AM4033 – Balun

2 to 18 GHz Balun

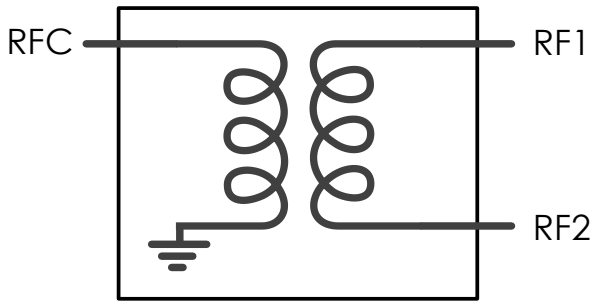
Description

AM4033 is a broadband Balun that allows a 180° phase difference between output ports. The Balun has low loss, high isolation, and low amplitude/phase mismatch from 2.0 GHz to 18.0 GHz. With internal 50Ω matching and packaged in a 3mm QFN, the AM4033 represents a compact total PCB footprint.

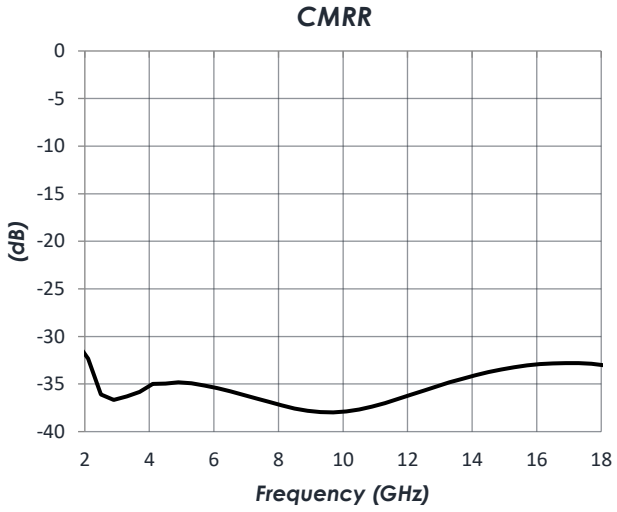
Features

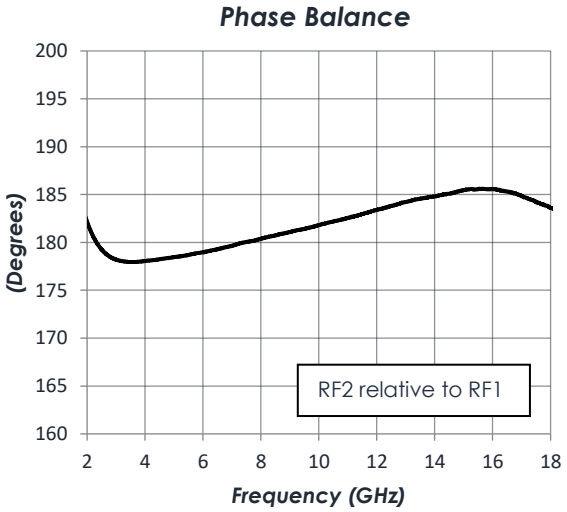
- Broadband, 2.0 to 18.0 GHz
- 6.3 dB Insertion Loss
- 13 dB Isolation
- 14 dB Return Loss
- 0.17 dB Amplitude Unbalance, TYP
- 1.8 deg Phase Unbalance, TYP
- 3mm QFN Package
- -40C to +85C Operation

Functional Diagram



Characteristic Performance





To obtain price, delivery, or to place an order contact MMICsales@mrcy.com
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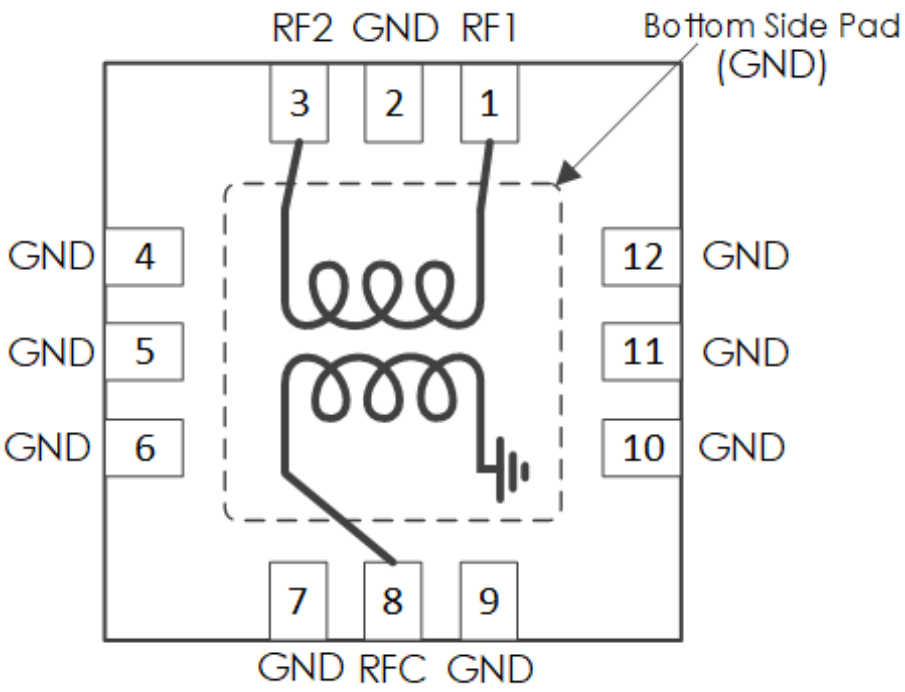
Table of Contents

Revision History

Date	Revision Number	Notes
January 5, 2024	1	Initial Release

Pin Layout and Definitions



Pin Number	Pin Name	Pin Function
1	RF1	RF Output – 50 Ohms – DC Blocked
2	GND	Ground – Common
3	RF2	RF Output – 50 Ohms – DC Blocked
4-7	GND	Ground – Common
8	RFC	RF Input – 50 Ohms – DC Blocked
9-12	GND	Ground – Common

Specifications

Absolute Maximum Ratings

	Minimum	Maximum
RF Input Power		+27 dBm
Storage Temperature Range	-50 C	+150 C

Note: *Any device operation beyond the* Absolute Maximum Ratings *may result in permanent damage to the device. The values listed in this table are extremes and do not imply functional operation of the device at these or any other conditions beyond what is listed under* Recommended Operating Conditions. *Any part subjected to conditions outside of what is recommended for an extended amount of time may suffer from reliability concerns.*

Handling Information

	Minimum	Maximum
Moisture Sensitivity Level	MSL 3	

Atlanta Micro products are electrostatic sensitive.
Follow safe handling practices to avoid damage

Recommended Operating Conditions

	Minimum	Typical	Maximum
Operating Case Temperature	-40 C		+85 C

RF Performance

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
Frequency Range		2.0 GHz		18.0 GHz
Insertion Loss	2.0 GHz to 18.0 GHz		6.3 dB	5.7 dB
Return Loss	2.0 GHz to 18.0 GHz		13.7 dB	
Isolation	2.0 GHz to 18.0 GHz		13.1 dB	
Phase Unbalance	2.0 GHz to 18.0 GHz		1.8 deg	
Amplitude Unbalance	2.0 GHz to 18.0 GHz		0.17 dB	

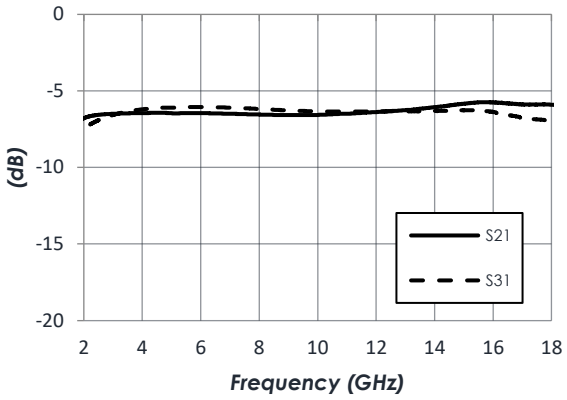
***Note:** Amplitude and phase unbalance will resemble the typical value compared to the maximum value.

Insertion loss shown depicts loss of IC after passive 3.0 dB loss.

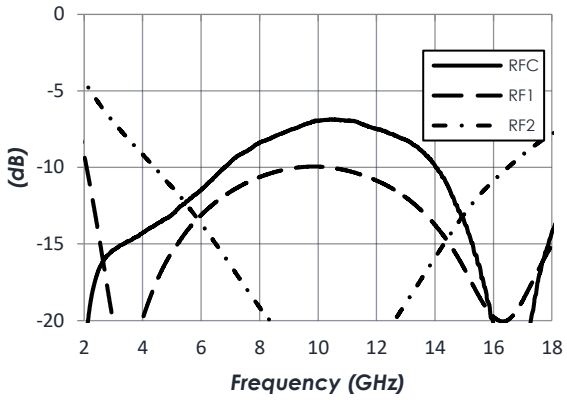
Typical Performance

(T = 25 °C unless otherwise specified. Port 1 = Sum Port, Port2 = RF1, Port 3 = RF2)

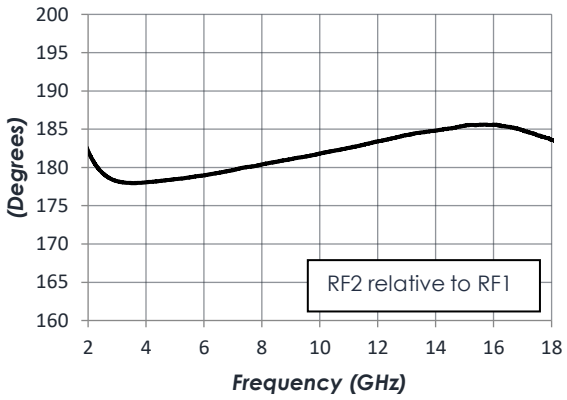
Insertion Loss



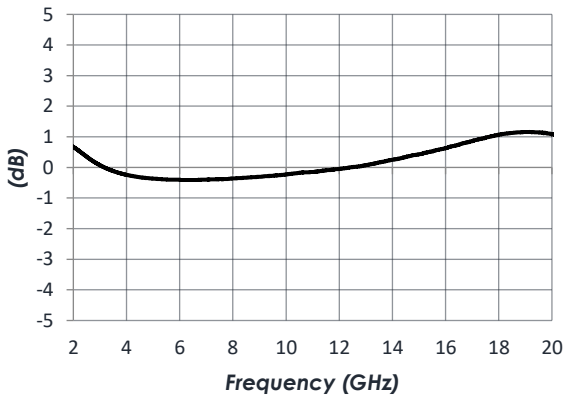
Return Loss



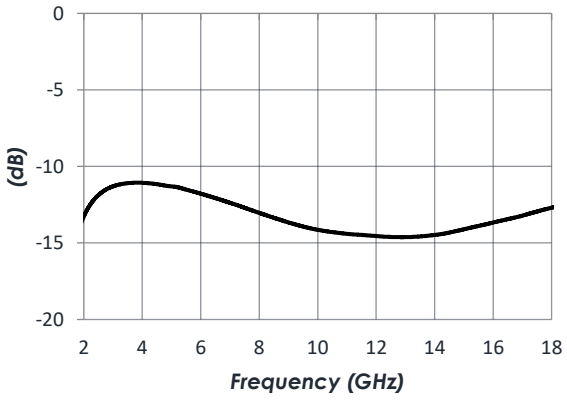
Phase Balance



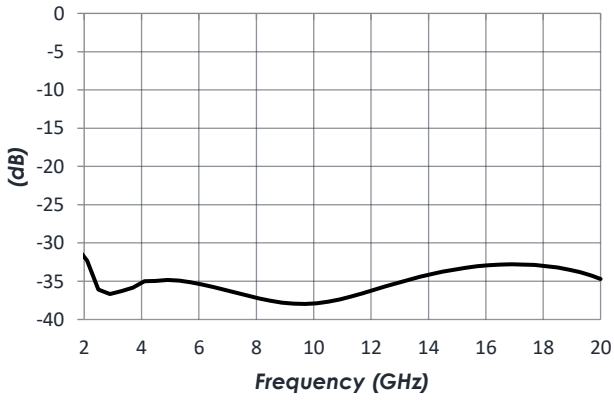
Amplitude Balance



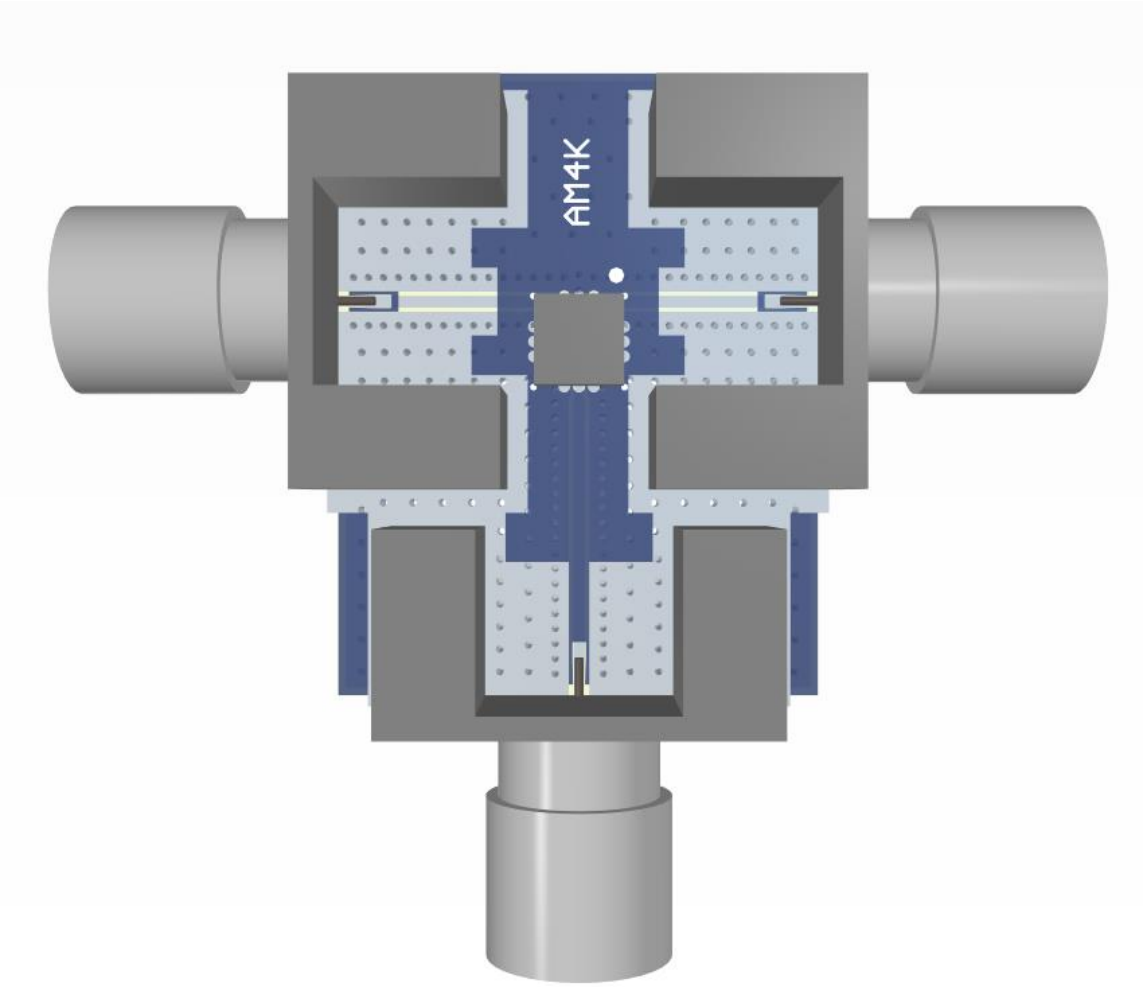
Isolation



CMRR



Evaluation PC Board



Part Ordering Details

Description	Part Number
3.1 mm x 3.1 mm x 1.2 mm QFN package	AM4033
AM4K Evaluation Board with Connectors	AM4033-EVAL

Component Compliance Information

RoHS: Atlanta Micro, Inc. hereby certifies that all products comply with the EC Directive 2011/65/EC on the Restriction of Hazardous Substances, commonly known as EU-RoHS 6 and 10. All products supplied by Atlanta Micro shall be compliant with the European Directive 2011/65/EC based on the following substance list.

Substance List	Allowable Maximum Concentration
Lead (Pb)	<1000 PPM (0.1% by weight)
Mercury (Hg)	<1000 PPM (0.1% by weight)
Cadmium (Cd)	<75 PPM (0.0075% by weight)
Hexavalent Chromium (CrVI)	<1000 PPM (0.1% by weight)
Polybrominated Biphenyls (PBB)	<1000 PPM (0.1% by weight)
Polybrominated Diphenyl ethers (PBDE)	<1000 PPM (0.1% by weight)
Decabromodiphenyl Deca BDE	<1000 PPM (0.1% by weight)
Bis (2-ethylheyl) Phthalate (DEHP)	<1000 PPM (0.1% by weight)
Butyl Benzyl Phthalate (BBP)	<1000 PPM (0.1% by weight)
Dibutyl Phthalate (DBP)	<1000 PPM (0.1% by weight)
Diisobutyl Phthalate (DIBP)	<1000 PPM (0.1% by weight)

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