5.2 GHz WiFi Coexistence BAW Filter A10252

Description

Akoustis' A10252 is a high performance, ultra-small bandpass BAW RF Filter for use in 5.2GHz WiFi applications covering U-NII 1 plus 2A bands. A10252 utilizes Akoustis' patented, XBAW technology which provides leading RF filter performance. This BAW RF filter provides low insertion loss and meets the stringent rejection requirements enabling coexistence with U-NII 2C and 3. This device exhibits high-power handling capabilities necessary for demanding power requirements of the latest WiFi standards. A10252 uses standard laminate packaging and is compatible with high volume, lead-free SMT soldering processes.

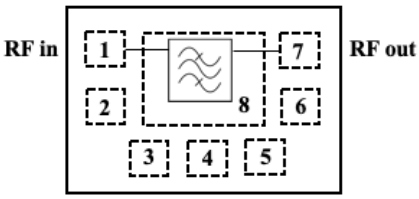
Features

- Ultra small form factor 2.5mm x 2.0mm x 1.0mm
- Single ended Tx/Rx ports.
- High rejection enables coexistance with adjacent WiFi UNII bands
- High power rating, maximum +30dBm
- Low insertion loss passband filter
- Performance over -40 C to +85C
- RoHS compliant, Pb-free package

Applications

- WiFi tri band routers, integrated cable modem
- WiFi tri band access points
- LTE/LAA small cells

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
A10252EVB	Evaluation board
A10252SP	(5) Loose pcs
A10252SR	(100) Short Reel
A10252TR1	(1000) Tape & Reel
A10252TR2	(2500) Tape & Reel

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9805-A Northcross Center Court, Huntersville, NC 28078
Prelim Datasheet: Rev 02082021
Pat. 10,256,786

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40 to 125 °C
Input Power (CW)	+30 dBm

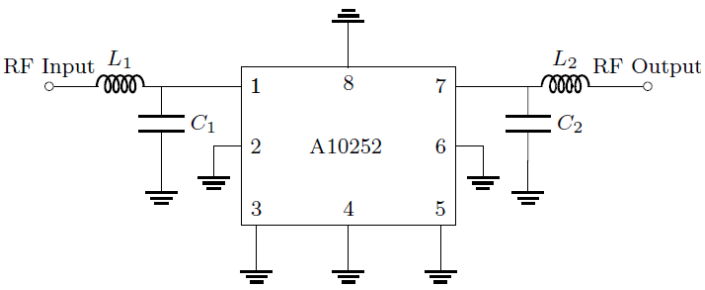
Nominal Operating Parameters

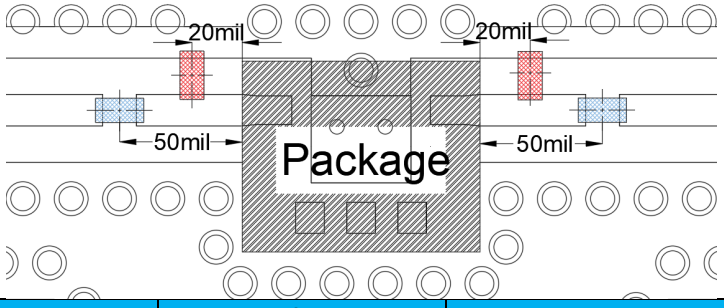
Parameter	Units	Min.	Typ.	Max.
Center Frequency (Fc)	MHz		5250	
Pass bandwidth	MHz		5170 - 5330	
Insertion Loss				
5170 – 5330 MHz	dB		1.5 (1)	2.0
Amplitude Variation				
5170 – 5330 MHz	dB		0.6	0.9
Attenuation				
30 – 2700 MHz	dB	35	37	
3300 - 3700 MHz	dB	37	39	
5490 - 5835 MHz	dB	55	57	
5900 - 11000 MHz	dB	40	45	
Return Loss				
5170 – 5330MHz		12	16 (1)	
Operating Temperature	C	-40		85
Load Impedence	Ohm		50	
Power Handling: 802.11ax MCS10, 80 MHz BW, PAR 11dB	dBm			28

Note:

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

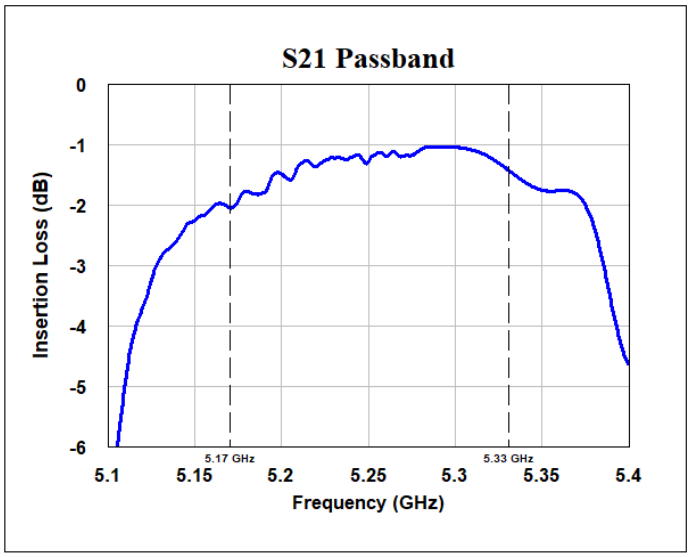
Schematic & Bill of Materials

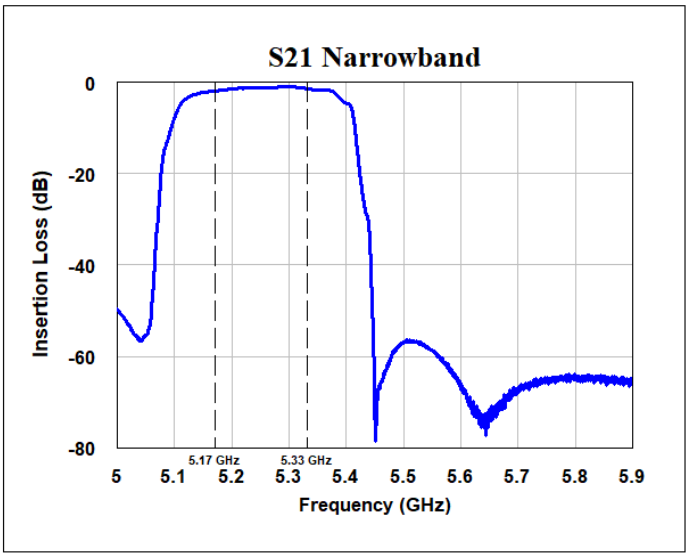


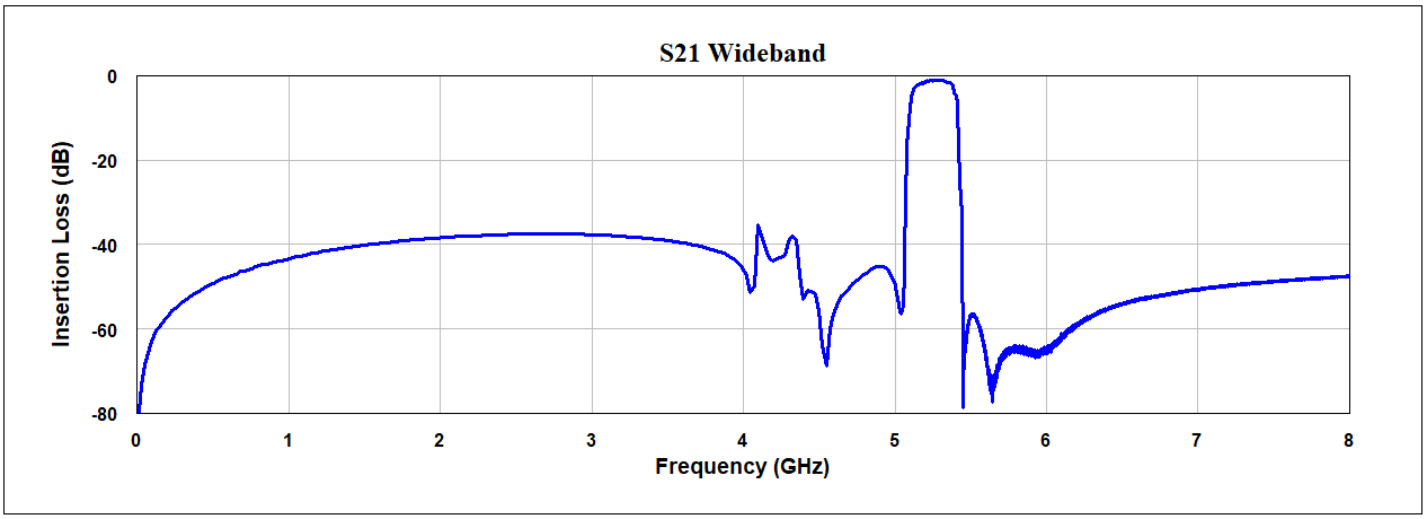


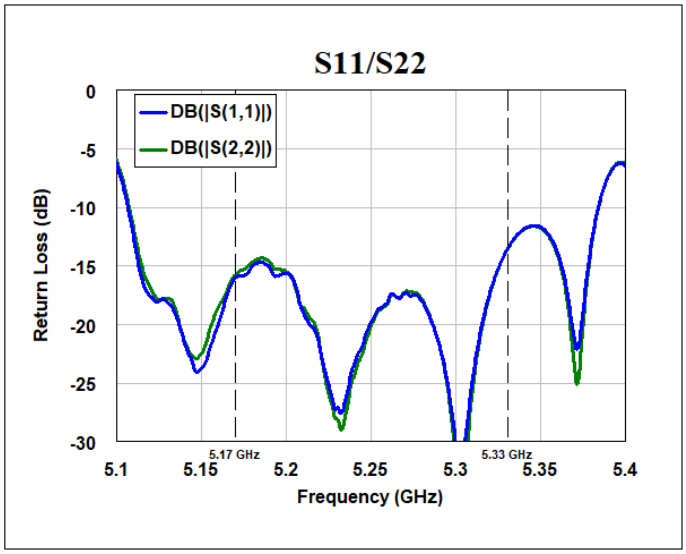
Reference Des.	Value	Description	Manufacturer	Part Number
PCB	N/A	4 layer	Multiple	
U1	N/A	5.2GHz BAW Filter	Akoustis	A10252
L1	1.6nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ1N6W02
L2	1.6nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ1N6W02
C1	0.1pF	Chip capacitor, 0201, ±0.05pF	Murata	GRM0335C1HR0WA01D
C2	0.1pF	Chip capacitor, 0201, ±0.05pF	Murata	GRM0335C1HR0WA01D

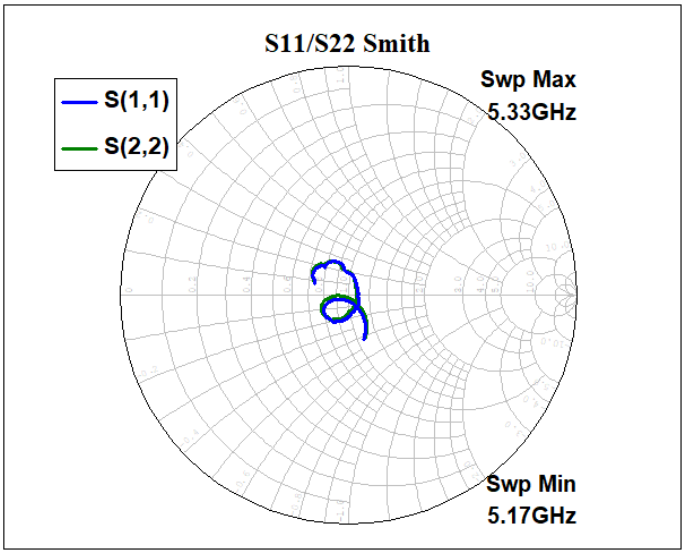
Performance Plots











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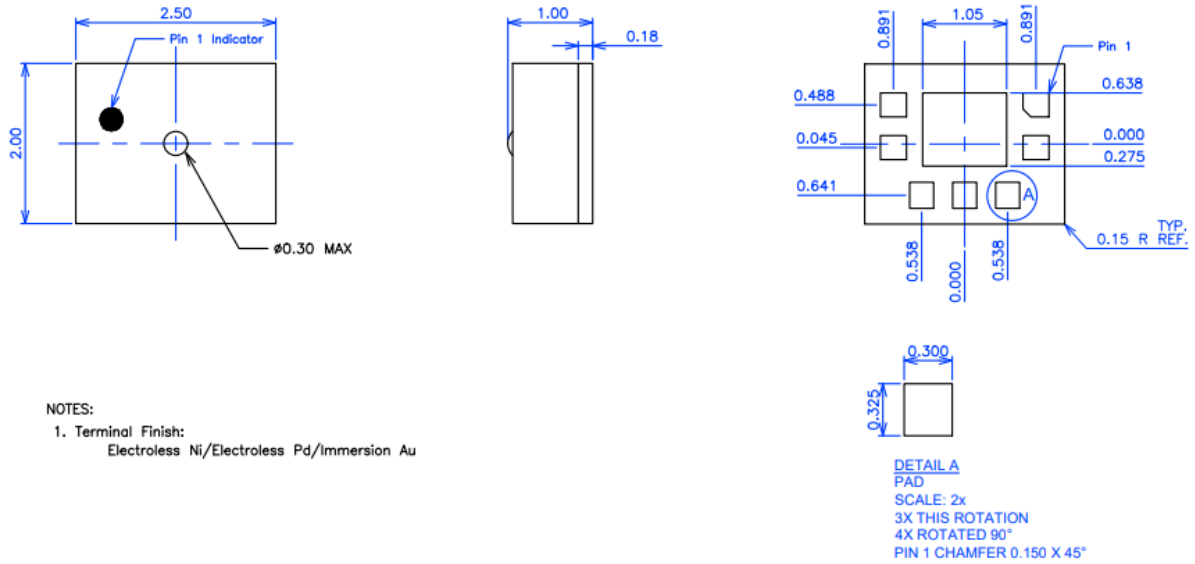
Package Outline Drawing

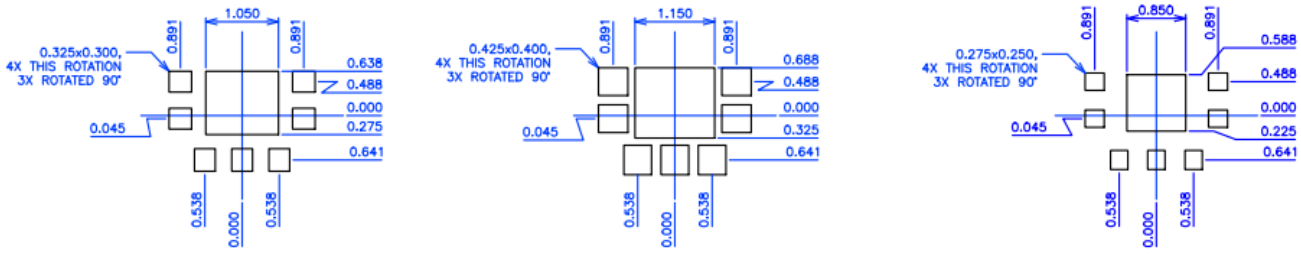
Notes:
- All Units are in mm unless otherwise stated
- General Tolerance:
  Linear X.XXX = ±0.050mm
  X.XX = ±0.10mm



NOTES:
1. Terminal Finish:
   Electroless Ni/Electroless Pd/Immersion Au

PCB Mounting Pattern

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



Recommended PCB Metal Top View

Recommended Solder Mask Opening Top View

Recommended Stencil Pattern Top View

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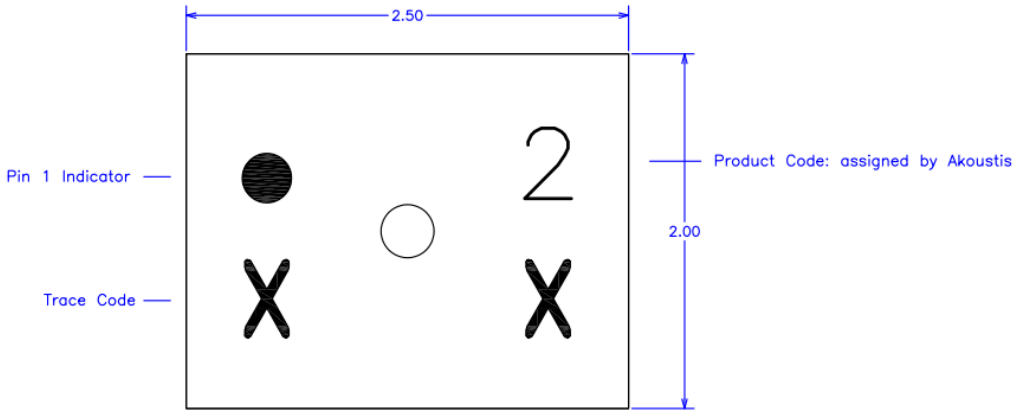
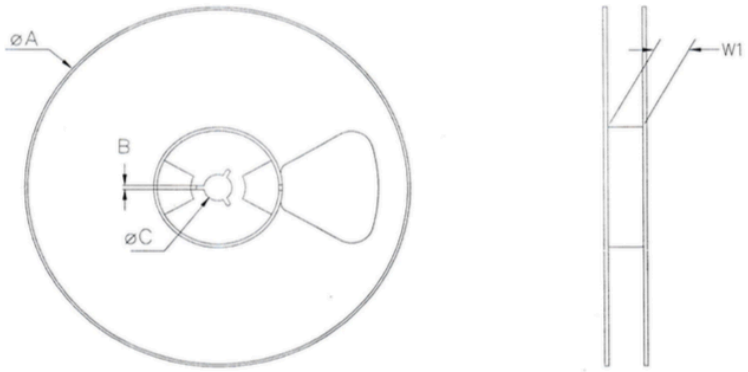
Typical Part Marking



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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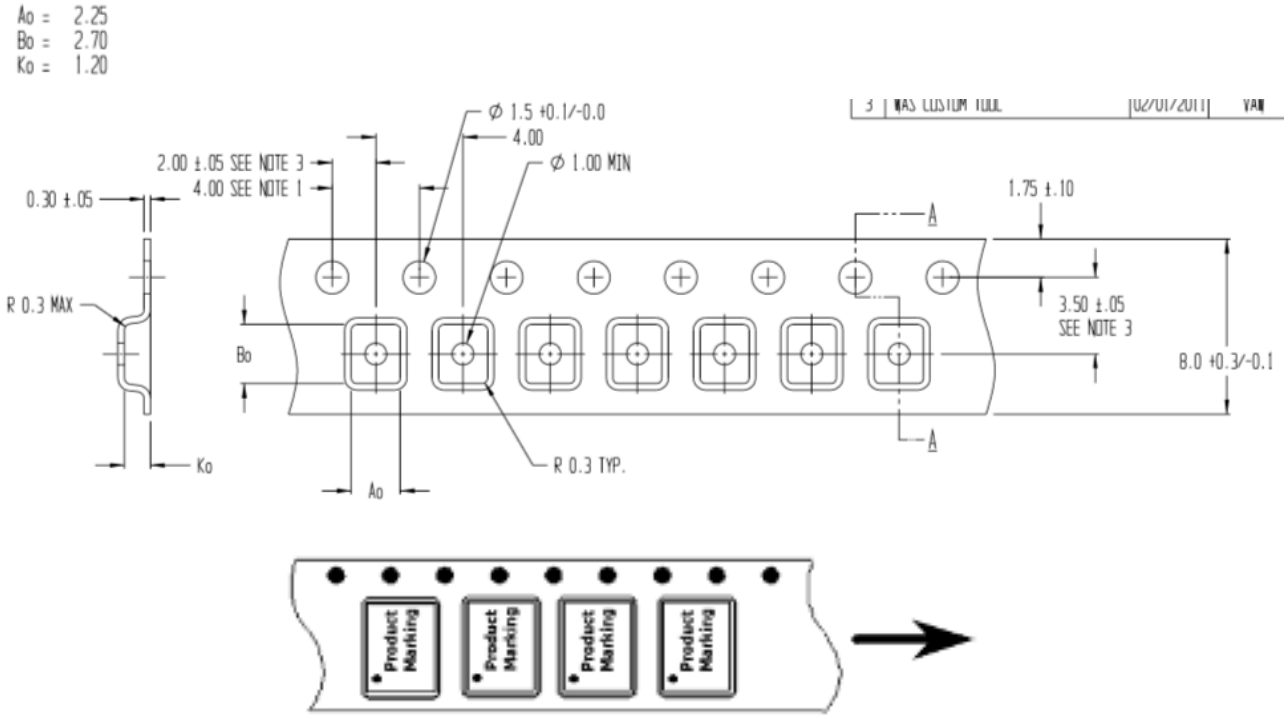
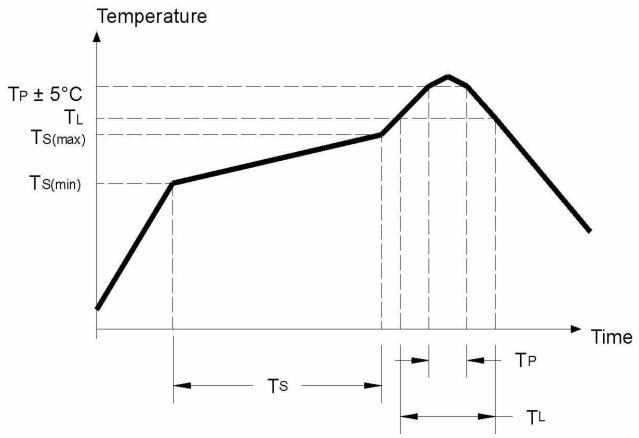
Tape Dimension



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: TBD
Standard: ANSI/ESDA/JEDEC JS-001-2017

Charged Device Model (CDM)
Rating: TBD
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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