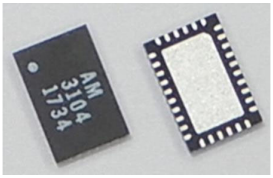
AM3104 – Filter Bank

Digitally Tunable 2.5 to 6.5 GHz Bandpass

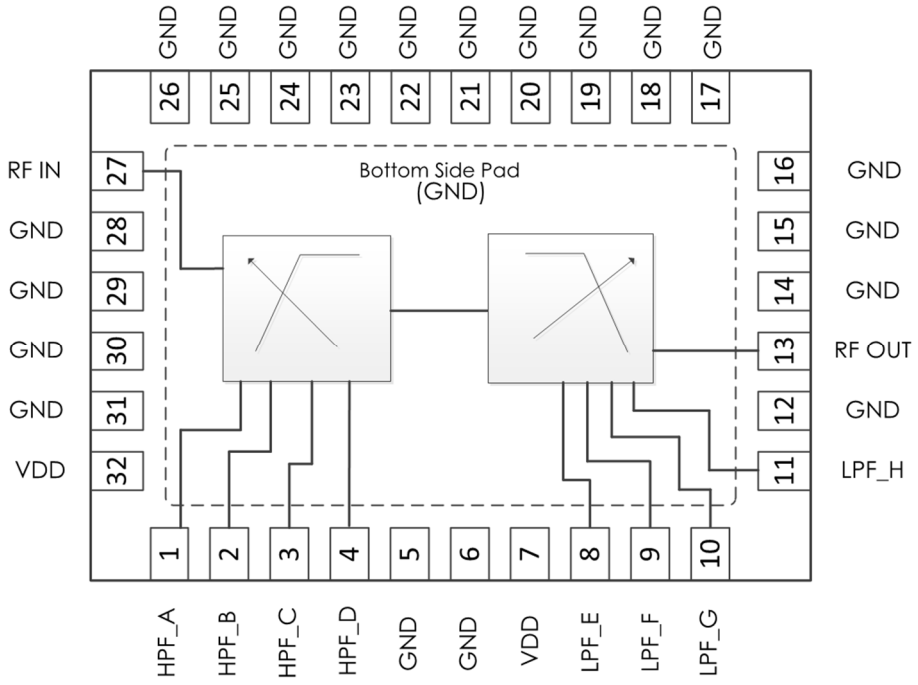


AM3104 is a miniature filter IC containing digitally tunable bandpass filters covering the 2.5 GHz to 6.5 GHz frequency range. Independent 4-bit digital control of the low-pass and high-pass corners provide control of both center frequency and bandwidth. AM3104 provides an excellent filtering solution for a receiver or transceiver requiring flexible center frequency and bandwidth, high dynamic range, and small size, weight, and power consumption.

FEATURES

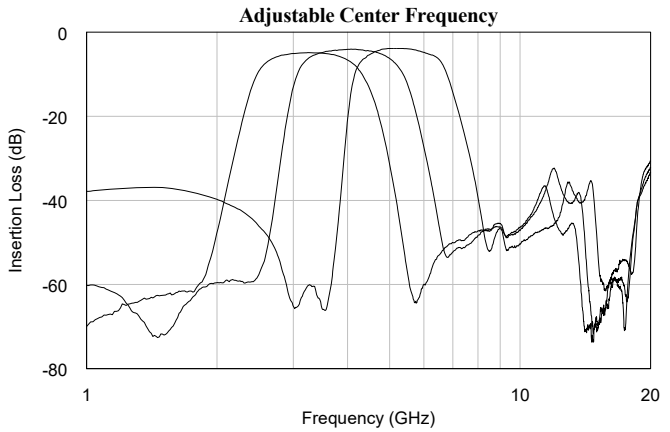
- Digitally Tunable Bandpass Filters
- Independent LP and HP control
- 4-bit Control, 3V or 5V Logic
- +3.3V to +5.0V Supply
- Integrated Control Line Filtering
- 2.5 dB Insertion Loss
- 4.0 x 6.0 mm QFN Package
- +40 dBm Input IP3
- -40C to +85C Operation

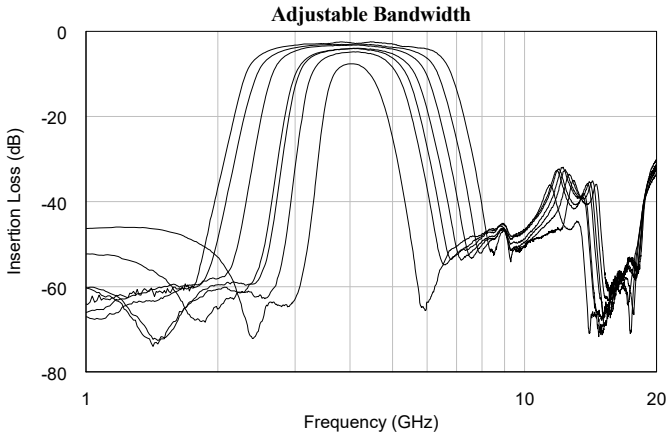
FUNCTIONAL DIAGRAM

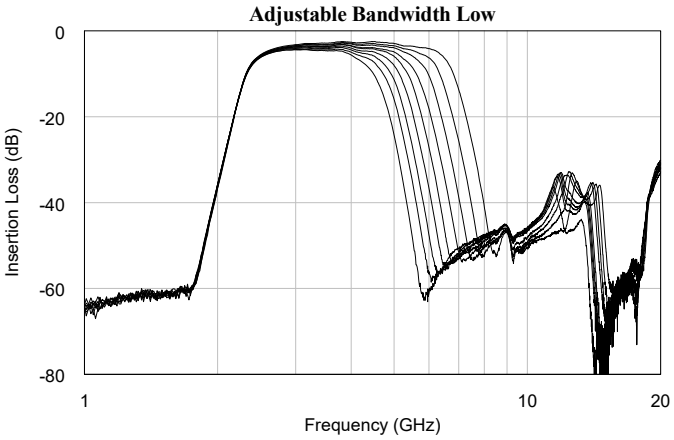


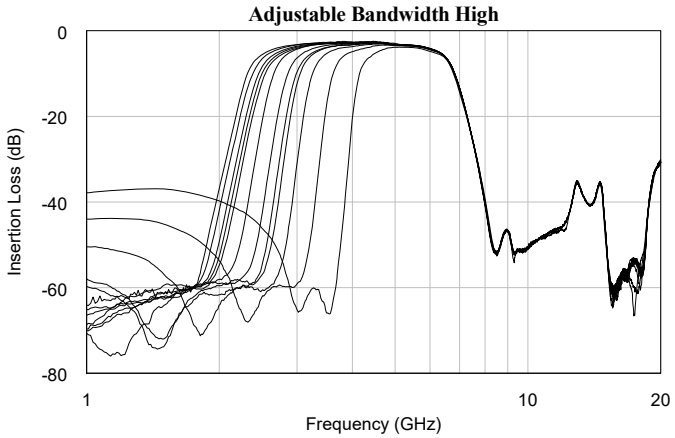
TYPICAL PERFORMANCE

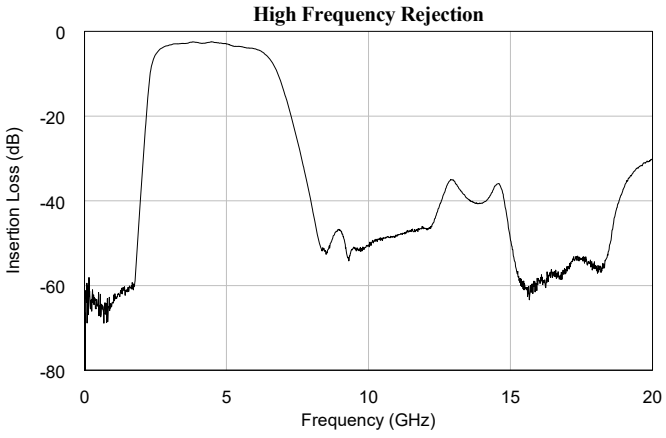
(Only some of the available states shown for simplicity)

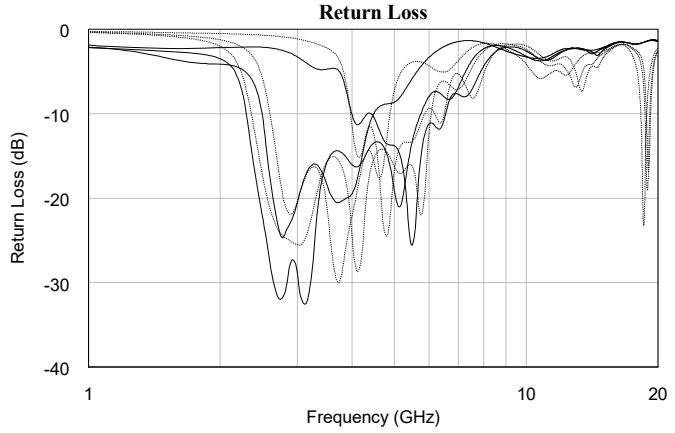




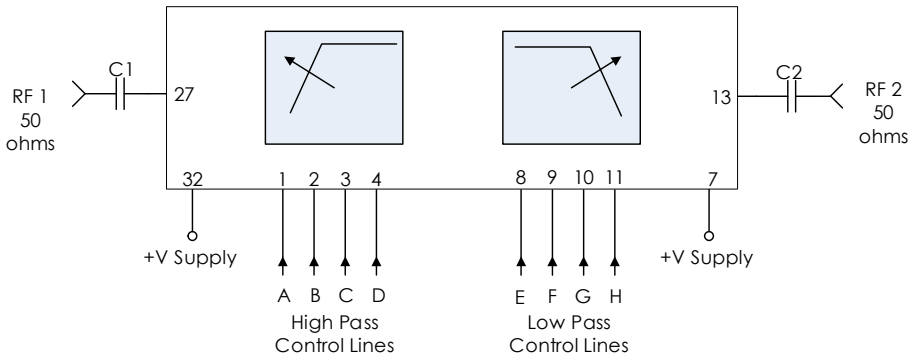








TYPICAL APPLICATION



Recommended Component List (or Equivalent)

Part	Value	Part Number	Manufacturer
C1, C2	0.1 uF	0402BB104KW160	Passives Plus

Notes:

1. RF blocking capacitors should be high performance, low-loss, broadband capacitors for optimum performance.
2. VDD and control lines filtered internally providing high-frequency isolation to 20+ GHz.

PIN DEFINITIONS

Pin	Name	Function
1	HPF_A	High pass filter control A
2	HPF_B	High pass filter control B
3	HPF_C	High pass filter control C
4	HPF_D	High pass filter control D
5,6	GND	Ground
7	VDD	DC Power Input
8	LPF_E	Low pass filter control E
9	LPF_F	Low pass filter control F
10	LPF_G	Low pass filter control G
11	LPF_H	Low pass filter control H
12	GND	Ground
13	RF OUT	RF Output – 50 ohms – DC coupled. External DC block required.
14-26	GND	Ground
27	RF IN	RF Input – 50 ohms – DC coupled. External DC block required.
28-31	GND	Ground
32	VDD	DC Power Input

SPECIFICATIONS

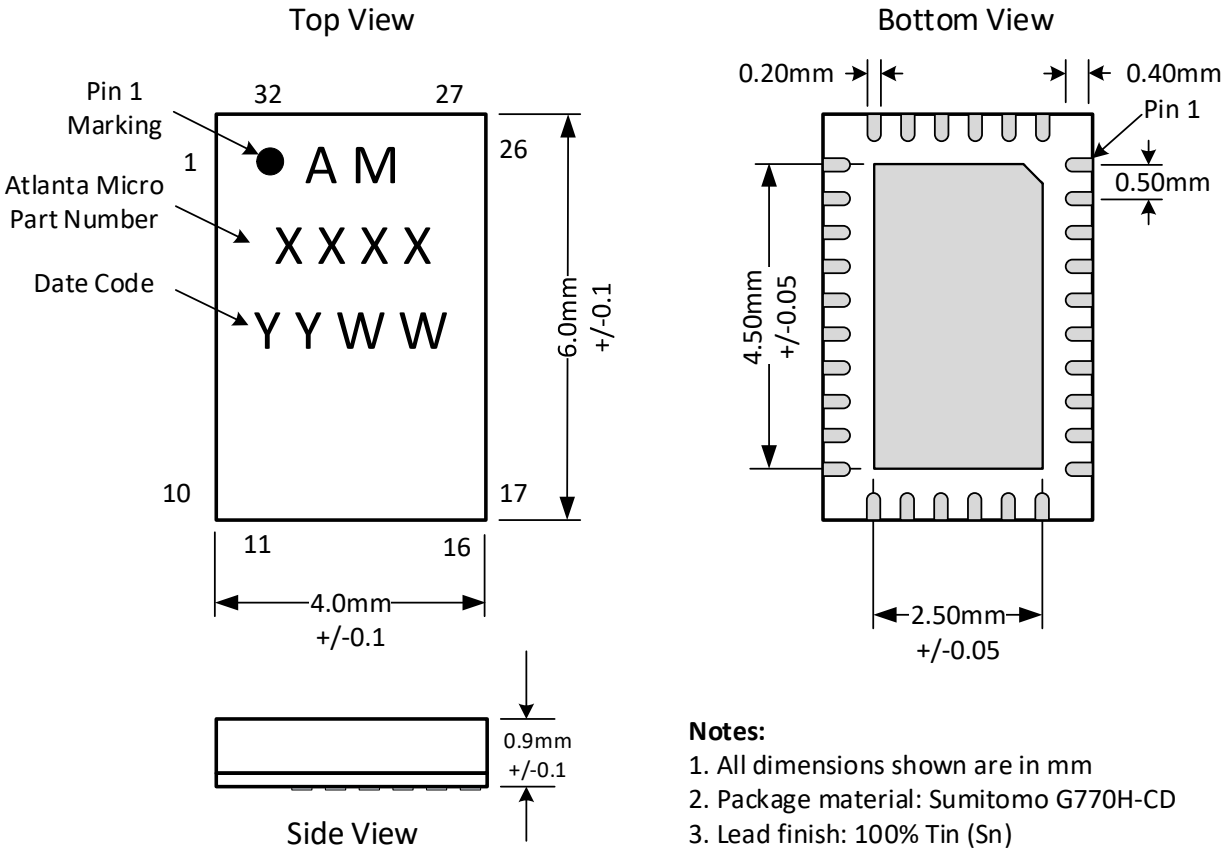
Specifications	Minimum	Typical	Maximum
Frequency Range	2.5 GHz		6.5 GHz
Insertion Loss		2.5dB	
Input IP3		+40dBm	
RF Input Level			+27dBm
Switching Speed			1µs
Logic Level Low	-0.1V		+0.5V
Logic Level High	+2.0V		+5.0V
Package Size		4.0 x 6.0 x 0.9 mm	
DC Supply Voltage	+3.1V		+5.2V
DC Supply Current		2mA	
Power Consumption		10mW	
Operating Temperature	-40 C		+85 C
Storage Temperature	-50 C		+125 C

CONTROL TABLE

High Pass Control Lines				Typical Cutoff Freq. (GHz)
D	C	B	A	
L	L	L	L	2.50
L	L	L	H	2.53
L	L	H	L	2.56
L	L	H	H	2.59
L	H	L	L	2.61
L	H	L	H	2.64
L	H	H	L	2.70
L	H	H	H	2.74
H	L	L	L	2.85
H	L	L	H	2.93
H	L	H	L	3.06
H	L	H	H	3.20
H	H	L	L	3.26
H	H	L	H	3.47
H	H	H	L	3.84
H	H	H	H	4.36

Low Pass Control Lines				Typical Cutoff Freq. (GHz)
H	G	F	E	
L	L	L	L	3.50
L	L	L	H	3.60
L	L	H	L	3.68
L	L	H	H	3.79
L	H	L	L	3.89
L	H	L	H	4.04
L	H	H	L	4.15
L	H	H	H	4.31
H	L	L	L	4.54
H	L	L	H	4.74
H	L	H	L	4.97
H	L	H	H	5.22
H	H	L	L	5.47
H	H	L	H	5.84
H	H	H	L	6.22
H	H	H	H	6.75

PACKAGE DETAILS



Notes:
1. All dimensions shown are in mm
2. Package material: Sumitomo G770H-CD
3. Lead finish: 100% Tin (Sn)

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