B48 CBRS 3.6GHz Bandpass BAW Filter AKF-1336

Description

Akoustis' AKF-1336 is a high performance, ultra-small bandpass BAW Filter targeting 5G B48 Citizen Broadcast Radio Solutions (CBRS) infrastructure applications. AKF-1336 utilizes Akoustis' XBAW technology which provides leading RF filter performance. This BAW filter provides 150 MHz bandwidth, low insertion loss at 3.6 GHz and high out of band attenuation. AKF-1336 uses standard ceramic packaging and is compatible with high volume, lead-free SMT soldering processes.

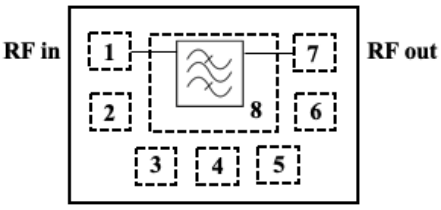
Features

- Ultra small form factor 2.5mm x 2.0mm x 0.8mm
- Single ended 50 Ohm Ant, Tx/Rx ports
- High out of band attenuation
- High power handling, maximum +30dBm
- Low insertion loss 150 MHz passband filter
- Performance -40 C to +85°C
- RoHS Compliant

Applications

- 5G Infrastructure
- B48 CBRS
- General Purpose Wireless

Functional Block Diagram



Pin #	Description
1	RF Input
2	Ground
3	Ground
4	Ground
5	Ground
6	Ground
7	RF Output
8	Ground

Ordering Information

Part Number	Description
AKF-1336EVB	Evaluation board
AKF-1336SP	(5) Loose pcs
AKF-1336SR	(100) Short Reel
AKF-1336TR1	(1000) Tape & Reel
AKF-1336TR2	(2500) Tape & Reel

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9805-A Northcross Center Court, Huntersville, NC 28078
Datasheet: Rev 11022021
Pat. 10,256,786

Absolute Maximum Rating

Parameter	Rating
Storage Temperature	-40 to 125 °C
Input Power (CW)	+32 dBm

A combination of AMR conditions may result in damage to the device.

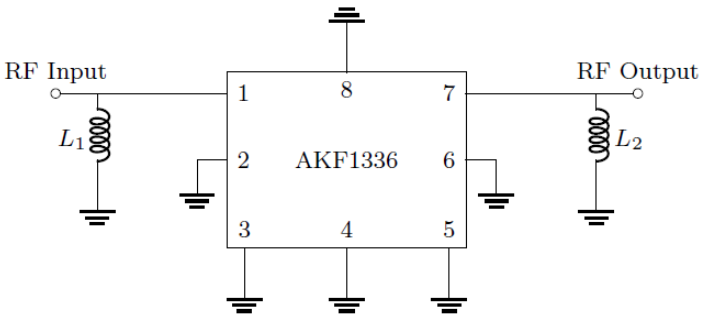
Operating Parameters (Temp=-40°C to +85°C unless otherwise noted)

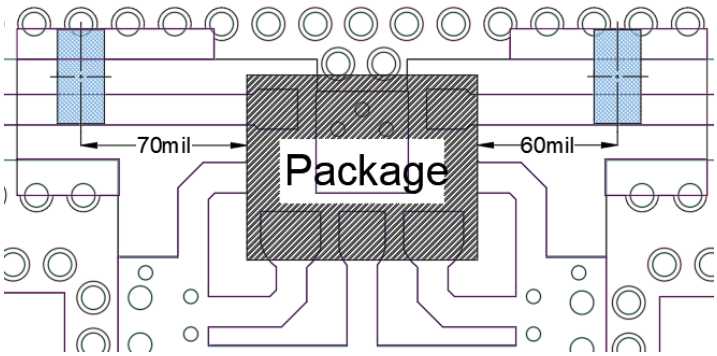
Parameter	Conditions	Units	Min.	Typ.	Max.
Passband		MHz	3550	3625	3700
Insertion Loss					
	3550 – 3700 MHz	dB		1.5(1)	2.7
Amplitude Variation					
	3550 – 3700 MHz	dB		1	1.5
Attenuation					
	10 – 1000 MHz	dB	50	55	
	1700 - 2690 MHz	dB	22	25	
	2690 - 3450 MHz	dB	22	25	
	3450 - 3530 MHz (2)	dB	10	15	
	3720 – 3800 MHz (2)	dB	9	15	
	3800 - 6000 MHz	dB	14	25	
	6000 - 8000 MHz	dB	15	18	
Return Loss					
	3550 - 3700MHz	dB	10	16(1)	
Load Impedance		Ω		50	
Power Handling	5G NR, 100MHz, 7.8dB PAR	dBm			30
2nd Harmonic	Po=27dBm **(25°C)**	dBm/MHz		-28	
3rd Harmonic	Po=27dBm **(25°C)**	dBm/MHz		-73	

Note:

1. S-parameter averaged over specified pass band frequency at room temperature
2. S-parameter averaged over 5MHz

EVB Schematic





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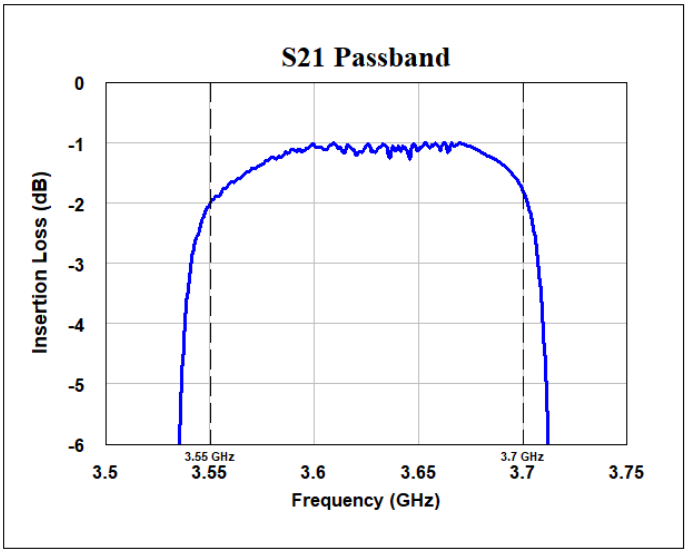
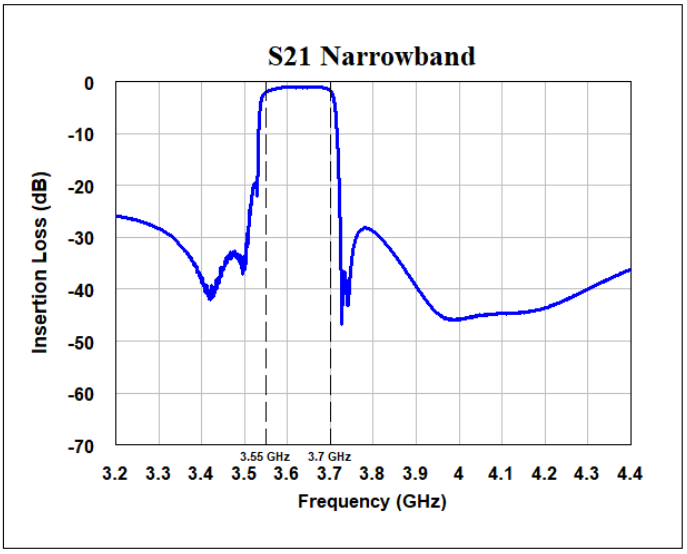
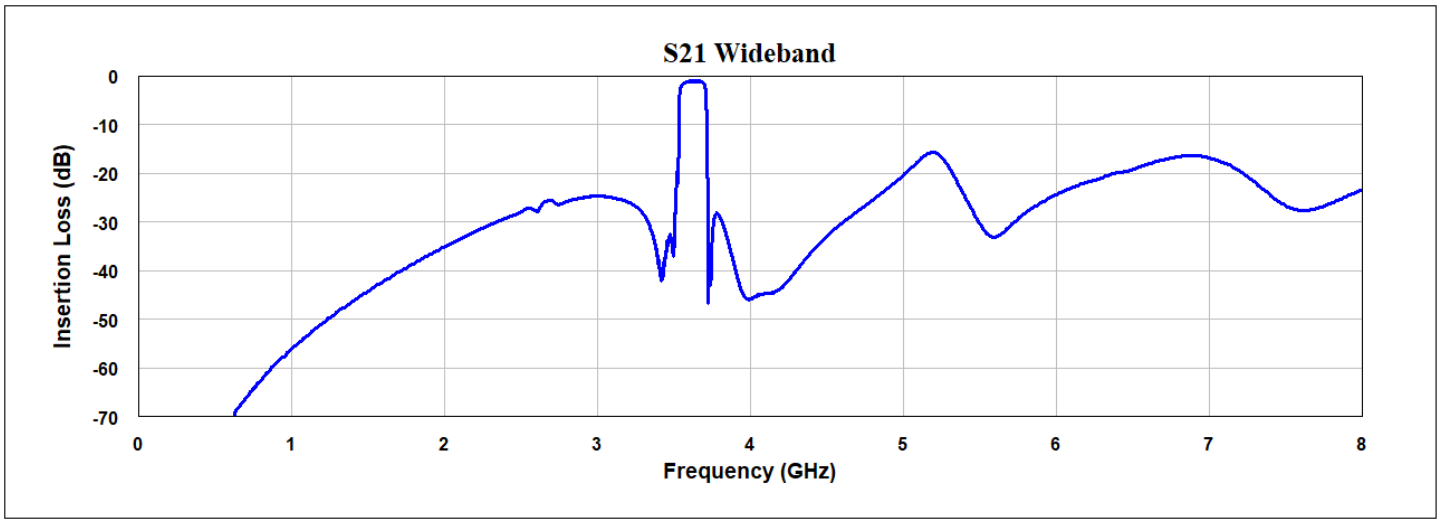
Bill of Materials

Reference Des.	Value	Description	Manufacturer	Part Number
PCB	N/A	2 layer	Multiple	
U1	N/A	3.6 GHz BAW Filter	Akoustis	AKF-1336
L1	2.6nH	Chip inductor, 0402, ±0.1nH	Murata	LQW15AN2N6G8ZD
L2	3.0nH	Chip inductor, 0402, ±0.1nH	Murata	LQW15AN3N0C10D

Performance Plots (Temp = 25°C unless otherwise noted)







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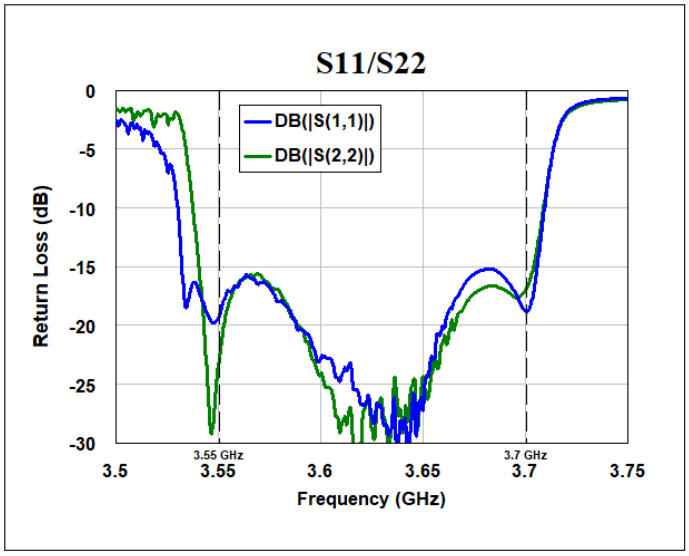
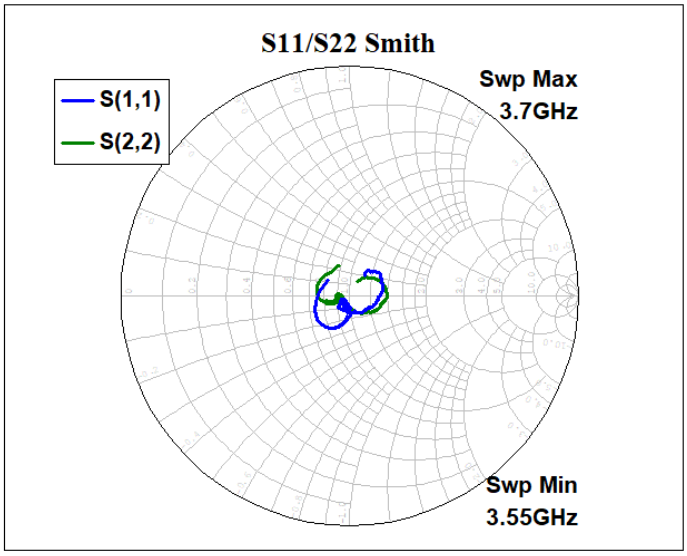
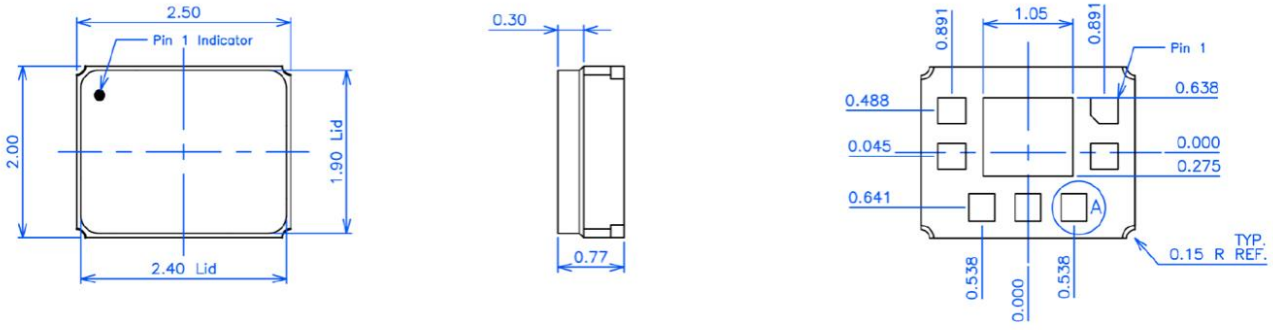




Package Dimensions & Pin Descriptions



NOTES:

1. PLATING THICKNESS
   ELECTRO Ni : 1.27~8.89μm(S/P)
   ELECTRO Au : 0.30~1.00μm(S/P)

Notes:
- All Units are in mm unless otherwise stated
- General Tolerance:
  Linear X.XXX = ±0.050mm
  X.XX = ±0.10mm

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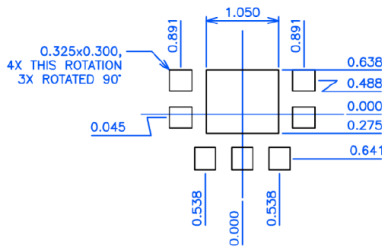
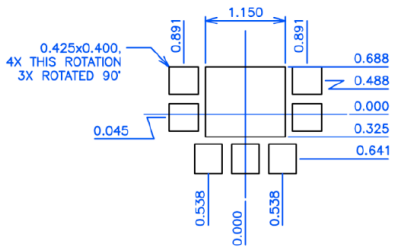
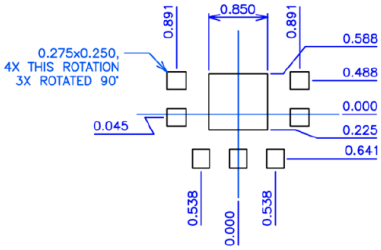
PCB Mounting Pattern



Recommended PCB Metal Top View

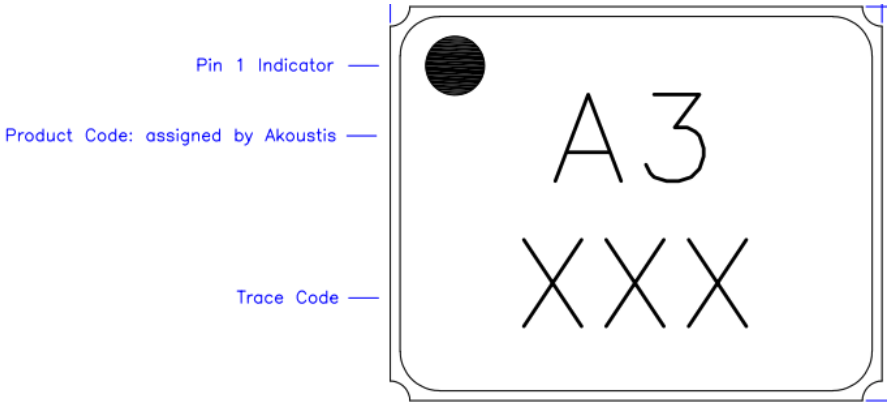


Recommended Solder Mask Opening Top View

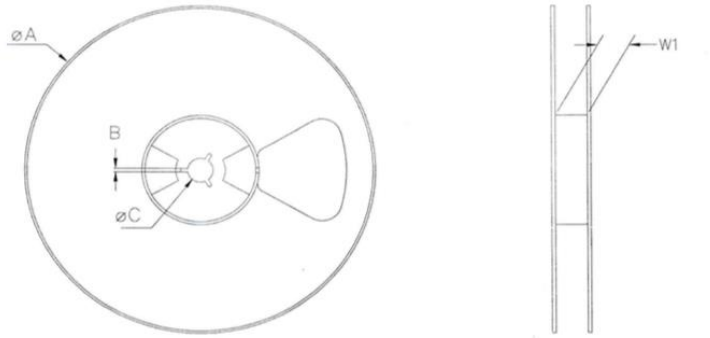


Recommended Stencil Pattern Top View

Typical Part Marking



Reel Dimension



Item	Parameters		Method	Min	Max
1	ø A	(180mm + 0 / - 2.0)	Caliper	178.96	179.00
2	B	(1.5mm Min)	Caliper	2.33	2.36
3	ø C	(13.0mm + 0.5 / - 0.2)	Caliper	13.26	13.29
4	W1	(8.40mm + 1.5 / - 0)	Caliper	9.24	9.27
5	Surface Resistivity	(10^{11} Max) ohms / sq	S.R meter	10^{9}	10^{10}
6	Visual			PASS	

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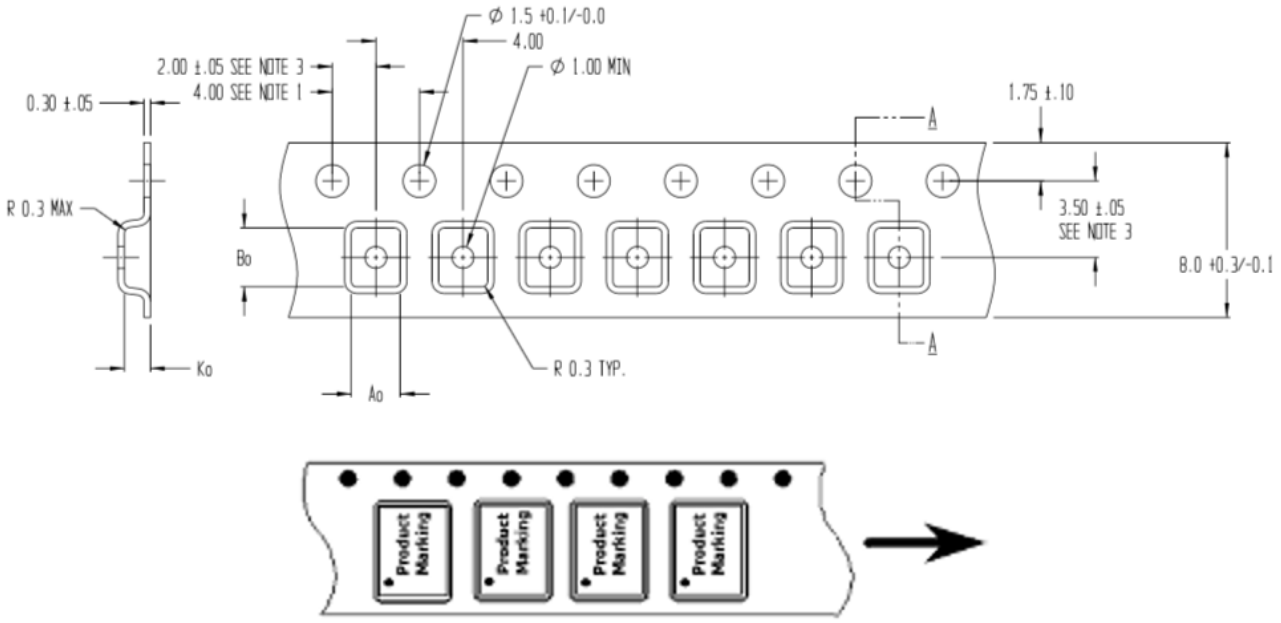
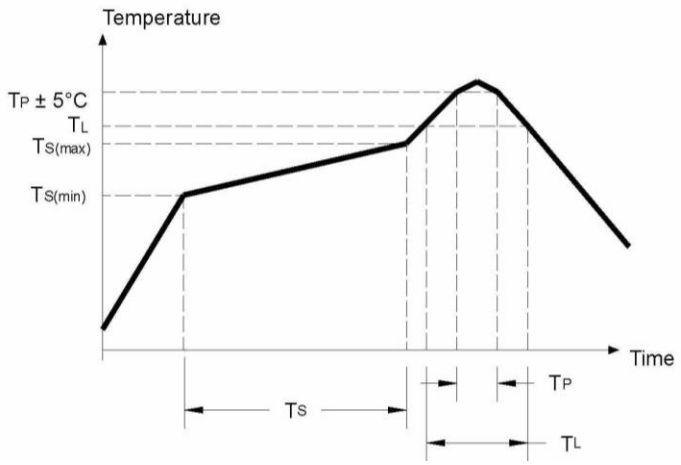
Tape Dimension

Ao = 2.25
Bo = 2.70
Ko = 1.20



Recommended Solder Profile

Parameter	Eutectic Sn/Pb	Pb Free
Max Ramp Up Rate	6 Deg C/Second	6 Deg C/Second
Soak Temp Time T_S(min) - T_S (max)	135 - 155 Deg C	150-200 Deg C
Max Soak Time T_S	2 minutes	3 minutes
Liquidous Temp T_L	183 Deg C	220 Deg C
Max Time Above T_L	150 Seconds	150 Seconds
Max Peak Temperature T_P	225 Deg C	260 Deg C
Max Time at Peak T_P	30 Seconds	30 Seconds
Max Ramp Down Rate	10 Deg C/Second	10 Deg C/Second



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Product Compliance Information

ESD Sensitivity Ratings

Human Body Model (HBM) Test
Rating: 500V
Standard: ANSI/ESDA/JEDEC JS-001-2017

Charged Device Model (CDM)
Rating: 1000V
Standard: ANSI/ESDA/JEDEC JS-002-2018

MSL Rating

TBD

RoHS

This part is compliant with 2011/65EU RoHS directive on the restrictions of the use of certain hazardous substances in electrical and electronics equipment as amended by Directive (EU) 2015/863

Contact Information

All contents specified in datasheet are subject to change. Please contact Akoustis for the latest on our products and company information.

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