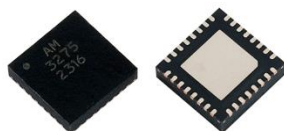


AM3275 – Filter Bank

6 GHz to 18 GHz Bandpass Filter Bank

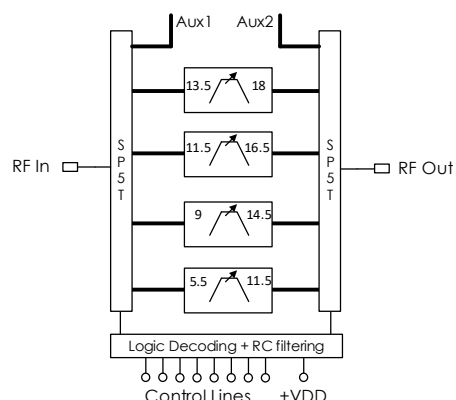


The AM3275 is a bandpass filter bank covering 6 GHz to 18 GHz in 4 tunable bands of at least 2 GHz bandwidth each. The bank features four separate tunable filter bands each with four states. With internal 50Ω matching in a 5mm QFN, the AM3275 represents a low loss filter solution for SWaP-constrained applications.

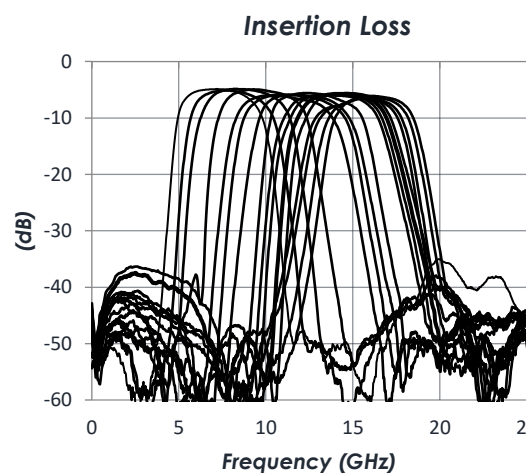
FEATURES

- Covers 6 to 18 GHz in 4 tunable bands
- 6 dB Typical Insertion Loss
- Additional 10 GHz bypass path for low frequency extension
- +3.3V to +5.0V Supply
- +3.3V to +5.0V Control
- 5mm QFN Package
- -40°C to +85°C Operation

FUNCTIONAL DIAGRAM



CHARACTERISTIC PERFORMANCE



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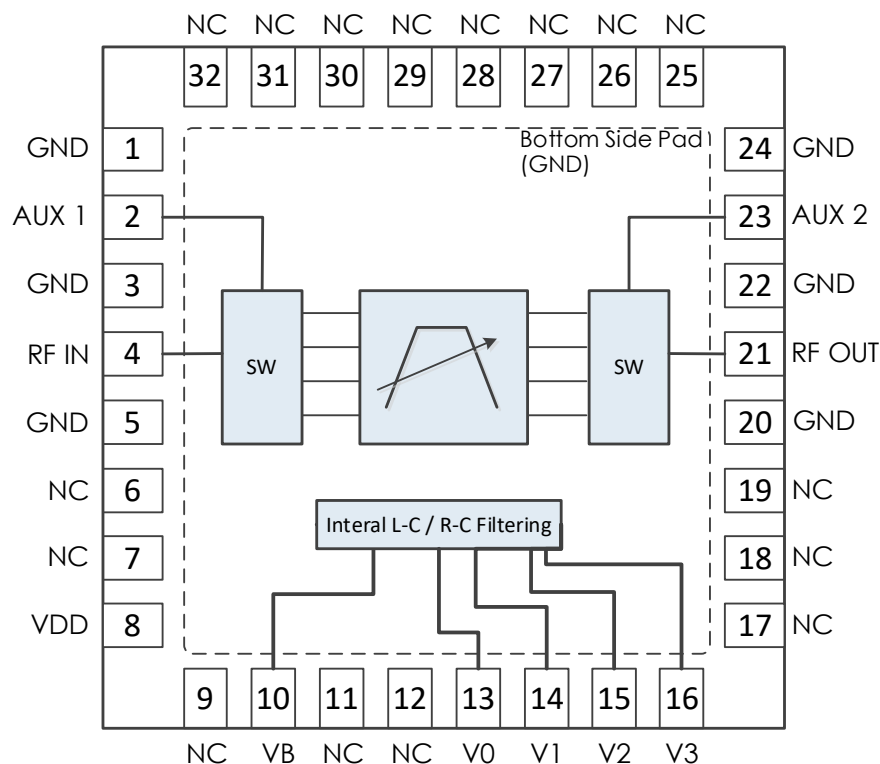
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REVISION HISTORY

Date	Revision	Notes
May 20, 2025	1	Initial Release.

PIN LAYOUT AND DEFINITIONS



Pin	Name	Function
1	GND	Ground – Common
2	AUX1	Filter Bypass Input Side – 50 Ohms – DC Coupled, External DC Blocking Cap Required
3	GND	Ground – Common
4	RF IN	RF Input – 50 Ohms – DC Coupled, External DC Blocking Cap Required
5	GND	Ground – Common
6,7	NC	No Connect
8	VDD	DC Power Input
9	NC	No Connect
10	VB	Bypass Switch Control
11,12	NC	No Connect
13	V0	Switch Control D
14	V1	Switch Control C
15	V2	Switch Control B
16	V3	Switch Control A
17-19	NC	No Connect

Pin	Name	Function
20	GND	Ground – Common
21	RF OUT	RF Output – 50 Ohms – DC Coupled, External DC Blocking Cap Required
22	GND	Ground – Common
23	AUX2	Filter Bypass Output Side – 50 Ohms – DC Coupled, External DC Blocking Cap Required
24	GND	Ground – Common
25-32	NC	No Connect
Note: NC pins may be grounded or left open		

SPECIFICATIONS

Absolute Maximum Ratings

	Minimum	Maximum
RF Input Power		+27 dBm
Operating Junction Temperature	-40 C	+150 C
Storage Temperature Range	-55 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	
ESD classification (HBM survivable)	Class 0A	



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

Recommended Operating Conditions

	Minimum	Typical	Maximum
Supply Voltage		+3.3 V	+5.0 V
Operating Case Temperature	-40 C		+85 C

Thermal information

	Thermal Resistance (°C / W)
Junction to Case Thermal Resistance (θJC)	80 C/W
Nominal Junction Temperature at +85C ambient	92 C
Channel Temperature to Maintain 1 Million Hour MTTF	105 C

DC Electrical Characteristics

(T = 25 °C unless otherwise specified)

Param	Testing Conditions	Min	Typical	Max
DC Supply Voltage		+3.0 V	+3.3 V	+5.2 V
DC Supply Current	VDD = +3.3V		7 mA	
	VDD = +5.0V		7 mA	
Power Dissipated	VDD = +3.3V		23.1 mW	
	VDD = +5.0V		35 mW	
Logic Level Low		-0.1 V		+0.5 V
Logic Level High		+2.0 V		+VDD V

Param	Testing Conditions	Min	Typical	Max
Frequency Range				
	Bypass (Aux)	-		16 GHz
	Band 1	5.5 GHz		11.5 GHz
	Band 2	9 GHz		14.5 GHz
	Band 3	11.5 GHz		16.5 GHz
	Band 4	13.5 GHz		18 GHz

RF Performance

(T = 25 °C unless otherwise specified)

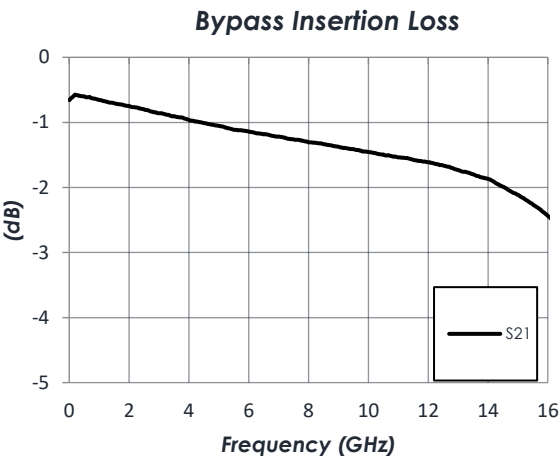
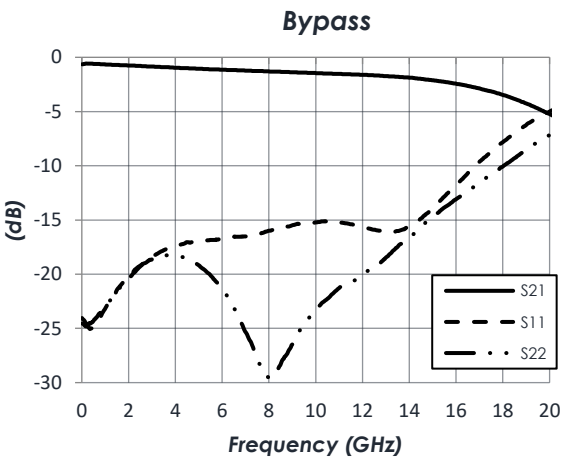
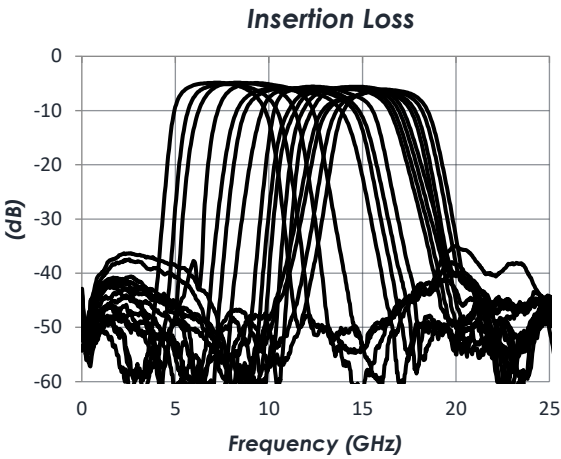
Param	Testing Conditions	Min	Typical	Max
Insertion Loss	VDD = +3.3V			
	Band 1		5 dB	
	Band 2		6 dB	
	Band 3		6 dB	
	Band 4		7 dB	
	Bypass (Aux)		1.5 dB	
Return Loss	VDD = +3.3V		-15 dB	

State Table

V3	V2	V1	V0	VB	Filter Band
L	L	L	L	L	Band 1(5.5 GHz – 11.5 GHz) State 00
H	L	L	L	L	Band 1(5.5 GHz – 11.5 GHz) State 01
L	H	L	L	L	Band 1(5.5 GHz – 11.5 GHz) State 10
H	H	L	L	L	Band 1(5.5 GHz – 11.5 GHz) State 11
L	L	H	L	L	Band 2(9 GHz – 14.5 GHz) State 00
H	L	H	L	L	Band 2(9 GHz – 14.5 GHz) State 01
L	H	H	L	L	Band 2(9 GHz – 14.5 GHz) State 10
H	H	H	L	L	Band 2(9 GHz – 14.5 GHz) State 11
L	L	H	H	L	Band 3(11.5 GHz – 16.5 GHz) State 00
H	L	H	H	L	Band 3(11.5 GHz – 16.5 GHz) State 01
L	H	H	H	L	Band 3(11.5 GHz – 16.5 GHz) State 10
H	H	H	H	L	Band 3(11.5 GHz – 16.5 GHz) State 11
L	L	L	H	L	Band 4(13.5 GHz – 18 GHz) State 00
H	L	L	H	L	Band 4(13.5 GHz – 18 GHz) State 01
L	H	L	H	L	Band 4(13.5 GHz – 18 GHz) State 10
H	H	L	H	L	Band 4(13.5 GHz – 18 GHz) State 11
X	X	X	X	H	Bypass (Aux) path

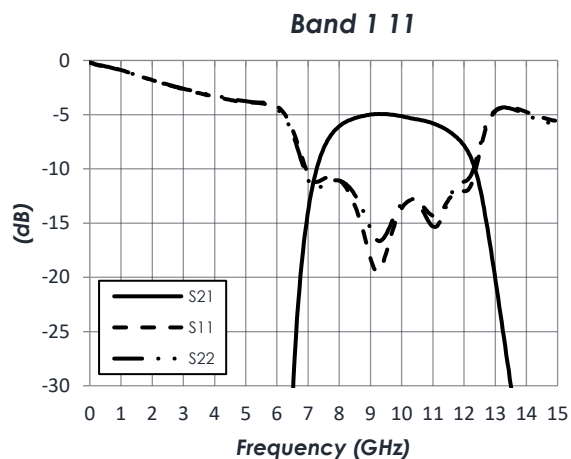
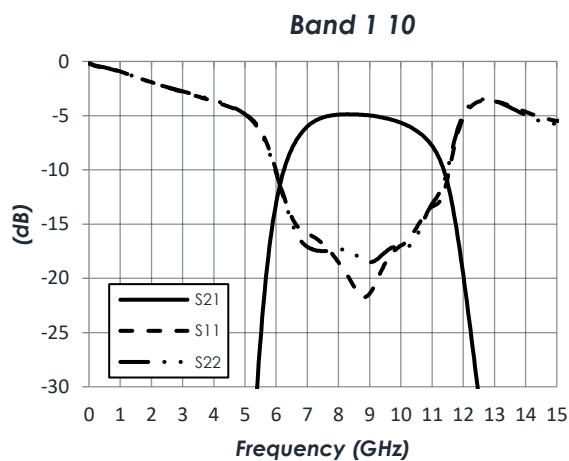
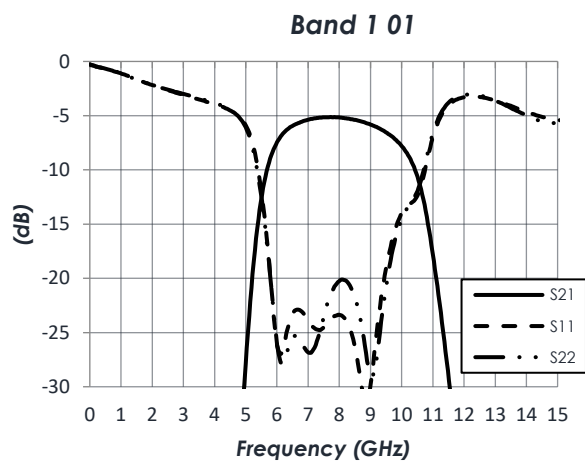
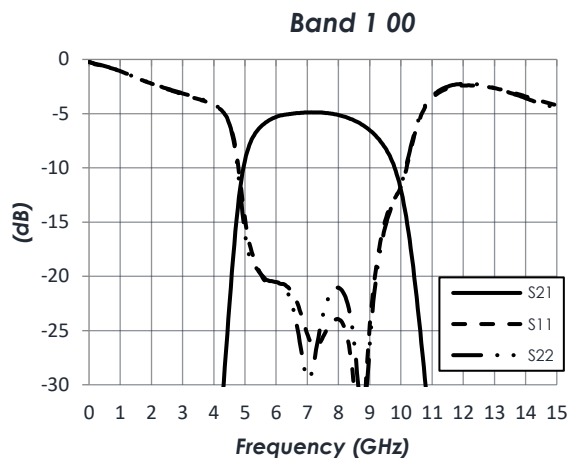
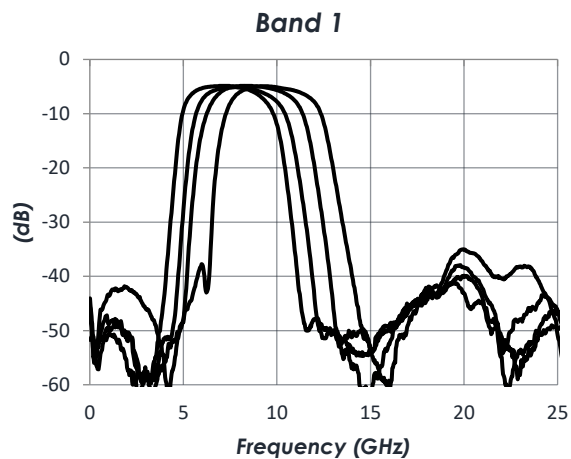
TYPICAL PERFORMANCE

(T = 25 °C and VDD = +3.3V unless otherwise specified.)



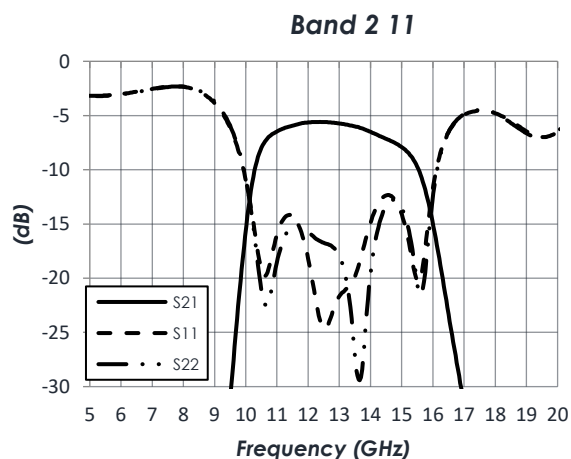
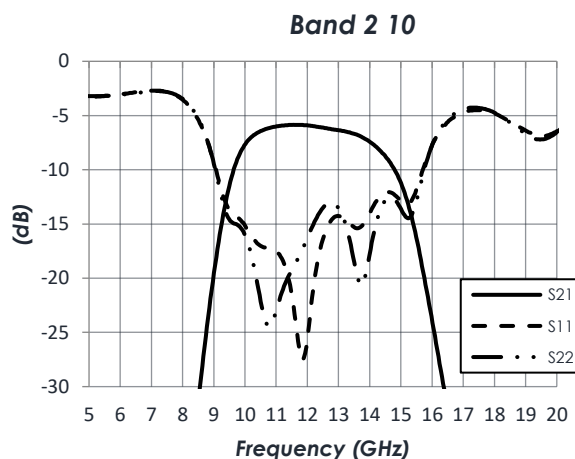
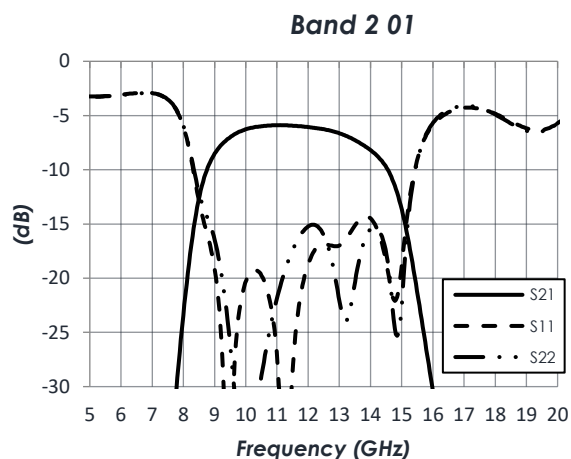
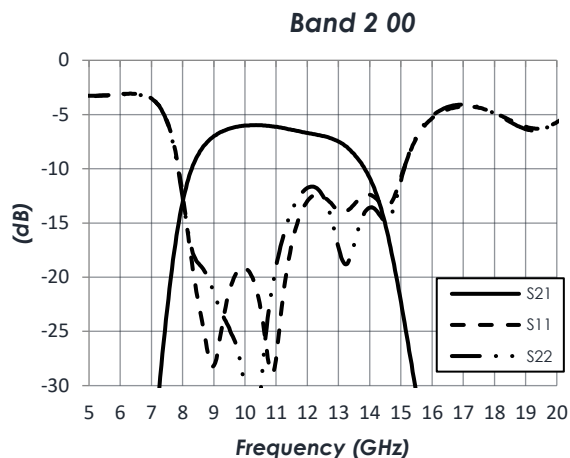
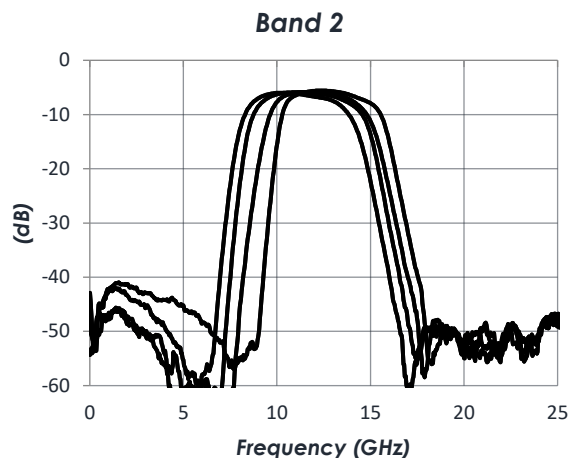
TYPICAL PERFORMANCE (CONTINUED)

(T = 25 °C and VDD = +3.3V unless otherwise specified.)



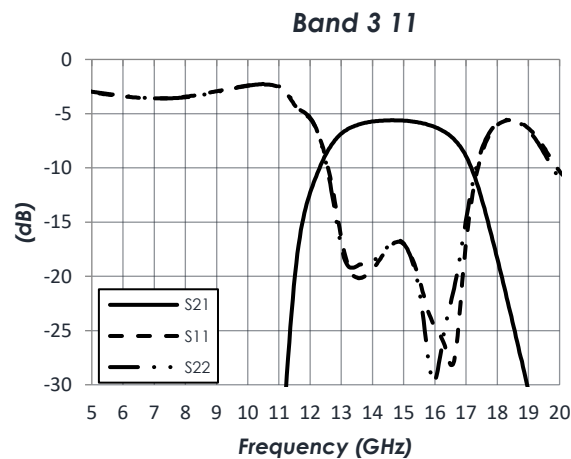
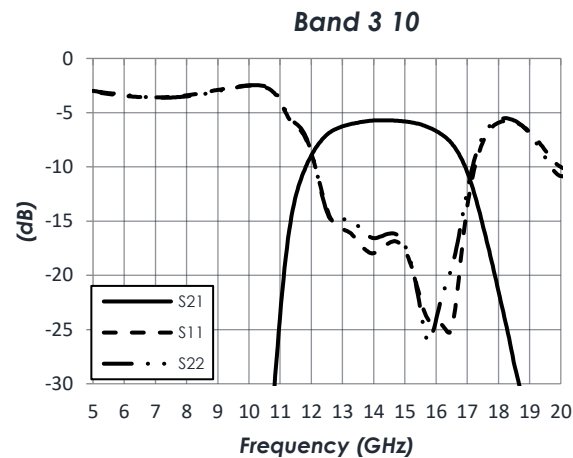
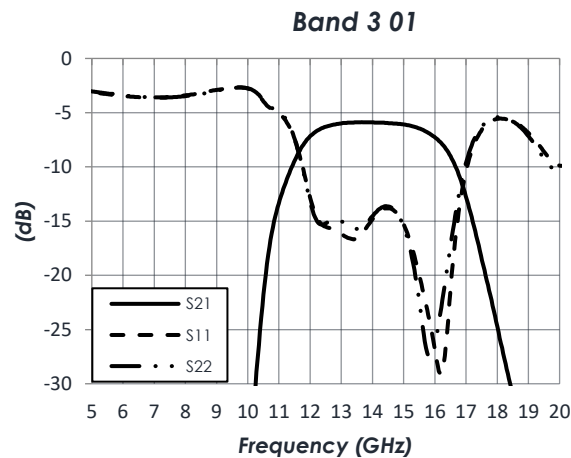
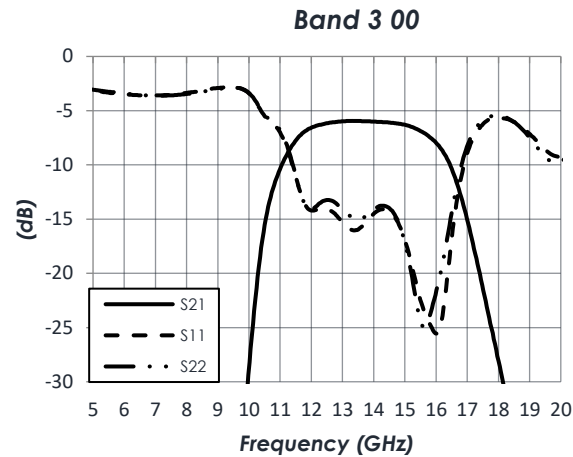
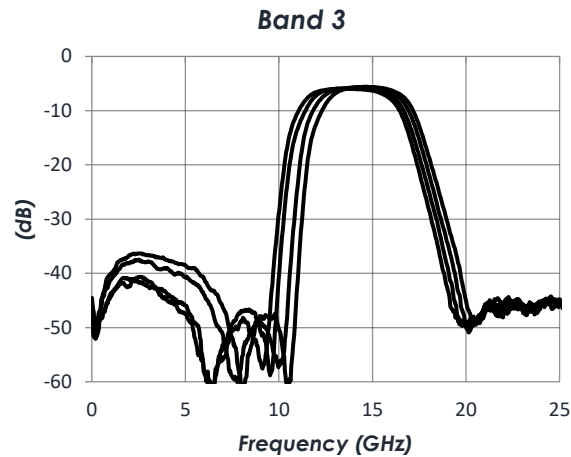
TYPICAL PERFORMANCE (CONTINUED)

(T = 25 °C and VDD = +3.3V unless otherwise specified.)



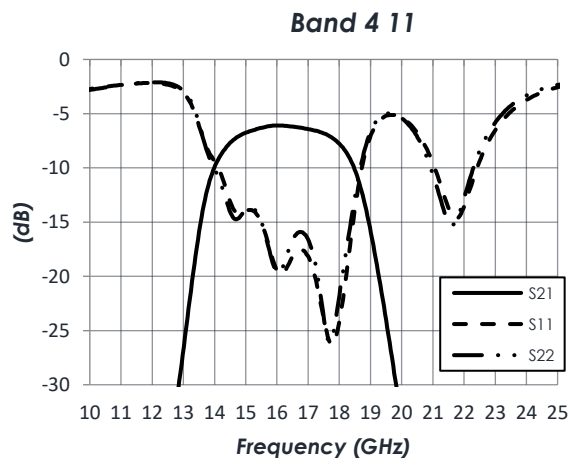
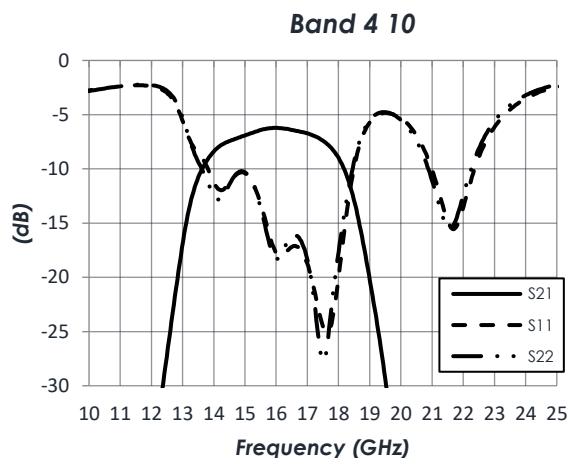
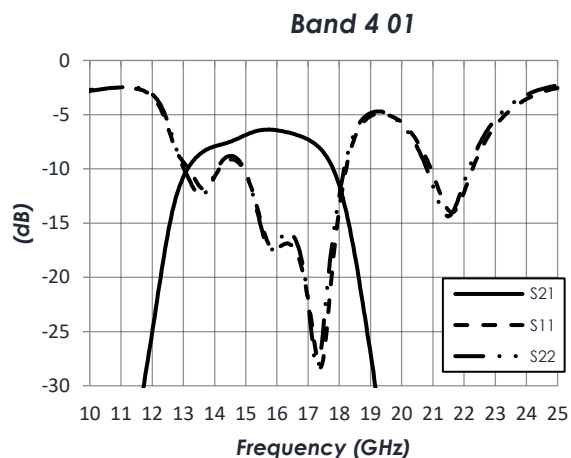
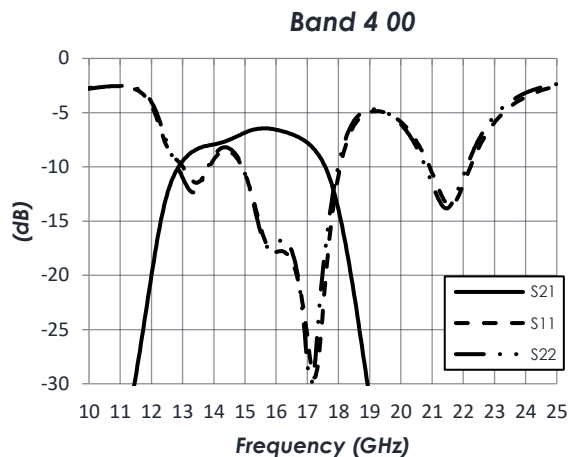
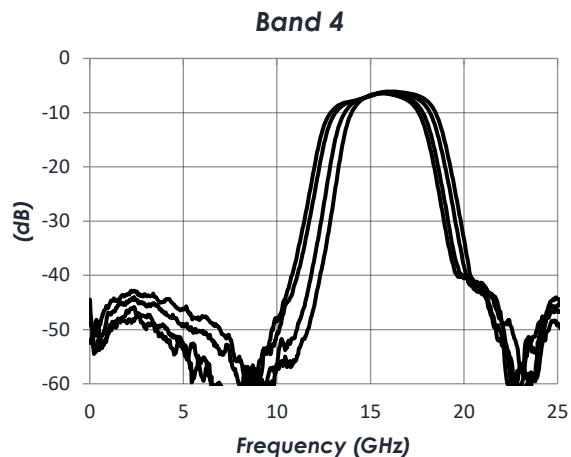
TYPICAL PERFORMANCE (CONTINUED)

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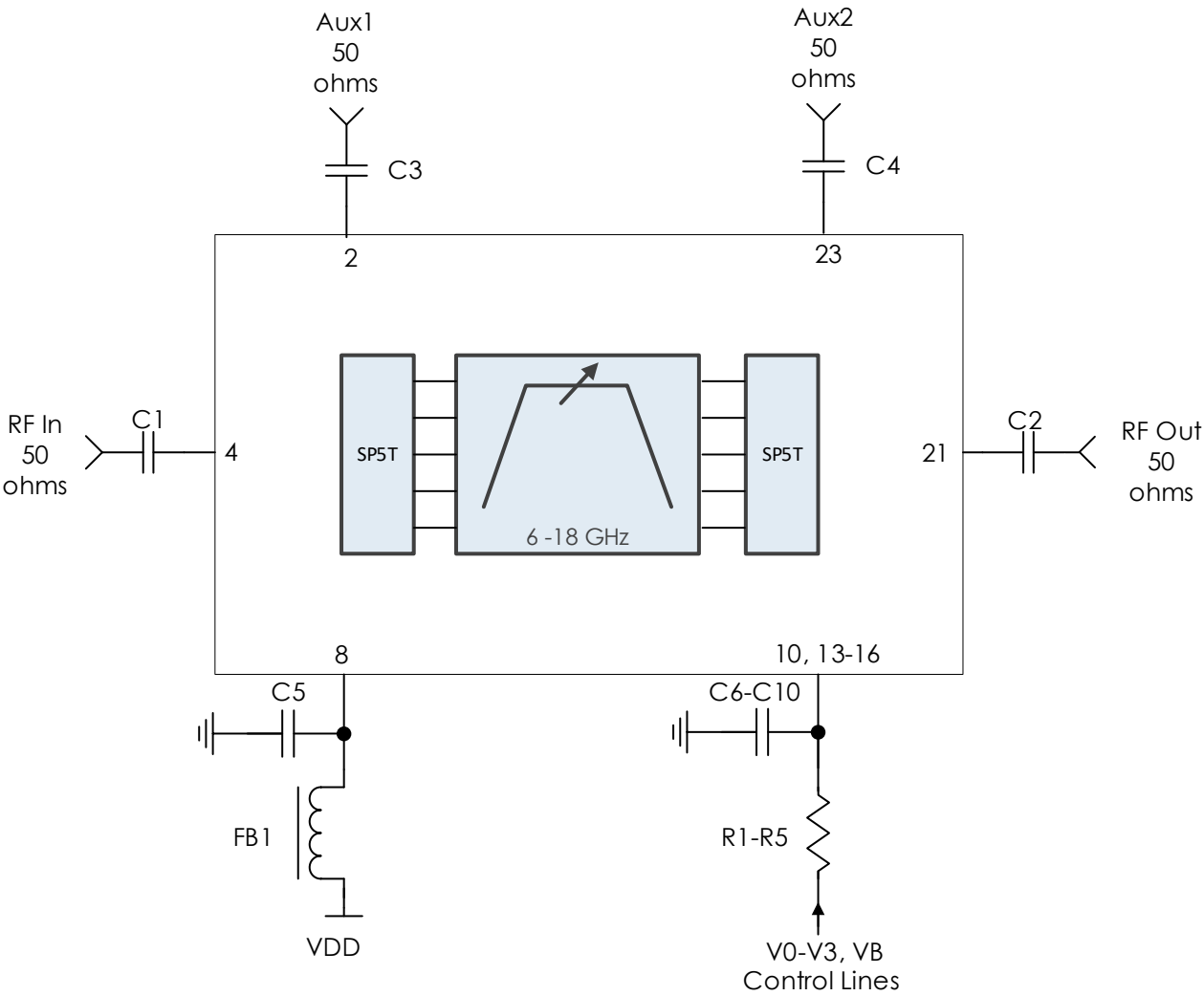
TYPICAL PERFORMANCE (CONTINUED)

(T = 25 °C and VDD = +3.3V unless otherwise specified.)



The measured data shown here does not include pcb, connectors, and blocking capacitors

TYPICAL APPLICATION



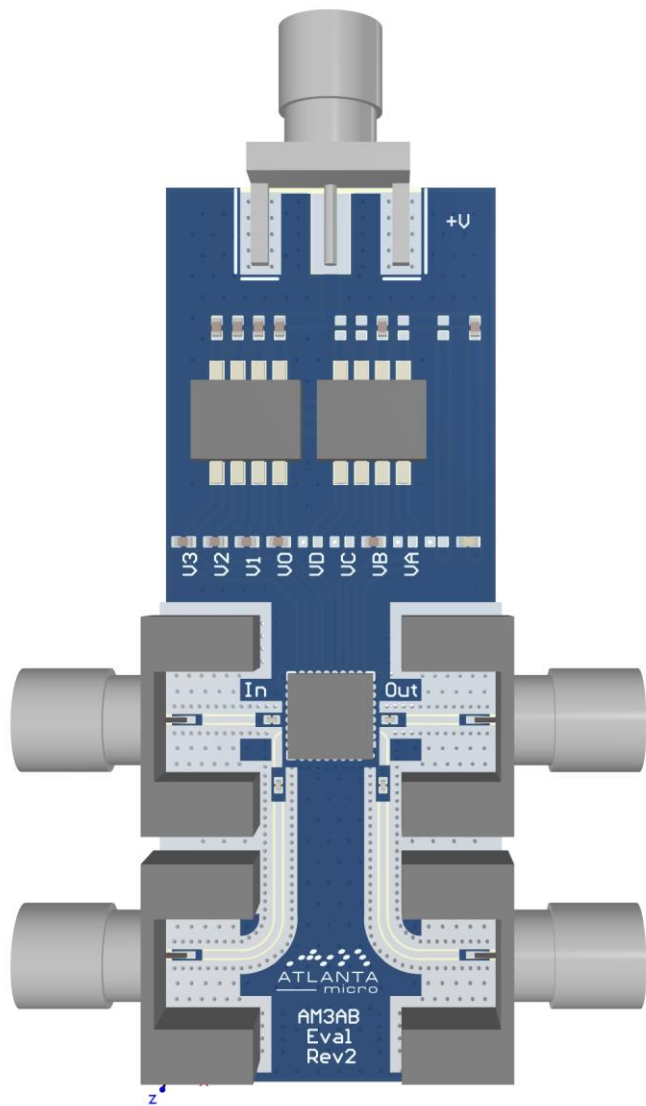
Recommended Component List (or Equivalent)

Part	Value	Part Number	Manufacturer
C1-C4	0.1 μ F	0201BB104KW160	Passives Plus
C5-C10	0.1 μ F	C1005X7R1H104K050BB	TDK
FB1		MMZ1005A222E	TDK
R1-R5	100 Ω	CRCW0402100RFKED	Vishay

Notes:

1. DC blocking capacitors should be low-loss, broadband capacitors for optimum performance.
2. Bypass capacitors (C5-C10) may limit switching speed. Reduce value as needed to achieve appropriate time constant.

EVALUATION PC BOARD



RELATED PARTS

Part Number		Description
AM3153	6 GHz to 26.5 GHz	Digitally Tunable Bandpass Filter Bank
AM3186	6 GHz to 26.5 GHz	Sub-Octave Bandpass Filter Bank
AM3194	6 GHz to 18 GHz	Sub-Octave Bandpass Filter Bank
AM3163	2 GHz to 18 GHz	Digitally Tunable Bandpass Filter Bank

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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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