figure, 3.1dB Typ
- Patent Pending

**TYPICAL APPLICATIONS**

- WiFi
- WLAN
- LTE/WCDMA/EDGE
- L, S and C-band Radar
- C-band Satcom

SEE ORDERING INFORMATION ON THE LAST PAGE

**+RoHS Compliant***The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications***PRODUCT OVERVIEW**

The PMA3-83MP-D+ is a GaAs PHEMT based wide-band, low noise MMIC amplifier die with a unique combination of low noise, high IP3, and high output power, over a wide-band making it ideal for sensitive, high-dynamic range receiver applications. This design operates on a single supply of 8V, is well matched for 50Ω.

**KEY FEATURES**

| Feature   | Advantages  |
|---|---|
| Low noise, 3dB Typical up to 8GHz   | Enables lower system noise figure performance.  |
| High IP3 <ul style="list-style-type: none"> <li>• +39.5 dBm at 0.4 GHz</li> <li>• +37.9 dBm at 2 GHz</li> <li>• +39.0 dBm at 4 GHz</li> <li>• +38.6 dBm at 8 GHz</li> </ul> | Combination of low noise and high IP3 makes this MMIC amplifier ideal for use in low noise receiver front end (RFE) as it gives the user advantages of sensitivity and two-tone IM performance at both ends of the dynamic range. |
| VDD Operates over 5V to 8V  | Allows the designer to tailor Pout and OIP3 via DC input for easier integration.  |
| Unpackaged die  | Enables users to integrate it directly into hybrids.  |
| Wide bandwidth with flat gain <ul style="list-style-type: none"> <li>• ±1.5 dB over 4 to 7 GHz</li> <li>• ±2.0 dB over 0.4 to 8 GHz</li> </ul>                              | Enables a single amplifier to be used in many wideband applications including defense, instrumentation and more.  |

 REV. A  
 ECO-010324  
 PMA3-83MP-D+  
 MCLNY  
 211027
**Mini-Circuits®**[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

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**ELECTRICAL SPECIFICATIONS<sup>1</sup> AT 25°C, 50Ω, UNLESS NOTED**

| Parameter   | Condition (MHz) | VDD=8V & Vladj= 1.7V |      |      | Units |
|---|-----------------|----------------------|------|------|-------|
|   |                 | Min.                 | Typ. | Max. |       |
| Frequency range                                       |                 | 400                  |      | 8000 | MHz   |
| Gain  | 400             |                      | 21.7 |      | dB    |
|   | 2000            |                      | 21.0 |      |       |
|   | 4000            |                      | 18.9 |      |       |
|   | 5000            |                      | 18.6 |      |       |
|   | 8000            |                      | 17.3 |      |       |
| Input Return loss                                     | 400             |                      | 13.1 |      | dB    |
|   | 2000            |                      | 14.8 |      |       |
|   | 4000            |                      | 8.3  |      |       |
|   | 5000            |                      | 8.4  |      |       |
|   | 8000            |                      | 10.4 |      |       |
| Output Return loss                                    | 400             |                      | 9.8  |      | dB    |
|   | 2000            |                      | 17.3 |      |       |
|   | 4000            |                      | 13.8 |      |       |
|   | 5000            |                      | 11.8 |      |       |
|   | 8000            |                      | 23.6 |      |       |
| P1dB  | 400             |                      | 27.2 |      | dBm   |
|   | 2000            |                      | 27.8 |      |       |
|   | 4000            |                      | 25.9 |      |       |
|   | 5000            |                      | 25.1 |      |       |
|   | 8000            |                      | 25.3 |      |       |
| OIP3<br>(Pout= 18dBm/Tone)                            | 400             |                      | 39.5 |      | dBm   |
|   | 2000            |                      | 37.9 |      |       |
|   | 4000            |                      | 39.0 |      |       |
|   | 5000            |                      | 35.2 |      |       |
|   | 8000            |                      | 38.6 |      |       |
| Noise Figure  | 400             |                      | 3.5  |      | dB    |
|   | 2000            |                      | 3.2  |      |       |
|   | 4000            |                      | 3.2  |      |       |
|   | 6000            |                      | 3.0  |      |       |
|   | 8000            |                      | 3.3  |      |       |
| Device operating voltage (VDD)                        |                 | 7.6                  | 8.0  | 8.4  | V     |
| Device operating current (IDD)                        |                 |                      | 144  | 175  | mA    |
| Device current variation vs. temperature <sup>2</sup> |                 |                      | -50  |      | µA/°C |
| Device current variation vs voltage <sup>3</sup>      |                 |                      | 0.02 |      | mA/mV |
| Thermal resistance, junction-to-ground Lead           |                 |                      | 46.3 |      | °C/W  |

1. Die is soldered in 3x3mm 12L MCLP and measured on Mini-Circuits Characterization Test Board TB-PMA3-83MP+. See Characterization Test &amp; Application Circuit (Fig. 1)

2. Device Current Variation vs. Temperature = (Current in mA at 85°C - Current in mA at -45°C)/130°C

3. Device Current Variation vs. Voltage = (Current in mA at 8.4V – Current in mA at 7.6V) / ((8.4V-7.6V)\*1000 mA/mV)

**ABSOLUTE MAXIMUM RATINGS<sup>4</sup>**

| Parameter                           | Ratings  |
|-------------------------------------|--|
| Operating temperature (ground lead) | -40°C to 85°C                                    |
| Storage temperature                 | -65°C to 150°C                                   |
| Junction Temperature                | 150°C  |
| Total power dissipation             | 1.4W   |
| Input power (CW)                    | +22 dBm (5 minutes max.)<br>+17 dBm (continuous) |
| DC voltage at Vladj                 | 1.8V   |
| DC voltage at VDD                   | 9V   |

4. Permanent damage may occur if any of those limits are exceeded.

Electrical maximum ratings are not intended for continuous normal operation.

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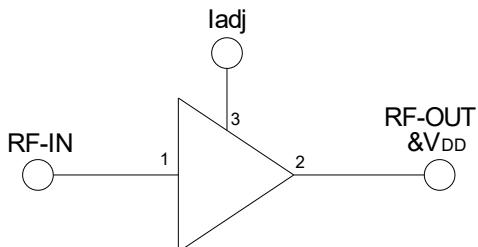
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# Monolithic Amplifier

**PMA3-83MP-D+**

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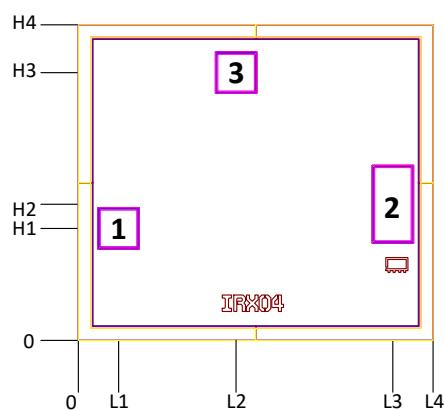
## SIMPLIFIED SCHEMATIC



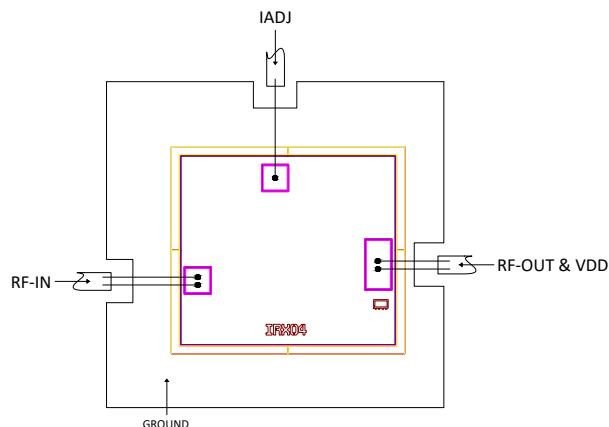
## PAD DESCRIPTION

| Function     | Pad Number | Description (Fig 1)                                     |
|--------------|------------|---|
| RF-IN        | 1          | Connects to RF input via C1                             |
| RF-OUT & VDD | 2          | Connects to RF output via C2 and connects to VDD via L1 |
| Iadj         | 3          | Current Adjustment Pad. Connects to Vladj               |

## BONDING PAD POSITION



## ASSEMBLY DIAGRAM



## DIE DIMENSIONS IN $\mu\text{M}$

| L1        | L2  | L3        | L4  | H1             | H2  | H3         | H4  |
|-----------|-----|-----------|-----|----------------|-----|------------|-----|
| 83.0      | 324 | 646       | 728 | 230            | 280 | 550        | 648 |
| Thickness |     | Die Size  |     | Pad Size 1 & 3 |     | Pad Size 2 |     |
| 100       |     | 728 x 648 |     | 75 x 75        |     | 75 x 150   |     |

## Recommended Wire Length and Loop Height, Typical

| Wire         | Wire Length (mils) | Wire Loop Height (mils) |
|--------------|--------------------|-------------------------|
| RF-IN        | 45                 | 7                       |
| RF-OUT & VDD | 28                 | 7                       |
| IADJ         | Not Critical       |                         |



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PMA3-83MP-D+

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## CHARACTERIZATION TEST & APPLICATION CIRCUIT

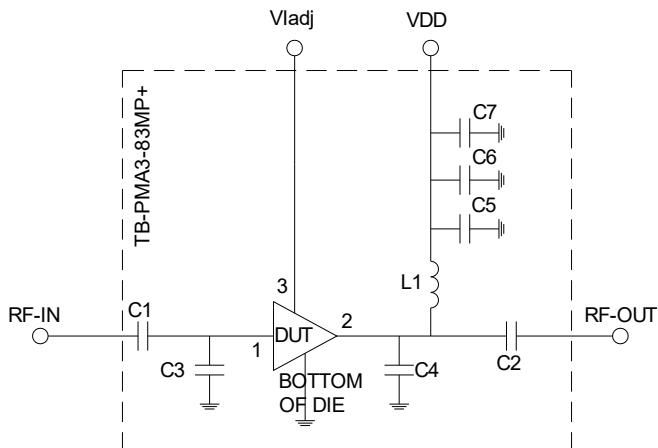


Fig 1. Application and Characterization Circuit

Note: This block diagram is used for characterization. (DUT is packaged in 3x3 12L MCLP and soldered on Mini-Circuits Characterization test board TB-PMA3-83MP+)

Gain, Return loss, Output power at 1dB compression (P1dB), output IP3 (OIP3) and noise figure measured using Agilent's N5242A PNA-X microwave network analyzer.

### Conditions:

1. VDD=8V, Vladj = 1.7V
2. Gain and Return loss: Pin= -25dBm
3. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 18 dBm/tone at output.

| Component | Size | Value | Part Number        | Manufacturer |
|-----------|------|-------|--------------------|--------------|
| C1        | 0402 | 100pF | GRM1555C1H101JA01D | Murata       |
| C2        | 0402 | 100pF | GRM1555C1H101JA01D | Murata       |
| C3        | 0402 | 0.3pF | GQM1555C2DR30WB01D | Murata       |
| C4        | 0402 | 0.3pF | GQM1555C2DR30WB01D | Murata       |
| C5        | 0402 | 10pF  | GRM1555C1H100JA01D | Murata       |
| C6        | 0402 | 1uF   | GRM155C71A105KE11D | Murata       |
| C7        | 0603 | 10uF  | GRM188D71A106MA73J | Murata       |
| L1        | 0603 | 33nH  | 0603CS-33NXJEU     | Coilcraft    |

## ASSEMBLY PROCEDURE

1. Storage  
Dice should be stored in a dry nitrogen purged desiccators or equivalent.
2. ESD  
MMIC PHEMT amplifier dice are susceptible to electrostatic and mechanical damage. Die are supplied in antistatic protected material, which should be open in clean room conditions at an appropriately grounded anti-static workstation.
3. Die Handling and Attachment  
Devices need careful handling using correctly designed collets, it is recommended to handle the chip along the edges with a custom design collet. The die mounting surface must be clean and flat. Using conductive silver filled epoxy, recommended epoxies are Ablestik 84-1 LMISR4 or equivalents. Apply sufficient epoxy to meet required epoxy bond line thickness, epoxy fillet height and epoxy coverage around total periphery. Parts shall be cured in a nitrogen filled atmosphere per manufacturer's cure condition. It is recommended to use anti-static die pick up tools only.
4. Wire Bonding  
Bond pad openings in the surface passivation above the bond pads are provided to allow wire bonding to the dice gold bond pads. Thermo-sonic bonding is used with minimized ultrasonic content. Bond force, time, ultrasonic power and temperature are all critical parameters. Suggested wire is pure gold, 1mil diameter. Bonds must be made from the bond pads on the die to the packaged or substrate. All bond wires should be kept as short as reasonable to minimize performance degradation due to undesirable series inductance.



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# Monolithic Amplifier **PMA3-83MP-D+**

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ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD.

|  |   |  |
|--|---|--|
| Performance Data                       | Data Table<br>Swept Graphs<br>S-Parameter (S2P Files) Data Set with and without port extension(.zip file)   |  |
| Case Style                             | Die   |  |
| Die Ordering and packaging information | Quantity, Package<br><br>Small, Gel - Pak: 5,10,50,100<br>KGD* Medium, Partial wafer: KGD*<2254<br>Full Wafer<br><br>†Available upon request contact sales representative<br>Refer to AN-60-067 | Model No.<br><br>PMA3-83MP-DG+<br>PMA3-83MP-DP+<br>PMA3-83MP-DF+ |
| Environmental Ratings                  | ENV80   |  |

\*Known Good Die ("KGD") means that the dice in question have been subjected to Mini-Circuits DC test performance criteria and measurement instructions and that the parametric data of such dice fall within a predefined range. While DC testing is not definitive, it does provide a higher degree of confidence that die are capable of meeting typical RF electrical parameters specified by Mini-Circuits.

## ESD RATING

Human Body Model (HBM): Class 1A (250V) in accordance with ANSI/ESD STM 5.1 - 2001  
(Tested in 3x3 12L MCLP package)

## NOTES

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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Vadj = 1.7V, Id = 139mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |         | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | Measure |                         |                                 |                         |
| 400           | 22.02        | 29.21             | 13.58                           | 10.46                            | 1.29      | 0.73    | 38.43                   | 26.99                           | 3.28                    |
| 600           | 22.04        | 29.04             | 15.19                           | 12.39                            | 1.30      | 0.76    | 38.45                   | 27.16                           | 3.23                    |
| 800           | 21.95        | 28.96             | 15.97                           | 13.50                            | 1.30      | 0.78    | 38.22                   | 27.30                           | 3.29                    |
| 1000          | 21.82        | 28.93             | 16.32                           | 14.77                            | 1.32      | 0.80    | 38.04                   | 27.48                           | 3.20                    |
| 1200          | 21.71        | 28.87             | 16.35                           | 15.44                            | 1.32      | 0.82    | 37.83                   | 27.56                           | 3.21                    |
| 1400          | 21.53        | 28.84             | 16.28                           | 16.20                            | 1.34      | 0.83    | 37.84                   | 27.69                           | 3.10                    |
| 1600          | 21.41        | 28.78             | 16.02                           | 16.19                            | 1.34      | 0.84    | 37.98                   | 27.67                           | 3.11                    |
| 1800          | 21.21        | 28.80             | 15.75                           | 16.12                            | 1.36      | 0.85    | 37.68                   | 27.54                           | 3.12                    |
| 2000          | 21.11        | 28.75             | 15.44                           | 15.67                            | 1.37      | 0.85    | 37.41                   | 27.65                           | 3.09                    |
| 2200          | 20.93        | 28.71             | 14.84                           | 15.11                            | 1.38      | 0.86    | 37.24                   | 27.42                           | 3.01                    |
| 2400          | 20.76        | 28.76             | 14.17                           | 14.81                            | 1.40      | 0.87    | 37.40                   | 27.49                           | 2.93                    |
| 2600          | 20.49        | 28.87             | 13.50                           | 14.19                            | 1.44      | 0.88    | 37.49                   | 27.15                           | 3.05                    |
| 2800          | 20.21        | 29.01             | 12.96                           | 14.44                            | 1.48      | 0.91    | 38.14                   | 27.02                           | 3.08                    |
| 3000          | 19.91        | 29.09             | 12.16                           | 14.23                            | 1.50      | 0.93    | 39.50                   | 26.86                           | 3.08                    |
| 3200          | 19.74        | 29.02             | 11.38                           | 14.57                            | 1.49      | 0.95    | 41.03                   | 26.76                           | 3.12                    |
| 3400          | 19.58        | 28.96             | 10.57                           | 14.39                            | 1.46      | 0.98    | 43.69                   | 26.68                           | 3.08                    |
| 3600          | 19.36        | 29.01             | 9.87                            | 14.22                            | 1.47      | 1.00    | 42.22                   | 26.45                           | 3.01                    |
| 3800          | 19.24        | 28.96             | 9.04                            | 13.24                            | 1.44      | 1.01    | 39.83                   | 26.38                           | 2.98                    |
| 4000          | 19.08        | 29.01             | 8.35                            | 12.27                            | 1.45      | 1.01    | 38.65                   | 25.85                           | 2.99                    |
| 4200          | 19.02        | 28.96             | 7.72                            | 11.07                            | 1.43      | 1.00    | 36.83                   | 25.20                           | 2.99                    |
| 4400          | 18.93        | 28.89             | 7.25                            | 10.39                            | 1.43      | 0.99    | 35.36                   | 25.28                           | 3.00                    |
| 4600          | 18.92        | 28.72             | 7.02                            | 9.92                             | 1.42      | 0.96    | 34.28                   | 24.33                           | 2.84                    |
| 4800          | 18.93        | 28.49             | 7.07                            | 10.07                            | 1.42      | 0.95    | 33.95                   | 25.25                           | 2.81                    |
| 5000          | 18.98        | 28.14             | 7.41                            | 10.44                            | 1.41      | 0.93    | 33.87                   | 24.42                           | 2.70                    |
| 5200          | 19.15        | 27.74             | 8.02                            | 11.73                            | 1.39      | 0.92    | 33.06                   | 24.96                           | 2.66                    |
| 5400          | 19.29        | 27.45             | 8.90                            | 13.31                            | 1.39      | 0.91    | 33.40                   | 25.72                           | 2.62                    |
| 5600          | 19.47        | 27.09             | 9.61                            | 16.60                            | 1.35      | 0.91    | 34.22                   | 25.86                           | 2.60                    |
| 5800          | 19.52        | 26.96             | 10.19                           | 21.49                            | 1.36      | 0.92    | 35.13                   | 26.19                           | 2.59                    |
| 6000          | 19.45        | 26.89             | 10.00                           | 31.42                            | 1.36      | 0.94    | 36.28                   | 26.16                           | 2.66                    |
| 6200          | 19.22        | 26.95             | 9.32                            | 26.65                            | 1.38      | 0.98    | 37.49                   | 26.05                           | 2.76                    |
| 6400          | 19.04        | 27.09             | 8.26                            | 20.99                            | 1.38      | 1.02    | 38.44                   | 25.92                           | 2.80                    |
| 6600          | 18.93        | 27.28             | 7.48                            | 18.66                            | 1.37      | 1.07    | 39.12                   | 25.84                           | 2.87                    |
| 6800          | 18.98        | 27.37             | 6.91                            | 17.85                            | 1.33      | 1.10    | 38.92                   | 25.74                           | 2.97                    |
| 7000          | 18.86        | 27.51             | 6.57                            | 18.83                            | 1.33      | 1.13    | 38.77                   | 25.68                           | 2.93                    |
| 7200          | 18.66        | 27.64             | 6.32                            | 19.11                            | 1.34      | 1.16    | 38.43                   | 25.63                           | 2.89                    |
| 7400          | 18.57        | 27.92             | 6.61                            | 20.05                            | 1.41      | 1.15    | 38.25                   | 25.67                           | 2.92                    |
| 7600          | 18.29        | 28.10             | 7.33                            | 22.79                            | 1.54      | 1.11    | 37.90                   | 25.81                           | 2.91                    |
| 7800          | 18.04        | 27.88             | 8.05                            | 24.67                            | 1.60      | 1.07    | 37.64                   | 25.81                           | 2.88                    |
| 8000          | 17.93        | 27.74             | 8.65                            | 30.63                            | 1.64      | 1.05    | 37.64                   | 25.79                           | 2.98                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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REV. OR

PMA3-83MP-D+

11/3/2021

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IF/RF MICROWAVE COMPONENTS

# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 7.60V, Vadj = 1.7V, Id = 127mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 21.83        | 28.90             | 13.52                           | 10.39                            | 1.28      | 0.72 | 38.63                   | 26.57                           | 3.26                    |
| 600           | 21.86        | 28.84             | 15.15                           | 12.25                            | 1.29      | 0.75 | 38.50                   | 26.74                           | 3.14                    |
| 800           | 21.78        | 28.78             | 15.96                           | 13.39                            | 1.30      | 0.78 | 38.21                   | 26.90                           | 3.26                    |
| 1000          | 21.66        | 28.76             | 16.34                           | 14.61                            | 1.31      | 0.80 | 38.04                   | 27.09                           | 3.25                    |
| 1200          | 21.55        | 28.71             | 16.41                           | 15.32                            | 1.32      | 0.81 | 37.84                   | 27.17                           | 3.12                    |
| 1400          | 21.38        | 28.67             | 16.36                           | 16.06                            | 1.33      | 0.83 | 37.88                   | 27.29                           | 3.05                    |
| 1600          | 21.26        | 28.61             | 16.12                           | 16.10                            | 1.34      | 0.84 | 38.05                   | 27.25                           | 3.05                    |
| 1800          | 21.07        | 28.63             | 15.86                           | 16.04                            | 1.36      | 0.85 | 37.80                   | 27.17                           | 3.08                    |
| 2000          | 20.97        | 28.51             | 15.53                           | 15.59                            | 1.36      | 0.85 | 37.64                   | 27.25                           | 3.03                    |
| 2200          | 20.80        | 28.54             | 14.93                           | 15.03                            | 1.38      | 0.85 | 37.42                   | 27.00                           | 2.99                    |
| 2400          | 20.63        | 28.57             | 14.25                           | 14.73                            | 1.39      | 0.87 | 37.53                   | 27.09                           | 2.95                    |
| 2600          | 20.37        | 28.67             | 13.57                           | 14.15                            | 1.43      | 0.88 | 37.73                   | 26.73                           | 3.00                    |
| 2800          | 20.09        | 28.85             | 13.04                           | 14.36                            | 1.48      | 0.90 | 38.40                   | 26.64                           | 3.04                    |
| 3000          | 19.80        | 28.92             | 12.24                           | 14.21                            | 1.50      | 0.93 | 39.73                   | 26.51                           | 3.04                    |
| 3200          | 19.63        | 28.84             | 11.46                           | 14.52                            | 1.48      | 0.95 | 41.33                   | 26.51                           | 3.12                    |
| 3400          | 19.48        | 28.78             | 10.66                           | 14.40                            | 1.45      | 0.97 | 44.45                   | 26.43                           | 3.06                    |
| 3600          | 19.27        | 28.83             | 9.94                            | 14.21                            | 1.46      | 1.00 | 41.00                   | 26.31                           | 3.06                    |
| 3800          | 19.14        | 28.80             | 9.12                            | 13.28                            | 1.43      | 1.01 | 39.22                   | 26.34                           | 2.96                    |
| 4000          | 18.99        | 28.84             | 8.41                            | 12.29                            | 1.44      | 1.01 | 38.12                   | 25.92                           | 3.02                    |
| 4200          | 18.94        | 28.78             | 7.77                            | 11.12                            | 1.42      | 1.00 | 36.56                   | 25.49                           | 2.97                    |
| 4400          | 18.86        | 28.74             | 7.28                            | 10.40                            | 1.42      | 0.98 | 35.17                   | 25.53                           | 2.94                    |
| 4600          | 18.85        | 28.63             | 7.04                            | 9.96                             | 1.42      | 0.96 | 34.08                   | 24.53                           | 2.84                    |
| 4800          | 18.86        | 28.33             | 7.08                            | 10.08                            | 1.41      | 0.95 | 33.64                   | 25.39                           | 2.80                    |
| 5000          | 18.91        | 28.01             | 7.42                            | 10.48                            | 1.41      | 0.93 | 33.42                   | 24.47                           | 2.71                    |
| 5200          | 19.07        | 27.64             | 8.05                            | 11.75                            | 1.39      | 0.92 | 32.58                   | 24.85                           | 2.64                    |
| 5400          | 19.22        | 27.31             | 8.94                            | 13.39                            | 1.38      | 0.91 | 33.02                   | 25.56                           | 2.63                    |
| 5600          | 19.41        | 27.03             | 9.69                            | 16.68                            | 1.36      | 0.91 | 33.63                   | 25.64                           | 2.59                    |
| 5800          | 19.46        | 26.83             | 10.30                           | 21.76                            | 1.35      | 0.92 | 34.72                   | 25.88                           | 2.58                    |
| 6000          | 19.39        | 26.79             | 10.12                           | 31.81                            | 1.36      | 0.94 | 36.14                   | 25.85                           | 2.60                    |
| 6200          | 19.18        | 26.84             | 9.42                            | 26.28                            | 1.38      | 0.97 | 37.98                   | 25.67                           | 2.69                    |
| 6400          | 18.99        | 26.96             | 8.35                            | 20.79                            | 1.37      | 1.02 | 38.94                   | 25.53                           | 2.76                    |
| 6600          | 18.89        | 27.17             | 7.56                            | 18.48                            | 1.37      | 1.06 | 39.22                   | 25.44                           | 2.81                    |
| 6800          | 18.94        | 27.27             | 7.00                            | 17.72                            | 1.33      | 1.09 | 38.92                   | 25.37                           | 2.96                    |
| 7000          | 18.83        | 27.41             | 6.64                            | 18.66                            | 1.33      | 1.13 | 38.48                   | 25.30                           | 2.93                    |
| 7200          | 18.63        | 27.55             | 6.40                            | 19.03                            | 1.34      | 1.15 | 38.10                   | 25.29                           | 2.93                    |
| 7400          | 18.55        | 27.80             | 6.68                            | 19.95                            | 1.40      | 1.14 | 37.98                   | 25.35                           | 2.94                    |
| 7600          | 18.26        | 27.99             | 7.40                            | 22.83                            | 1.54      | 1.11 | 37.76                   | 25.53                           | 2.85                    |
| 7800          | 18.02        | 27.76             | 8.12                            | 24.87                            | 1.59      | 1.07 | 37.55                   | 25.54                           | 2.86                    |
| 8000          | 17.92        | 27.63             | 8.73                            | 31.58                            | 1.63      | 1.04 | 37.55                   | 25.52                           | 2.92                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)  
Gain(Power Gain) = S21 (dB)  
Reverse Isolation = -S12 (dB)  
Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.40V, Vadj = 1.7V, Id = 150mA @ Temperature = +25°C

| FREQ<br>(MHz) | GAIN<br>(dB) | ISOLATION<br>(dB) | INPUT<br>RETURN<br>LOSS<br>(dB) | OUTPUT<br>RETURN<br>LOSS<br>(dB) | STABILITY |      | IP-3<br>OUTPUT<br>(dBm) | 1dB<br>COMP.<br>OUTPUT<br>(dBm) | NOISE<br>FIGURE<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 22.25        | 29.26             | 13.50                           | 10.60                            | 1.27      | 0.72 | 38.44                   | 27.45                           | 3.32                    |
| 600           | 22.26        | 29.18             | 15.11                           | 12.46                            | 1.29      | 0.76 | 38.55                   | 27.64                           | 3.23                    |
| 800           | 22.16        | 29.10             | 15.90                           | 13.74                            | 1.29      | 0.78 | 38.36                   | 27.75                           | 3.30                    |
| 1000          | 22.04        | 29.07             | 16.20                           | 14.88                            | 1.31      | 0.80 | 38.21                   | 27.95                           | 3.18                    |
| 1200          | 21.91        | 29.01             | 16.23                           | 15.70                            | 1.31      | 0.82 | 38.03                   | 28.01                           | 3.23                    |
| 1400          | 21.74        | 29.00             | 16.13                           | 16.31                            | 1.33      | 0.83 | 38.00                   | 28.11                           | 3.09                    |
| 1600          | 21.59        | 28.93             | 15.88                           | 16.41                            | 1.34      | 0.84 | 38.19                   | 28.06                           | 3.07                    |
| 1800          | 21.40        | 28.89             | 15.60                           | 16.26                            | 1.35      | 0.85 | 37.76                   | 27.99                           | 3.06                    |
| 2000          | 21.29        | 28.85             | 15.29                           | 15.81                            | 1.36      | 0.85 | 37.37                   | 28.09                           | 3.02                    |
| 2200          | 21.12        | 28.81             | 14.70                           | 15.26                            | 1.37      | 0.86 | 37.31                   | 27.86                           | 3.08                    |
| 2400          | 20.93        | 28.86             | 14.05                           | 14.89                            | 1.39      | 0.87 | 37.34                   | 27.93                           | 3.14                    |
| 2600          | 20.67        | 28.97             | 13.37                           | 14.36                            | 1.42      | 0.88 | 37.45                   | 27.61                           | 3.05                    |
| 2800          | 20.38        | 29.10             | 12.83                           | 14.48                            | 1.47      | 0.91 | 38.08                   | 27.45                           | 3.08                    |
| 3000          | 20.08        | 29.21             | 12.01                           | 14.38                            | 1.49      | 0.93 | 39.42                   | 27.30                           | 3.12                    |
| 3200          | 19.91        | 29.09             | 11.24                           | 14.57                            | 1.47      | 0.96 | 40.86                   | 27.05                           | 3.08                    |
| 3400          | 19.73        | 29.07             | 10.44                           | 14.49                            | 1.45      | 0.98 | 43.23                   | 26.98                           | 3.04                    |
| 3600          | 19.53        | 29.09             | 9.69                            | 14.15                            | 1.45      | 1.00 | 43.42                   | 26.68                           | 3.09                    |
| 3800          | 19.37        | 29.09             | 8.91                            | 13.25                            | 1.43      | 1.02 | 40.43                   | 26.49                           | 3.02                    |
| 4000          | 19.23        | 29.10             | 8.21                            | 12.17                            | 1.43      | 1.02 | 39.09                   | 25.80                           | 3.04                    |
| 4200          | 19.15        | 29.05             | 7.59                            | 11.06                            | 1.42      | 1.00 | 37.18                   | 24.90                           | 3.02                    |
| 4400          | 19.08        | 28.95             | 7.11                            | 10.29                            | 1.41      | 0.99 | 35.60                   | 24.96                           | 2.90                    |
| 4600          | 19.05        | 28.83             | 6.90                            | 9.90                             | 1.41      | 0.97 | 34.59                   | 24.03                           | 2.85                    |
| 4800          | 19.06        | 28.54             | 6.95                            | 9.97                             | 1.40      | 0.95 | 34.36                   | 25.04                           | 2.82                    |
| 5000          | 19.12        | 28.26             | 7.29                            | 10.43                            | 1.40      | 0.93 | 34.00                   | 24.26                           | 2.77                    |
| 5200          | 19.27        | 27.84             | 7.89                            | 11.60                            | 1.38      | 0.92 | 33.37                   | 24.91                           | 2.70                    |
| 5400          | 19.43        | 27.50             | 8.74                            | 13.27                            | 1.37      | 0.91 | 34.06                   | 25.86                           | 2.65                    |
| 5600          | 19.60        | 27.24             | 9.46                            | 16.32                            | 1.35      | 0.91 | 34.72                   | 26.06                           | 2.60                    |
| 5800          | 19.65        | 27.01             | 10.02                           | 21.32                            | 1.34      | 0.92 | 35.62                   | 26.48                           | 2.60                    |
| 6000          | 19.57        | 26.94             | 9.83                            | 30.44                            | 1.35      | 0.94 | 36.52                   | 26.46                           | 2.64                    |
| 6200          | 19.36        | 27.02             | 9.12                            | 26.99                            | 1.37      | 0.98 | 37.36                   | 26.40                           | 2.79                    |
| 6400          | 19.15        | 27.18             | 8.10                            | 21.39                            | 1.37      | 1.03 | 38.06                   | 26.29                           | 2.73                    |
| 6600          | 19.06        | 27.36             | 7.31                            | 18.81                            | 1.36      | 1.07 | 38.77                   | 26.22                           | 2.87                    |
| 6800          | 19.09        | 27.44             | 6.77                            | 18.15                            | 1.32      | 1.11 | 38.72                   | 26.08                           | 2.90                    |
| 7000          | 18.99        | 27.57             | 6.40                            | 18.98                            | 1.31      | 1.14 | 38.75                   | 25.98                           | 2.94                    |
| 7200          | 18.76        | 27.72             | 6.19                            | 19.38                            | 1.33      | 1.17 | 38.58                   | 25.95                           | 2.95                    |
| 7400          | 18.69        | 28.00             | 6.47                            | 20.08                            | 1.39      | 1.15 | 38.44                   | 25.93                           | 2.94                    |
| 7600          | 18.38        | 28.19             | 7.19                            | 22.83                            | 1.53      | 1.12 | 38.20                   | 26.02                           | 2.96                    |
| 7800          | 18.15        | 27.95             | 7.88                            | 24.06                            | 1.59      | 1.08 | 37.95                   | 26.04                           | 2.81                    |
| 8000          | 18.03        | 27.85             | 8.48                            | 29.61                            | 1.64      | 1.05 | 37.84                   | 26.01                           | 3.01                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)  
 Gain(Power Gain) = S21 (dB)  
 Reverse Isolation = -S12 (dB)  
 Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Vadj = 1.7V, Id = 176mA Temperature = -45°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |         | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | Measure |                         |                                 |                         |
| 400           | 21.65        | 29.33             | 12.82                           | 8.27                             | 1.28      | 0.67    | 38.92                   | 27.36                           | 2.93                    |
| 600           | 21.72        | 29.21             | 14.08                           | 9.49                             | 1.30      | 0.71    | 39.20                   | 27.50                           | 2.84                    |
| 800           | 21.68        | 29.14             | 14.94                           | 9.92                             | 1.30      | 0.72    | 39.03                   | 27.60                           | 2.82                    |
| 1000          | 21.62        | 29.05             | 15.68                           | 10.98                            | 1.32      | 0.75    | 38.82                   | 27.83                           | 2.86                    |
| 1200          | 21.58        | 28.95             | 16.20                           | 11.49                            | 1.31      | 0.76    | 38.50                   | 27.96                           | 2.83                    |
| 1400          | 21.45        | 28.93             | 16.48                           | 12.30                            | 1.34      | 0.78    | 38.34                   | 28.10                           | 2.71                    |
| 1600          | 21.40        | 28.85             | 16.28                           | 12.52                            | 1.33      | 0.79    | 38.23                   | 28.14                           | 2.69                    |
| 1800          | 21.20        | 28.91             | 16.06                           | 12.65                            | 1.37      | 0.80    | 37.84                   | 28.02                           | 2.66                    |
| 2000          | 21.15        | 28.76             | 15.52                           | 12.42                            | 1.35      | 0.80    | 37.55                   | 28.09                           | 2.56                    |
| 2200          | 20.97        | 28.85             | 14.68                           | 11.91                            | 1.38      | 0.80    | 37.31                   | 27.87                           | 2.65                    |
| 2400          | 20.86        | 28.76             | 13.77                           | 11.97                            | 1.38      | 0.81    | 37.15                   | 27.96                           | 2.74                    |
| 2600          | 20.57        | 28.97             | 13.08                           | 11.44                            | 1.42      | 0.83    | 37.18                   | 27.63                           | 2.65                    |
| 2800          | 20.38        | 29.02             | 12.76                           | 12.05                            | 1.45      | 0.85    | 37.33                   | 27.53                           | 2.71                    |
| 3000          | 20.08        | 29.15             | 12.58                           | 12.31                            | 1.50      | 0.88    | 38.22                   | 27.44                           | 2.71                    |
| 3200          | 20.03        | 28.97             | 11.97                           | 13.43                            | 1.47      | 0.91    | 38.94                   | 27.49                           | 2.65                    |
| 3400          | 19.98        | 28.85             | 11.45                           | 13.98                            | 1.44      | 0.93    | 40.30                   | 27.43                           | 2.65                    |
| 3600          | 19.84        | 28.82             | 11.09                           | 15.51                            | 1.45      | 0.96    | 43.80                   | 27.31                           | 2.57                    |
| 3800          | 19.85        | 28.68             | 10.39                           | 15.60                            | 1.41      | 0.98    | 40.93                   | 27.28                           | 2.55                    |
| 4000          | 19.73        | 28.77             | 9.80                            | 15.52                            | 1.44      | 0.99    | 39.34                   | 26.93                           | 2.61                    |
| 4200          | 19.77        | 28.66             | 9.10                            | 13.88                            | 1.41      | 0.98    | 38.06                   | 26.59                           | 2.50                    |
| 4400          | 19.69        | 28.63             | 8.51                            | 12.97                            | 1.42      | 0.97    | 36.30                   | 26.77                           | 2.41                    |
| 4600          | 19.76        | 28.48             | 8.07                            | 11.98                            | 1.39      | 0.95    | 35.19                   | 25.59                           | 2.32                    |
| 4800          | 19.73        | 28.38             | 8.03                            | 12.00                            | 1.40      | 0.94    | 35.11                   | 26.39                           | 2.31                    |
| 5000          | 19.76        | 28.16             | 8.29                            | 12.07                            | 1.39      | 0.92    | 34.89                   | 25.89                           | 2.20                    |
| 5200          | 19.82        | 27.82             | 8.96                            | 13.68                            | 1.38      | 0.91    | 34.14                   | 26.23                           | 2.28                    |
| 5400          | 19.81        | 27.52             | 10.02                           | 15.49                            | 1.38      | 0.89    | 34.77                   | 27.02                           | 2.10                    |
| 5600          | 19.94        | 27.29             | 10.82                           | 19.57                            | 1.36      | 0.89    | 35.53                   | 27.31                           | 2.14                    |
| 5800          | 20.02        | 27.06             | 11.48                           | 22.85                            | 1.35      | 0.88    | 36.65                   | 27.27                           | 2.15                    |
| 6000          | 20.03        | 27.03             | 11.35                           | 21.92                            | 1.35      | 0.88    | 38.20                   | 27.28                           | 2.20                    |
| 6200          | 19.89        | 27.13             | 10.63                           | 19.29                            | 1.37      | 0.91    | 41.09                   | 27.00                           | 2.26                    |
| 6400          | 19.71        | 27.26             | 9.43                            | 17.39                            | 1.38      | 0.95    | 43.33                   | 26.72                           | 2.30                    |
| 6600          | 19.57        | 27.26             | 8.57                            | 16.53                            | 1.37      | 0.98    | 42.95                   | 26.62                           | 2.38                    |
| 6800          | 19.65        | 27.28             | 7.84                            | 16.14                            | 1.32      | 1.01    | 41.78                   | 26.44                           | 2.41                    |
| 7000          | 19.61        | 27.39             | 7.30                            | 17.14                            | 1.30      | 1.05    | 41.31                   | 26.29                           | 2.45                    |
| 7200          | 19.69        | 27.40             | 6.74                            | 18.79                            | 1.25      | 1.09    | 40.59                   | 26.27                           | 2.50                    |
| 7400          | 19.39        | 27.72             | 7.12                            | 20.50                            | 1.33      | 1.10    | 40.23                   | 26.00                           | 2.45                    |
| 7600          | 19.17        | 27.54             | 7.66                            | 25.62                            | 1.37      | 1.07    | 40.63                   | 26.54                           | 2.42                    |
| 7800          | 18.85        | 27.47             | 8.56                            | 38.34                            | 1.46      | 1.03    | 40.39                   | 26.55                           | 2.43                    |
| 8000          | 18.66        | 27.73             | 9.50                            | 24.82                            | 1.58      | 1.00    | 40.11                   | 26.56                           | 2.45                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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IF/RF MICROWAVE COMPONENTS

# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 7.60V, Vadj = 1.7V Id = 162mA @ Temperature = -45°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |         | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | Measure |                         |                                 |                         |
| 400           | 21.78        | 29.25             | 12.43                           | 8.23                             | 1.26      | 0.66    | 38.93                   | 26.74                           | 2.86                    |
| 600           | 21.83        | 29.10             | 13.70                           | 9.15                             | 1.27      | 0.69    | 39.11                   | 26.87                           | 2.83                    |
| 800           | 21.79        | 29.05             | 14.58                           | 9.84                             | 1.28      | 0.71    | 38.94                   | 27.02                           | 2.88                    |
| 1000          | 21.75        | 28.97             | 15.26                           | 10.60                            | 1.29      | 0.73    | 38.80                   | 27.25                           | 2.78                    |
| 1200          | 21.69        | 28.90             | 15.87                           | 11.33                            | 1.30      | 0.75    | 38.55                   | 27.38                           | 2.79                    |
| 1400          | 21.60        | 28.82             | 16.13                           | 11.93                            | 1.30      | 0.77    | 38.41                   | 27.56                           | 2.68                    |
| 1600          | 21.50        | 28.80             | 16.07                           | 12.26                            | 1.32      | 0.78    | 38.34                   | 27.56                           | 2.66                    |
| 1800          | 21.35        | 28.76             | 15.77                           | 12.39                            | 1.33      | 0.79    | 38.06                   | 27.50                           | 2.60                    |
| 2000          | 21.26        | 28.73             | 15.29                           | 12.10                            | 1.34      | 0.79    | 37.86                   | 27.56                           | 2.58                    |
| 2200          | 21.12        | 28.68             | 14.38                           | 11.77                            | 1.34      | 0.79    | 38.06                   | 27.36                           | 2.61                    |
| 2400          | 20.95        | 28.74             | 13.55                           | 11.60                            | 1.36      | 0.80    | 37.51                   | 27.41                           | 2.63                    |
| 2600          | 20.73        | 28.85             | 12.82                           | 11.38                            | 1.38      | 0.82    | 37.45                   | 27.12                           | 2.62                    |
| 2800          | 20.47        | 28.94             | 12.55                           | 11.67                            | 1.43      | 0.84    | 37.67                   | 27.02                           | 2.64                    |
| 3000          | 20.22        | 29.07             | 12.32                           | 12.26                            | 1.47      | 0.87    | 38.31                   | 26.94                           | 2.72                    |
| 3200          | 20.16        | 28.87             | 11.84                           | 13.00                            | 1.43      | 0.90    | 39.14                   | 27.04                           | 2.61                    |
| 3400          | 20.10        | 28.77             | 11.35                           | 14.02                            | 1.41      | 0.93    | 40.38                   | 26.93                           | 2.60                    |
| 3600          | 20.02        | 28.69             | 10.90                           | 15.14                            | 1.40      | 0.95    | 43.16                   | 26.85                           | 2.55                    |
| 3800          | 19.95        | 28.63             | 10.37                           | 15.91                            | 1.39      | 0.98    | 40.22                   | 26.90                           | 2.58                    |
| 4000          | 19.91        | 28.58             | 9.74                            | 15.58                            | 1.39      | 0.98    | 39.18                   | 26.57                           | 2.57                    |
| 4200          | 19.89        | 28.51             | 9.06                            | 14.33                            | 1.38      | 0.98    | 38.09                   | 26.39                           | 2.55                    |
| 4400          | 19.87        | 28.52             | 8.41                            | 13.10                            | 1.38      | 0.97    | 36.38                   | 26.54                           | 2.37                    |
| 4600          | 19.88        | 28.42             | 8.03                            | 12.34                            | 1.37      | 0.95    | 35.14                   | 25.47                           | 2.34                    |
| 4800          | 19.90        | 28.25             | 7.93                            | 12.09                            | 1.37      | 0.93    | 34.91                   | 26.32                           | 2.56                    |
| 5000          | 19.91        | 28.06             | 8.22                            | 12.45                            | 1.37      | 0.92    | 34.94                   | 25.78                           | 2.26                    |
| 5200          | 19.92        | 27.76             | 8.90                            | 13.78                            | 1.36      | 0.91    | 34.01                   | 26.19                           | 2.21                    |
| 5400          | 19.96        | 27.43             | 9.94                            | 16.01                            | 1.36      | 0.89    | 34.81                   | 26.79                           | 2.14                    |
| 5600          | 20.05        | 27.26             | 10.86                           | 19.56                            | 1.35      | 0.89    | 35.85                   | 27.10                           | 2.15                    |
| 5800          | 20.12        | 27.02             | 11.55                           | 23.16                            | 1.33      | 0.87    | 37.70                   | 26.92                           | 2.14                    |
| 6000          | 20.12        | 27.01             | 11.38                           | 21.59                            | 1.34      | 0.88    | 40.19                   | 26.88                           | 2.21                    |
| 6200          | 20.01        | 27.07             | 10.59                           | 18.67                            | 1.35      | 0.90    | 43.76                   | 26.60                           | 2.28                    |
| 6400          | 19.79        | 27.21             | 9.44                            | 17.17                            | 1.36      | 0.94    | 41.43                   | 26.29                           | 2.26                    |
| 6600          | 19.69        | 27.24             | 8.54                            | 16.07                            | 1.35      | 0.97    | 39.33                   | 26.16                           | 2.33                    |
| 6800          | 19.71        | 27.26             | 7.84                            | 15.95                            | 1.31      | 1.01    | 38.40                   | 25.94                           | 2.48                    |
| 7000          | 19.76        | 27.29             | 7.20                            | 16.70                            | 1.26      | 1.05    | 38.31                   | 25.82                           | 2.46                    |
| 7200          | 19.74        | 27.39             | 6.76                            | 18.62                            | 1.24      | 1.09    | 38.32                   | 25.83                           | 2.52                    |
| 7400          | 19.53        | 27.62             | 7.10                            | 20.08                            | 1.30      | 1.09    | 38.17                   | 25.50                           | 2.50                    |
| 7600          | 19.25        | 27.53             | 7.69                            | 25.63                            | 1.37      | 1.06    | 39.55                   | 26.09                           | 2.44                    |
| 7800          | 18.98        | 27.44             | 8.53                            | 35.78                            | 1.44      | 1.03    | 39.94                   | 26.09                           | 2.46                    |
| 8000          | 18.73        | 27.74             | 9.57                            | 23.81                            | 1.57      | 1.00    | 39.88                   | 26.13                           | 2.43                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)  
 Gain(Power Gain) = S21 (dB)  
 Reverse Isolation = -S12 (dB)  
 Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.40V, Vadj = 1.7V, Id = 182mA @ Temperature = -45°C

| FREQ<br>(MHz) | GAIN<br>(dB) | ISOLATION<br>(dB) | INPUT<br>RETURN<br>LOSS<br>(dB) | OUTPUT<br>RETURN<br>LOSS<br>(dB) | STABILITY |         | IP-3<br>OUTPUT<br>(dBm) | 1dB<br>COMP.<br>OUTPUT<br>(dBm) | NOISE<br>FIGURE<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | MEASURE |                         |                                 |                         |
| 400           | 21.62        | 29.41             | 13.02                           | 8.34                             | 1.30      | 0.68    | 38.95                   | 27.92                           | 2.94                    |
| 600           | 21.72        | 29.26             | 14.29                           | 9.79                             | 1.31      | 0.72    | 39.34                   | 28.06                           | 2.84                    |
| 800           | 21.64        | 29.21             | 15.15                           | 10.03                            | 1.31      | 0.73    | 39.18                   | 28.16                           | 2.85                    |
| 1000          | 21.61        | 29.10             | 15.89                           | 11.39                            | 1.33      | 0.76    | 38.97                   | 28.38                           | 2.83                    |
| 1200          | 21.54        | 29.02             | 16.42                           | 11.59                            | 1.33      | 0.77    | 38.65                   | 28.50                           | 2.77                    |
| 1400          | 21.42        | 29.00             | 16.66                           | 12.80                            | 1.35      | 0.79    | 38.46                   | 28.63                           | 2.76                    |
| 1600          | 21.36        | 28.90             | 16.44                           | 12.60                            | 1.34      | 0.79    | 38.32                   | 28.65                           | 2.71                    |
| 1800          | 21.17        | 28.94             | 16.21                           | 13.17                            | 1.38      | 0.81    | 37.80                   | 28.54                           | 2.75                    |
| 2000          | 21.10        | 28.80             | 15.70                           | 12.46                            | 1.36      | 0.80    | 37.36                   | 28.59                           | 2.64                    |
| 2200          | 20.92        | 28.87             | 14.85                           | 12.38                            | 1.39      | 0.81    | 37.11                   | 28.38                           | 2.68                    |
| 2400          | 20.83        | 28.86             | 13.93                           | 12.00                            | 1.39      | 0.82    | 36.98                   | 28.41                           | 2.72                    |
| 2600          | 20.51        | 28.99             | 13.24                           | 11.85                            | 1.44      | 0.84    | 36.94                   | 28.14                           | 2.67                    |
| 2800          | 20.34        | 29.06             | 12.90                           | 12.11                            | 1.46      | 0.86    | 37.20                   | 28.03                           | 2.68                    |
| 3000          | 19.98        | 29.22             | 12.77                           | 12.71                            | 1.53      | 0.89    | 37.85                   | 27.93                           | 2.75                    |
| 3200          | 20.02        | 28.95             | 12.02                           | 13.48                            | 1.47      | 0.91    | 38.58                   | 27.98                           | 2.66                    |
| 3400          | 19.85        | 28.91             | 11.55                           | 14.41                            | 1.47      | 0.94    | 39.67                   | 27.85                           | 2.63                    |
| 3600          | 19.83        | 28.79             | 11.07                           | 15.33                            | 1.44      | 0.96    | 42.77                   | 27.71                           | 2.61                    |
| 3800          | 19.72        | 28.83             | 10.44                           | 15.91                            | 1.45      | 0.98    | 42.25                   | 27.74                           | 2.54                    |
| 4000          | 19.66        | 28.79             | 9.77                            | 14.90                            | 1.44      | 0.99    | 40.03                   | 27.26                           | 2.61                    |
| 4200          | 19.67        | 28.69             | 9.10                            | 13.95                            | 1.43      | 0.98    | 38.42                   | 26.81                           | 2.47                    |
| 4400          | 19.59        | 28.70             | 8.51                            | 12.42                            | 1.43      | 0.97    | 36.81                   | 26.98                           | 2.43                    |
| 4600          | 19.67        | 28.52             | 8.07                            | 12.03                            | 1.41      | 0.95    | 35.33                   | 25.69                           | 2.37                    |
| 4800          | 19.59        | 28.46             | 8.07                            | 11.50                            | 1.43      | 0.93    | 35.06                   | 26.54                           | 2.35                    |
| 5000          | 19.72        | 28.15             | 8.24                            | 12.14                            | 1.40      | 0.92    | 34.91                   | 26.03                           | 2.26                    |
| 5200          | 19.63        | 27.93             | 9.07                            | 13.08                            | 1.42      | 0.91    | 34.24                   | 26.29                           | 2.21                    |
| 5400          | 19.79        | 27.47             | 9.94                            | 15.66                            | 1.38      | 0.90    | 34.79                   | 27.22                           | 2.19                    |
| 5600          | 19.82        | 27.37             | 10.79                           | 18.45                            | 1.38      | 0.89    | 35.50                   | 27.49                           | 2.14                    |
| 5800          | 19.95        | 27.11             | 11.39                           | 23.71                            | 1.36      | 0.89    | 36.47                   | 27.63                           | 2.16                    |
| 6000          | 19.91        | 27.10             | 11.37                           | 22.19                            | 1.37      | 0.89    | 37.56                   | 27.62                           | 2.19                    |
| 6200          | 19.87        | 27.10             | 10.58                           | 19.57                            | 1.37      | 0.91    | 39.36                   | 27.38                           | 2.29                    |
| 6400          | 19.59        | 27.29             | 9.48                            | 18.08                            | 1.40      | 0.95    | 40.92                   | 27.12                           | 2.30                    |
| 6600          | 19.56        | 27.26             | 8.53                            | 16.66                            | 1.37      | 0.98    | 42.58                   | 27.03                           | 2.35                    |
| 6800          | 19.50        | 27.40             | 7.93                            | 16.74                            | 1.36      | 1.02    | 43.15                   | 26.85                           | 2.44                    |
| 7000          | 19.63        | 27.29             | 7.20                            | 17.24                            | 1.28      | 1.06    | 42.50                   | 26.72                           | 2.44                    |
| 7200          | 19.50        | 27.53             | 6.86                            | 19.67                            | 1.30      | 1.10    | 41.64                   | 26.74                           | 2.54                    |
| 7400          | 19.39        | 27.64             | 7.02                            | 20.37                            | 1.31      | 1.10    | 41.27                   | 26.48                           | 2.48                    |
| 7600          | 19.02        | 27.64             | 7.70                            | 27.19                            | 1.41      | 1.07    | 40.59                   | 26.90                           | 2.44                    |
| 7800          | 18.83        | 27.47             | 8.48                            | 38.96                            | 1.46      | 1.04    | 39.98                   | 26.97                           | 2.39                    |
| 8000          | 18.50        | 27.84             | 9.55                            | 24.33                            | 1.62      | 1.00    | 39.70                   | 27.01                           | 2.49                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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IF/RF MICROWAVE COMPONENTS

# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)  
 Gain(Power Gain) = S21 (dB)  
 Reverse Isolation = -S12 (dB)  
 Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Vadj = 1.7V, Id = 117mA @ Temperature = +85°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |         | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | Measure |                         |                                 |                         |
| 400           | 22.00        | 28.94             | 13.59                           | 12.37                            | 1.29      | 0.76    | 40.60                   | 26.71                           | 3.47                    |
| 600           | 21.99        | 28.82             | 15.16                           | 15.66                            | 1.30      | 0.79    | 40.52                   | 26.92                           | 3.51                    |
| 800           | 21.86        | 28.77             | 15.65                           | 17.88                            | 1.31      | 0.82    | 40.16                   | 27.03                           | 3.46                    |
| 1000          | 21.68        | 28.75             | 15.64                           | 19.57                            | 1.32      | 0.84    | 40.45                   | 27.17                           | 3.43                    |
| 1200          | 21.52        | 28.70             | 15.37                           | 19.80                            | 1.33      | 0.85    | 40.72                   | 27.21                           | 3.42                    |
| 1400          | 21.30        | 28.68             | 15.12                           | 19.82                            | 1.34      | 0.86    | 41.34                   | 27.29                           | 3.28                    |
| 1600          | 21.14        | 28.67             | 14.81                           | 18.91                            | 1.35      | 0.87    | 42.56                   | 27.19                           | 3.35                    |
| 1800          | 20.93        | 28.66             | 14.65                           | 18.37                            | 1.37      | 0.88    | 41.26                   | 27.12                           | 3.31                    |
| 2000          | 20.81        | 28.55             | 14.50                           | 17.65                            | 1.37      | 0.88    | 40.62                   | 27.09                           | 3.25                    |
| 2200          | 20.64        | 28.55             | 14.20                           | 17.15                            | 1.39      | 0.89    | 40.78                   | 27.06                           | 3.24                    |
| 2400          | 20.44        | 28.61             | 13.76                           | 16.57                            | 1.42      | 0.90    | 41.88                   | 27.00                           | 3.23                    |
| 2600          | 20.18        | 28.70             | 13.18                           | 15.86                            | 1.45      | 0.91    | 42.06                   | 26.79                           | 3.32                    |
| 2800          | 19.88        | 28.81             | 12.52                           | 15.61                            | 1.49      | 0.93    | 41.90                   | 26.62                           | 3.32                    |
| 3000          | 19.54        | 28.95             | 11.55                           | 14.77                            | 1.51      | 0.96    | 39.92                   | 26.49                           | 3.36                    |
| 3200          | 19.29        | 28.95             | 10.68                           | 14.35                            | 1.51      | 0.98    | 38.16                   | 26.13                           | 3.32                    |
| 3400          | 19.05        | 28.99             | 9.75                            | 13.45                            | 1.49      | 1.00    | 37.33                   | 26.15                           | 3.31                    |
| 3600          | 18.76        | 29.11             | 8.92                            | 12.52                            | 1.49      | 1.02    | 35.31                   | 25.85                           | 3.26                    |
| 3800          | 18.56        | 29.09             | 8.07                            | 11.32                            | 1.46      | 1.03    | 34.30                   | 25.42                           | 3.28                    |
| 4000          | 18.36        | 29.19             | 7.41                            | 10.32                            | 1.47      | 1.02    | 33.76                   | 24.86                           | 3.36                    |
| 4200          | 18.26        | 29.15             | 6.86                            | 9.39                             | 1.45      | 1.00    | 33.02                   | 23.95                           | 3.21                    |
| 4400          | 18.19        | 29.11             | 6.46                            | 8.83                             | 1.45      | 0.98    | 32.56                   | 24.03                           | 3.17                    |
| 4600          | 18.19        | 28.94             | 6.29                            | 8.55                             | 1.44      | 0.96    | 32.08                   | 22.87                           | 3.09                    |
| 4800          | 18.25        | 28.69             | 6.32                            | 8.69                             | 1.43      | 0.95    | 31.91                   | 23.67                           | 3.10                    |
| 5000          | 18.32        | 28.32             | 6.61                            | 9.13                             | 1.42      | 0.94    | 31.30                   | 22.75                           | 2.96                    |
| 5200          | 18.49        | 27.80             | 7.15                            | 10.31                            | 1.40      | 0.94    | 30.91                   | 23.21                           | 2.98                    |
| 5400          | 18.64        | 27.37             | 7.99                            | 11.89                            | 1.39      | 0.93    | 31.20                   | 24.05                           | 2.95                    |
| 5600          | 18.83        | 27.02             | 8.67                            | 14.78                            | 1.37      | 0.95    | 31.31                   | 24.19                           | 2.89                    |
| 5800          | 18.92        | 26.76             | 9.25                            | 19.48                            | 1.36      | 0.96    | 32.04                   | 24.79                           | 2.95                    |
| 6000          | 18.92        | 26.75             | 9.13                            | 29.33                            | 1.37      | 0.98    | 33.21                   | 24.79                           | 3.00                    |
| 6200          | 18.73        | 26.85             | 8.60                            | 30.88                            | 1.39      | 1.02    | 34.26                   | 24.89                           | 3.07                    |
| 6400          | 18.48        | 27.01             | 7.72                            | 22.28                            | 1.39      | 1.07    | 34.81                   | 24.96                           | 3.14                    |
| 6600          | 18.29        | 27.21             | 7.07                            | 19.37                            | 1.40      | 1.11    | 35.40                   | 24.93                           | 3.24                    |
| 6800          | 18.25        | 27.34             | 6.56                            | 18.18                            | 1.38      | 1.14    | 35.60                   | 24.89                           | 3.30                    |
| 7000          | 18.06        | 27.51             | 6.20                            | 18.02                            | 1.38      | 1.17    | 35.31                   | 24.81                           | 3.28                    |
| 7200          | 17.88        | 27.58             | 5.96                            | 16.78                            | 1.37      | 1.19    | 35.04                   | 24.69                           | 3.32                    |
| 7400          | 17.77        | 27.68             | 6.12                            | 16.94                            | 1.42      | 1.17    | 35.05                   | 24.60                           | 3.31                    |
| 7600          | 17.49        | 27.81             | 6.77                            | 17.92                            | 1.55      | 1.13    | 34.89                   | 24.46                           | 3.31                    |
| 7800          | 17.25        | 27.51             | 7.50                            | 19.45                            | 1.61      | 1.09    | 34.77                   | 24.44                           | 3.26                    |
| 8000          | 17.14        | 27.38             | 8.17                            | 25.42                            | 1.67      | 1.07    | 34.83                   | 24.30                           | 3.32                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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IF/RF MICROWAVE COMPONENTS

# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)  
 Gain(Power Gain) = S21 (dB)  
 Reverse Isolation = -S12 (dB)  
 Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 7.60V, Vadj = 1.7V, Id = 107mA @ Temperature = +85°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |         | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | Measure |                         |                                 |                         |
| 400           | 21.88        | 28.76             | 13.50                           | 12.47                            | 1.28      | 0.76    | 41.45                   | 26.24                           | 3.51                    |
| 600           | 21.88        | 28.64             | 15.07                           | 15.84                            | 1.29      | 0.79    | 40.90                   | 26.44                           | 3.51                    |
| 800           | 21.74        | 28.57             | 15.59                           | 18.32                            | 1.30      | 0.81    | 40.20                   | 26.54                           | 3.45                    |
| 1000          | 21.58        | 28.56             | 15.54                           | 19.84                            | 1.31      | 0.83    | 40.39                   | 26.71                           | 3.41                    |
| 1200          | 21.40        | 28.52             | 15.30                           | 20.30                            | 1.32      | 0.85    | 40.94                   | 26.74                           | 3.48                    |
| 1400          | 21.21        | 28.49             | 15.03                           | 19.92                            | 1.33      | 0.86    | 41.63                   | 26.82                           | 3.34                    |
| 1600          | 21.03        | 28.48             | 14.74                           | 19.19                            | 1.34      | 0.87    | 42.81                   | 26.76                           | 3.34                    |
| 1800          | 20.84        | 28.45             | 14.58                           | 18.38                            | 1.36      | 0.88    | 41.83                   | 26.67                           | 3.31                    |
| 2000          | 20.71        | 28.35             | 14.45                           | 17.77                            | 1.36      | 0.88    | 41.02                   | 26.65                           | 3.26                    |
| 2200          | 20.54        | 28.33             | 14.16                           | 17.20                            | 1.38      | 0.89    | 41.14                   | 26.61                           | 3.30                    |
| 2400          | 20.34        | 28.44             | 13.74                           | 16.61                            | 1.41      | 0.90    | 41.98                   | 26.51                           | 3.34                    |
| 2600          | 20.09        | 28.52             | 13.17                           | 15.94                            | 1.44      | 0.91    | 41.86                   | 26.28                           | 3.32                    |
| 2800          | 19.79        | 28.67             | 12.50                           | 15.59                            | 1.48      | 0.93    | 41.63                   | 26.14                           | 3.28                    |
| 3000          | 19.46        | 28.77             | 11.52                           | 14.79                            | 1.50      | 0.96    | 39.47                   | 25.98                           | 3.31                    |
| 3200          | 19.21        | 28.80             | 10.64                           | 14.24                            | 1.49      | 0.98    | 37.84                   | 25.74                           | 3.39                    |
| 3400          | 18.95        | 28.83             | 9.71                            | 13.37                            | 1.48      | 1.00    | 36.95                   | 25.82                           | 3.34                    |
| 3600          | 18.69        | 28.92             | 8.83                            | 12.34                            | 1.47      | 1.02    | 35.20                   | 25.55                           | 3.32                    |
| 3800          | 18.45        | 28.99             | 8.02                            | 11.20                            | 1.46      | 1.02    | 34.06                   | 25.13                           | 3.34                    |
| 4000          | 18.28        | 29.08             | 7.33                            | 10.15                            | 1.46      | 1.02    | 33.75                   | 24.69                           | 3.31                    |
| 4200          | 18.17        | 29.10             | 6.78                            | 9.29                             | 1.45      | 1.00    | 33.14                   | 23.76                           | 3.27                    |
| 4400          | 18.11        | 29.01             | 6.37                            | 8.70                             | 1.43      | 0.98    | 32.72                   | 23.89                           | 3.22                    |
| 4600          | 18.11        | 28.86             | 6.20                            | 8.46                             | 1.43      | 0.96    | 32.02                   | 22.58                           | 3.12                    |
| 4800          | 18.17        | 28.63             | 6.22                            | 8.55                             | 1.42      | 0.95    | 31.87                   | 23.43                           | 3.12                    |
| 5000          | 18.27        | 28.22             | 6.49                            | 9.03                             | 1.41      | 0.94    | 31.32                   | 22.38                           | 3.00                    |
| 5200          | 18.42        | 27.72             | 7.05                            | 10.14                            | 1.39      | 0.94    | 30.97                   | 22.93                           | 2.94                    |
| 5400          | 18.59        | 27.29             | 7.85                            | 11.79                            | 1.38      | 0.94    | 30.98                   | 23.73                           | 2.94                    |
| 5600          | 18.76        | 26.92             | 8.59                            | 14.57                            | 1.36      | 0.95    | 31.18                   | 23.90                           | 2.94                    |
| 5800          | 18.87        | 26.66             | 9.18                            | 19.40                            | 1.35      | 0.96    | 31.81                   | 24.46                           | 2.93                    |
| 6000          | 18.86        | 26.64             | 9.10                            | 28.52                            | 1.36      | 0.98    | 32.77                   | 24.45                           | 2.94                    |
| 6200          | 18.72        | 26.72             | 8.54                            | 29.74                            | 1.37      | 1.02    | 33.79                   | 24.52                           | 3.09                    |
| 6400          | 18.45        | 26.93             | 7.72                            | 22.20                            | 1.39      | 1.07    | 34.38                   | 24.56                           | 3.18                    |
| 6600          | 18.27        | 27.10             | 7.06                            | 19.20                            | 1.39      | 1.11    | 34.93                   | 24.52                           | 3.19                    |
| 6800          | 18.20        | 27.24             | 6.58                            | 18.12                            | 1.37      | 1.14    | 35.09                   | 24.49                           | 3.27                    |
| 7000          | 18.04        | 27.35             | 6.18                            | 17.75                            | 1.36      | 1.17    | 34.77                   | 24.41                           | 3.26                    |
| 7200          | 17.83        | 27.48             | 5.96                            | 16.58                            | 1.37      | 1.19    | 34.50                   | 24.33                           | 3.30                    |
| 7400          | 17.75        | 27.54             | 6.09                            | 16.60                            | 1.39      | 1.17    | 34.51                   | 24.27                           | 3.31                    |
| 7600          | 17.46        | 27.63             | 6.73                            | 17.68                            | 1.52      | 1.13    | 34.47                   | 24.11                           | 3.27                    |
| 7800          | 17.24        | 27.32             | 7.44                            | 19.12                            | 1.58      | 1.09    | 34.31                   | 24.12                           | 3.33                    |
| 8000          | 17.12        | 27.18             | 8.14                            | 25.33                            | 1.64      | 1.07    | 34.44                   | 24.00                           | 3.31                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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IF/RF MICROWAVE COMPONENTS

# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)  
 Gain(Power Gain) = S21 (dB)  
 Reverse Isolation = -S12 (dB)  
 Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.40V, Vadj = 1.7V, Id = 127mA @ Temperature = +85°C

| FREQ<br>(MHz) | GAIN<br>(dB) | ISOLATION<br>(dB) | INPUT<br>RETURN<br>LOSS<br>(dB) | OUTPUT<br>RETURN<br>LOSS<br>(dB) | STABILITY |         | IP-3<br>OUTPUT<br>(dBm) | 1dB<br>COMP.<br>OUTPUT<br>(dBm) | NOISE<br>FIGURE<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | MEASURE |                         |                                 |                         |
| 400           | 22.09        | 29.12             | 13.68                           | 12.26                            | 1.30      | 0.76    | 40.16                   | 27.15                           | 3.67                    |
| 600           | 22.06        | 29.00             | 15.26                           | 15.54                            | 1.31      | 0.80    | 40.16                   | 27.36                           | 3.46                    |
| 800           | 21.95        | 28.93             | 15.74                           | 17.47                            | 1.31      | 0.82    | 40.09                   | 27.47                           | 3.50                    |
| 1000          | 21.75        | 28.94             | 15.76                           | 19.40                            | 1.34      | 0.84    | 40.45                   | 27.63                           | 3.47                    |
| 1200          | 21.60        | 28.87             | 15.47                           | 19.37                            | 1.34      | 0.85    | 40.68                   | 27.63                           | 3.48                    |
| 1400          | 21.36        | 28.87             | 15.23                           | 19.79                            | 1.36      | 0.86    | 41.23                   | 27.70                           | 3.41                    |
| 1600          | 21.22        | 28.82             | 14.89                           | 18.68                            | 1.36      | 0.87    | 42.27                   | 27.59                           | 3.48                    |
| 1800          | 21.00        | 28.83             | 14.73                           | 18.42                            | 1.39      | 0.88    | 41.02                   | 27.50                           | 3.34                    |
| 2000          | 20.88        | 28.69             | 14.57                           | 17.54                            | 1.38      | 0.88    | 40.50                   | 27.47                           | 3.36                    |
| 2200          | 20.70        | 28.72             | 14.26                           | 17.13                            | 1.41      | 0.89    | 40.50                   | 27.50                           | 3.32                    |
| 2400          | 20.51        | 28.78             | 13.80                           | 16.55                            | 1.43      | 0.90    | 41.40                   | 27.41                           | 3.27                    |
| 2600          | 20.23        | 28.87             | 13.22                           | 15.82                            | 1.47      | 0.92    | 41.66                   | 27.22                           | 3.33                    |
| 2800          | 19.94        | 29.01             | 12.57                           | 15.66                            | 1.51      | 0.94    | 41.86                   | 26.97                           | 3.34                    |
| 3000          | 19.60        | 29.08             | 11.61                           | 14.77                            | 1.52      | 0.96    | 40.37                   | 26.82                           | 3.39                    |
| 3200          | 19.34        | 29.10             | 10.73                           | 14.46                            | 1.52      | 0.98    | 38.56                   | 26.34                           | 3.37                    |
| 3400          | 19.12        | 29.10             | 9.80                            | 13.54                            | 1.50      | 1.00    | 37.77                   | 26.38                           | 3.47                    |
| 3600          | 18.80        | 29.24             | 9.03                            | 12.68                            | 1.52      | 1.02    | 35.50                   | 25.98                           | 3.39                    |
| 3800          | 18.64        | 29.23             | 8.13                            | 11.42                            | 1.48      | 1.03    | 33.61                   | 25.55                           | 3.38                    |
| 4000          | 18.41        | 29.33             | 7.50                            | 10.45                            | 1.49      | 1.02    | 34.26                   | 24.92                           | 3.34                    |
| 4200          | 18.35        | 29.25             | 6.93                            | 9.47                             | 1.46      | 1.00    | 33.42                   | 23.91                           | 3.38                    |
| 4400          | 18.24        | 29.23             | 6.56                            | 8.96                             | 1.47      | 0.98    | 32.67                   | 23.95                           | 3.30                    |
| 4600          | 18.27        | 29.03             | 6.37                            | 8.61                             | 1.45      | 0.96    | 32.17                   | 22.86                           | 3.22                    |
| 4800          | 18.29        | 28.79             | 6.43                            | 8.81                             | 1.45      | 0.95    | 32.05                   | 23.74                           | 3.19                    |
| 5000          | 18.37        | 28.42             | 6.72                            | 9.19                             | 1.44      | 0.94    | 31.59                   | 22.88                           | 3.06                    |
| 5200          | 18.55        | 27.92             | 7.26                            | 10.45                            | 1.41      | 0.94    | 31.02                   | 23.44                           | 3.07                    |
| 5400          | 18.68        | 27.51             | 8.10                            | 11.93                            | 1.41      | 0.93    | 31.45                   | 24.30                           | 3.01                    |
| 5600          | 18.89        | 27.14             | 8.74                            | 14.96                            | 1.38      | 0.95    | 31.81                   | 24.47                           | 2.99                    |
| 5800          | 18.97        | 26.90             | 9.29                            | 19.46                            | 1.37      | 0.96    | 32.72                   | 25.12                           | 2.96                    |
| 6000          | 18.96        | 26.86             | 9.15                            | 30.04                            | 1.38      | 0.98    | 33.81                   | 25.11                           | 3.00                    |
| 6200          | 18.74        | 26.97             | 8.62                            | 32.13                            | 1.41      | 1.02    | 34.89                   | 25.25                           | 3.11                    |
| 6400          | 18.52        | 27.13             | 7.70                            | 22.38                            | 1.41      | 1.07    | 35.46                   | 25.38                           | 3.14                    |
| 6600          | 18.31        | 27.31             | 7.07                            | 19.67                            | 1.42      | 1.11    | 35.96                   | 25.34                           | 3.31                    |
| 6800          | 18.30        | 27.47             | 6.54                            | 18.35                            | 1.39      | 1.14    | 36.11                   | 25.29                           | 3.30                    |
| 7000          | 18.08        | 27.62             | 6.25                            | 18.42                            | 1.41      | 1.17    | 35.85                   | 25.18                           | 3.36                    |
| 7200          | 17.94        | 27.70             | 5.95                            | 17.00                            | 1.38      | 1.19    | 35.66                   | 25.03                           | 3.40                    |
| 7400          | 17.80        | 27.87             | 6.13                            | 17.27                            | 1.45      | 1.17    | 35.49                   | 24.93                           | 3.33                    |
| 7600          | 17.55        | 27.94             | 6.76                            | 18.07                            | 1.56      | 1.14    | 35.28                   | 24.77                           | 3.37                    |
| 7800          | 17.29        | 27.66             | 7.52                            | 19.65                            | 1.63      | 1.10    | 35.11                   | 24.76                           | 3.31                    |
| 8000          | 17.19        | 27.48             | 8.14                            | 25.28                            | 1.68      | 1.07    | 35.18                   | 24.60                           | 3.28                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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IF/RF MICROWAVE COMPONENTS

# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V , Iadj connection = Ground, Id = 63mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 20.23        | 26.83             | 13.32                           | 13.23                            | 1.27      | 0.75 | 35.32                   | 27.04                           | 3.36                    |
| 600           | 20.29        | 26.73             | 14.98                           | 18.63                            | 1.28      | 0.79 | 35.06                   | 27.27                           | 3.27                    |
| 800           | 20.17        | 26.72             | 15.52                           | 25.07                            | 1.29      | 0.81 | 34.42                   | 27.45                           | 3.35                    |
| 1000          | 20.04        | 26.69             | 15.43                           | 29.40                            | 1.29      | 0.83 | 34.16                   | 27.74                           | 3.35                    |
| 1200          | 19.87        | 26.69             | 15.15                           | 25.57                            | 1.30      | 0.84 | 33.96                   | 27.88                           | 3.25                    |
| 1400          | 19.70        | 26.68             | 14.89                           | 22.12                            | 1.31      | 0.85 | 34.01                   | 28.18                           | 3.17                    |
| 1600          | 19.54        | 26.67             | 14.73                           | 20.30                            | 1.32      | 0.85 | 34.02                   | 28.13                           | 3.24                    |
| 1800          | 19.37        | 26.67             | 14.72                           | 18.98                            | 1.33      | 0.86 | 33.87                   | 28.05                           | 3.14                    |
| 2000          | 19.28        | 26.59             | 14.80                           | 18.41                            | 1.34      | 0.86 | 33.91                   | 28.18                           | 3.16                    |
| 2200          | 19.16        | 26.57             | 14.72                           | 17.94                            | 1.35      | 0.87 | 33.71                   | 27.94                           | 3.08                    |
| 2400          | 18.99        | 26.64             | 14.41                           | 17.24                            | 1.37      | 0.88 | 33.44                   | 28.06                           | 2.99                    |
| 2600          | 18.77        | 26.73             | 13.94                           | 16.58                            | 1.40      | 0.90 | 33.27                   | 27.75                           | 3.15                    |
| 2800          | 18.47        | 26.92             | 13.32                           | 16.04                            | 1.44      | 0.92 | 33.45                   | 27.74                           | 3.22                    |
| 3000          | 18.15        | 27.09             | 12.26                           | 14.91                            | 1.47      | 0.94 | 33.96                   | 27.59                           | 3.18                    |
| 3200          | 17.95        | 27.10             | 11.20                           | 13.82                            | 1.45      | 0.95 | 34.52                   | 27.74                           | 3.15                    |
| 3400          | 17.71        | 27.16             | 10.06                           | 12.46                            | 1.43      | 0.97 | 35.04                   | 27.53                           | 3.18                    |
| 3600          | 17.47        | 27.28             | 9.03                            | 11.15                            | 1.41      | 0.97 | 35.33                   | 27.49                           | 3.12                    |
| 3800          | 17.23        | 27.43             | 8.07                            | 9.91                             | 1.41      | 0.97 | 35.25                   | 27.55                           | 3.13                    |
| 4000          | 17.04        | 27.55             | 7.27                            | 8.85                             | 1.40      | 0.96 | 35.72                   | 27.22                           | 3.18                    |
| 4200          | 16.93        | 27.62             | 6.63                            | 8.04                             | 1.39      | 0.94 | 35.81                   | 26.71                           | 3.14                    |
| 4400          | 16.85        | 27.57             | 6.17                            | 7.50                             | 1.37      | 0.91 | 35.83                   | 26.57                           | 3.07                    |
| 4600          | 16.84        | 27.45             | 5.95                            | 7.30                             | 1.37      | 0.90 | 35.95                   | 25.03                           | 3.02                    |
| 4800          | 16.91        | 27.25             | 5.96                            | 7.40                             | 1.37      | 0.89 | 34.89                   | 26.30                           | 2.98                    |
| 5000          | 17.07        | 26.91             | 6.18                            | 7.79                             | 1.36      | 0.88 | 36.22                   | 24.68                           | 2.87                    |
| 5200          | 17.31        | 26.51             | 6.67                            | 8.60                             | 1.34      | 0.88 | 34.41                   | 25.36                           | 2.84                    |
| 5400          | 17.63        | 26.12             | 7.33                            | 9.74                             | 1.32      | 0.88 | 33.50                   | 26.25                           | 2.77                    |
| 5600          | 17.93        | 25.75             | 8.07                            | 11.66                            | 1.29      | 0.89 | 33.31                   | 26.51                           | 2.67                    |
| 5800          | 18.13        | 25.41             | 8.84                            | 14.54                            | 1.27      | 0.91 | 33.52                   | 26.45                           | 2.67                    |
| 6000          | 18.17        | 25.21             | 9.12                            | 18.39                            | 1.27      | 0.94 | 34.19                   | 26.52                           | 2.68                    |
| 6200          | 18.14        | 25.17             | 8.84                            | 22.22                            | 1.26      | 0.98 | 35.48                   | 26.31                           | 2.83                    |
| 6400          | 18.08        | 25.30             | 8.07                            | 21.09                            | 1.25      | 1.03 | 36.70                   | 26.09                           | 2.82                    |
| 6600          | 18.05        | 25.45             | 7.41                            | 19.03                            | 1.23      | 1.07 | 38.35                   | 25.99                           | 2.89                    |
| 6800          | 17.98        | 25.64             | 6.90                            | 17.59                            | 1.22      | 1.10 | 38.75                   | 25.82                           | 2.98                    |
| 7000          | 17.80        | 25.85             | 6.53                            | 16.71                            | 1.23      | 1.12 | 40.41                   | 25.71                           | 3.03                    |
| 7200          | 17.49        | 26.10             | 6.31                            | 15.53                            | 1.27      | 1.13 | 40.27                   | 25.65                           | 3.01                    |
| 7400          | 17.36        | 26.20             | 6.39                            | 14.75                            | 1.30      | 1.12 | 39.05                   | 25.64                           | 2.93                    |
| 7600          | 17.17        | 26.20             | 6.55                            | 14.81                            | 1.35      | 1.09 | 39.35                   | 25.90                           | 2.97                    |
| 7800          | 17.14        | 25.97             | 6.79                            | 15.51                            | 1.35      | 1.07 | 40.02                   | 25.86                           | 2.95                    |
| 8000          | 17.13        | 25.86             | 7.58                            | 18.94                            | 1.41      | 1.05 | 41.20                   | 25.90                           | 2.94                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V , Iadj connection = 0.2V, Id = 77mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 20.94        | 27.68             | 13.54                           | 12.38                            | 1.27      | 0.74 | 36.86                   | 27.00                           | 3.32                    |
| 600           | 20.99        | 27.49             | 15.27                           | 15.97                            | 1.27      | 0.78 | 36.45                   | 27.20                           | 3.27                    |
| 800           | 20.88        | 27.46             | 15.95                           | 18.89                            | 1.28      | 0.80 | 35.70                   | 27.38                           | 3.25                    |
| 1000          | 20.75        | 27.44             | 16.01                           | 20.94                            | 1.29      | 0.82 | 35.45                   | 27.67                           | 3.29                    |
| 1200          | 20.60        | 27.40             | 15.84                           | 21.76                            | 1.30      | 0.83 | 35.29                   | 27.79                           | 3.24                    |
| 1400          | 20.43        | 27.36             | 15.62                           | 21.25                            | 1.31      | 0.84 | 35.41                   | 28.03                           | 3.10                    |
| 1600          | 20.28        | 27.34             | 15.42                           | 20.28                            | 1.32      | 0.85 | 35.48                   | 27.99                           | 3.14                    |
| 1800          | 20.11        | 27.36             | 15.33                           | 19.26                            | 1.33      | 0.86 | 35.07                   | 27.89                           | 3.10                    |
| 2000          | 20.01        | 27.29             | 15.26                           | 18.51                            | 1.34      | 0.86 | 34.98                   | 28.00                           | 3.10                    |
| 2200          | 19.88        | 27.30             | 14.99                           | 17.84                            | 1.35      | 0.87 | 34.76                   | 27.78                           | 3.00                    |
| 2400          | 19.70        | 27.34             | 14.52                           | 17.08                            | 1.37      | 0.88 | 34.56                   | 27.88                           | 2.90                    |
| 2600          | 19.47        | 27.46             | 13.94                           | 16.37                            | 1.40      | 0.89 | 34.45                   | 27.57                           | 3.08                    |
| 2800          | 19.18        | 27.60             | 13.32                           | 16.10                            | 1.44      | 0.91 | 34.66                   | 27.51                           | 3.14                    |
| 3000          | 18.87        | 27.76             | 12.31                           | 15.32                            | 1.47      | 0.94 | 35.34                   | 27.33                           | 3.14                    |
| 3200          | 18.68        | 27.75             | 11.35                           | 14.65                            | 1.45      | 0.96 | 36.17                   | 27.34                           | 3.12                    |
| 3400          | 18.48        | 27.77             | 10.31                           | 13.63                            | 1.43      | 0.98 | 36.94                   | 27.11                           | 3.05                    |
| 3600          | 18.26        | 27.84             | 9.35                            | 12.45                            | 1.42      | 0.99 | 37.33                   | 26.93                           | 3.06                    |
| 3800          | 18.05        | 27.95             | 8.43                            | 11.17                            | 1.41      | 0.99 | 37.80                   | 26.97                           | 3.08                    |
| 4000          | 17.89        | 28.04             | 7.64                            | 10.02                            | 1.40      | 0.98 | 38.38                   | 26.11                           | 3.13                    |
| 4200          | 17.79        | 28.07             | 7.00                            | 9.10                             | 1.39      | 0.96 | 37.88                   | 25.35                           | 3.00                    |
| 4400          | 17.72        | 28.04             | 6.52                            | 8.46                             | 1.38      | 0.94 | 37.53                   | 25.22                           | 2.93                    |
| 4600          | 17.71        | 27.90             | 6.30                            | 8.20                             | 1.38      | 0.92 | 36.44                   | 23.95                           | 2.95                    |
| 4800          | 17.75        | 27.63             | 6.33                            | 8.30                             | 1.37      | 0.91 | 34.91                   | 25.45                           | 2.87                    |
| 5000          | 17.88        | 27.35             | 6.58                            | 8.73                             | 1.37      | 0.90 | 35.29                   | 23.55                           | 2.83                    |
| 5200          | 18.09        | 26.99             | 7.11                            | 9.65                             | 1.36      | 0.89 | 33.67                   | 24.64                           | 2.72                    |
| 5400          | 18.35        | 26.62             | 7.83                            | 10.97                            | 1.33      | 0.89 | 32.94                   | 26.00                           | 2.65                    |
| 5600          | 18.59        | 26.32             | 8.59                            | 13.26                            | 1.32      | 0.90 | 32.88                   | 26.33                           | 2.65                    |
| 5800          | 18.72        | 25.99             | 9.29                            | 16.88                            | 1.30      | 0.92 | 33.24                   | 26.41                           | 2.69                    |
| 6000          | 18.69        | 25.88             | 9.41                            | 22.67                            | 1.30      | 0.95 | 34.06                   | 26.47                           | 2.67                    |
| 6200          | 18.61        | 25.86             | 8.96                            | 28.59                            | 1.30      | 0.98 | 35.34                   | 26.27                           | 2.78                    |
| 6400          | 18.52        | 26.06             | 8.08                            | 22.80                            | 1.29      | 1.03 | 36.91                   | 26.04                           | 2.75                    |
| 6600          | 18.49        | 26.24             | 7.38                            | 19.99                            | 1.28      | 1.07 | 38.03                   | 25.94                           | 2.82                    |
| 6800          | 18.43        | 26.42             | 6.89                            | 18.73                            | 1.27      | 1.11 | 38.27                   | 25.74                           | 2.87                    |
| 7000          | 18.27        | 26.62             | 6.58                            | 18.52                            | 1.29      | 1.13 | 39.68                   | 25.59                           | 2.95                    |
| 7200          | 17.96        | 26.88             | 6.42                            | 17.66                            | 1.34      | 1.14 | 40.55                   | 25.50                           | 2.96                    |
| 7400          | 17.84        | 26.94             | 6.59                            | 16.90                            | 1.37      | 1.13 | 38.65                   | 25.41                           | 2.87                    |
| 7600          | 17.64        | 26.98             | 6.84                            | 17.06                            | 1.42      | 1.10 | 38.95                   | 25.74                           | 2.96                    |
| 7800          | 17.59        | 26.76             | 7.12                            | 17.82                            | 1.43      | 1.08 | 39.36                   | 25.70                           | 2.82                    |
| 8000          | 17.52        | 26.75             | 7.93                            | 22.15                            | 1.51      | 1.06 | 39.76                   | 25.74                           | 2.93                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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REV. OR

PMA3-83MP-D+

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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 0.4V, Id = 87mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 21.31        | 28.09             | 13.55                           | 11.80                            | 1.27      | 0.74 | 37.93                   | 26.98                           | 3.25                    |
| 600           | 21.35        | 27.93             | 15.29                           | 14.64                            | 1.27      | 0.77 | 37.45                   | 27.16                           | 3.21                    |
| 800           | 21.24        | 27.89             | 16.03                           | 16.79                            | 1.28      | 0.79 | 36.69                   | 27.31                           | 3.27                    |
| 1000          | 21.12        | 27.85             | 16.18                           | 18.36                            | 1.29      | 0.81 | 36.45                   | 27.59                           | 3.24                    |
| 1200          | 20.98        | 27.82             | 16.09                           | 19.36                            | 1.30      | 0.83 | 36.34                   | 27.73                           | 3.13                    |
| 1400          | 20.81        | 27.78             | 15.90                           | 19.56                            | 1.31      | 0.84 | 36.53                   | 27.90                           | 3.11                    |
| 1600          | 20.66        | 27.76             | 15.70                           | 19.16                            | 1.32      | 0.84 | 36.57                   | 27.85                           | 3.12                    |
| 1800          | 20.49        | 27.75             | 15.54                           | 18.51                            | 1.33      | 0.85 | 36.18                   | 27.76                           | 3.09                    |
| 2000          | 20.39        | 27.69             | 15.40                           | 17.82                            | 1.34      | 0.85 | 36.08                   | 27.86                           | 3.03                    |
| 2200          | 20.25        | 27.68             | 15.02                           | 17.17                            | 1.35      | 0.86 | 35.88                   | 27.65                           | 3.01                    |
| 2400          | 20.06        | 27.73             | 14.47                           | 16.48                            | 1.37      | 0.87 | 35.70                   | 27.76                           | 3.00                    |
| 2600          | 19.83        | 27.86             | 13.85                           | 15.84                            | 1.40      | 0.89 | 35.48                   | 27.43                           | 3.04                    |
| 2800          | 19.55        | 28.03             | 13.25                           | 15.72                            | 1.45      | 0.91 | 35.80                   | 27.35                           | 3.06                    |
| 3000          | 19.24        | 28.15             | 12.28                           | 15.22                            | 1.47      | 0.94 | 36.67                   | 27.09                           | 3.07                    |
| 3200          | 19.06        | 28.10             | 11.38                           | 14.82                            | 1.45      | 0.96 | 37.71                   | 26.96                           | 3.11                    |
| 3400          | 18.86        | 28.11             | 10.41                           | 14.10                            | 1.43      | 0.98 | 39.19                   | 26.76                           | 3.10                    |
| 3600          | 18.66        | 28.17             | 9.50                            | 13.09                            | 1.42      | 0.99 | 40.41                   | 26.50                           | 3.02                    |
| 3800          | 18.47        | 28.26             | 8.62                            | 11.87                            | 1.41      | 1.00 | 40.13                   | 26.33                           | 3.09                    |
| 4000          | 18.31        | 28.32             | 7.84                            | 10.69                            | 1.41      | 0.99 | 39.42                   | 25.48                           | 3.05                    |
| 4200          | 18.23        | 28.31             | 7.20                            | 9.72                             | 1.39      | 0.98 | 38.03                   | 24.70                           | 2.96                    |
| 4400          | 18.16        | 28.28             | 6.72                            | 9.01                             | 1.39      | 0.96 | 37.14                   | 24.74                           | 2.91                    |
| 4600          | 18.14        | 28.15             | 6.50                            | 8.72                             | 1.38      | 0.94 | 35.55                   | 23.28                           | 2.90                    |
| 4800          | 18.18        | 27.88             | 6.53                            | 8.81                             | 1.38      | 0.92 | 34.39                   | 24.96                           | 2.79                    |
| 5000          | 18.29        | 27.58             | 6.80                            | 9.26                             | 1.37      | 0.91 | 34.35                   | 23.01                           | 2.74                    |
| 5200          | 18.47        | 27.27             | 7.36                            | 10.24                            | 1.37      | 0.90 | 32.99                   | 24.33                           | 2.69                    |
| 5400          | 18.71        | 26.91             | 8.10                            | 11.66                            | 1.35      | 0.90 | 32.60                   | 25.83                           | 2.60                    |
| 5600          | 18.91        | 26.60             | 8.86                            | 14.15                            | 1.33      | 0.91 | 32.66                   | 26.23                           | 2.57                    |
| 5800          | 19.01        | 26.33             | 9.53                            | 18.26                            | 1.32      | 0.92 | 33.09                   | 26.36                           | 2.60                    |
| 6000          | 18.95        | 26.24             | 9.54                            | 25.73                            | 1.32      | 0.95 | 34.09                   | 26.41                           | 2.63                    |
| 6200          | 18.84        | 26.24             | 8.99                            | 31.45                            | 1.32      | 0.98 | 35.33                   | 26.25                           | 2.72                    |
| 6400          | 18.75        | 26.42             | 8.07                            | 22.57                            | 1.31      | 1.03 | 36.81                   | 26.02                           | 2.76                    |
| 6600          | 18.71        | 26.60             | 7.36                            | 19.81                            | 1.30      | 1.07 | 37.76                   | 25.91                           | 2.72                    |
| 6800          | 18.66        | 26.79             | 6.88                            | 18.84                            | 1.29      | 1.11 | 37.98                   | 25.70                           | 2.87                    |
| 7000          | 18.50        | 27.00             | 6.59                            | 19.16                            | 1.31      | 1.13 | 38.69                   | 25.50                           | 2.93                    |
| 7200          | 18.20        | 27.25             | 6.46                            | 18.82                            | 1.36      | 1.15 | 38.97                   | 25.40                           | 2.95                    |
| 7400          | 18.08        | 27.38             | 6.67                            | 18.13                            | 1.41      | 1.13 | 38.03                   | 25.34                           | 2.88                    |
| 7600          | 17.87        | 27.38             | 6.97                            | 18.43                            | 1.46      | 1.11 | 38.16                   | 25.64                           | 2.88                    |
| 7800          | 17.81        | 27.16             | 7.28                            | 19.28                            | 1.47      | 1.08 | 38.27                   | 25.64                           | 2.83                    |
| 8000          | 17.72        | 27.16             | 8.08                            | 24.13                            | 1.55      | 1.06 | 38.39                   | 25.70                           | 2.88                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 0.6V, Id = 97mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 21.56        | 28.37             | 13.54                           | 11.35                            | 1.27      | 0.73 | 38.51                   | 26.95                           | 3.25                    |
| 600           | 21.60        | 28.30             | 15.26                           | 13.78                            | 1.28      | 0.76 | 38.05                   | 27.15                           | 3.17                    |
| 800           | 21.50        | 28.22             | 16.03                           | 15.55                            | 1.28      | 0.79 | 37.34                   | 27.26                           | 3.21                    |
| 1000          | 21.38        | 28.19             | 16.23                           | 16.89                            | 1.29      | 0.81 | 37.14                   | 27.54                           | 3.21                    |
| 1200          | 21.24        | 28.13             | 16.21                           | 17.88                            | 1.30      | 0.82 | 37.06                   | 27.66                           | 3.14                    |
| 1400          | 21.08        | 28.07             | 16.05                           | 18.31                            | 1.31      | 0.83 | 37.31                   | 27.81                           | 3.06                    |
| 1600          | 20.93        | 28.08             | 15.84                           | 18.17                            | 1.32      | 0.84 | 37.48                   | 27.77                           | 3.05                    |
| 1800          | 20.76        | 28.05             | 15.65                           | 17.74                            | 1.33      | 0.85 | 37.08                   | 27.68                           | 3.07                    |
| 2000          | 20.65        | 27.99             | 15.43                           | 17.13                            | 1.34      | 0.85 | 36.98                   | 27.80                           | 3.08                    |
| 2200          | 20.51        | 27.98             | 14.99                           | 16.53                            | 1.35      | 0.86 | 36.67                   | 27.59                           | 2.97                    |
| 2400          | 20.32        | 28.03             | 14.39                           | 15.93                            | 1.37      | 0.87 | 36.52                   | 27.67                           | 2.87                    |
| 2600          | 20.08        | 28.13             | 13.75                           | 15.35                            | 1.40      | 0.89 | 36.34                   | 27.34                           | 3.01                    |
| 2800          | 19.80        | 28.32             | 13.16                           | 15.31                            | 1.45      | 0.91 | 36.91                   | 27.22                           | 3.05                    |
| 3000          | 19.50        | 28.44             | 12.24                           | 15.00                            | 1.47      | 0.93 | 37.84                   | 26.99                           | 3.07                    |
| 3200          | 19.32        | 28.40             | 11.38                           | 14.81                            | 1.46      | 0.96 | 38.97                   | 26.76                           | 3.01                    |
| 3400          | 19.13        | 28.35             | 10.46                           | 14.36                            | 1.43      | 0.98 | 41.15                   | 26.53                           | 3.04                    |
| 3600          | 18.94        | 28.39             | 9.60                            | 13.52                            | 1.42      | 1.00 | 41.33                   | 26.18                           | 2.97                    |
| 3800          | 18.75        | 28.44             | 8.74                            | 12.39                            | 1.41      | 1.00 | 39.77                   | 26.09                           | 3.00                    |
| 4000          | 18.61        | 28.50             | 7.98                            | 11.20                            | 1.41      | 1.00 | 38.39                   | 25.27                           | 3.06                    |
| 4200          | 18.53        | 28.50             | 7.34                            | 10.18                            | 1.40      | 0.98 | 36.91                   | 24.53                           | 2.90                    |
| 4400          | 18.46        | 28.45             | 6.87                            | 9.44                             | 1.39      | 0.97 | 36.08                   | 24.50                           | 2.88                    |
| 4600          | 18.44        | 28.28             | 6.64                            | 9.13                             | 1.38      | 0.95 | 34.70                   | 23.18                           | 2.80                    |
| 4800          | 18.47        | 28.05             | 6.69                            | 9.20                             | 1.38      | 0.93 | 33.93                   | 24.75                           | 2.80                    |
| 5000          | 18.57        | 27.75             | 6.97                            | 9.66                             | 1.38      | 0.92 | 33.75                   | 23.16                           | 2.68                    |
| 5200          | 18.73        | 27.44             | 7.54                            | 10.68                            | 1.37      | 0.91 | 32.68                   | 24.22                           | 2.63                    |
| 5400          | 18.95        | 27.14             | 8.30                            | 12.17                            | 1.36      | 0.90 | 32.47                   | 25.73                           | 2.57                    |
| 5600          | 19.13        | 26.79             | 9.05                            | 14.81                            | 1.33      | 0.91 | 32.60                   | 26.16                           | 2.52                    |
| 5800          | 19.20        | 26.58             | 9.67                            | 19.27                            | 1.33      | 0.92 | 33.11                   | 26.35                           | 2.52                    |
| 6000          | 19.12        | 26.46             | 9.62                            | 28.55                            | 1.33      | 0.95 | 34.13                   | 26.39                           | 2.61                    |
| 6200          | 19.00        | 26.48             | 9.01                            | 30.47                            | 1.33      | 0.98 | 35.56                   | 26.24                           | 2.72                    |
| 6400          | 18.90        | 26.70             | 8.05                            | 21.92                            | 1.33      | 1.03 | 36.90                   | 25.98                           | 2.76                    |
| 6600          | 18.86        | 26.89             | 7.34                            | 19.45                            | 1.32      | 1.07 | 37.91                   | 25.90                           | 2.73                    |
| 6800          | 18.81        | 27.08             | 6.87                            | 18.71                            | 1.31      | 1.11 | 38.09                   | 25.69                           | 2.90                    |
| 7000          | 18.66        | 27.32             | 6.60                            | 19.43                            | 1.34      | 1.14 | 38.41                   | 25.48                           | 2.87                    |
| 7200          | 18.36        | 27.55             | 6.48                            | 19.59                            | 1.39      | 1.15 | 38.38                   | 25.42                           | 2.93                    |
| 7400          | 18.25        | 27.63             | 6.73                            | 19.05                            | 1.43      | 1.13 | 37.81                   | 25.33                           | 2.89                    |
| 7600          | 18.04        | 27.67             | 7.05                            | 19.50                            | 1.49      | 1.11 | 37.77                   | 25.63                           | 2.88                    |
| 7800          | 17.97        | 27.40             | 7.38                            | 20.44                            | 1.49      | 1.08 | 37.75                   | 25.66                           | 2.86                    |
| 8000          | 17.86        | 27.44             | 8.18                            | 25.77                            | 1.58      | 1.06 | 37.84                   | 25.77                           | 2.87                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 0.8V, Id = 106mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 21.75        | 28.63             | 13.53                           | 11.03                            | 1.27      | 0.72 | 38.69                   | 26.96                           | 3.19                    |
| 600           | 21.78        | 28.51             | 15.19                           | 13.20                            | 1.28      | 0.76 | 38.31                   | 27.14                           | 3.13                    |
| 800           | 21.69        | 28.47             | 16.00                           | 14.76                            | 1.29      | 0.78 | 37.70                   | 27.29                           | 3.14                    |
| 1000          | 21.57        | 28.41             | 16.24                           | 15.97                            | 1.29      | 0.80 | 37.54                   | 27.54                           | 3.15                    |
| 1200          | 21.43        | 28.37             | 16.26                           | 16.95                            | 1.30      | 0.82 | 37.46                   | 27.61                           | 3.13                    |
| 1400          | 21.28        | 28.33             | 16.12                           | 17.45                            | 1.31      | 0.83 | 37.77                   | 27.80                           | 3.03                    |
| 1600          | 21.13        | 28.30             | 15.91                           | 17.45                            | 1.32      | 0.84 | 37.98                   | 27.73                           | 3.03                    |
| 1800          | 20.95        | 28.30             | 15.69                           | 17.15                            | 1.34      | 0.85 | 37.64                   | 27.64                           | 2.96                    |
| 2000          | 20.84        | 28.22             | 15.44                           | 16.59                            | 1.34      | 0.85 | 37.56                   | 27.74                           | 2.88                    |
| 2200          | 20.69        | 28.20             | 14.95                           | 16.04                            | 1.36      | 0.86 | 37.19                   | 27.53                           | 2.96                    |
| 2400          | 20.50        | 28.28             | 14.32                           | 15.51                            | 1.38      | 0.87 | 37.06                   | 27.63                           | 3.04                    |
| 2600          | 20.26        | 28.38             | 13.65                           | 14.97                            | 1.41      | 0.88 | 36.97                   | 27.32                           | 3.00                    |
| 2800          | 19.98        | 28.50             | 13.09                           | 14.99                            | 1.45      | 0.90 | 37.53                   | 27.17                           | 3.00                    |
| 3000          | 19.68        | 28.62             | 12.19                           | 14.77                            | 1.47      | 0.93 | 38.77                   | 26.93                           | 3.08                    |
| 3200          | 19.51        | 28.53             | 11.37                           | 14.73                            | 1.45      | 0.95 | 39.90                   | 26.67                           | 3.01                    |
| 3400          | 19.32        | 28.56             | 10.49                           | 14.47                            | 1.44      | 0.98 | 42.30                   | 26.52                           | 3.03                    |
| 3600          | 19.14        | 28.56             | 9.66                            | 13.80                            | 1.42      | 1.00 | 40.57                   | 26.05                           | 2.93                    |
| 3800          | 18.96        | 28.62             | 8.83                            | 12.75                            | 1.42      | 1.01 | 38.89                   | 26.01                           | 2.99                    |
| 4000          | 18.82        | 28.68             | 8.08                            | 11.57                            | 1.41      | 1.01 | 37.57                   | 25.17                           | 2.99                    |
| 4200          | 18.74        | 28.65             | 7.45                            | 10.53                            | 1.40      | 0.99 | 36.17                   | 24.51                           | 2.91                    |
| 4400          | 18.67        | 28.55             | 6.97                            | 9.75                             | 1.39      | 0.97 | 35.35                   | 24.53                           | 2.84                    |
| 4600          | 18.65        | 28.44             | 6.75                            | 9.42                             | 1.39      | 0.95 | 34.22                   | 23.32                           | 2.77                    |
| 4800          | 18.67        | 28.20             | 6.80                            | 9.48                             | 1.39      | 0.94 | 33.65                   | 24.77                           | 2.73                    |
| 5000          | 18.77        | 27.87             | 7.09                            | 9.95                             | 1.38      | 0.92 | 33.38                   | 23.45                           | 2.67                    |
| 5200          | 18.92        | 27.58             | 7.67                            | 11.00                            | 1.38      | 0.91 | 32.45                   | 24.38                           | 2.62                    |
| 5400          | 19.13        | 27.25             | 8.44                            | 12.54                            | 1.36      | 0.90 | 32.45                   | 25.73                           | 2.57                    |
| 5600          | 19.29        | 26.99             | 9.19                            | 15.29                            | 1.35      | 0.91 | 32.65                   | 26.11                           | 2.50                    |
| 5800          | 19.34        | 26.77             | 9.79                            | 20.03                            | 1.34      | 0.92 | 33.33                   | 26.34                           | 2.54                    |
| 6000          | 19.24        | 26.70             | 9.67                            | 30.82                            | 1.35      | 0.95 | 34.46                   | 26.36                           | 2.55                    |
| 6200          | 19.11        | 26.68             | 9.02                            | 28.79                            | 1.35      | 0.99 | 36.00                   | 26.22                           | 2.72                    |
| 6400          | 19.01        | 26.91             | 8.04                            | 21.32                            | 1.34      | 1.03 | 37.33                   | 26.00                           | 2.74                    |
| 6600          | 18.97        | 27.07             | 7.32                            | 19.08                            | 1.33      | 1.07 | 38.27                   | 25.94                           | 2.80                    |
| 6800          | 18.92        | 27.28             | 6.86                            | 18.51                            | 1.33      | 1.11 | 38.36                   | 25.70                           | 2.86                    |
| 7000          | 18.77        | 27.49             | 6.60                            | 19.49                            | 1.35      | 1.14 | 38.45                   | 25.55                           | 2.84                    |
| 7200          | 18.47        | 27.80             | 6.50                            | 20.11                            | 1.41      | 1.15 | 38.26                   | 25.47                           | 2.94                    |
| 7400          | 18.37        | 27.87             | 6.76                            | 19.71                            | 1.45      | 1.14 | 37.83                   | 25.39                           | 2.88                    |
| 7600          | 18.16        | 27.87             | 7.11                            | 20.33                            | 1.51      | 1.11 | 37.72                   | 25.69                           | 2.86                    |
| 7800          | 18.08        | 27.63             | 7.45                            | 21.37                            | 1.51      | 1.09 | 37.60                   | 25.74                           | 2.78                    |
| 8000          | 17.95        | 27.63             | 8.24                            | 26.94                            | 1.60      | 1.06 | 37.66                   | 25.75                           | 2.82                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 1.0V, Id = 116mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 21.90        | 28.90             | 13.49                           | 10.79                            | 1.28      | 0.72 | 38.68                   | 26.97                           | 3.23                    |
| 600           | 21.93        | 28.72             | 15.15                           | 12.78                            | 1.28      | 0.76 | 38.37                   | 27.16                           | 3.16                    |
| 800           | 21.83        | 28.65             | 15.95                           | 14.22                            | 1.29      | 0.78 | 37.89                   | 27.31                           | 3.16                    |
| 1000          | 21.72        | 28.61             | 16.23                           | 15.35                            | 1.30      | 0.80 | 37.74                   | 27.53                           | 3.19                    |
| 1200          | 21.58        | 28.55             | 16.28                           | 16.29                            | 1.30      | 0.81 | 37.67                   | 27.64                           | 3.12                    |
| 1400          | 21.42        | 28.51             | 16.17                           | 16.83                            | 1.31      | 0.83 | 38.00                   | 27.78                           | 3.00                    |
| 1600          | 21.27        | 28.52             | 15.95                           | 16.91                            | 1.33      | 0.84 | 38.24                   | 27.72                           | 3.04                    |
| 1800          | 21.10        | 28.47             | 15.71                           | 16.70                            | 1.34      | 0.85 | 37.97                   | 27.63                           | 2.97                    |
| 2000          | 20.99        | 28.40             | 15.42                           | 16.18                            | 1.35      | 0.85 | 37.89                   | 27.72                           | 3.01                    |
| 2200          | 20.84        | 28.40             | 14.90                           | 15.66                            | 1.36      | 0.85 | 37.49                   | 27.51                           | 3.01                    |
| 2400          | 20.64        | 28.46             | 14.25                           | 15.18                            | 1.38      | 0.87 | 37.41                   | 27.60                           | 2.71                    |
| 2600          | 20.40        | 28.53             | 13.58                           | 14.68                            | 1.41      | 0.88 | 37.33                   | 27.29                           | 2.99                    |
| 2800          | 20.12        | 28.69             | 13.02                           | 14.72                            | 1.45      | 0.90 | 37.97                   | 27.14                           | 3.10                    |
| 3000          | 19.82        | 28.80             | 12.15                           | 14.59                            | 1.48      | 0.93 | 39.35                   | 26.90                           | 3.02                    |
| 3200          | 19.65        | 28.71             | 11.35                           | 14.64                            | 1.46      | 0.95 | 40.61                   | 26.64                           | 3.02                    |
| 3400          | 19.47        | 28.68             | 10.50                           | 14.53                            | 1.44      | 0.98 | 42.93                   | 26.47                           | 3.01                    |
| 3600          | 19.29        | 28.71             | 9.70                            | 13.99                            | 1.43      | 1.00 | 40.22                   | 26.12                           | 2.98                    |
| 3800          | 19.12        | 28.74             | 8.90                            | 13.02                            | 1.42      | 1.01 | 38.56                   | 26.00                           | 3.00                    |
| 4000          | 18.98        | 28.78             | 8.15                            | 11.86                            | 1.41      | 1.01 | 37.31                   | 25.25                           | 3.00                    |
| 4200          | 18.91        | 28.74             | 7.53                            | 10.79                            | 1.40      | 0.99 | 36.02                   | 24.56                           | 2.89                    |
| 4400          | 18.84        | 28.70             | 7.06                            | 9.99                             | 1.40      | 0.98 | 35.05                   | 24.55                           | 2.81                    |
| 4600          | 18.81        | 28.53             | 6.83                            | 9.64                             | 1.39      | 0.96 | 34.00                   | 23.53                           | 2.85                    |
| 4800          | 18.83        | 28.30             | 6.88                            | 9.71                             | 1.39      | 0.94 | 33.48                   | 24.82                           | 2.74                    |
| 5000          | 18.92        | 27.96             | 7.18                            | 10.17                            | 1.38      | 0.92 | 33.48                   | 23.75                           | 2.69                    |
| 5200          | 19.06        | 27.67             | 7.77                            | 11.25                            | 1.38      | 0.91 | 32.45                   | 24.52                           | 2.65                    |
| 5400          | 19.26        | 27.35             | 8.54                            | 12.82                            | 1.36      | 0.91 | 32.58                   | 25.78                           | 2.60                    |
| 5600          | 19.41        | 27.12             | 9.29                            | 15.66                            | 1.35      | 0.91 | 32.85                   | 26.10                           | 2.54                    |
| 5800          | 19.45        | 26.85             | 9.86                            | 20.58                            | 1.34      | 0.92 | 33.65                   | 26.36                           | 2.47                    |
| 6000          | 19.33        | 26.80             | 9.70                            | 32.48                            | 1.35      | 0.95 | 34.88                   | 26.38                           | 2.57                    |
| 6200          | 19.20        | 26.82             | 9.02                            | 27.41                            | 1.35      | 0.98 | 36.48                   | 26.24                           | 2.68                    |
| 6400          | 19.09        | 27.04             | 8.03                            | 20.84                            | 1.35      | 1.03 | 37.81                   | 26.02                           | 2.72                    |
| 6600          | 19.05        | 27.22             | 7.30                            | 18.75                            | 1.34      | 1.07 | 38.70                   | 25.92                           | 2.80                    |
| 6800          | 19.00        | 27.42             | 6.84                            | 18.28                            | 1.33      | 1.11 | 38.65                   | 25.75                           | 2.84                    |
| 7000          | 18.85        | 27.64             | 6.60                            | 19.45                            | 1.36      | 1.14 | 38.53                   | 25.59                           | 2.84                    |
| 7200          | 18.56        | 27.90             | 6.51                            | 20.44                            | 1.42      | 1.15 | 38.23                   | 25.51                           | 3.00                    |
| 7400          | 18.46        | 28.03             | 6.79                            | 20.22                            | 1.46      | 1.14 | 37.95                   | 25.47                           | 2.85                    |
| 7600          | 18.25        | 27.97             | 7.16                            | 21.06                            | 1.51      | 1.11 | 37.79                   | 25.76                           | 2.87                    |
| 7800          | 18.17        | 27.77             | 7.51                            | 22.17                            | 1.53      | 1.09 | 37.58                   | 25.81                           | 2.90                    |
| 8000          | 18.03        | 27.79             | 8.29                            | 27.91                            | 1.61      | 1.06 | 37.62                   | 25.81                           | 2.94                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 1.2V, Id = 125mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 22.01        | 28.96             | 13.46                           | 10.61                            | 1.27      | 0.72 | 38.60                   | 27.03                           | 3.23                    |
| 600           | 22.04        | 28.87             | 15.10                           | 12.47                            | 1.28      | 0.75 | 38.39                   | 27.20                           | 3.14                    |
| 800           | 21.94        | 28.80             | 15.92                           | 13.82                            | 1.29      | 0.78 | 38.00                   | 27.35                           | 3.15                    |
| 1000          | 21.83        | 28.75             | 16.21                           | 14.90                            | 1.30      | 0.80 | 37.88                   | 27.57                           | 3.24                    |
| 1200          | 21.69        | 28.71             | 16.29                           | 15.82                            | 1.31      | 0.81 | 37.80                   | 27.63                           | 3.12                    |
| 1400          | 21.54        | 28.64             | 16.19                           | 16.39                            | 1.31      | 0.82 | 38.09                   | 27.75                           | 3.02                    |
| 1600          | 21.39        | 28.65             | 15.97                           | 16.50                            | 1.33      | 0.84 | 38.34                   | 27.72                           | 3.03                    |
| 1800          | 21.21        | 28.65             | 15.71                           | 16.35                            | 1.35      | 0.85 | 38.17                   | 27.64                           | 3.02                    |
| 2000          | 21.10        | 28.57             | 15.40                           | 15.87                            | 1.35      | 0.85 | 38.03                   | 27.72                           | 2.92                    |
| 2200          | 20.95        | 28.56             | 14.86                           | 15.37                            | 1.36      | 0.85 | 37.61                   | 27.55                           | 2.99                    |
| 2400          | 20.75        | 28.58             | 14.20                           | 14.91                            | 1.38      | 0.86 | 37.52                   | 27.60                           | 2.80                    |
| 2600          | 20.51        | 28.72             | 13.51                           | 14.44                            | 1.42      | 0.88 | 37.47                   | 27.27                           | 3.00                    |
| 2800          | 20.23        | 28.83             | 12.97                           | 14.51                            | 1.46      | 0.90 | 38.11                   | 27.15                           | 3.03                    |
| 3000          | 19.93        | 28.91             | 12.10                           | 14.43                            | 1.48      | 0.93 | 39.54                   | 26.88                           | 3.08                    |
| 3200          | 19.76        | 28.83             | 11.33                           | 14.54                            | 1.46      | 0.95 | 40.91                   | 26.69                           | 3.02                    |
| 3400          | 19.58        | 28.83             | 10.51                           | 14.54                            | 1.44      | 0.98 | 43.58                   | 26.56                           | 2.97                    |
| 3600          | 19.41        | 28.82             | 9.73                            | 14.12                            | 1.43      | 1.00 | 40.64                   | 26.23                           | 3.03                    |
| 3800          | 19.24        | 28.85             | 8.94                            | 13.22                            | 1.42      | 1.01 | 38.19                   | 26.07                           | 2.96                    |
| 4000          | 19.11        | 28.87             | 8.22                            | 12.08                            | 1.42      | 1.01 | 37.10                   | 25.37                           | 2.98                    |
| 4200          | 19.03        | 28.87             | 7.59                            | 11.00                            | 1.41      | 1.00 | 36.03                   | 24.73                           | 2.90                    |
| 4400          | 18.97        | 28.71             | 7.12                            | 10.18                            | 1.39      | 0.98 | 34.88                   | 24.71                           | 2.91                    |
| 4600          | 18.94        | 28.63             | 6.90                            | 9.83                             | 1.40      | 0.96 | 33.90                   | 23.75                           | 2.82                    |
| 4800          | 18.95        | 28.37             | 6.96                            | 9.89                             | 1.40      | 0.94 | 33.56                   | 24.93                           | 2.72                    |
| 5000          | 19.03        | 28.07             | 7.26                            | 10.36                            | 1.39      | 0.93 | 33.41                   | 23.96                           | 2.70                    |
| 5200          | 19.17        | 27.77             | 7.85                            | 11.45                            | 1.39      | 0.92 | 32.63                   | 24.64                           | 2.60                    |
| 5400          | 19.37        | 27.48             | 8.62                            | 13.04                            | 1.37      | 0.91 | 32.76                   | 25.79                           | 2.58                    |
| 5600          | 19.51        | 27.20             | 9.37                            | 15.94                            | 1.35      | 0.91 | 33.09                   | 26.07                           | 2.53                    |
| 5800          | 19.53        | 26.98             | 9.92                            | 20.99                            | 1.35      | 0.92 | 34.01                   | 26.35                           | 2.58                    |
| 6000          | 19.41        | 26.90             | 9.73                            | 33.43                            | 1.35      | 0.95 | 35.35                   | 26.37                           | 2.56                    |
| 6200          | 19.27        | 26.90             | 9.02                            | 26.39                            | 1.35      | 0.98 | 36.92                   | 26.23                           | 2.75                    |
| 6400          | 19.16        | 27.15             | 8.02                            | 20.45                            | 1.35      | 1.03 | 38.09                   | 26.05                           | 2.82                    |
| 6600          | 19.12        | 27.35             | 7.28                            | 18.48                            | 1.34      | 1.07 | 39.00                   | 25.95                           | 2.78                    |
| 6800          | 19.07        | 27.54             | 6.83                            | 18.09                            | 1.34      | 1.11 | 38.92                   | 25.77                           | 2.86                    |
| 7000          | 18.92        | 27.78             | 6.60                            | 19.37                            | 1.37      | 1.14 | 38.67                   | 25.65                           | 2.91                    |
| 7200          | 18.64        | 28.03             | 6.52                            | 20.68                            | 1.43      | 1.15 | 38.34                   | 25.60                           | 2.92                    |
| 7400          | 18.54        | 28.10             | 6.80                            | 20.57                            | 1.46      | 1.14 | 38.08                   | 25.57                           | 2.89                    |
| 7600          | 18.33        | 28.10             | 7.18                            | 21.63                            | 1.52      | 1.11 | 37.85                   | 25.82                           | 2.86                    |
| 7800          | 18.24        | 27.87             | 7.55                            | 22.80                            | 1.53      | 1.09 | 37.61                   | 25.82                           | 2.83                    |
| 8000          | 18.10        | 27.88             | 8.32                            | 28.70                            | 1.62      | 1.06 | 37.55                   | 25.86                           | 2.89                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 1.4V, Id = 134mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 22.10        | 29.13             | 13.44                           | 10.48                            | 1.27      | 0.72 | 38.52                   | 27.09                           | 3.24                    |
| 600           | 22.12        | 28.98             | 15.07                           | 12.25                            | 1.28      | 0.75 | 38.39                   | 27.22                           | 3.20                    |
| 800           | 22.02        | 28.92             | 15.88                           | 13.54                            | 1.29      | 0.77 | 38.07                   | 27.36                           | 3.16                    |
| 1000          | 21.92        | 28.89             | 16.19                           | 14.59                            | 1.30      | 0.79 | 37.95                   | 27.60                           | 3.20                    |
| 1200          | 21.78        | 28.85             | 16.29                           | 15.49                            | 1.31      | 0.81 | 37.84                   | 27.68                           | 3.13                    |
| 1400          | 21.63        | 28.75             | 16.19                           | 16.06                            | 1.32      | 0.82 | 38.11                   | 27.80                           | 3.06                    |
| 1600          | 21.48        | 28.75             | 15.98                           | 16.21                            | 1.33      | 0.83 | 38.34                   | 27.75                           | 3.05                    |
| 1800          | 21.30        | 28.75             | 15.71                           | 16.09                            | 1.35      | 0.84 | 38.24                   | 27.66                           | 3.07                    |
| 2000          | 21.19        | 28.64             | 15.37                           | 15.63                            | 1.35      | 0.84 | 38.17                   | 27.75                           | 2.99                    |
| 2200          | 21.03        | 28.66             | 14.82                           | 15.16                            | 1.36      | 0.85 | 37.64                   | 27.53                           | 2.96                    |
| 2400          | 20.84        | 28.70             | 14.15                           | 14.72                            | 1.38      | 0.86 | 37.58                   | 27.61                           | 2.93                    |
| 2600          | 20.59        | 28.80             | 13.46                           | 14.27                            | 1.42      | 0.88 | 37.53                   | 27.31                           | 3.06                    |
| 2800          | 20.31        | 28.90             | 12.92                           | 14.35                            | 1.45      | 0.90 | 38.13                   | 27.15                           | 3.04                    |
| 3000          | 20.01        | 29.02             | 12.07                           | 14.30                            | 1.48      | 0.93 | 39.48                   | 26.94                           | 3.00                    |
| 3200          | 19.84        | 28.95             | 11.32                           | 14.47                            | 1.46      | 0.95 | 40.87                   | 26.77                           | 3.05                    |
| 3400          | 19.67        | 28.92             | 10.52                           | 14.54                            | 1.44      | 0.98 | 43.62                   | 26.68                           | 3.04                    |
| 3600          | 19.50        | 28.90             | 9.75                            | 14.19                            | 1.43      | 1.00 | 40.98                   | 26.36                           | 2.96                    |
| 3800          | 19.33        | 28.95             | 8.98                            | 13.37                            | 1.43      | 1.01 | 38.24                   | 26.21                           | 2.98                    |
| 4000          | 19.20        | 28.97             | 8.26                            | 12.24                            | 1.42      | 1.01 | 37.34                   | 25.60                           | 2.99                    |
| 4200          | 19.13        | 28.92             | 7.64                            | 11.16                            | 1.41      | 1.00 | 36.16                   | 24.92                           | 2.92                    |
| 4400          | 19.06        | 28.84             | 7.17                            | 10.34                            | 1.40      | 0.98 | 34.98                   | 24.90                           | 2.87                    |
| 4600          | 19.03        | 28.67             | 6.95                            | 9.96                             | 1.40      | 0.96 | 34.02                   | 23.95                           | 2.75                    |
| 4800          | 19.05        | 28.40             | 7.02                            | 10.02                            | 1.40      | 0.94 | 33.65                   | 25.11                           | 2.79                    |
| 5000          | 19.12        | 28.12             | 7.32                            | 10.50                            | 1.39      | 0.93 | 33.53                   | 24.20                           | 2.71                    |
| 5200          | 19.26        | 27.82             | 7.92                            | 11.60                            | 1.39      | 0.92 | 32.81                   | 24.86                           | 2.61                    |
| 5400          | 19.45        | 27.56             | 8.69                            | 13.20                            | 1.37      | 0.91 | 33.08                   | 25.83                           | 2.56                    |
| 5600          | 19.58        | 27.26             | 9.43                            | 16.13                            | 1.36      | 0.91 | 33.42                   | 26.11                           | 2.58                    |
| 5800          | 19.60        | 27.04             | 9.95                            | 21.30                            | 1.35      | 0.92 | 34.47                   | 26.38                           | 2.61                    |
| 6000          | 19.47        | 26.94             | 9.74                            | 33.87                            | 1.35      | 0.95 | 35.81                   | 26.37                           | 2.58                    |
| 6200          | 19.33        | 27.00             | 9.01                            | 25.70                            | 1.36      | 0.98 | 37.27                   | 26.24                           | 2.70                    |
| 6400          | 19.21        | 27.21             | 8.00                            | 20.12                            | 1.35      | 1.03 | 38.39                   | 26.08                           | 2.76                    |
| 6600          | 19.17        | 27.45             | 7.27                            | 18.27                            | 1.35      | 1.07 | 39.27                   | 25.98                           | 2.81                    |
| 6800          | 19.12        | 27.65             | 6.83                            | 17.93                            | 1.35      | 1.10 | 39.11                   | 25.81                           | 2.87                    |
| 7000          | 18.97        | 27.86             | 6.61                            | 19.29                            | 1.37      | 1.13 | 38.83                   | 25.70                           | 2.95                    |
| 7200          | 18.69        | 28.12             | 6.53                            | 20.82                            | 1.43      | 1.15 | 38.48                   | 25.66                           | 2.90                    |
| 7400          | 18.60        | 28.23             | 6.82                            | 20.83                            | 1.48      | 1.14 | 38.22                   | 25.62                           | 2.91                    |
| 7600          | 18.40        | 28.18             | 7.19                            | 22.00                            | 1.53      | 1.11 | 37.95                   | 25.86                           | 2.88                    |
| 7800          | 18.31        | 27.95             | 7.56                            | 23.25                            | 1.54      | 1.09 | 37.66                   | 25.87                           | 2.81                    |
| 8000          | 18.15        | 27.97             | 8.34                            | 29.35                            | 1.63      | 1.06 | 37.59                   | 25.89                           | 2.87                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 1.6V, Id = 142mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |      | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|------|-------------------------|---------------------------------|-------------------------|
| 400           | 22.16        | 29.27             | 13.42                           | 10.38                            | 1.28      | 0.72 | 38.47                   | 27.10                           | 3.22                    |
| 600           | 22.19        | 29.07             | 15.03                           | 12.10                            | 1.28      | 0.75 | 38.41                   | 27.27                           | 3.19                    |
| 800           | 22.09        | 29.00             | 15.85                           | 13.35                            | 1.29      | 0.77 | 38.14                   | 27.41                           | 3.15                    |
| 1000          | 21.99        | 28.98             | 16.17                           | 14.37                            | 1.30      | 0.79 | 38.01                   | 27.63                           | 3.26                    |
| 1200          | 21.85        | 28.91             | 16.27                           | 15.26                            | 1.31      | 0.81 | 37.87                   | 27.68                           | 3.17                    |
| 1400          | 21.70        | 28.86             | 16.19                           | 15.84                            | 1.32      | 0.82 | 38.09                   | 27.85                           | 3.06                    |
| 1600          | 21.55        | 28.83             | 15.98                           | 15.99                            | 1.33      | 0.83 | 38.31                   | 27.80                           | 2.99                    |
| 1800          | 21.37        | 28.82             | 15.70                           | 15.91                            | 1.35      | 0.84 | 38.25                   | 27.71                           | 2.99                    |
| 2000          | 21.26        | 28.76             | 15.36                           | 15.46                            | 1.35      | 0.84 | 38.14                   | 27.79                           | 3.04                    |
| 2200          | 21.10        | 28.73             | 14.79                           | 15.00                            | 1.36      | 0.85 | 37.66                   | 27.56                           | 2.94                    |
| 2400          | 20.90        | 28.78             | 14.11                           | 14.58                            | 1.39      | 0.86 | 37.58                   | 27.62                           | 2.84                    |
| 2600          | 20.66        | 28.89             | 13.42                           | 14.14                            | 1.42      | 0.88 | 37.55                   | 27.32                           | 3.00                    |
| 2800          | 20.38        | 29.02             | 12.88                           | 14.23                            | 1.46      | 0.90 | 38.08                   | 27.16                           | 3.04                    |
| 3000          | 20.08        | 29.14             | 12.04                           | 14.20                            | 1.49      | 0.93 | 39.30                   | 26.99                           | 3.06                    |
| 3200          | 19.91        | 29.04             | 11.30                           | 14.39                            | 1.47      | 0.95 | 40.58                   | 26.84                           | 3.06                    |
| 3400          | 19.73        | 28.97             | 10.52                           | 14.52                            | 1.44      | 0.98 | 43.00                   | 26.76                           | 3.01                    |
| 3600          | 19.56        | 28.98             | 9.77                            | 14.25                            | 1.43      | 1.00 | 41.97                   | 26.48                           | 2.99                    |
| 3800          | 19.40        | 29.00             | 9.01                            | 13.47                            | 1.43      | 1.01 | 38.55                   | 26.34                           | 2.99                    |
| 4000          | 19.27        | 29.00             | 8.29                            | 12.36                            | 1.42      | 1.01 | 37.50                   | 25.78                           | 2.99                    |
| 4200          | 19.21        | 28.98             | 7.68                            | 11.28                            | 1.41      | 1.00 | 36.50                   | 25.06                           | 2.91                    |
| 4400          | 19.14        | 28.88             | 7.21                            | 10.45                            | 1.40      | 0.98 | 35.15                   | 25.12                           | 2.88                    |
| 4600          | 19.11        | 28.70             | 7.00                            | 10.07                            | 1.40      | 0.96 | 34.14                   | 24.18                           | 2.82                    |
| 4800          | 19.12        | 28.50             | 7.07                            | 10.14                            | 1.40      | 0.95 | 33.93                   | 25.24                           | 2.78                    |
| 5000          | 19.19        | 28.16             | 7.38                            | 10.61                            | 1.39      | 0.93 | 33.74                   | 24.43                           | 2.74                    |
| 5200          | 19.33        | 27.90             | 7.97                            | 11.71                            | 1.39      | 0.92 | 33.06                   | 24.98                           | 2.65                    |
| 5400          | 19.51        | 27.59             | 8.75                            | 13.33                            | 1.37      | 0.91 | 33.41                   | 25.91                           | 2.57                    |
| 5600          | 19.64        | 27.32             | 9.48                            | 16.28                            | 1.36      | 0.91 | 33.85                   | 26.12                           | 2.56                    |
| 5800          | 19.65        | 27.14             | 9.98                            | 21.51                            | 1.36      | 0.93 | 34.94                   | 26.38                           | 2.56                    |
| 6000          | 19.51        | 27.01             | 9.74                            | 33.98                            | 1.36      | 0.95 | 36.21                   | 26.37                           | 2.61                    |
| 6200          | 19.37        | 27.06             | 9.00                            | 25.19                            | 1.36      | 0.98 | 37.58                   | 26.25                           | 2.72                    |
| 6400          | 19.25        | 27.29             | 7.98                            | 19.86                            | 1.36      | 1.03 | 38.66                   | 26.07                           | 2.74                    |
| 6600          | 19.22        | 27.52             | 7.26                            | 18.06                            | 1.35      | 1.07 | 39.47                   | 26.00                           | 2.80                    |
| 6800          | 19.16        | 27.71             | 6.82                            | 17.77                            | 1.35      | 1.10 | 39.29                   | 25.85                           | 2.89                    |
| 7000          | 19.02        | 27.93             | 6.62                            | 19.20                            | 1.38      | 1.13 | 39.00                   | 25.75                           | 2.93                    |
| 7200          | 18.73        | 28.18             | 6.54                            | 20.92                            | 1.44      | 1.15 | 38.59                   | 25.71                           | 2.96                    |
| 7400          | 18.65        | 28.28             | 6.84                            | 21.02                            | 1.48      | 1.14 | 38.35                   | 25.71                           | 2.92                    |
| 7600          | 18.45        | 28.23             | 7.22                            | 22.31                            | 1.53      | 1.11 | 38.05                   | 25.90                           | 2.90                    |
| 7800          | 18.36        | 28.03             | 7.58                            | 23.61                            | 1.54      | 1.09 | 37.73                   | 25.92                           | 2.83                    |
| 8000          | 18.20        | 28.04             | 8.35                            | 29.89                            | 1.63      | 1.06 | 37.64                   | 25.92                           | 2.88                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 1.8V, Id = 150mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |         | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | Measure |                         |                                 |                         |
| 400           | 22.22        | 29.31             | 13.40                           | 10.31                            | 1.28      | 0.72    | 38.45                   | 27.15                           | 3.26                    |
| 600           | 22.24        | 29.16             | 15.00                           | 11.97                            | 1.28      | 0.75    | 38.46                   | 27.32                           | 3.21                    |
| 800           | 22.14        | 29.07             | 15.83                           | 13.20                            | 1.29      | 0.77    | 38.22                   | 27.46                           | 3.19                    |
| 1000          | 22.04        | 29.04             | 16.16                           | 14.20                            | 1.30      | 0.79    | 38.07                   | 27.65                           | 3.27                    |
| 1200          | 21.91        | 28.99             | 16.27                           | 15.09                            | 1.31      | 0.81    | 37.94                   | 27.73                           | 3.20                    |
| 1400          | 21.75        | 28.94             | 16.20                           | 15.66                            | 1.32      | 0.82    | 38.11                   | 27.89                           | 3.06                    |
| 1600          | 21.60        | 28.90             | 15.98                           | 15.84                            | 1.33      | 0.83    | 38.34                   | 27.84                           | 3.04                    |
| 1800          | 21.43        | 28.91             | 15.69                           | 15.76                            | 1.35      | 0.84    | 38.29                   | 27.73                           | 2.99                    |
| 2000          | 21.31        | 28.83             | 15.33                           | 15.33                            | 1.35      | 0.84    | 38.16                   | 27.80                           | 2.95                    |
| 2200          | 21.15        | 28.81             | 14.76                           | 14.88                            | 1.37      | 0.85    | 37.69                   | 27.60                           | 3.01                    |
| 2400          | 20.95        | 28.86             | 14.07                           | 14.46                            | 1.39      | 0.86    | 37.63                   | 27.63                           | 3.07                    |
| 2600          | 20.71        | 28.94             | 13.38                           | 14.04                            | 1.42      | 0.88    | 37.60                   | 27.33                           | 3.03                    |
| 2800          | 20.43        | 29.07             | 12.84                           | 14.13                            | 1.46      | 0.90    | 37.98                   | 27.20                           | 3.08                    |
| 3000          | 20.13        | 29.19             | 12.02                           | 14.12                            | 1.48      | 0.93    | 39.19                   | 27.02                           | 3.08                    |
| 3200          | 19.96        | 29.10             | 11.28                           | 14.33                            | 1.47      | 0.95    | 40.17                   | 26.94                           | 3.04                    |
| 3400          | 19.79        | 29.05             | 10.51                           | 14.50                            | 1.45      | 0.98    | 42.37                   | 26.86                           | 3.01                    |
| 3600          | 19.62        | 29.05             | 9.77                            | 14.28                            | 1.44      | 1.00    | 43.18                   | 26.64                           | 2.99                    |
| 3800          | 19.46        | 29.04             | 9.03                            | 13.55                            | 1.42      | 1.01    | 39.02                   | 26.53                           | 3.02                    |
| 4000          | 19.33        | 29.10             | 8.32                            | 12.45                            | 1.43      | 1.02    | 38.22                   | 25.96                           | 3.02                    |
| 4200          | 19.27        | 29.01             | 7.71                            | 11.38                            | 1.41      | 1.00    | 36.95                   | 25.31                           | 3.00                    |
| 4400          | 19.20        | 28.92             | 7.25                            | 10.53                            | 1.40      | 0.98    | 35.40                   | 25.34                           | 2.86                    |
| 4600          | 19.17        | 28.74             | 7.04                            | 10.15                            | 1.40      | 0.96    | 34.42                   | 24.40                           | 2.77                    |
| 4800          | 19.18        | 28.55             | 7.10                            | 10.21                            | 1.40      | 0.95    | 34.28                   | 25.36                           | 2.77                    |
| 5000          | 19.25        | 28.22             | 7.41                            | 10.69                            | 1.40      | 0.93    | 34.13                   | 24.64                           | 2.70                    |
| 5200          | 19.38        | 27.94             | 8.01                            | 11.80                            | 1.39      | 0.92    | 33.27                   | 25.18                           | 2.56                    |
| 5400          | 19.57        | 27.63             | 8.79                            | 13.42                            | 1.37      | 0.91    | 33.77                   | 25.96                           | 2.58                    |
| 5600          | 19.70        | 27.39             | 9.51                            | 16.40                            | 1.36      | 0.91    | 34.41                   | 26.11                           | 2.59                    |
| 5800          | 19.70        | 27.13             | 10.01                           | 21.70                            | 1.35      | 0.92    | 35.41                   | 26.40                           | 2.58                    |
| 6000          | 19.55        | 27.08             | 9.75                            | 34.11                            | 1.36      | 0.95    | 36.44                   | 26.38                           | 2.53                    |
| 6200          | 19.41        | 27.11             | 8.99                            | 24.83                            | 1.36      | 0.98    | 37.79                   | 26.25                           | 2.71                    |
| 6400          | 19.29        | 27.34             | 7.98                            | 19.69                            | 1.36      | 1.03    | 38.80                   | 26.08                           | 2.77                    |
| 6600          | 19.26        | 27.54             | 7.25                            | 17.92                            | 1.35      | 1.07    | 39.63                   | 26.00                           | 2.90                    |
| 6800          | 19.21        | 27.78             | 6.81                            | 17.62                            | 1.35      | 1.10    | 39.39                   | 25.86                           | 2.92                    |
| 7000          | 19.06        | 28.00             | 6.61                            | 19.06                            | 1.38      | 1.13    | 39.12                   | 25.79                           | 2.95                    |
| 7200          | 18.78        | 28.20             | 6.54                            | 20.88                            | 1.43      | 1.15    | 38.70                   | 25.75                           | 2.98                    |
| 7400          | 18.69        | 28.31             | 6.84                            | 21.12                            | 1.48      | 1.14    | 38.48                   | 25.76                           | 2.89                    |
| 7600          | 18.49        | 28.28             | 7.23                            | 22.60                            | 1.53      | 1.11    | 38.03                   | 25.93                           | 2.98                    |
| 7800          | 18.41        | 28.06             | 7.60                            | 24.05                            | 1.54      | 1.09    | 37.77                   | 25.95                           | 2.86                    |
| 8000          | 18.24        | 28.10             | 8.37                            | 30.40                            | 1.64      | 1.06    | 37.68                   | 25.95                           | 2.91                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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# MMIC Amplifier Die

# PMA3-83MP-D+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 8.00V, Iadj connection = 2.0V, Id = 158mA @ Temperature = +25°C

| FREQ<br>(MHz) | Gain<br>(dB) | Isolation<br>(dB) | Input<br>Return<br>Loss<br>(dB) | Output<br>Return<br>Loss<br>(dB) | Stability |         | IP-3<br>Output<br>(dBm) | 1dB<br>Comp.<br>Output<br>(dBm) | Noise<br>Figure<br>(dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|-------------------------|
|               |              |                   |                                 |                                  | K         | Measure |                         |                                 |                         |
| 400           | 22.27        | 29.32             | 13.38                           | 10.25                            | 1.27      | 0.71    | 38.49                   | 27.22                           | 3.29                    |
| 600           | 22.29        | 29.20             | 14.98                           | 11.90                            | 1.28      | 0.75    | 38.52                   | 27.37                           | 3.16                    |
| 800           | 22.19        | 29.15             | 15.80                           | 13.09                            | 1.29      | 0.77    | 38.30                   | 27.51                           | 3.18                    |
| 1000          | 22.08        | 29.10             | 16.14                           | 14.08                            | 1.30      | 0.79    | 38.16                   | 27.69                           | 3.11                    |
| 1200          | 21.95        | 29.05             | 16.26                           | 14.96                            | 1.31      | 0.81    | 38.02                   | 27.77                           | 3.18                    |
| 1400          | 21.80        | 29.02             | 16.18                           | 15.55                            | 1.32      | 0.82    | 38.14                   | 27.93                           | 3.10                    |
| 1600          | 21.65        | 28.97             | 15.97                           | 15.73                            | 1.33      | 0.83    | 38.41                   | 27.88                           | 3.06                    |
| 1800          | 21.47        | 28.96             | 15.68                           | 15.66                            | 1.35      | 0.84    | 38.36                   | 27.75                           | 3.05                    |
| 2000          | 21.36        | 28.88             | 15.31                           | 15.23                            | 1.35      | 0.84    | 38.25                   | 27.84                           | 2.99                    |
| 2200          | 21.20        | 28.86             | 14.73                           | 14.80                            | 1.37      | 0.85    | 37.76                   | 27.63                           | 3.03                    |
| 2400          | 21.00        | 28.92             | 14.03                           | 14.38                            | 1.39      | 0.86    | 37.68                   | 27.66                           | 3.08                    |
| 2600          | 20.75        | 29.00             | 13.35                           | 13.96                            | 1.42      | 0.88    | 37.67                   | 27.36                           | 3.06                    |
| 2800          | 20.47        | 29.12             | 12.81                           | 14.06                            | 1.46      | 0.90    | 38.03                   | 27.22                           | 3.09                    |
| 3000          | 20.17        | 29.27             | 11.99                           | 14.05                            | 1.49      | 0.93    | 38.95                   | 27.10                           | 3.05                    |
| 3200          | 20.00        | 29.14             | 11.26                           | 14.27                            | 1.46      | 0.95    | 40.03                   | 27.03                           | 3.03                    |
| 3400          | 19.83        | 29.11             | 10.50                           | 14.47                            | 1.45      | 0.98    | 41.91                   | 26.99                           | 3.04                    |
| 3600          | 19.66        | 29.11             | 9.78                            | 14.28                            | 1.44      | 1.00    | 44.66                   | 26.75                           | 3.00                    |
| 3800          | 19.50        | 29.08             | 9.04                            | 13.59                            | 1.42      | 1.01    | 39.59                   | 26.72                           | 3.03                    |
| 4000          | 19.38        | 29.07             | 8.34                            | 12.52                            | 1.42      | 1.01    | 38.73                   | 26.19                           | 3.04                    |
| 4200          | 19.32        | 29.05             | 7.74                            | 11.44                            | 1.41      | 1.00    | 37.41                   | 25.47                           | 2.95                    |
| 4400          | 19.25        | 28.94             | 7.28                            | 10.59                            | 1.40      | 0.98    | 35.73                   | 25.54                           | 2.85                    |
| 4600          | 19.22        | 28.80             | 7.07                            | 10.22                            | 1.40      | 0.97    | 34.72                   | 24.60                           | 2.85                    |
| 4800          | 19.22        | 28.53             | 7.14                            | 10.27                            | 1.40      | 0.95    | 34.64                   | 25.51                           | 2.82                    |
| 5000          | 19.29        | 28.23             | 7.45                            | 10.75                            | 1.39      | 0.93    | 34.38                   | 24.83                           | 2.73                    |
| 5200          | 19.43        | 27.95             | 8.06                            | 11.87                            | 1.39      | 0.92    | 33.56                   | 25.24                           | 2.61                    |
| 5400          | 19.61        | 27.68             | 8.82                            | 13.50                            | 1.38      | 0.91    | 34.23                   | 26.00                           | 2.58                    |
| 5600          | 19.74        | 27.44             | 9.54                            | 16.50                            | 1.36      | 0.91    | 34.81                   | 26.11                           | 2.57                    |
| 5800          | 19.74        | 27.18             | 10.03                           | 21.85                            | 1.35      | 0.92    | 35.77                   | 26.39                           | 2.62                    |
| 6000          | 19.59        | 27.12             | 9.76                            | 34.05                            | 1.36      | 0.95    | 36.73                   | 26.37                           | 2.60                    |
| 6200          | 19.44        | 27.12             | 9.00                            | 24.57                            | 1.36      | 0.98    | 37.98                   | 26.24                           | 2.77                    |
| 6400          | 19.33        | 27.39             | 7.97                            | 19.51                            | 1.36      | 1.03    | 38.90                   | 26.10                           | 2.79                    |
| 6600          | 19.29        | 27.57             | 7.24                            | 17.78                            | 1.35      | 1.07    | 39.55                   | 26.02                           | 2.82                    |
| 6800          | 19.24        | 27.83             | 6.81                            | 17.51                            | 1.35      | 1.10    | 39.52                   | 25.87                           | 2.89                    |
| 7000          | 19.09        | 28.04             | 6.60                            | 18.94                            | 1.38      | 1.13    | 39.16                   | 25.82                           | 2.96                    |
| 7200          | 18.82        | 28.30             | 6.54                            | 20.86                            | 1.44      | 1.15    | 38.79                   | 25.79                           | 3.03                    |
| 7400          | 18.73        | 28.37             | 6.85                            | 21.18                            | 1.48      | 1.14    | 38.58                   | 25.80                           | 2.88                    |
| 7600          | 18.54        | 28.35             | 7.25                            | 22.80                            | 1.54      | 1.11    | 38.11                   | 25.95                           | 2.94                    |
| 7800          | 18.45        | 28.08             | 7.62                            | 24.34                            | 1.54      | 1.09    | 37.74                   | 25.97                           | 2.84                    |
| 8000          | 18.28        | 28.16             | 8.39                            | 30.95                            | 1.64      | 1.06    | 37.71                   | 25.95                           | 2.87                    |

Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package



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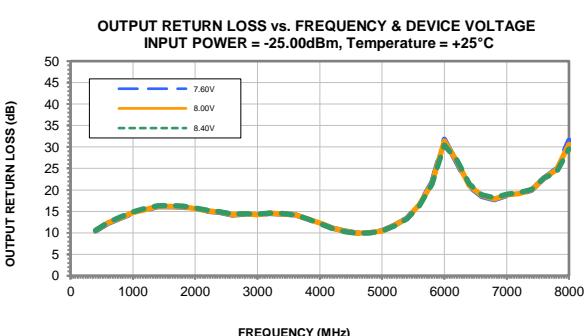
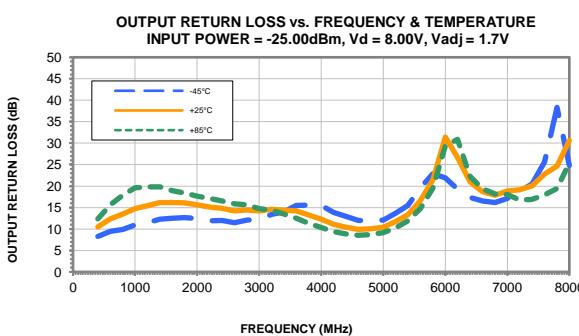
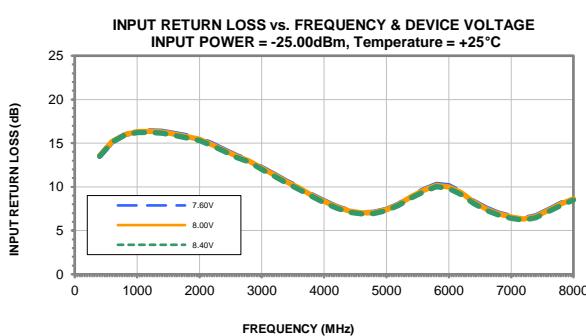
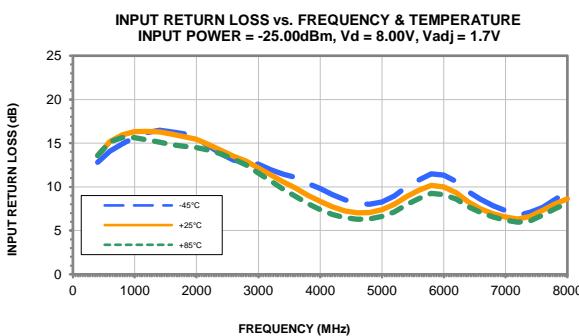
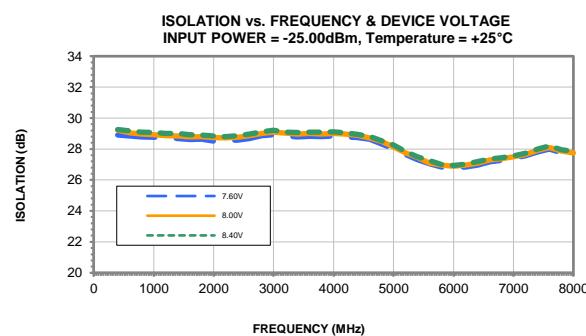
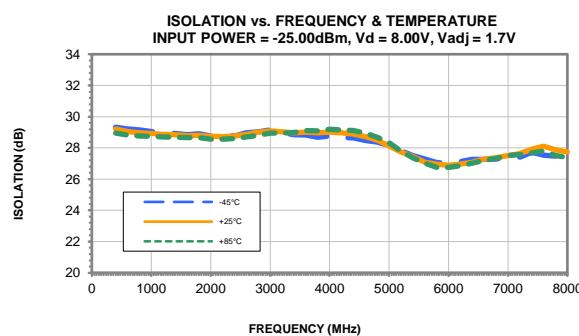
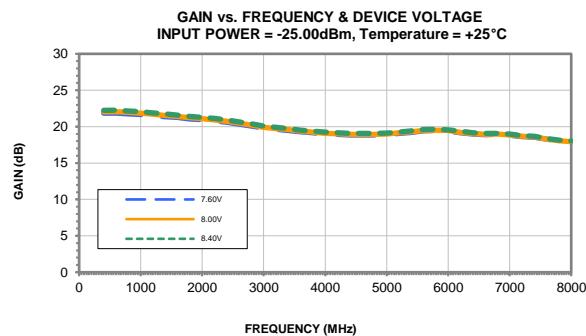
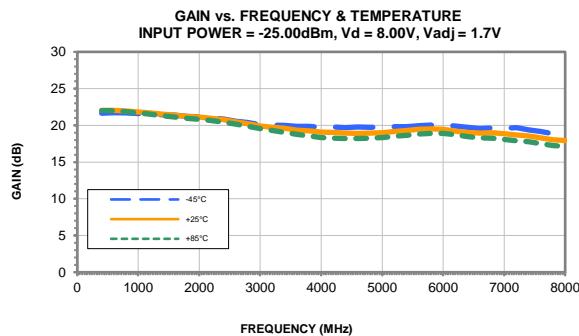
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# MMIC Amplifier Die

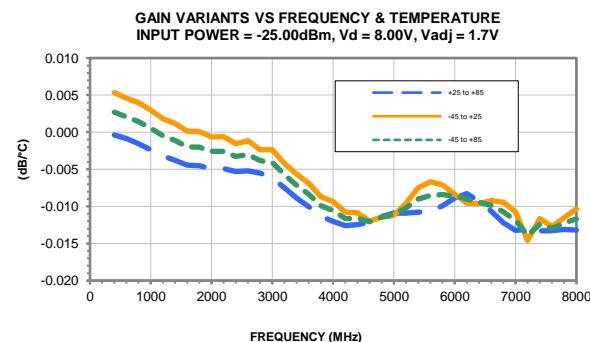
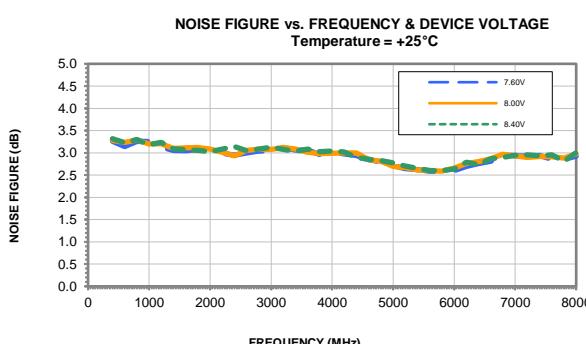
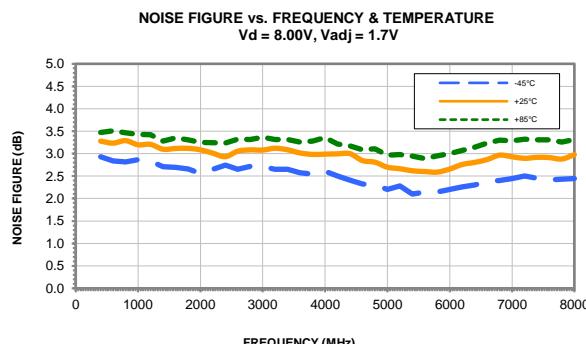
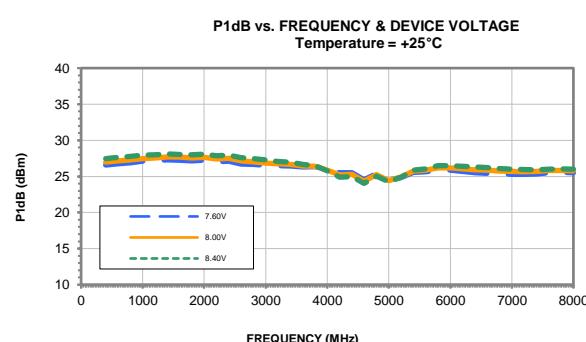
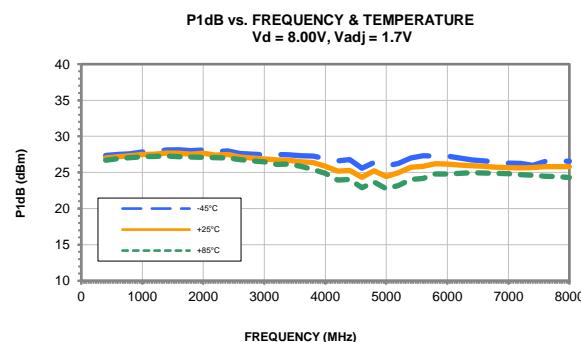
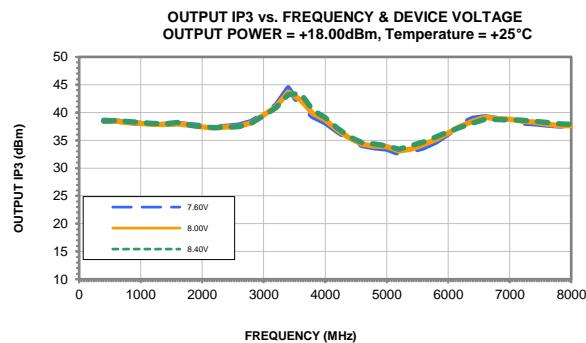
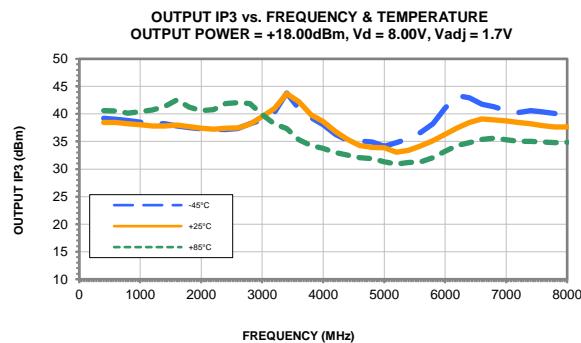
# PMA3-83MP-D+

## Typical Performance Curves



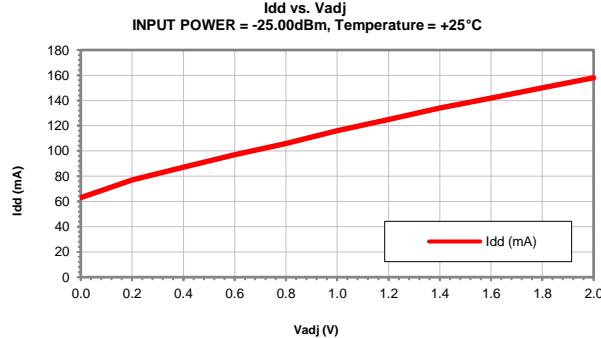
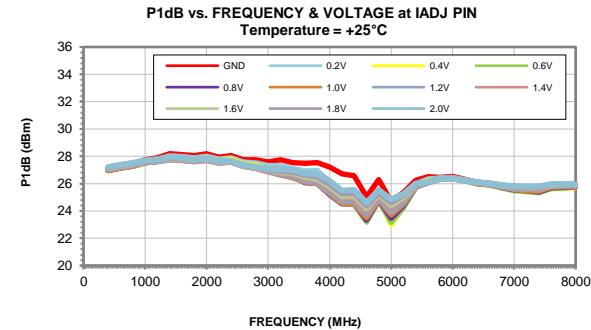
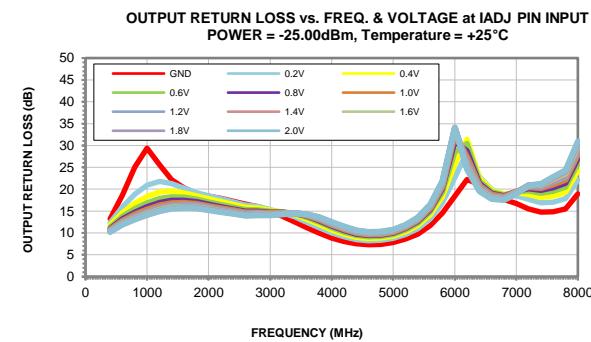
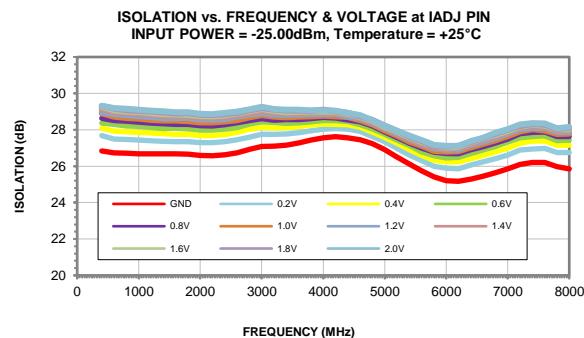
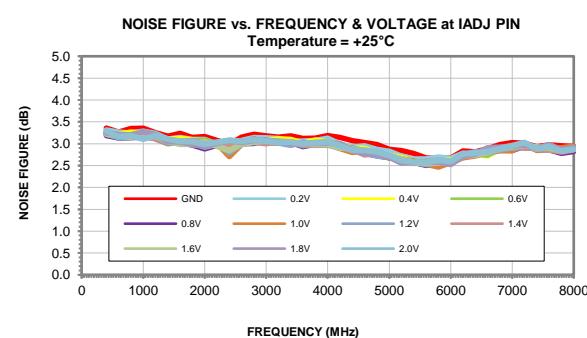
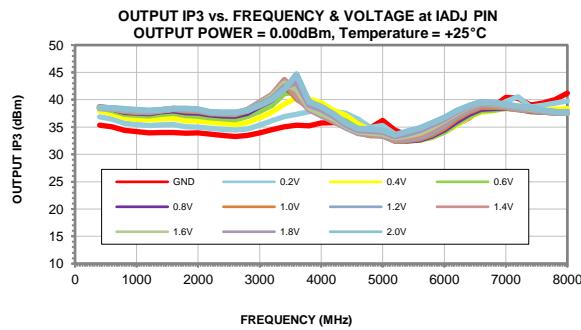
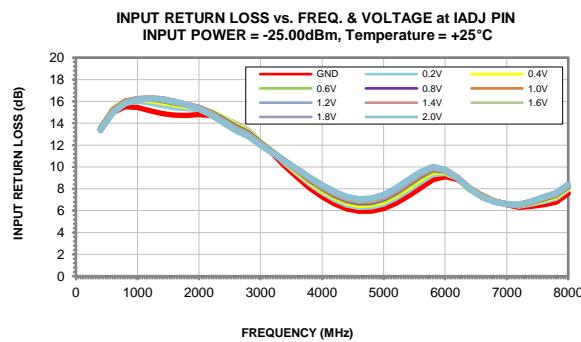
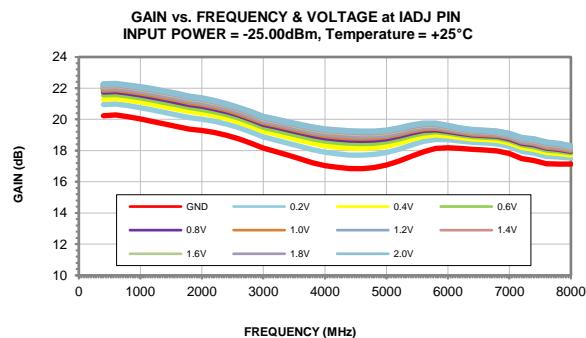
Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package

## Typical Performance Curves



Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package

## Typical Performance Curves



Note: Test data of Die packaged in industry standard 3x3mm 12L MCLP package

**Environmental Specifications****ENV80**

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification                  | Test/Inspection Condition  | Reference/Spec                       |
|--------------------------------|--|--------------------------------------|
| Operating Temperature          | -40° to 85° C or -40° to 105° C or -55° to 105° C or -45° to 105° C<br>Ambient Environment | Refer to Individual Model Data Sheet |
| Storage Environment (Die)      | -65° to 150°C  | Individual Model Data Sheet          |
| Storage Environment(Packaging) | -40° to 70°C and 40 to 60% humidity (In Factory Shipped Package)                           |                                      |