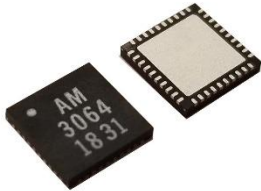


AM3064 – Filter Bank

Digitally Tunable 1.0 to 6.5 GHz Bandpass



AM3064 is a miniature filter IC containing digitally tunable bandpass filters

covering the 1.0 GHz to 6.5 GHz frequency range. Separate low-pass and high-pass control lines provide independent control of both center frequency and bandwidth.

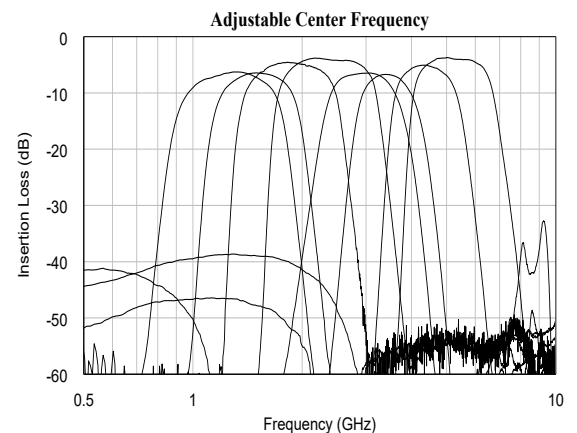
Power and Control lines are internally filtered using Mercury's AM35 filter chip.

AM3064 provides an excellent filtering solution for a receiver or transceiver requiring flexible center frequency and bandwidth, high dynamic range, and small size, weight, and power consumption.

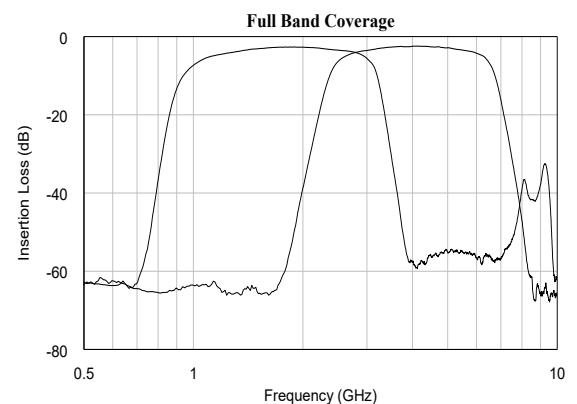
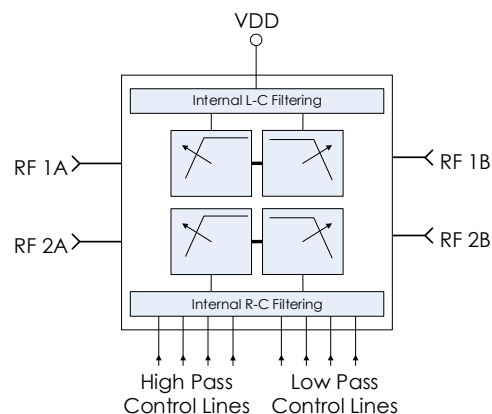
FEATURES

- Digitally Tunable Bandpass Filters
- Independent LP and HP control
- 3.0 dB Insertion Loss
- +40 dBm Input IP3
- +3.3V to +5.0V Supply
- Integrated Power and Control Line Filtering (See AM35 Datasheet) 4-bit Control
- 6mm QFN Package
- -40C to +85C Operation

CHARACTERISTIC PERFORMANCE



FUNCTIONAL DIAGRAM



CONTENTS

REVISION HISTORY..... 2

PIN LAYOUT AND DEFINITIONS 3

SPECIFICATIONS..... 4

TYPICAL PERFORMANCE 8

TYPICAL APPLICATION.....10

PART ORDERING INFORMATION10

EVALUATION PC BOARD.....11

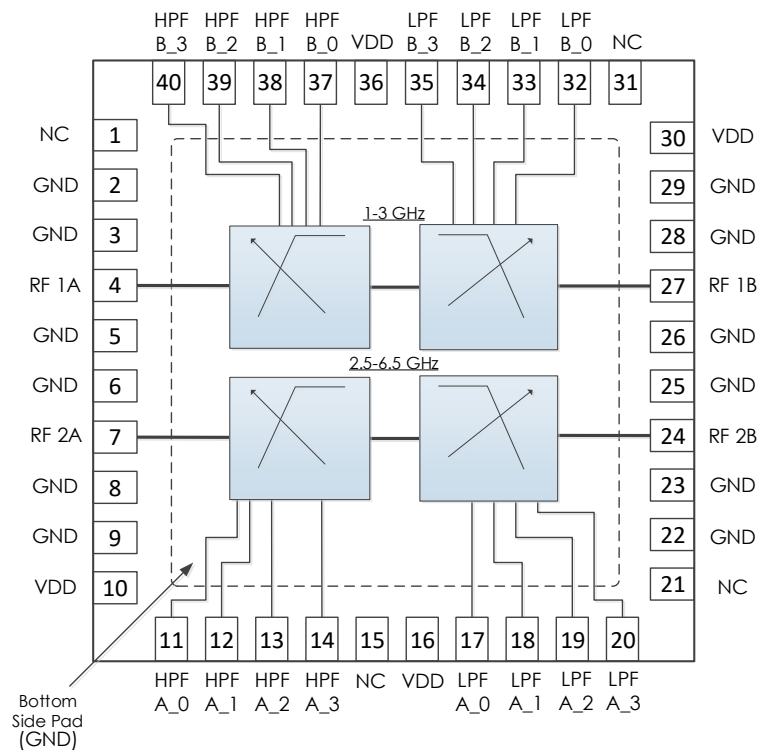
RELATED PARTS.....11

COMPONENT COMPLIANCE INFORMATION12

REVISION HISTORY

Date	Revision	Notes
August 17, 2018	1	Initial Release.
July 17, 2019	2	Various Notes Added, Component Footprint Updated, Various Performance Details Added.
July 28, 2020	3	Moved Package Information to Main Product Details Page on Website.
June 26, 2024	4	Changed to Mercury branding. No content changes.
May 18, 2026	4.1	Corrected low pass filter cutoff frequencies and pin descriptions.
July 29, 2026	4.2	Added Part Ordering Information

PIN LAYOUT AND DEFINITIONS



Pin	Name	Function
1	NC	Do Not Connect
2,3	GND	Ground - Common
4	RF1A	1.0-3.0 GHz RF Port 1 - 50 ohms - DC coupled - DC blocking capacitor required*
5,6	GND	Ground - Common
7	RF2A	2.5-6.5 GHz RF Port 1 - 50 ohms - DC coupled - DC blocking capacitor required*
8,9	GND	Ground - Common
10	VDD	DC Supply
11	HPFA_0	2.5-6.5 GHz HPF control bit 0
12	HPFA_1	2.5-6.5 GHz HPF control bit 1
13	HPFA_2	2.5-6.5 GHz HPF control bit 2
14	HPFA_3	2.5-6.5 GHz HPF control bit 3
15	NC	Do Not Connect
16	VDD	DC Supply

Pin	Name	Function
17	LPFA_0	2.5-6.5 GHz LPF control bit 0
18	LPFA_1	2.5-6.5 GHz LPF control bit 1
19	LPFA_2	2.5-6.5 GHz LPF control bit 2
20	LPFA_3	2.5-6.5 GHz LPF control bit 3
21	NC	Do Not Connect
22,23	GND	Ground - Common
24	RF2B	2.5-6.5 GHz RF Port 2 - 50 ohms - DC coupled - DC blocking capacitor required*
25,26	GND	Ground - Common
27	RF1B	1.0-3.0 GHz RF Port 2 - 50 ohms - DC coupled - DC blocking capacitor required*
28,29	GND	Ground - Common
30	VDD	DC Supply
31	NC	Do Not Connect
32	LPFB_0	1.0-3.0 GHz LPF control bit 0
33	LPFB_1	1.0-3.0 GHz LPF control bit 1
34	LPFB_2	1.0-3.0 GHz LPF control bit 2
35	LPFB_3	1.0-3.0 GHz LPF control bit 3
36	VDD	DC Supply
37	HPFB_0	1.0-3.0 GHz HPF control bit 0
38	HPFB_1	1.0-3.0 GHz HPF control bit 1
39	HPFB_2	1.0-3.0 GHz HPF control bit 2
40	HPFB_3	1.0-3.0 GHz HPF control bit 3
Case GND	GND	Ground - Common

***Note:** DC blocking caps not required if in series with other Mercury parts of the same reference voltage.

SPECIFICATIONS

Absolute Maximum Ratings

	Minimum	Maximum
Supply Voltage	-0.3 V	+6.0 V
RF Input Power		+27 dBm
Operating Junction Temperature	-40 C	+150 C
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.

Recommended Operating Conditions

	Minimum	Typical	Maximum
Supply Voltage	+2.7 V	+5.0 V	
Operating Case Temperature	-40 C		+85 C
Operating Junction Temperature	-40 C		+125 C

Handling Information

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



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

DC Electrical Characteristics

Param	Testing Conditions	Min	Typical	Max
DC Supply Voltage		+2.7 V	+5.0 V	
DC Supply Current	VDD = +3.3 V	<1 mA		3 mA
	VDD = +5.0 V	<1 mA		5 mA
Power Dissipated	VDD = +3.3 V	<3.3 mW		10 mW
	VDD = +5.0 V	<5 mW		25 mW
Logic Level Low		-0.1 V		+0.5 V
Logic Level High		+2.0 V		+VDD V

*Power and Control lines are internally filtered. See AM35 datasheet for performance details.

RF Performance

Param	Testing Conditions	Min	Typical	Max
Frequency Range		1.0 GHz		6.5 GHz
Insertion Loss			3.0 dB	
Return Loss			15.0 dB	
Input IP3			+40 dBm	

Timing Characteristic

	Minimum	Typical	Maximum
Switching Speed		1 μ s	

State Tables

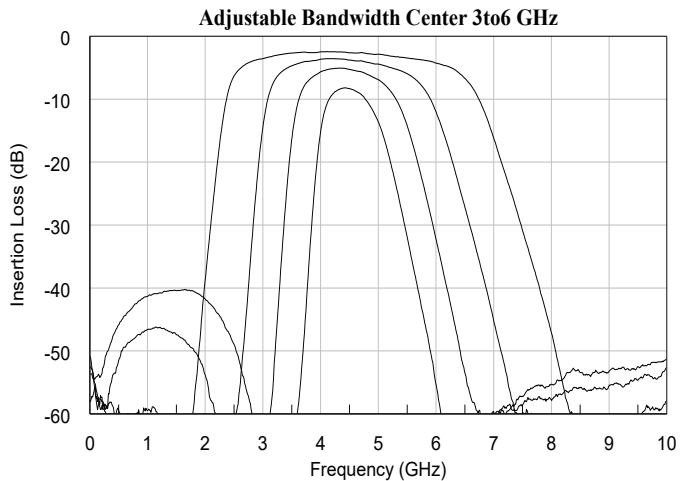
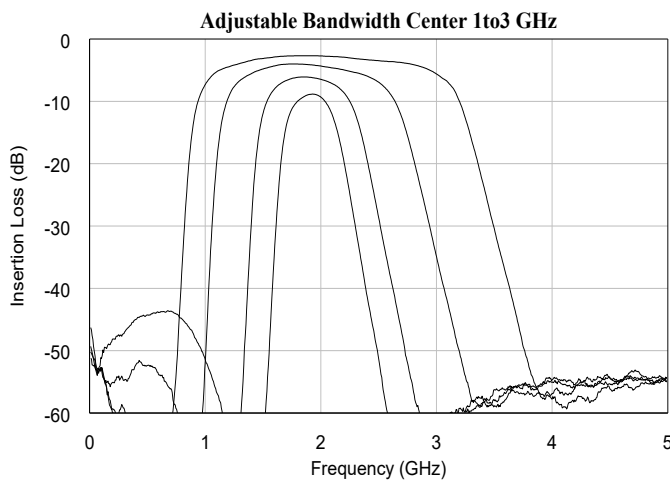
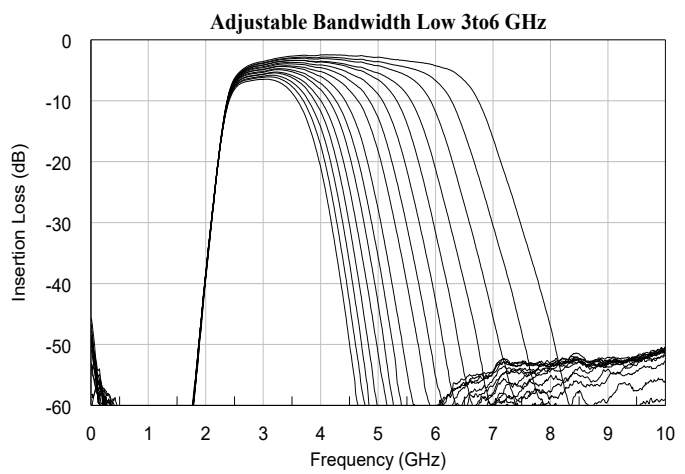
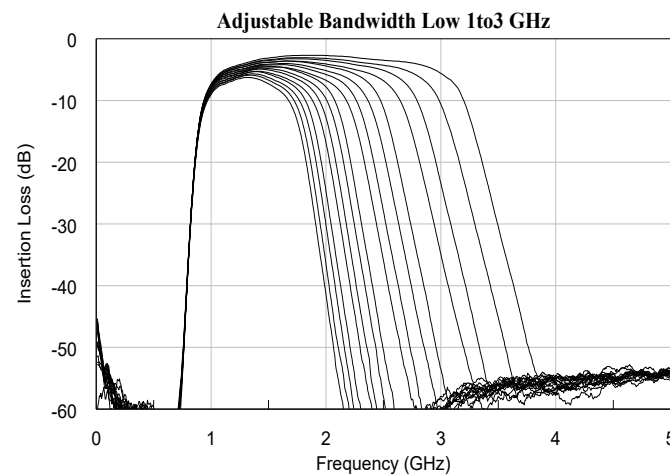
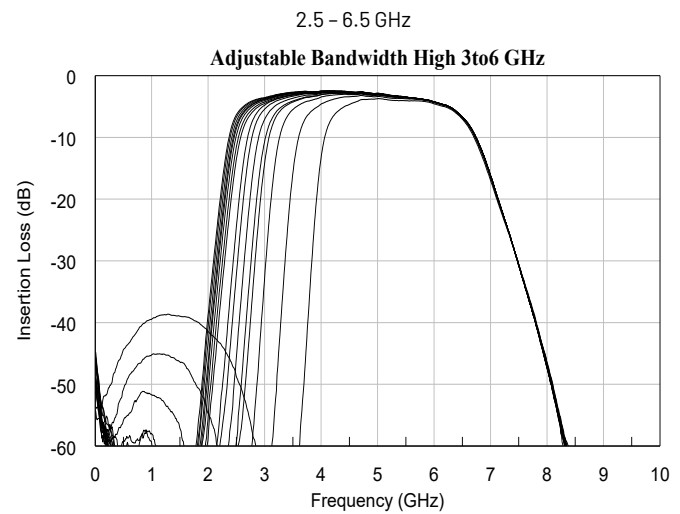
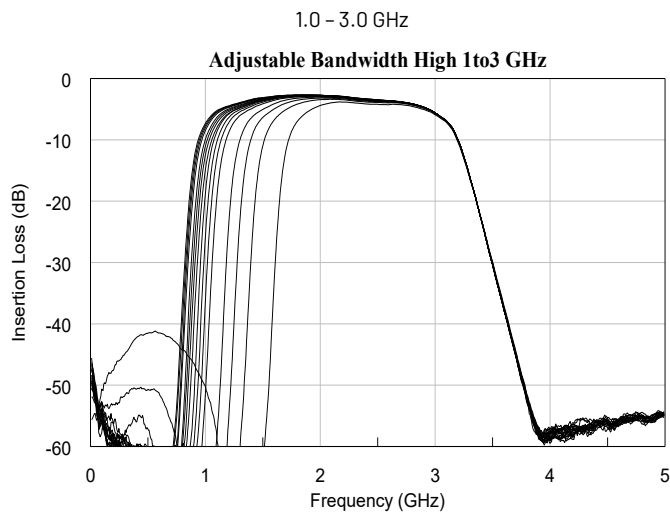
High Pass Typical Cutoff Frequencies (GHz)				Band 1	Band 2
B_3/A_3	B_2/Z_2	B_1/A_1	B_0/A0A		
Low	Low	Low	Low	1.00	2.50
Low	Low	Low	High	1.01	2.53
Low	Low	High	Low	1.02	2.56
Low	Low	High	High	1.03	2.59
Low	High	Low	Low	1.06	2.61
Low	High	Low	High	1.08	2.64
Low	High	High	Low	1.10	2.70
Low	High	High	High	1.12	2.74
High	Low	Low	Low	1.14	2.85
High	Low	Low	High	1.16	2.93
High	Low	High	Low	1.20	3.06
High	Low	High	High	1.25	3.20
High	High	Low	Low	1.37	3.26
High	High	Low	High	1.47	3.47
High	High	High	Low	1.60	3.84
High	High	High	High	1.82	4.36

State Tables

Low Pass Typical Cutoff Frequencies (GHz)				Band 1	Band 2
B_3/A_3	B_2/Z_2	B_1/A_1	B_0/A0A		
Low	Low	Low	Low	1.50	3.50
Low	Low	Low	High	1.55	3.60
Low	Low	High	Low	1.59	3.68
Low	Low	High	High	1.65	3.79
Low	High	Low	Low	1.70	3.89
Low	High	Low	High	1.78	4.04
Low	High	High	Low	1.84	4.15
Low	High	High	High	1.92	4.31
High	Low	Low	Low	2.00	4.54
High	Low	Low	High	2.10	4.74
High	Low	High	Low	2.20	4.97
High	Low	High	High	2.33	5.22
High	High	Low	Low	2.49	5.47
High	High	Low	High	2.67	5.84
High	High	High	Low	2.86	6.22
High	High	High	High	3.12	6.75

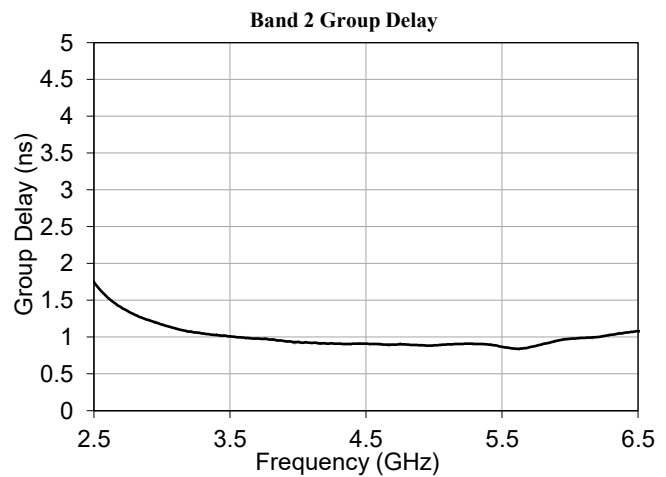
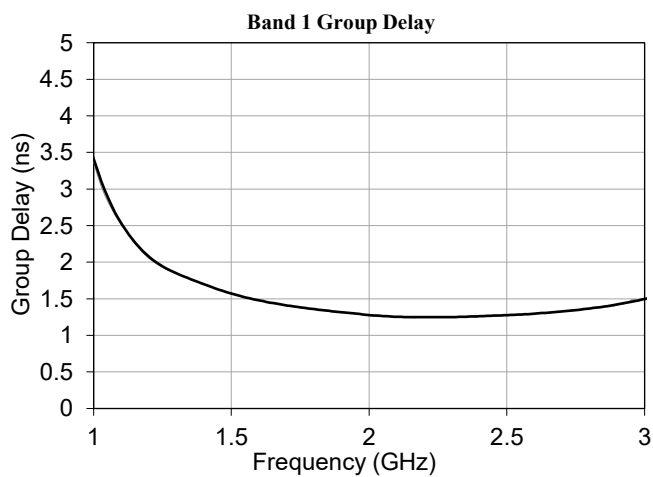
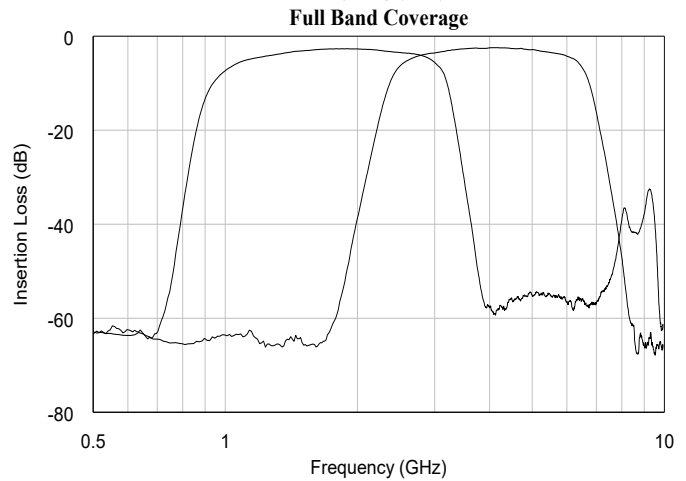
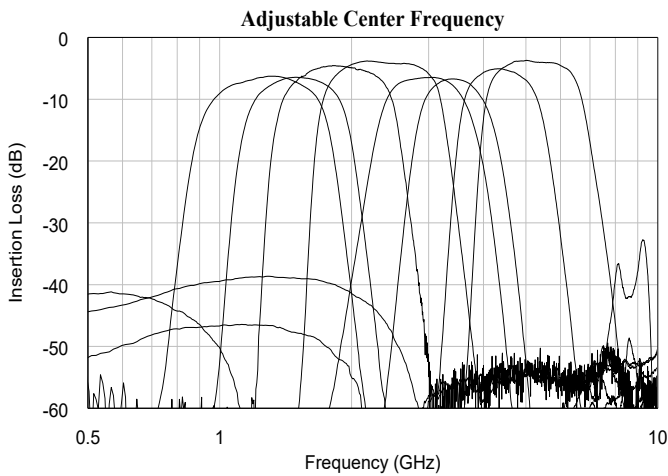
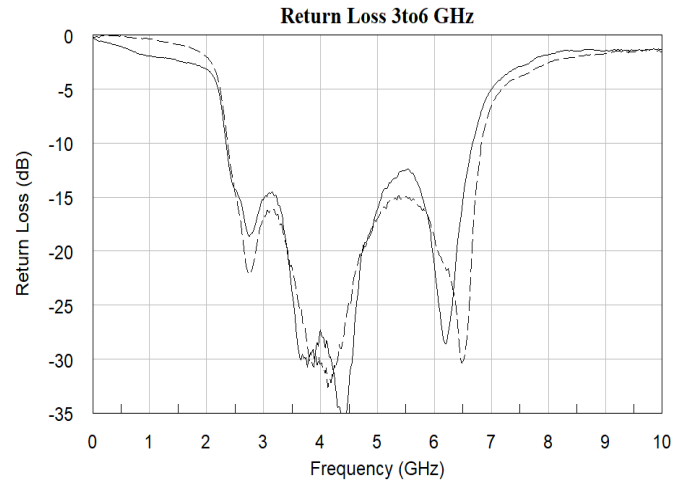
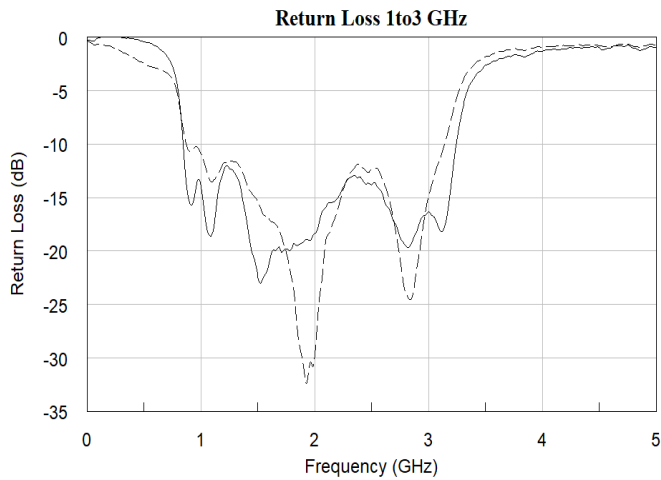
TYPICAL PERFORMANCE

*Note: Only some states shown for simplicity

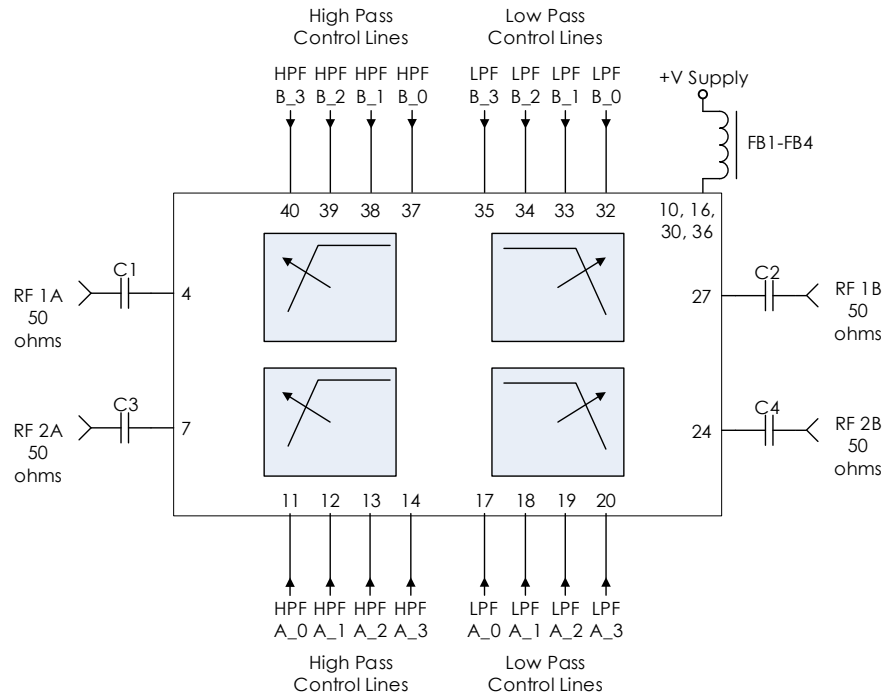


TYPICAL PERFORMANCE (CONTINUED)

*Note: Only some states shown for simplicity



TYPICAL APPLICATION



Recommended Component List (or Equivalent)

Part	Value	Part Number	Manufacturer
C1 – C4	0.1 uF	0201BB104KW160	Passives Plus
FB1 – FB4	-	MMZ1005A222E	TDK

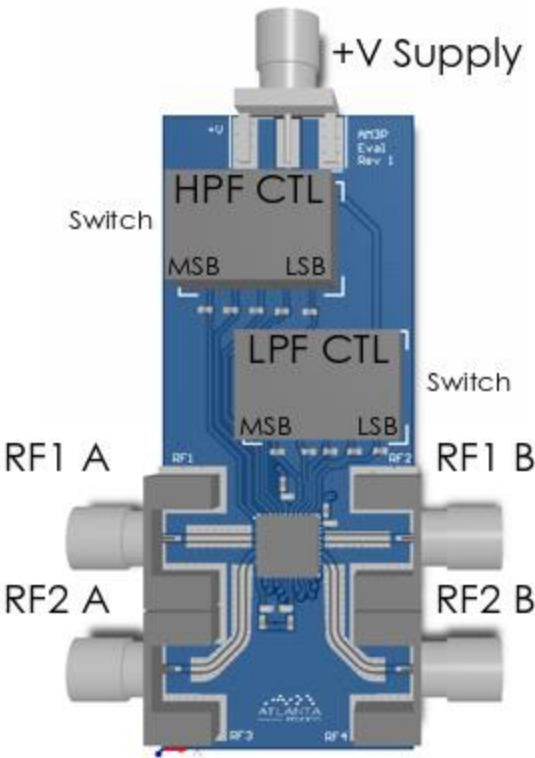
Notes:

- RF blocking capacitors should be high performance, low-loss, broadband capacitors for optimum performance.
- VDD and control lines filtered internally providing high frequency isolation up to 50+ GHz.
 - No additional RC filtering required on control lines.
 - Ferrite bead recommended on VDD lines for better low frequency performance.
 - See AM35 datasheet for performance details

PART ORDERING INFORMATION

Part Number	Description
AM3064	6mm 40 Lead QFN; Sn Lead Finish
AM3064-1	6mm 40 Lead QFN; ENEPIG Lead Finish
AM3064-Eval	AM3064-1 Evaluation Board

EVALUATION PC BOARD



RELATED PARTS

Part Number		Description
AM3060	.32 GHz to 6.5 GHz	Switched Digitally Tunable BPF Bank
AM3063	6 GHz to 18 GHz	Digitally Tunable Bandpass Filter Bank
AM3065	6 GHz to 12 GHz	Digitally Tunable Bandpass Filter
AM3066	12 GHz to 26.5 GHz	Digitally Tunable Bandpass Filter Bank
AM3089	2 GHz to 18 GHz	Switched Analog Tunable BPF Bank
AM3134	2 GHz to 4.5 GHz	Analog Tunable Bandpass Filter Bank
AM3135	3.5 GHz to 9 GHz	Analog Tunable Bandpass Filter Bank
AM3136	8 GHz to 19 GHz	Analog Tunable Bandpass Filter Bank
AM35	100 MHz to 40 GHz	Power and Control EMI Filter Bank

COMPONENT COMPLIANCE INFORMATION

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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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