Mini-Circuits®

NEW MOLDED-PACKAGE MAV AMPLIFIERS
REPLACEMENT FOR EXISTING MAV, MAV-SM, AND AGILENT® UNITS
(AN-60-014)

Introduction

Mini-Circuits has introduced MAV-series amplifiers in an economical new package. The new units are lower-cost drop-in replacements for the existing MAV models having straight leads, as well as for the gull-wing MAV-SM models. Those older units are being obsoleted, and can be supplied only until current stock is exhausted. The new units also replace Agilent® MSA-xx04 series (straight lead) and MSA-xx05 series (surface mount) devices; “xx” represents the particular Agilent® parts. Amplifiers in the new package have an "A" suffix in their model numbers, MAV11A for example.

This Application Note describes the advantages of the new package, and shows how it is compatible with PC board patterns that were designed for the existing MAV and MAV-SM models.

Advantages of the New Units

1) Lower profile
2) Tight co-planarity
3) Clearance hole not needed in PC board
4) More consistent performance
5) Flatter gain response
6) Better VSWR due to favorable lead configuration
7) Available in tape-and reel
8) Easier handling due to flat top surface

Description of the Package

The new package, Case Style DH820, is a solid, molded plastic block having an embedded lead frame. The overall size is nominally .197 inch (5.0 mm) square, and .035 inch (0.9 mm) high. The device terminals are integral with the lead frame and are located at the corners of the bottom surface. The package has a flat bottom surface throughout.

Devices utilizing this package are suitable for pick-and-place assembly with reflow soldering.

Mounting Compatibility

The new units are compatible with existing PC board layouts, as will now be shown.

Applications currently using MAV amplifiers with straight leads, Case Style BBB123

A typical PC board footprint for Mini-Circuits Case Style BBB123 is given in Figure 1. The dimensions shown accommodate the full length of the existing MAV amplifier's package leads. The circle represents a hole in the PC board for drop-in mounting of the package body.

Figure 2 is a superimposed illustration, showing how the existing MAV amplifier and the MAV amplifier in the new package fit the footprint. Note that the new unit is oriented at a 45-degree angle so that the lead frame aligns with the PC board pattern.

Applications currently using MAV-SM amplifiers, Case Style RRR137

A typical PC board footprint for Mini-Circuits Case Style RRR137 is given in Figure 3. The dimensions shown accommodate the gull-wing contact area of the surface mount leads. Figure 4 is a superimposed illustration, showing how the existing MAV amplifier and the MAV amplifier in the new package fit the footprint.

Conclusion

This Application Note has illustrated how applications presently using MAV and MAV-SM amplifiers will continue to be supported by Mini-Circuits devices that are expected to have long-range availability. Notably, these units are in a new molded plastic package that offers performance, handling, and cost advantages.

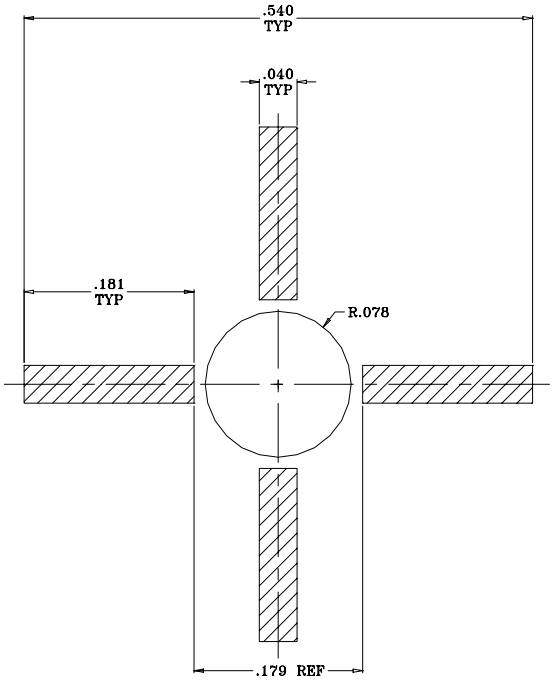

Figure 1 – Footprint for BBB123

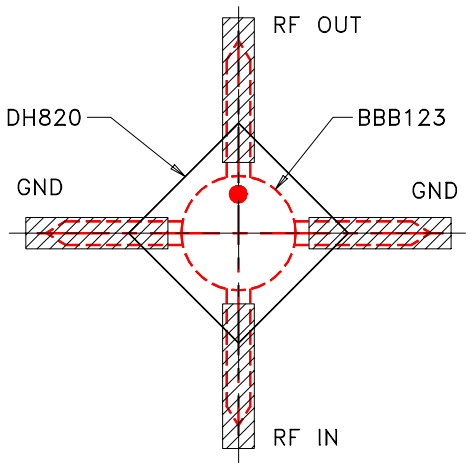

Figure 2 – Existing MAV and New Case Style DH820 Unit on BBB123 Footprint

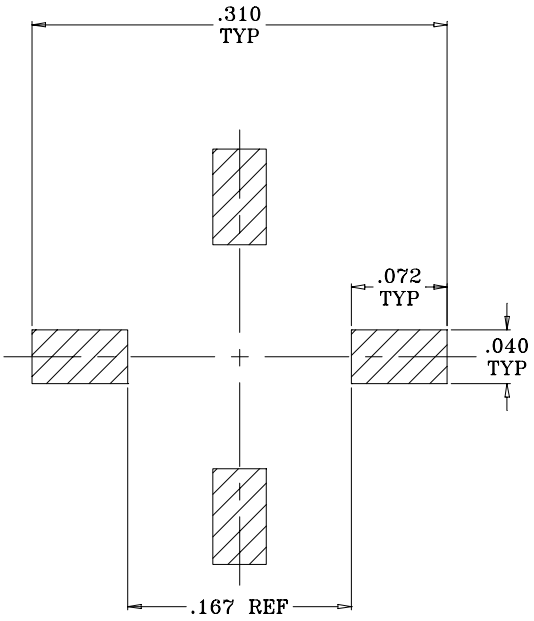

Figure 3 – Footprint for RRR137

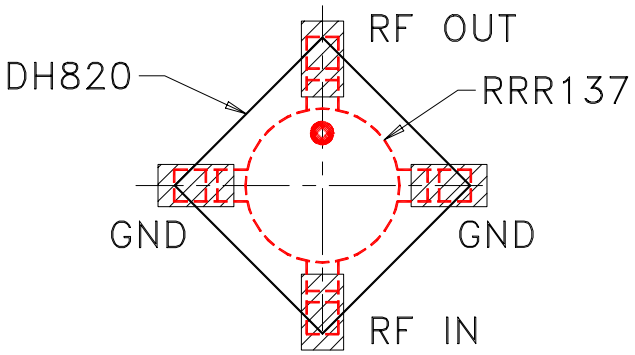

Figure 4 – Existing MAV-SM Unit and New Case Style DH820 on RRR137 Footprint