

AM3232 – Filter

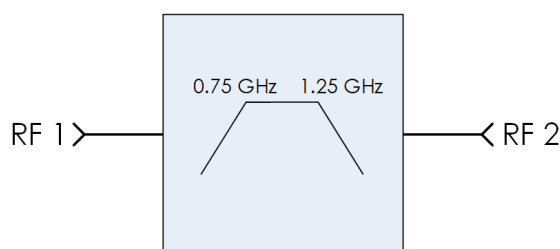
1 GHz Bandpass Filter

AM3232 is a passive bandpass filter implemented on chip that provides low loss and high rejection in a small 3 mm package. With a center frequency of 1.0 GHz, 1.1 GHz, or 1.2 GHz and a bandwidth of 500 MHz, AM3232 is useful as an IF filter in any RF system for image, LO, and spur rejection. AM3232 is AC coupled and matched to 50 ohms and operates over the -40C to +100C temperature range.

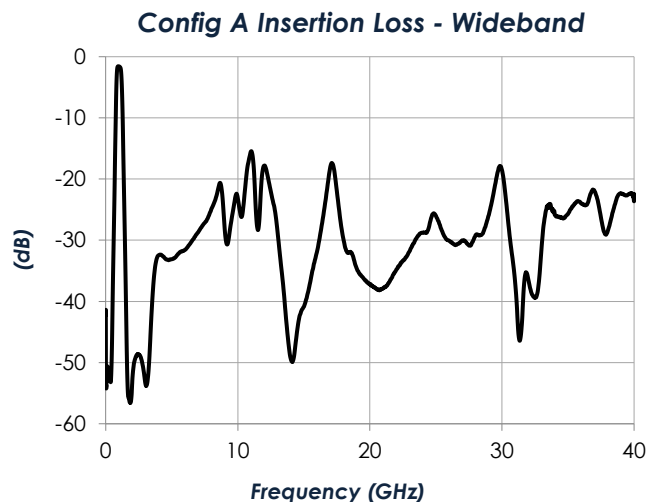
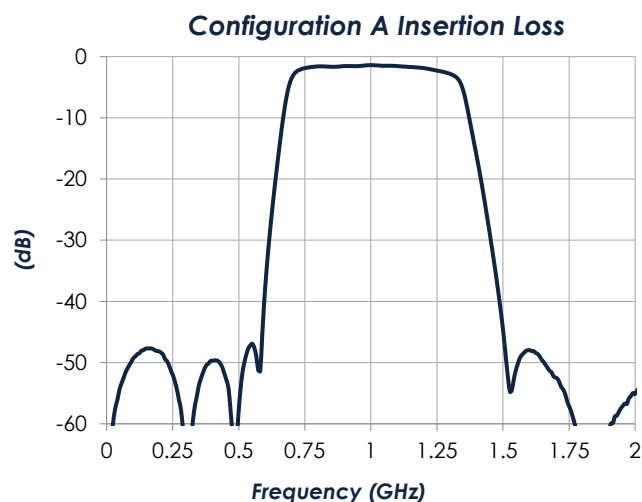
FEATURES

- 1 GHz Center Frequency
- 500 MHz Bandwidth
- -1.4 dB Loss at 1 GHz typ.
- 45 dBc Rejection in Stopband typ.
- 0.9 dB Passband Flatness typ.
- 1.0 W Power Handling
- 3 mm QFN Package
- -40C to +100C Operation

FUNCTIONAL DIAGRAM



CHARACTERISTIC PERFORMANCE



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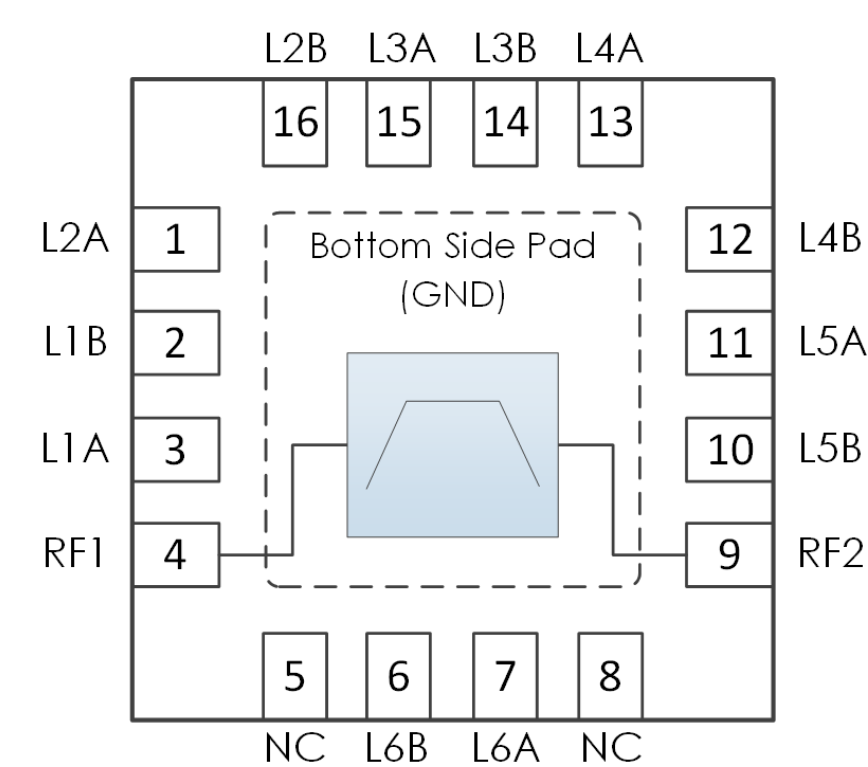
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REVISION HISTORY

Date	Revision	Notes
January 3, 2024	1	Initial Release
January 10, 2024	1.1	Added Wideband Insertion Loss Plot
February 18, 2025	2	Changed to Mercury branding. No content changes.

PORT LAYOUT AND DEFINITIONS



Pin Number	Pin Name	Pin Function
1	L2A	External inductor L2 connection
2	L1B	External inductor L1 connection
3	L1A	External inductor L1 connection
4	RF1	RF Port 1 – 50 ohms, AC coupled
5	NC	Not Connected*
6	L6B	External inductor L6 connection
7	L6A	External inductor L6 connection
8	NC	Not Connected*
9	RF2	RF Port 2 – 50 ohms, AC coupled
10	L5B	External inductor L5 connection
11	L5A	External inductor L5 connection
12	L4B	External inductor L4 connection
13	L4A	External inductor L4 connection
14	L3B	External inductor L3 connection
15	L3A	External inductor L3 connection
16	L2B	External inductor L2 connection
* NC pins may be left open or connected to ground.		

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SPECIFICATIONS

Absolute Maximum Ratings

	Minimum	Maximum
RF Input Power		+27 dBm
Operating Case Temperature	-40 C	+150 C
Storage Temperature Range	-55C	+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. Devices subjected to conditions outside of what is recommended for extended periods may affect device reliability.

Handling Information

	Minimum	Maximum
Storage Temperature Range (Recommended)	-50 C	+125 C
Moisture Sensitivity Level	MSL 3	



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

Recommended Operating Conditions

Param	Min	Typical	Maximum
Operating Case Temperature	-40 C		+100 C

RF Performance – Configuration A: 1.0 GHz Center

(T = 25 °C unless otherwise specified)

Param	Testing Conditions	Min	Typical	Max
Passband Range		0.75 GHz		1.25 GHz
Bandwidth			500 MHz	
Passband Flatness			0.9 dB	
Stopband Rejection	f < 550 MHz		45 dB	
	1.6 GHz < f < 3.4 GHz		45 dB	
	f > 3.4 GHz		30 dB	
Insertion Loss	f = 0.75 GHz		1.9 dB	
	f = 1.0 GHz		1.4 dB	
	f = 1.25 GHz		2.3 dB	
Return Loss	f = 0.75 GHz		21 dB	
	f = 1.0 GHz		16 dB	
	f = 1.25 GHz		13 dB	

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RF Performance – Configuration B: 1.1 GHz Center

(T = 25 °C unless otherwise specified)

Param	Testing Conditions	Min	Typical	Max
Passband Range		0.85 GHz		1.35 GHz
Bandwidth			500 MHz	
Passband Flatness			1.1 dB	
Stopband Rejection	f < 600 MHz		42 dB	
	1.6 GHz < f < 3.4 GHz		44 dB	
	f > 3.4 GHz		31 dB	
Insertion Loss	f = 0.85 GHz		1.8 dB	
	f = 1.1 GHz		1.6 dB	
	f = 1.35 GHz		2.6 dB	
Return Loss	f = 0.85 GHz		17 dB	
	f = 1.1 GHz		15 dB	
	f = 1.35 GHz		12 dB	

RF Performance – Configuration C: 1.8 GHz Center

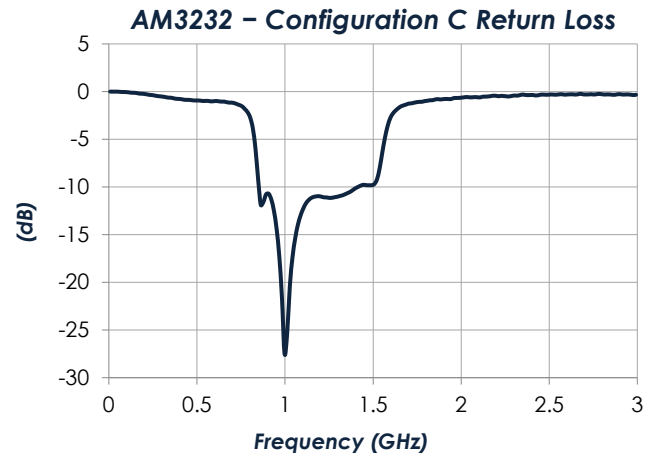
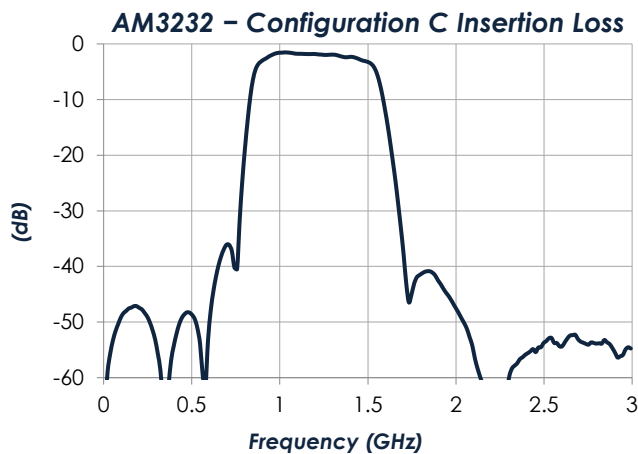
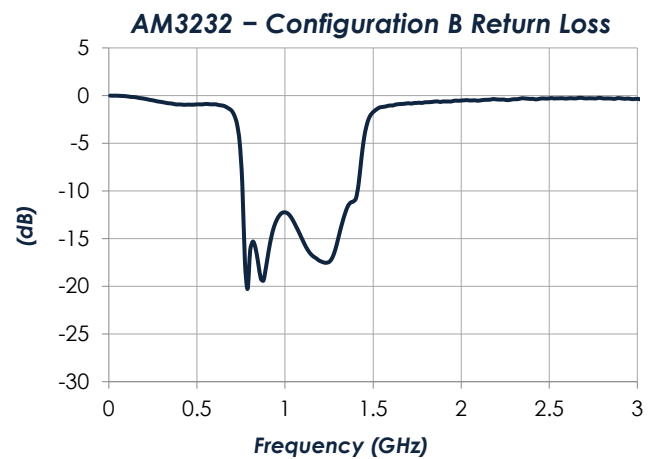
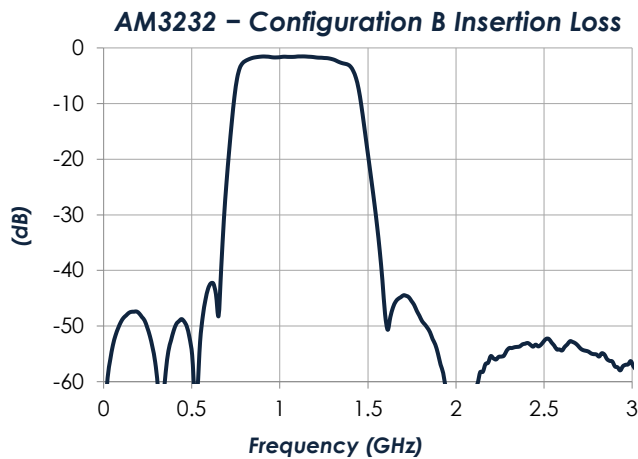
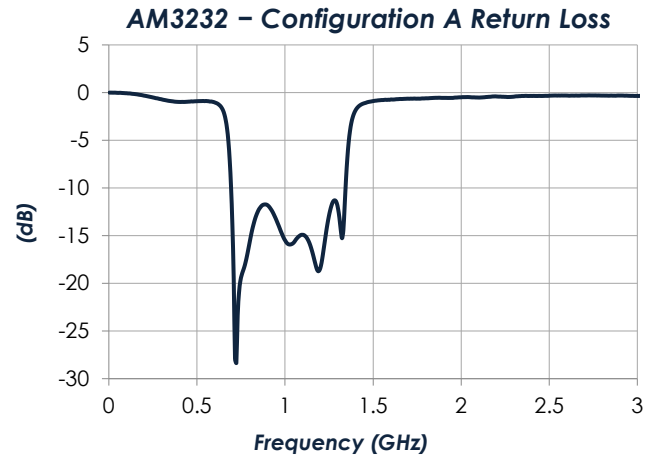
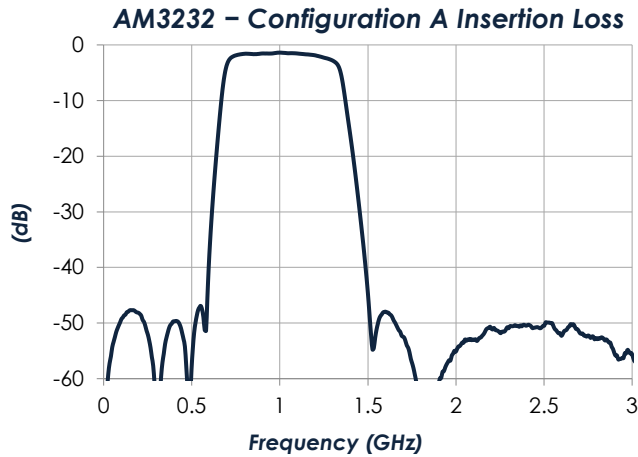
(T = 25 °C unless otherwise specified)

Param	Testing Conditions	Min	Typical	Max
Passband Range		0.95 GHz		1.45 GHz
Bandwidth			500 MHz	
Passband Flatness			1.4 dB	
Stopband Rejection	f < 700 MHz		36 dB	
	1.8 GHz < f < 3.5 GHz		40 dB	
	f > 3.4 GHz		31 dB	
Insertion Loss	f = 0.95 GHz		2.2 dB	
	f = 1.2 GHz		1.8 dB	
	f = 1.45 GHz		3.2 dB	
Return Loss	f = 0.95 GHz		13 dB	
	f = 1.2 GHz		11 dB	
	f = 1.45 GHz		9.8 dB	

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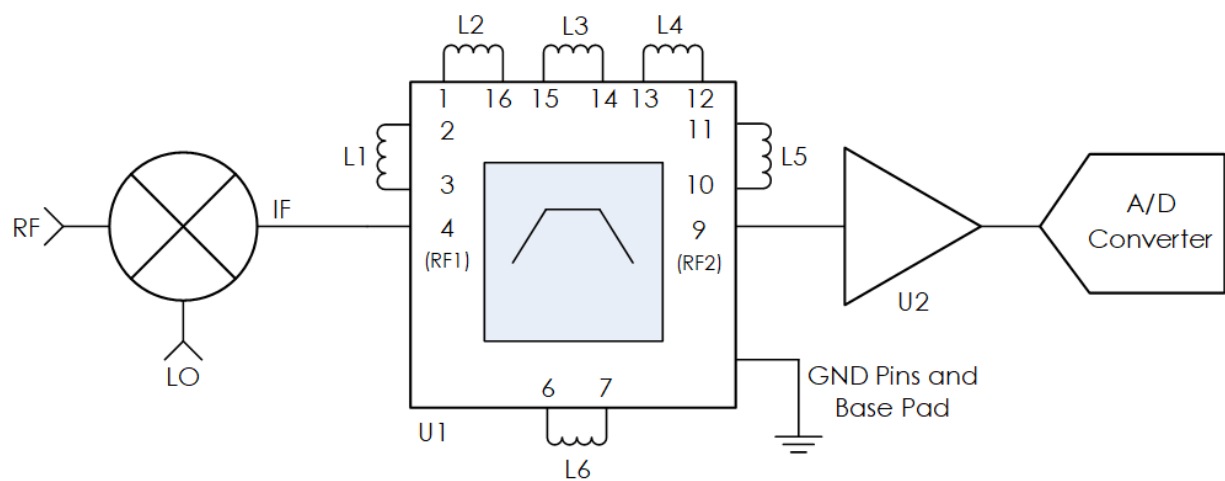
TYPICAL PERFORMANCE

(T = 25 °C unless otherwise specified. Refer to s-parameters available for download on the Mercury website for more information.)



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Typical Application



Configuration A Recommended Component List (or equivalent): 1.0 GHz Center

Part	Value	Part Number	Manufacturer
U1		AM3232	Mercury
U2		AM1025B	Mercury
L1	8.2 nH	0402DC-8N2XGRW	Coilcraft
L2	5.3 nH	0402DC-5N3XGRW	Coilcraft
L3	6.9 nH	0402DC-6N9XGRW	Coilcraft
L4, L5	10.0 nH	0402DC-10NXGRW	Coilcraft
L6	15.0 nH	0402DC-15NXGRW	Coilcraft

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Configuration B Recommended Component List (or equivalent): 1.1 GHz Center

Part	Value	Part Number	Manufacturer
U1		AM3232	Mercury
U2		AM1025B	Mercury
L1	7.0 nH	0402DC-7N0XGRW	Coilcraft
L2	4.5 nH	0402DC-4N5XGRW	Coilcraft
L3	5.8 nH	0402DC-5N8XGRW	Coilcraft
L4, L5	8.1 nH	0402DC-8N1XGRW	Coilcraft
L6	11.0 nH	0402DC-11NXGRW	Coilcraft

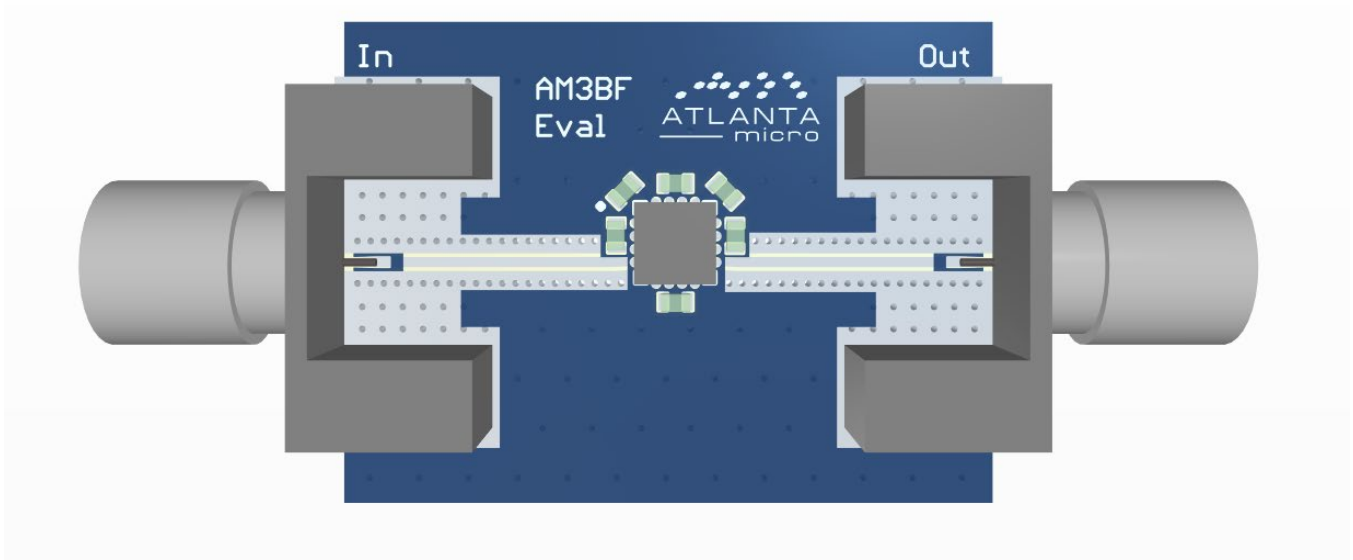
Configuration C Recommended Component List (or equivalent): 1.2 GHz Center

Part	Value	Part Number	Manufacturer
U1		AM3232	Mercury
U2		AM1025B	Mercury
L1	5.5 nH	0402DC-5N5XGRW	Coilcraft
L2	3.5 nH	0402DC-3N5XGRW	Coilcraft
L3	4.5 nH	0402DC-4N5XGRW	Coilcraft
L4, L5	6.6 nH	0402DC-6N6XGRW	Coilcraft
L6	8.1 nH	0402DC-8N1XGRW	Coilcraft

Notes:

1. L1-L6 should be placed close to AM3232.

EVALUATION PC BOARD



PART ORDERING DETAILS

Description		Part Number
3.1 mm x 3.1 mm x 0.5 mm QFN package		AM3232
AM3232 Evaluation Board with Connectors, Configuration A		AM3232 Eval-A
AM3232 Evaluation Board with Connectors, Configuration B		AM3232 Eval-B
AM3232 Evaluation Board with Connectors, Configuration C		AM3232 Eval-C

RELATED PARTS

Part Number		Description
AM3056	0.75 GHz to 1.25 GHz	Bandpass
AM3188	2.5 GHz to 3.5 GHz	Bandpass
AM3187	3.25 GHz to 4.25 GHz	Bandpass
AM3231	1.5 GHz to 2.5 GHz	Bandpass
AM3103	1 GHz to 3 GHz	Digitally Tunable Bandpass

COMPONENT COMPLIANCE INFORMATION

RoHS: Mercury Systems, 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 Mercury 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-ethylhexyl) 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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Mercury takes its responsibility as a global partner seriously and will use due diligence within our supply chain to ensure all standards are met to the best of our knowledge.



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