

## Mini Amplifier

### DESCRIPTION

The A114M Mini Amplifier is an amplifier which covers the L-Band (GPS, Galileo, and GLONASS frequencies) designed with the thin link margins of satellite navigation systems in mind.

The A114M features 40dB of gain, and a noise figure of less than 2dB. Since it consumes less than 20mA, it can be powered by using the GPS receiver's antenna voltage output.

The A114M can be selected with the filtered option which will protect the GPS receiver from other spurious signals received by the antenna.

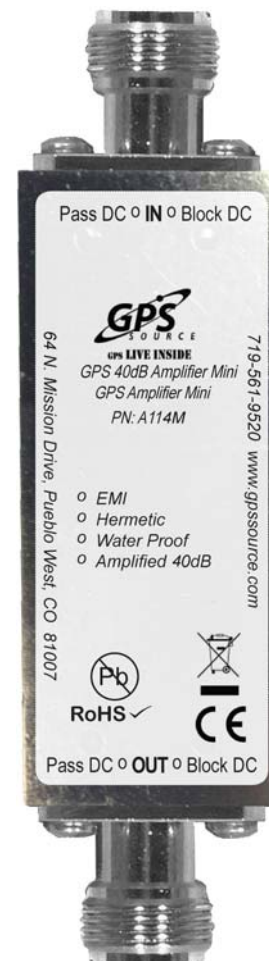
### FEATURES

- Passes Entire GPS L1/L2 signals
- RoHS/REACH/WEEE

### OPTIONS

- Filtered Option Available
- Variable Gain Option Available: 0dB to 39dB
- EMI shielding, waterproofing, hermetically sealed

The A114M Mini Amplifier can be custom configured. Please contact GPS Source for further information on product options and specifications.



# 1 A114M Electrical Specifications

**Table 1-1. Electrical Specifications**

Operating Temperature -40°C to 85°C

| Parameter                      | Conditions                                                    | Min             | Typ | Max    | Units |
|--------------------------------|---------------------------------------------------------------|-----------------|-----|--------|-------|
| Frequency Range                | IN – OUT, IN/OUT 50Ω                                          | 1.1             |     | 1.7    | GHz   |
| In/Out Impedance               | IN, OUT                                                       |                 | 50  |        | Ω     |
| Gain (Standard)                | IN – OUT, IN/OUT 50Ω                                          | 38              | 40  | 42     | dB    |
| Gain (Custom) -AXX (1 - 39 dB) |                                                               | XX - 1          | XX  | XX + 1 |       |
| Variable Gain Option           | IN – OUT, IN/OUT 50Ω                                          | Min             | -1  | 0      | dB    |
|                                |                                                               | Max             | 35  | 36     |       |
| Filtered Option <sup>(1)</sup> | IN – OUT, IN/OUT 50Ω                                          |                 | 37  | 38.5   | dB    |
|                                |                                                               | Reject (-50MHz) | -30 |        |       |
|                                |                                                               | Reject (+50MHz) | -42 |        |       |
| Input 1dB Comp.                | IN – OUT, IN/OUT 50Ω                                          | -41             |     |        | dB    |
| Input IP <sub>3</sub>          | IN – OUT, IN/OUT 50Ω                                          | -33             |     |        | dB    |
| Input SWR                      | OUT Port 50Ω                                                  |                 |     | 2.5:1  | —     |
| Output SWR                     | IN Port 50Ω                                                   |                 |     | 2.5:1  | —     |
| Noise Figure <sup>(2)</sup>    | Antenna Any Port, Unused Ports 50Ω                            |                 |     | 2      | dB    |
| Gain Flatness                  | [L1 – L2] Antenna Any Port, Unused Ports 50Ω                  |                 |     | 3      | dB    |
| Group Delay Flatness           | T <sub>d,max</sub> – T <sub>d,min</sub> , IN – OUT            |                 |     | 1      | ns    |
| Reverse Isolation              | OUT – IN                                                      | 40              |     |        | dB    |
| DC IN                          | DC Input on IN/OUT port                                       | 3               |     | 16     | VDC   |
| Device Current                 | Current Consumption of Device (Excludes antenna current draw) |                 |     | 20     | mA    |
| Ant/Thru Current               | Non-Powered Configuration, DC Input on OUT port               |                 |     | 250    | mA    |
| Max RF Input                   | Max RF Input Without Damage                                   |                 |     | 10     | dBm   |

1. Rejection figures are relative to passband.
2. Does not apply to variable gain option at any setting other than maximum gain.

## 2 Performance Data

### 2.1 Unfiltered

Figure 2-1. Unfiltered Frequency Response

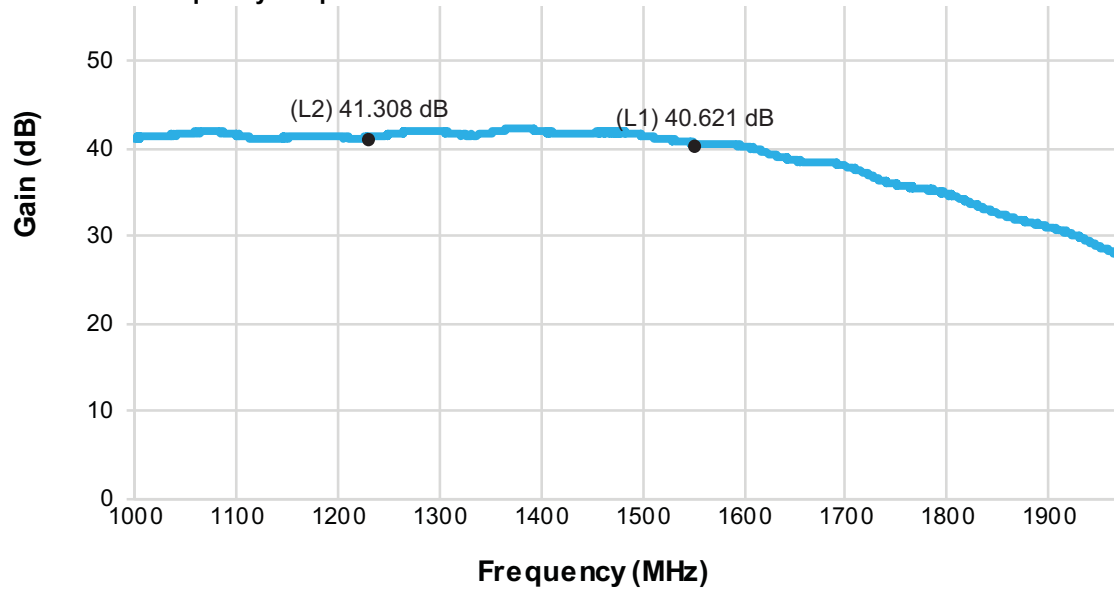
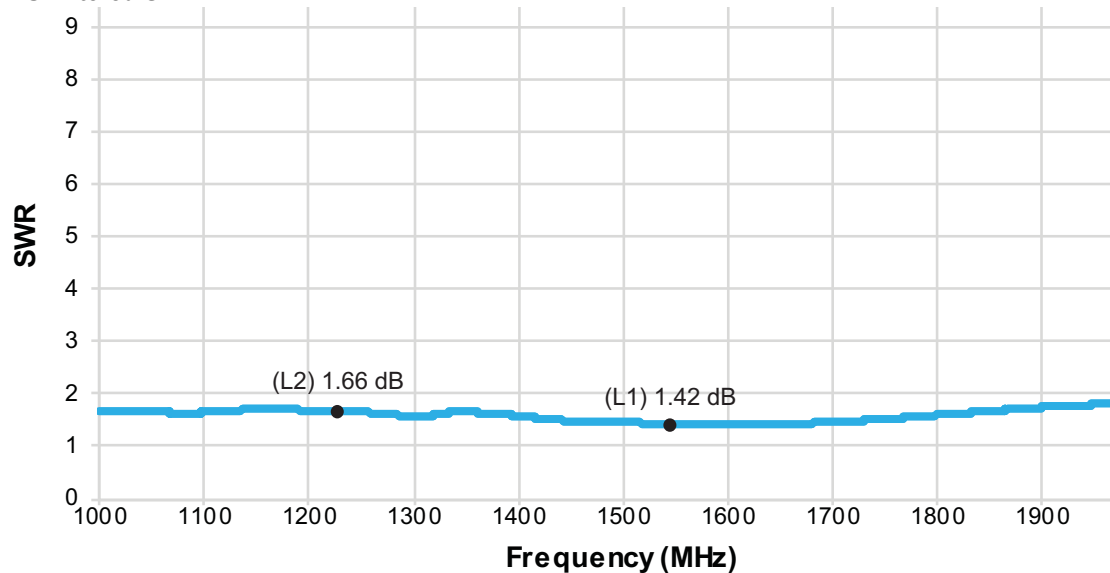


Figure 2-2. Unfiltered SWR



## 2.2 Filtered Option

Figure 2-3. Filtered Frequency Response

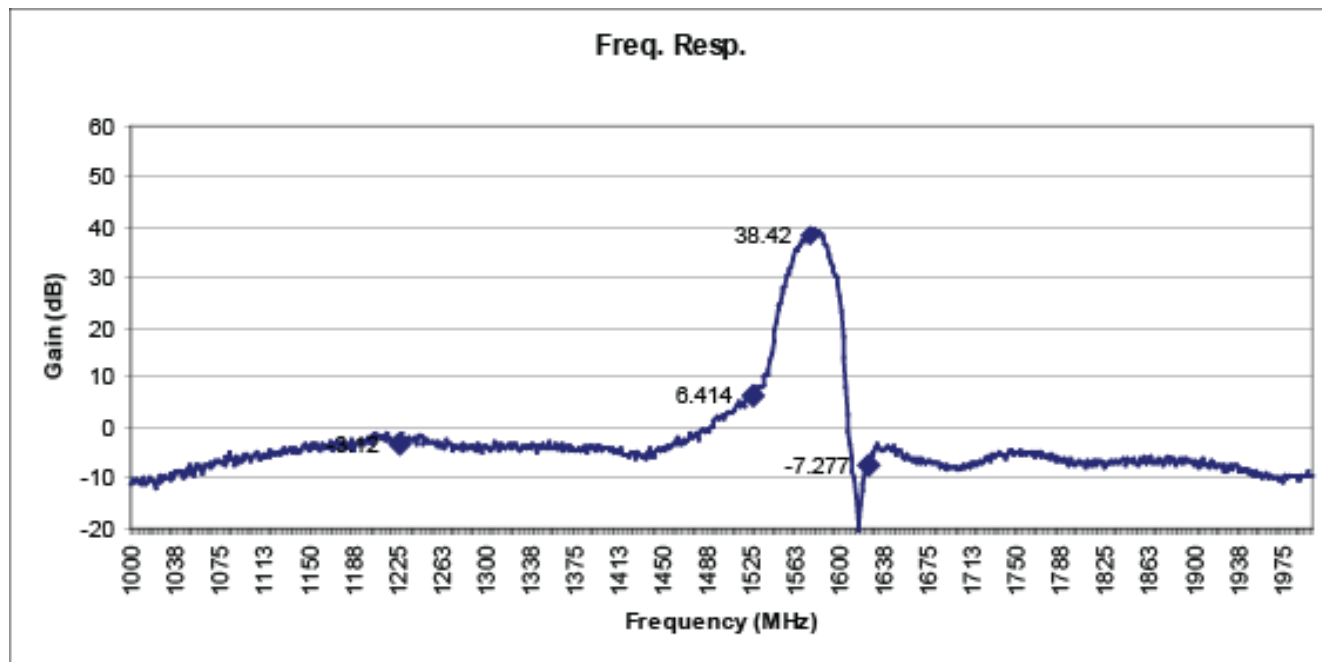
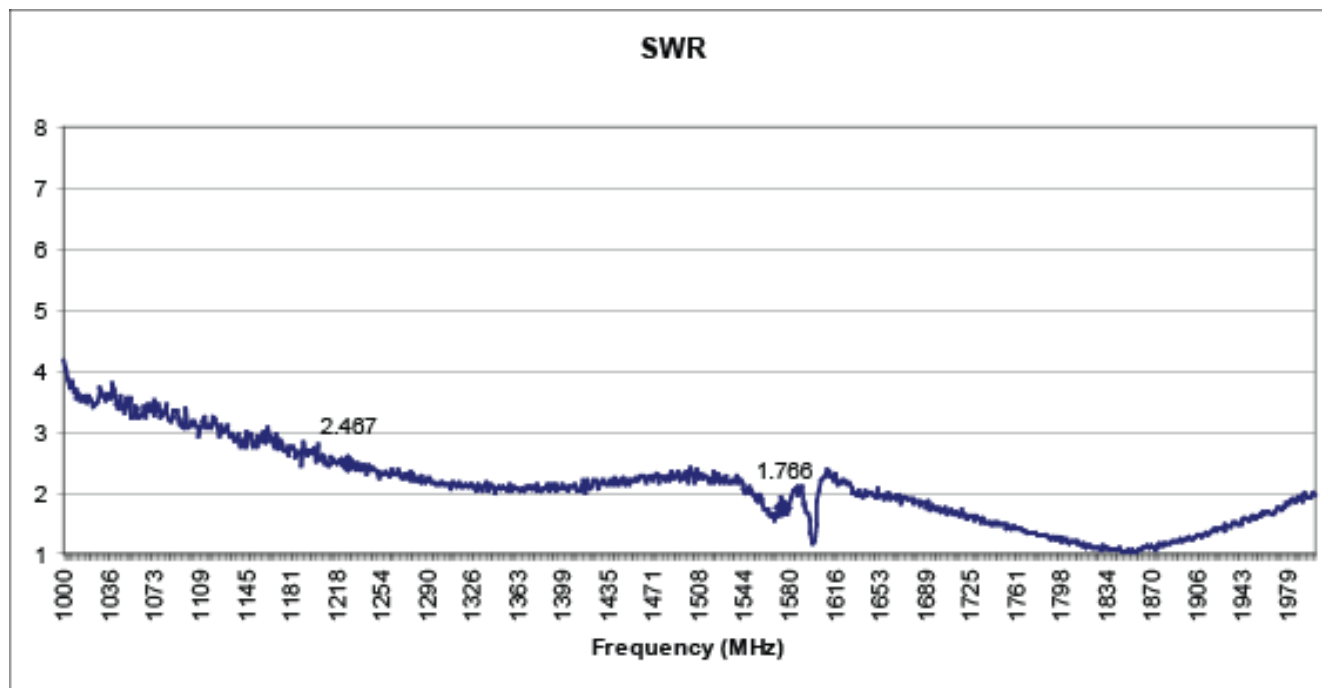


Figure 2-4. Filtered SWR



## 2.3 Variable Gain Option

Figure 2-5. Variable Gain Frequency Response

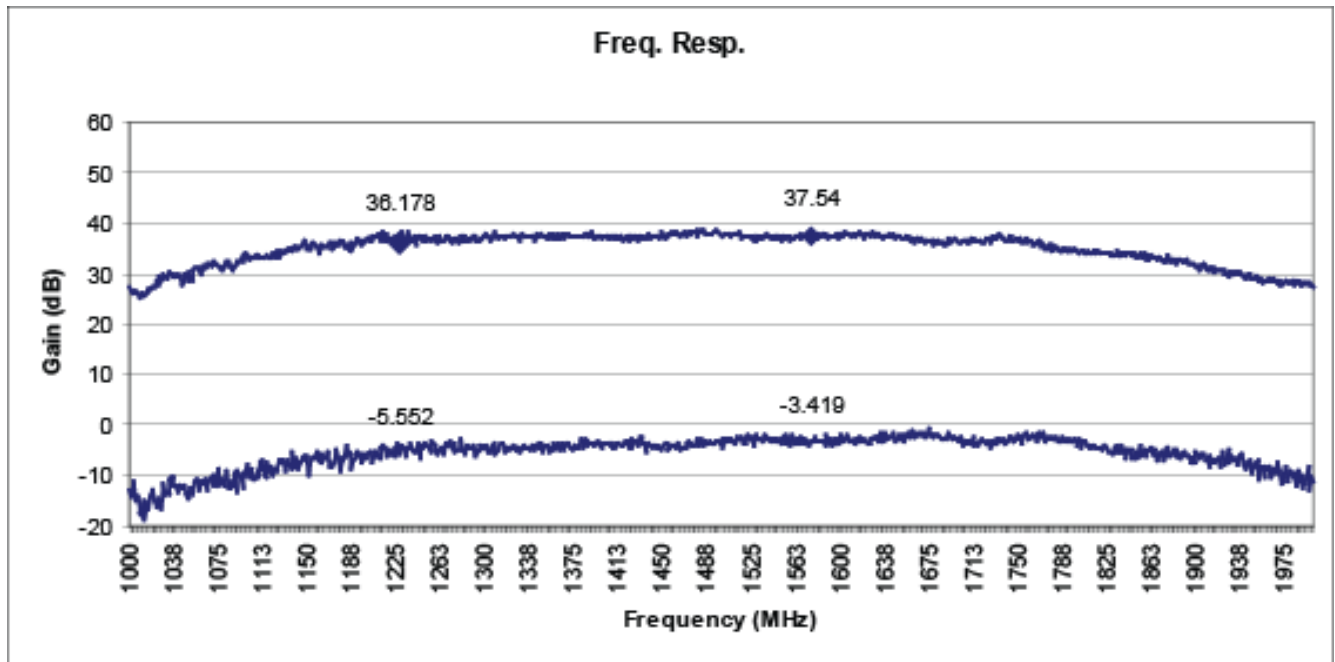
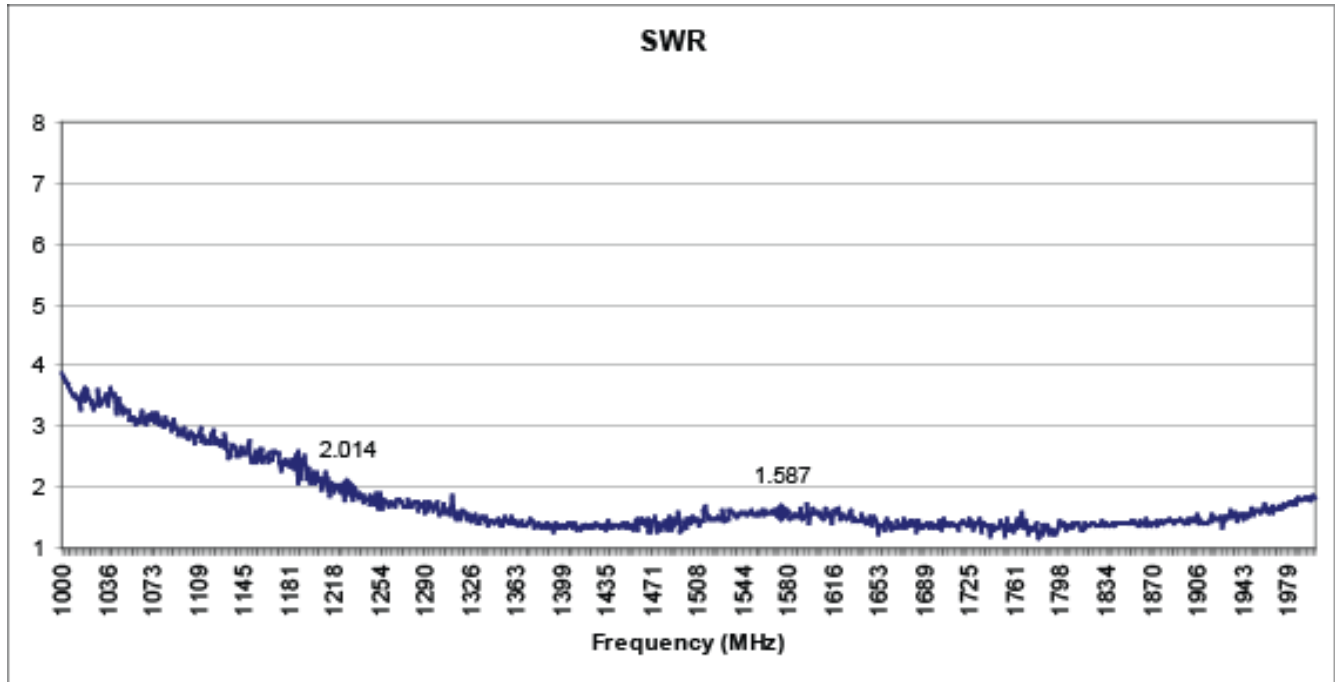


Figure 2-6. Variable Gain SWR

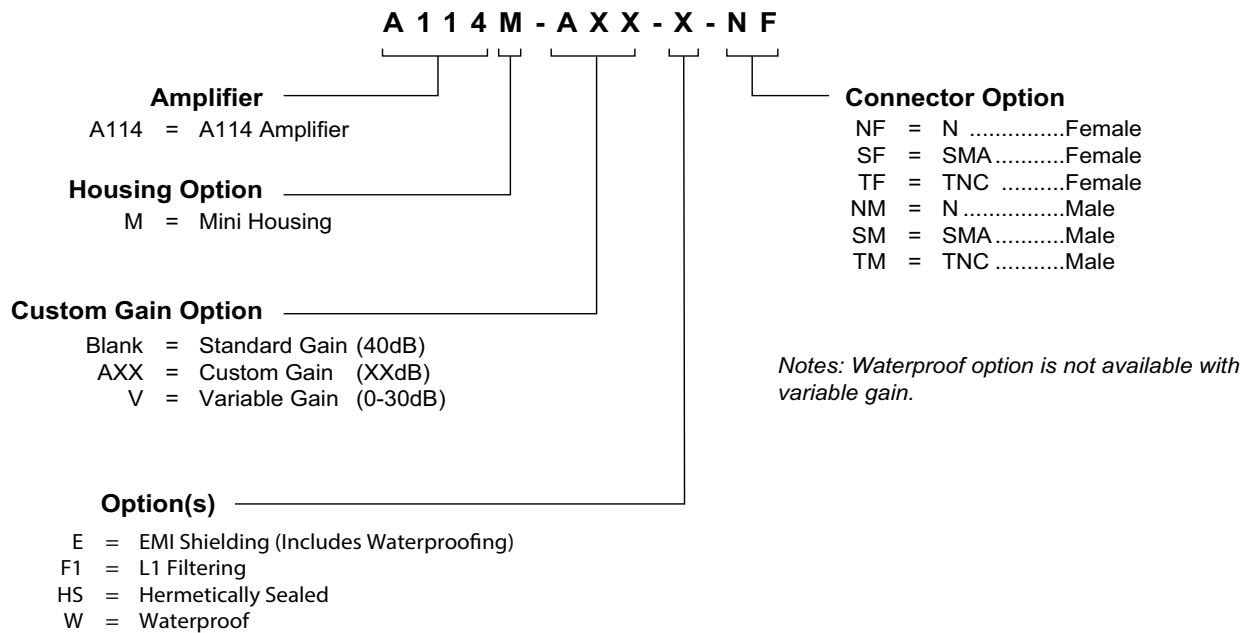


### 3 Product Options

Table 3-1. A114M Available Options

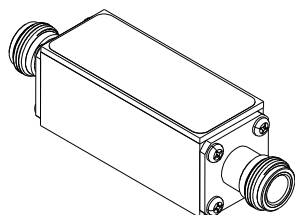
| RF Connector  |                       |                         |                   |
|---------------|-----------------------|-------------------------|-------------------|
| Connector     | Connector Type        |                         | Limitations       |
|               | N                     | (Female/Male Mini Only) | N/A               |
|               | SMA                   | (Female/Male Mini Only) | N/A               |
|               | TNC                   | (Female/Male)           | N/A               |
| Housing       |                       |                         |                   |
| Housing       | Housing Type          |                         | Limitations       |
|               | Mini                  |                         | None              |
| Ports         |                       |                         |                   |
| Configuration | Pass DC               |                         | IN Port Passes DC |
|               | DC Blocked (Standard) |                         | In Port Blocks DC |
| Amplification |                       |                         |                   |
| Gain          | Standard              |                         | 40dB              |
|               | Custom                |                         | 1-39dB            |

## 4 Product Code Decoder

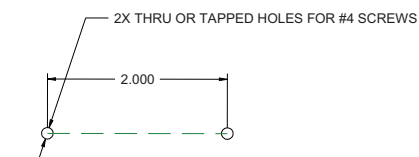
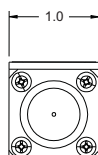
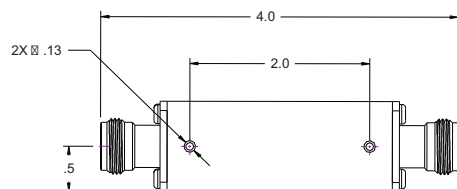
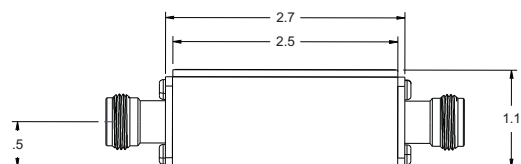


## 5 Mechanical Drawing

### A114M Mini Amplifier — FAM-ABM-AAX-AGZ

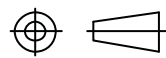


ISOMETRIC VIEW  
FOR REFERENCE ONLY



RECOMMENDED MOUNTING PATTERN

11/18/2016 Revision 001

|                                                                                                                                          |                        |                                                                                                               |      |                                       |                                       |
|------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------|------|---------------------------------------|---------------------------------------|
| GPS Source Part No.<br><b>FAM-ABM-AAX-AGZ</b>                                                                                            | Finish<br><b>N/A</b>   | Size<br><b>C</b>                                                                                              | Mass | Tolerances                            |                                       |
| Description<br><b>A114M Standard Mini Amplifier</b>                                                                                      | Material<br><b>N/A</b> | 3rd Angle Projection<br> |      | Linear<br>.X = ±0.100<br>.XX = ±0.010 | Angular<br>±1°<br>RADII<br>See Linear |
|                                                                                                                                          |                        |                                                                                                               |      |                                       |                                       |
| All materials and finishes shall comply with European Union RoHS and are lead free. Dimensions are in inches unless otherwise specified. |                        |                                                                                                               |      |                                       |                                       |



## A114M Mini Amplifier Data Sheet

059-FAM-ABM-AAX-AGZ-006

Page 9 of 9, 04/06/2020



2121 Executive Cir. Ste 100  
Colorado Springs, CO 80906

Phone: (+1)(719) 421.7300

Toll Free: (+1)(866) 289.4777

**GPSS-Sales@gd-ms.com**

**www.gpssource.com**

AS9100 and ISO 9001 Compliant Company



© 2014 GPS Source, Inc. All rights reserved.

GPS Source, Inc., GPS Live Inside, GPS Source logo, and other GPS Source, Inc. products, brands, and trademarks mentioned in this document are property of GPS Source, Inc. and/or its affiliates in the United States and/or other countries. Other products, brands, and trademarks are property of their respective owners/companies. Any rights not expressly granted herein are reserved.

DISCLAIMER: The materials in this document could include inaccuracies or typographical errors and are subject to change at any time. The materials are provided "as is" without warranty of any kind. To the maximum extent permitted by applicable law, GPS Source, Inc. and its suppliers hereby disclaim all warranties, either expressed or implied, and conditions with respect to the materials, their quality, performance, suitability, merchantability, fitness for a particular purpose, title, and non-infringement. LIMITATION OF LIABILITY: IN NO EVENT WILL GPS SOURCE, INC. AND ITS SUPPLIERS BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT OR TORT, ARISING OUT OF THE USE OR INABILITY TO USE THE MATERIALS AVAILABLE IN THIS DOCUMENT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR AND WITHOUT LIMITATION, GPS SOURCE, INC. SHALL HAVE NO LIABILITY FOR ANY LOSS OF USE, DATA, INCLUDING THE COSTS OF RECOVERING SUCH DATA, OR PROFITS.