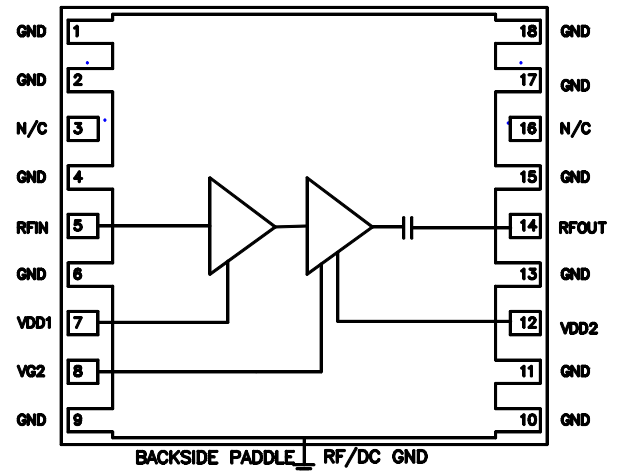


## Features:

- **Wide Band:** 2 to 6 GHz
- **Gain :** 26 dB @ 2.0 GHz  
24 dB @ 4.0 GHz  
24 dB @ 6.0 GHz
- **P-1dB: 8V/9V** 30.5/31.5 dBm @ 2.0 GHz  
31.0/32.0 dBm @ 4.0 GHz  
31.5/32.5 dBm @ 6.0 GHz
- **Psat: 8V/9V** 31.5/32.0 dBm @ 2.0 GHz  
32.0/32.5 dBm @ 4.0 GHz  
32.5/33.0 dBm @ 6.0 GHz
- **Bias Condition:** VDD1 = 8V, 230 mA  
VDD2 = 8V or 9V 320 mA
- 50-Ohm Matched Input & Output
- 0.5 x 0.45 inch, 18-Lead Ceramic SMT - 05 Package

## Functional Diagram



## Applications:

- Microwave Radios
- Satellite & Telemetry Communications
- Test Instrumentation
- Military EW Systems
- Wide-band Communication Systems
- Commercial Wireless Systems

## Description:

The MPAM-206032-05 is a packaged fully-matched broadband power amplifier module utilizing high-reliability GaAs device technology. This power module is suited for Satellite Communications, Microwave radios, Test Instrumentation, Wideband Military Systems and also many commercial wireless applications where broadband high-power with high-gain is desirable. It has excellent gain ( 24 dB) and power P-1dB/Psat (32/32.5 dBm, mid-band) over a broad frequency range. It has on-board bias circuit, choke and output DC blocking to provide bias stability and ease of use. Available in 0.5 x 0.45 inch, 18-Lead Ceramic SMT - 05 Package.



# MPAM-206032-05

2 - 6 GHz Packaged 1.5 W Power Amplifier Module  
Data Sheet Rev A  
Nov, 2010

## Electrical Specifications<sup>(1)</sup>: VDD1=+8.0V, IDD1=230mA, VDD2=+8V, VG2= -0.75 V, IDD2=320mA, Ta=25°C

| Parameter                         | Units | Typical                             | Test Conditions                |
|-----------------------------------|-------|-------------------------------------|--------------------------------|
| Frequency Range                   | GHz   | 2-6                                 |                                |
| Gain                              | dB    | 26<br>24                            | 2 GHz<br>4-6 GHz               |
| Gain Flatness                     | +/-dB | 1.2<br>0.7                          | 2 – 4 GHz<br>4 – 6 GHz         |
| Input Return Loss                 | dB    | >13                                 |                                |
| Output Return Loss                | dB    | >14                                 |                                |
| Gain Temperature Coefficient      | dB/°C | -0.035                              | worst-case over frequency band |
| Output P-1dB/Psat(P-3dB) VDD2=8V  | dBm   | 30.5/31.5<br>31.0/32.0<br>31.5/32.5 | 2 GHz<br>4 GHz<br>6 GHz        |
| Output P-1dB/Psat(P-3dB) VDD2=9V  | dBm   | 31.5/32.0<br>32.0/32.5<br>32.5/33.0 | 2 GHz<br>4 GHz<br>6 GHz        |
| DC/RF Efficiency @ P-1dB, VDD2=9V | %     | 27<br>24<br>27                      | 2 GHz<br>4 GHz<br>6 GHz        |
| Noise Figure                      | dB    | 5.5                                 |                                |
| Operating Bias Conditions:        |       |                                     |                                |
| VDD1                              | V     | + 8                                 |                                |
| IDD1                              | mA    | 230                                 |                                |
| VDD2                              | V     | +8 or +9                            |                                |
| IDD2                              | mA    | 320                                 |                                |
| VG2                               | V     | -0.75                               | Adjust to set IDD2             |

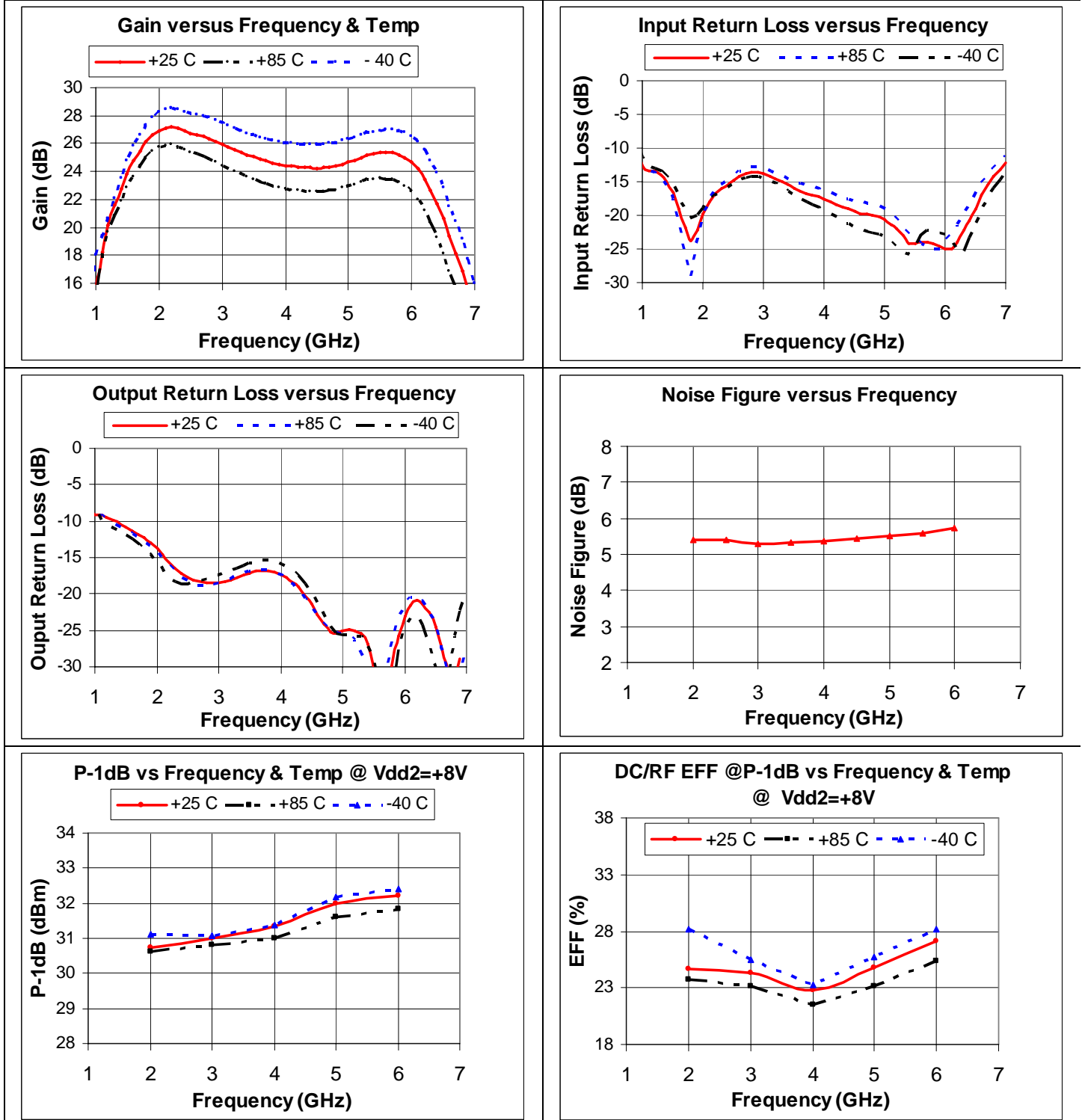
(1) All Data is measured on Evaluation Board as per the attached Schematic & Layout with Input/Output Zo= 50 ohm

## Absolute Maximum Ratings:

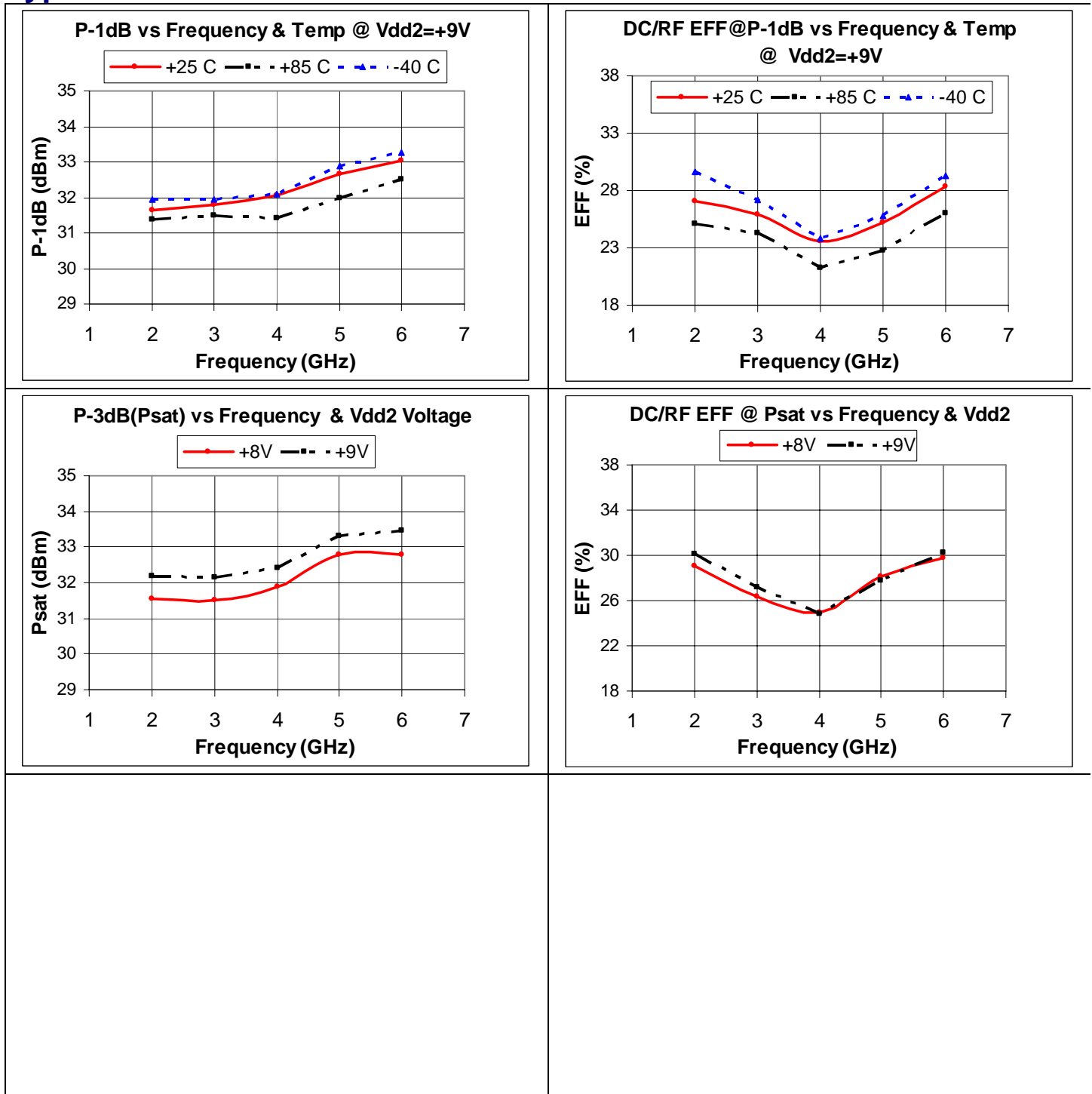
| SYMBOL  | PARAMETERS                            | UNITS | ABSOLUTE MAXIMUM |
|---------|---------------------------------------|-------|------------------|
| VDD1    | Drain Voltage                         | V     | 8.5              |
| VDD2    |                                       |       | 12               |
| IDD1    | Drain Current (Quiescent, IDQ)        | mA    | 280              |
| IDD2    |                                       |       | 400              |
| Pdiss   | DC Power Dissipation                  | W     | TBD              |
| Pin max | RF Input Power                        | dBm   | TBD              |
| Toper   | Operating Case/Lead Temperature Range | °C    | - 40 to + 85     |
| Tch     | Channel Temperature                   | °C    | 150              |
| Tstg    | Storage Temperature                   | °C    | -60 to +150      |

\*Operation of this device above any one of these parameters may cause permanent damage.

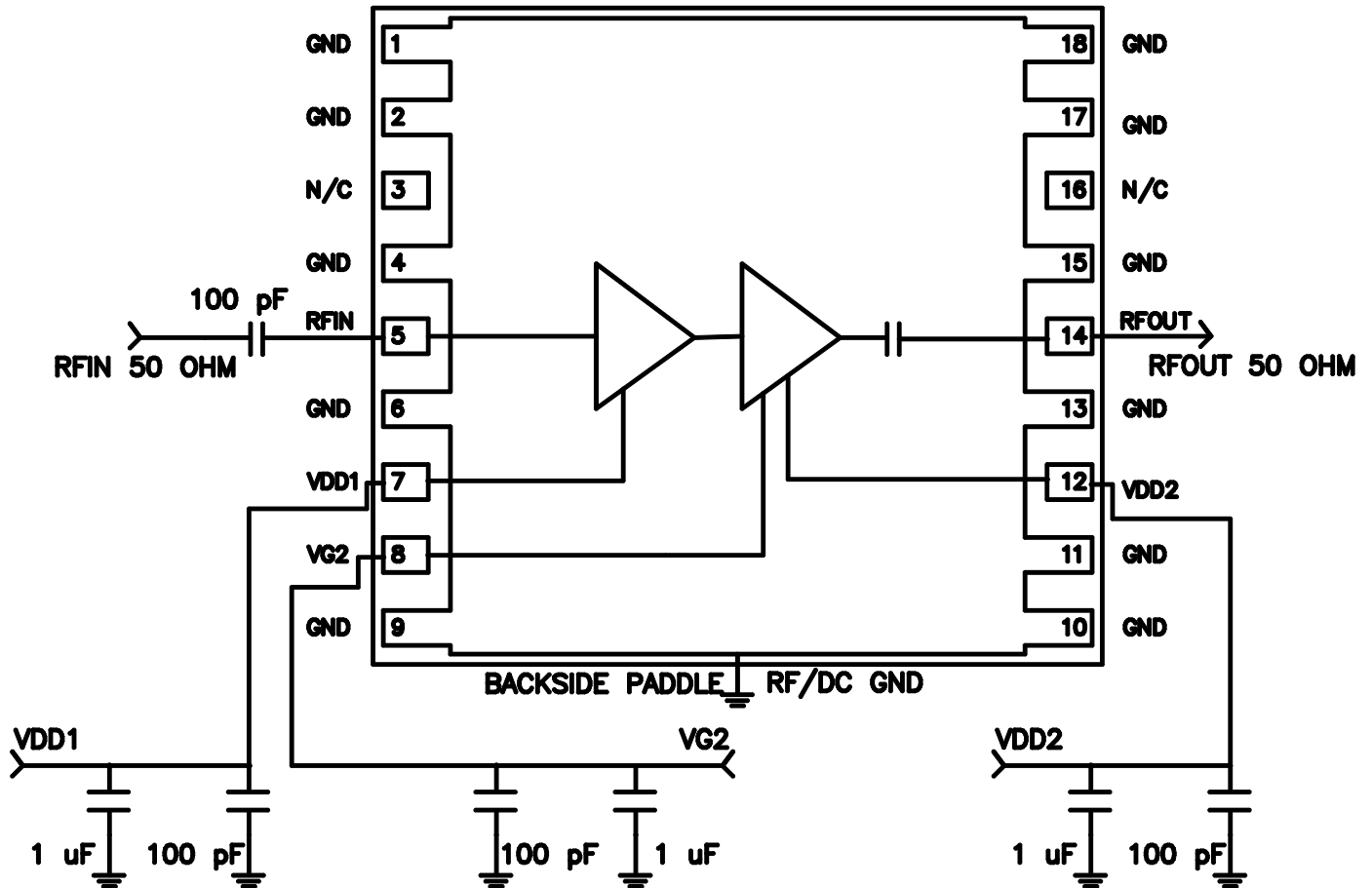
**Typical RF Performance<sup>(1)</sup>:**  $VDD1=+8.0V, IDD1=230mA, VDD2=+8V, VG2= -0.75 V, IDD2=320mA, Ta=25^{\circ}C$



## Typical RF Performance<sup>(1)</sup>: VDD1=+8.0V, IDD1=230mA, VDD2=+8V, VG2= -0.75 V, IDD2=320mA, Ta=25°C



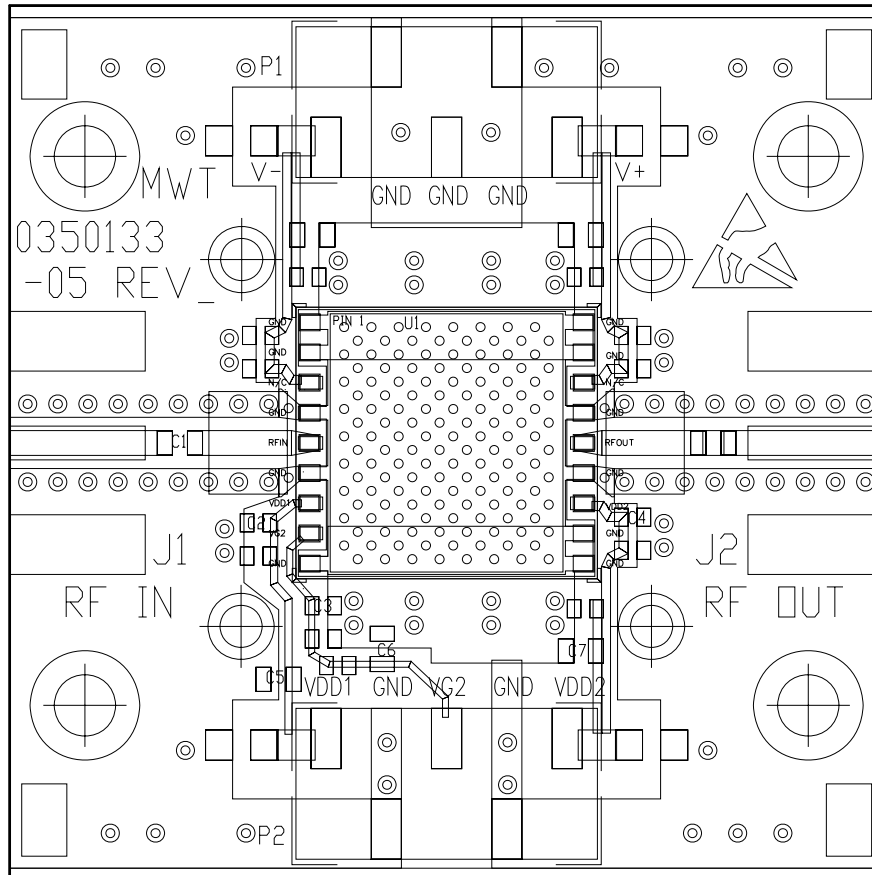
**Application Circuit Schematic**



**Notes:**

- 1) Package Backside is RF/DC GND and must be well grounded through PCB vias.
- 2) External DC block & bypass capacitors must be placed as close to package as possible.

## Evaluation Board Layout



### PCB 03-50-133 Application Circuit BOM1

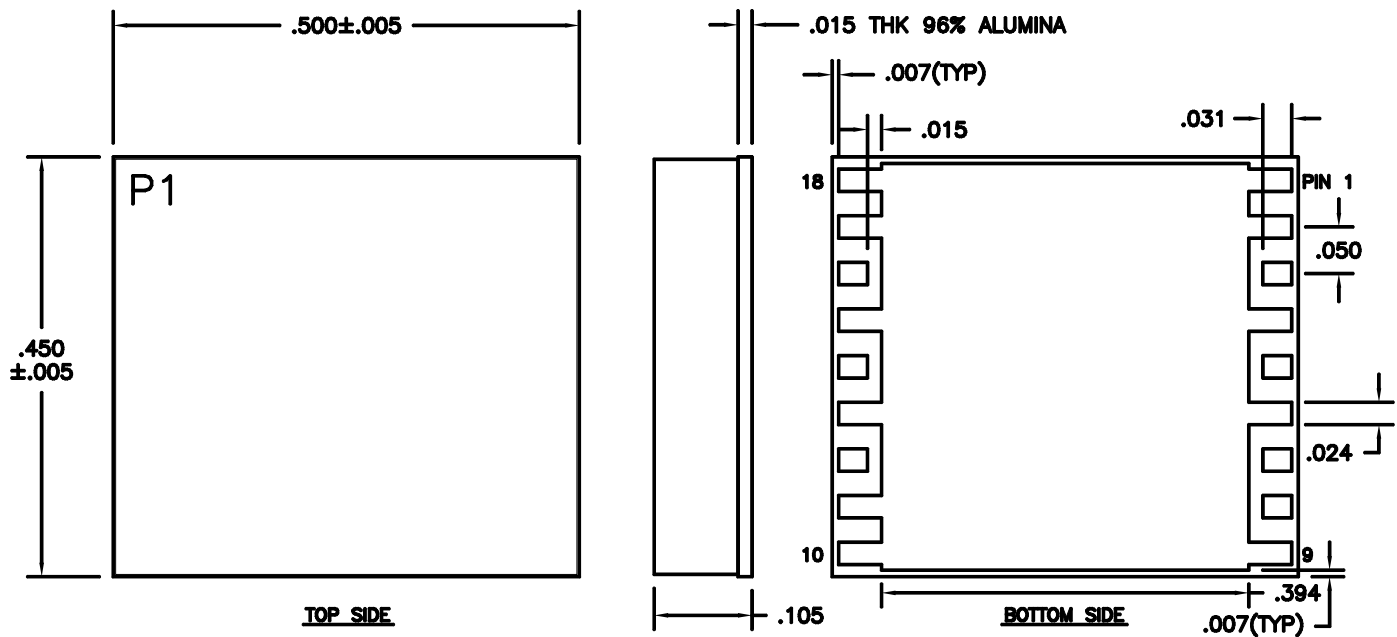
| Ref #     | Part No.        | Value                | Vendor  |
|-----------|-----------------|----------------------|---------|
| C1        | 06035A101JAT2A  | 100 pF               | AVX     |
| C2,C3, C4 | 04025A101JAT2A  | 100pF                | AVX     |
| C5,C6,C7  | 0603YD105KAT2A  | 1 uF                 | AVX     |
| U1        | 05 PKG          | 18-Lead              | MWT     |
| P1,P2     | TSM-105-01-S-SV | DC STRIP             | SAMTEC  |
| PCB       | 03-50-133       | 20 mil thick RO4003C | MWT     |
| J1,J2     | 142-0701-841    | RF CONN              | JOHNSON |

#### NOTES:

- 1) The PCB vias are filled with conductive copper paste and planarized on top & bottom side

**Mechanical Information:**

0.5 x 0.45 inch , 18 Lead Ceramic - 05 Package Outline Drawing  
Dimensions are in inches



**NOTE:**

1. PLATED WITH  $.002''$  OF Cu AND  $150\mu''$  OF Ni.
2. BACKSIDE GOLD FINISH:  $4-10\mu''$  Au