

5.6GHz WiFi Coexistence BAW Filter

A10256

Description

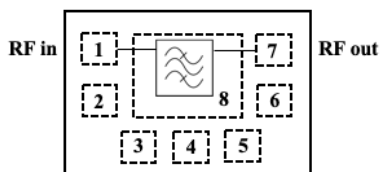
Akoustis' A10256 is a high performance, ultra-wide bandwidth BAW RF Filter for use in 5.6GHz WiFi applications covering U-NII-2C plus U-NII-3 bands. A10256 utilizes Akoustis' patented, XBAW technology to deliver differentiated filter performance. This BAW RF filter provides very low insertion loss and meets the stringent rejection requirements enabling coexistence with U-NII-1 and 2A. This device exhibits high-power handling capabilities necessary for demanding power requirements of the latest WiFi standards. A10256 uses standard laminate packaging and is compatible with high volume, lead-free SMT soldering processes.

- Ultra small form factor 2.5mm x 2.0mm x 1.0mm
- Single ended Tx/Rx ports.
- Ultra-wide passband covering 345MHz
- High rejection enables coexistence 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
A10256EVB	Evaluation board
A10256SP	(5) Loose pcs
A10256SR	(100) Short Reel
A10256TR1	(1000) Tape & Reel
A10256TR2	(2500) Tape & Reel

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40 to 125 °C
Input Power	+31 dBm

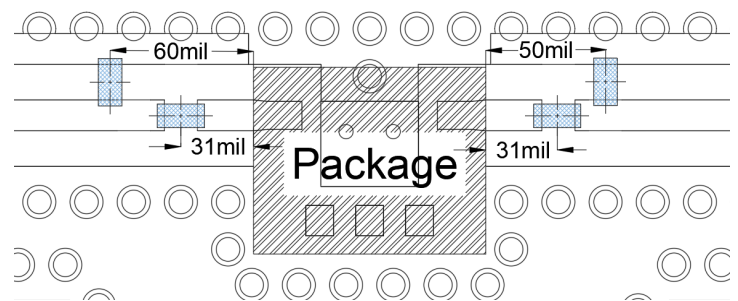
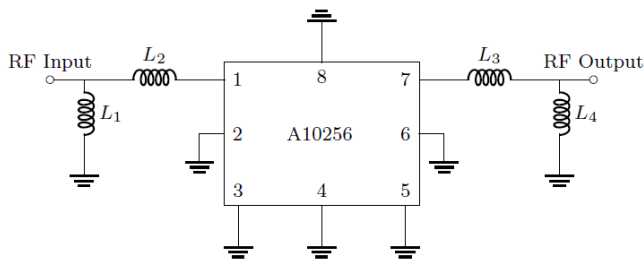
Nominal Operating Parameters

Parameter	Units	Min.	Typ.	Max.
Center Frequency (Fc)	MHz		5665	
Pass bandwidth	MHz		5490 – 5835	
Insertion Loss				
5490 – 5835 MHz	dB		1.4 ⁽¹⁾	2.1
Amplitude Variation				
5490 – 5835 MHz (80MHz BW Channel)	dB		0.7	0.9
Attenuation				
30 – 2100 MHz	dB	45	47	
2400 – 2500 MHz	dB	38	40	
3300 - 5000 MHz	dB	10	11	
5170 – 5330 MHz	dB	51	52	
5950 - 10000 MHz	dB	22	24	
10000 - 12000 MHz	dB	40	41	
Return Loss				
5490 – 5835 MHz		11	17 ⁽¹⁾	
Operating Temperature	C	-40		85
Load Impedance	Ohm		50	
Power Handling: 802.11ax MCS10, 80 MHz BW, PAR 11dB	dBm			30

Note:

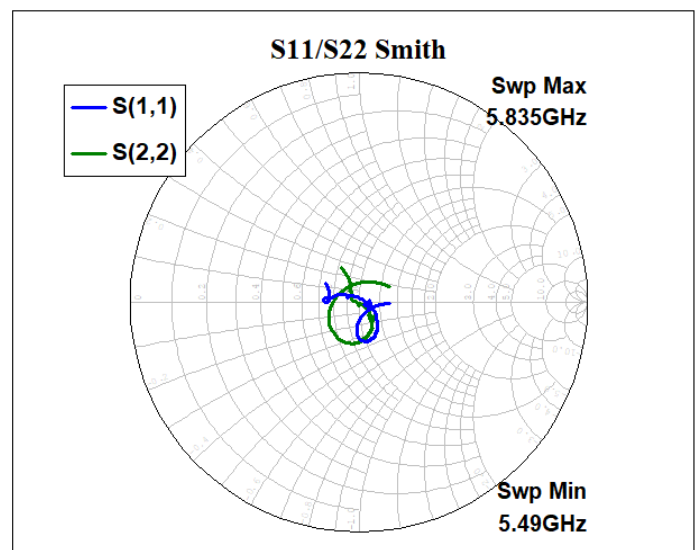
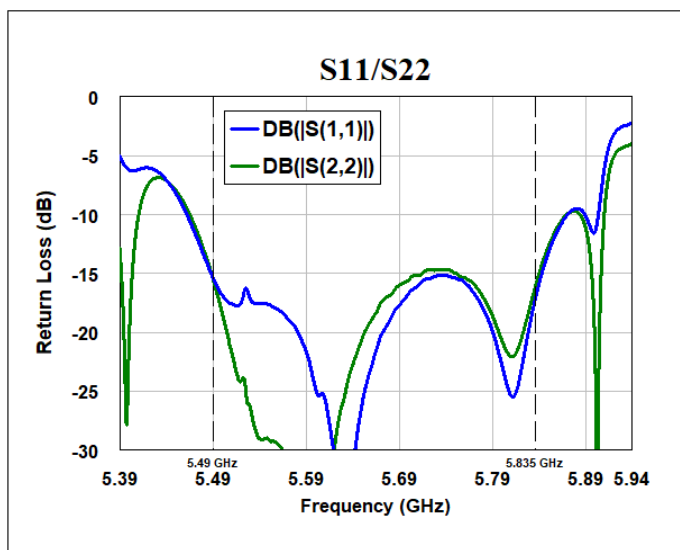
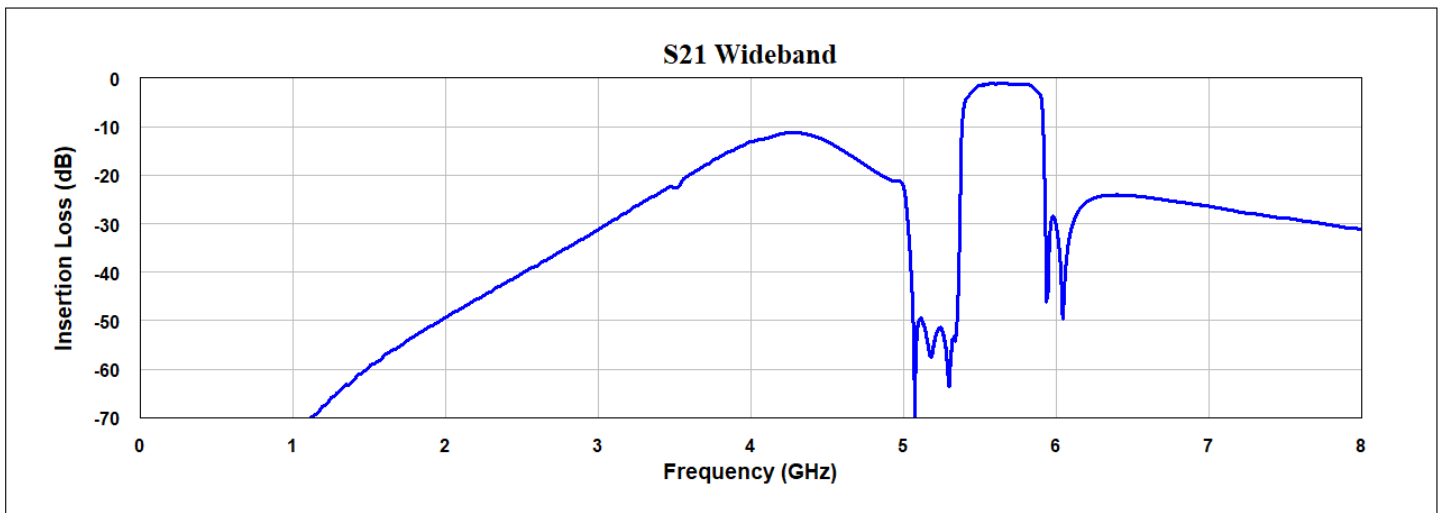
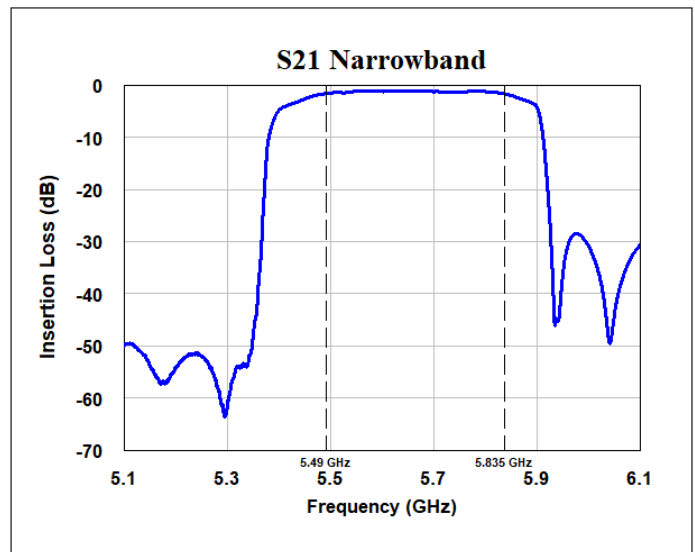
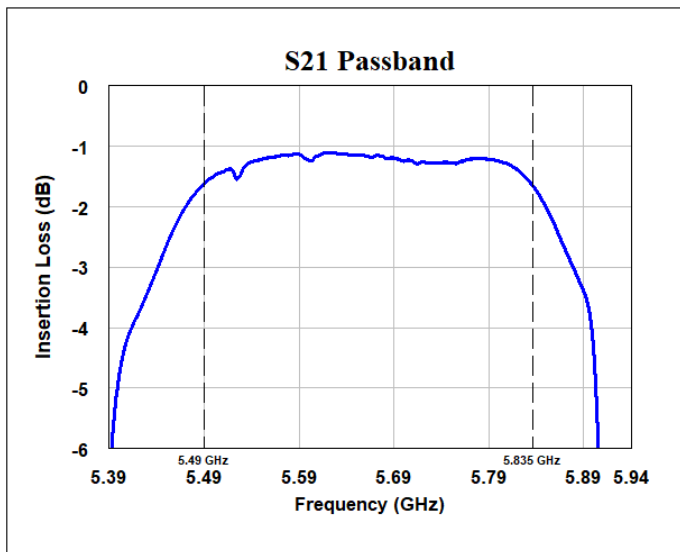
1. S-parameter averaged over specified pass band frequency at room temperature

Schematic & Bill of Material



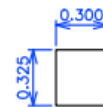
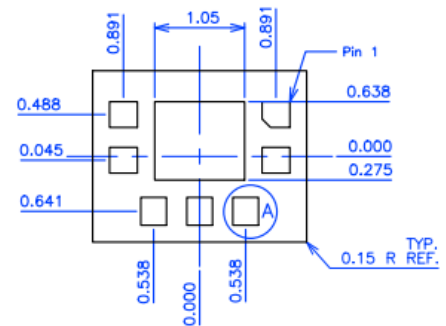
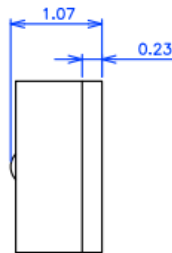
Reference Des.	Value	Description	Manufacturer	Part Number
PCB	N/A	3 layer	Multiple	
U1	N/A	5.6GHz Wi-Fi Filter	Akoustis	A10256
L1	1.1nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ1N1B02D
L2	0.3nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03TG0N3B02D
L3	0.8nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ0N8B02D
L4	1.6nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ1N6B02D

Performance Plots



Notes:

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NOTES:

- Notes:

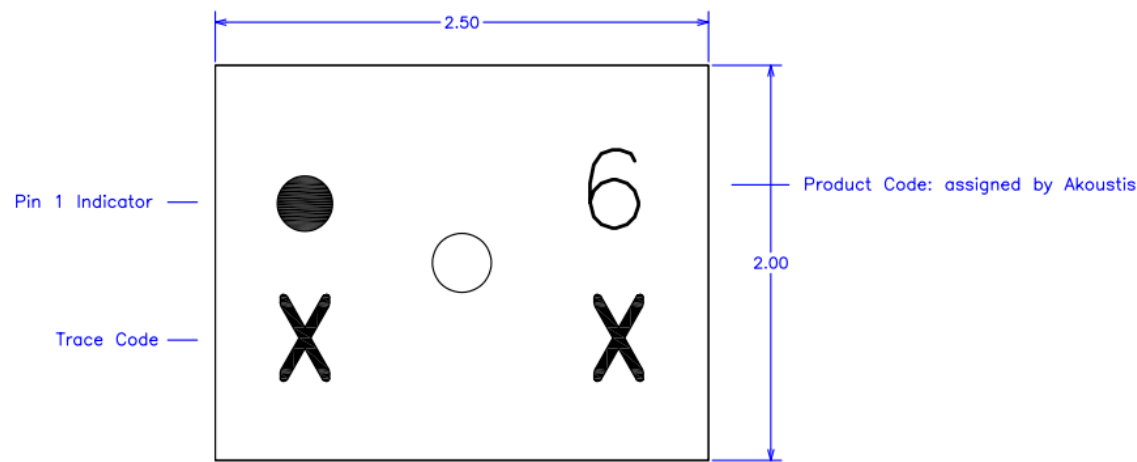
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Technical drawing of a square plate with the following dimensions and tolerances:

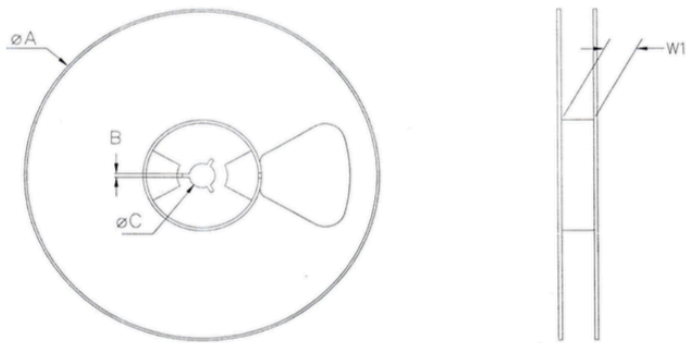
- Overall width: 1.150
- Overall height: 0.891
- Inner square width: 0.536
- Inner square height: 0.536
- Inner square tolerance: ± 0.000
- Plate thickness: 0.045
- Top edge tolerance: ± 0.000
- Right edge tolerance: ± 0.000
- Bottom edge tolerance: ± 0.000
- Left edge tolerance: ± 0.000
- Top-left corner tolerance: ± 0.000
- Top-right corner tolerance: ± 0.000
- Bottom-right corner tolerance: ± 0.000
- Bottom-left corner tolerance: ± 0.000
- Top-left corner text: 4X THIS ROTATION 3X ROTATED 90°
- Top-left corner dimension: 0.425x0.400
- Top-left corner tolerance: ± 0.000
- Top-left corner text: 0.688
- Top-left corner text: 0.488
- Top-left corner text: 0.325
- Top-left corner text: 0.64

Prelim Datasheet: Rev 02082021
Pat. 10,256,786

Typical Part Marking



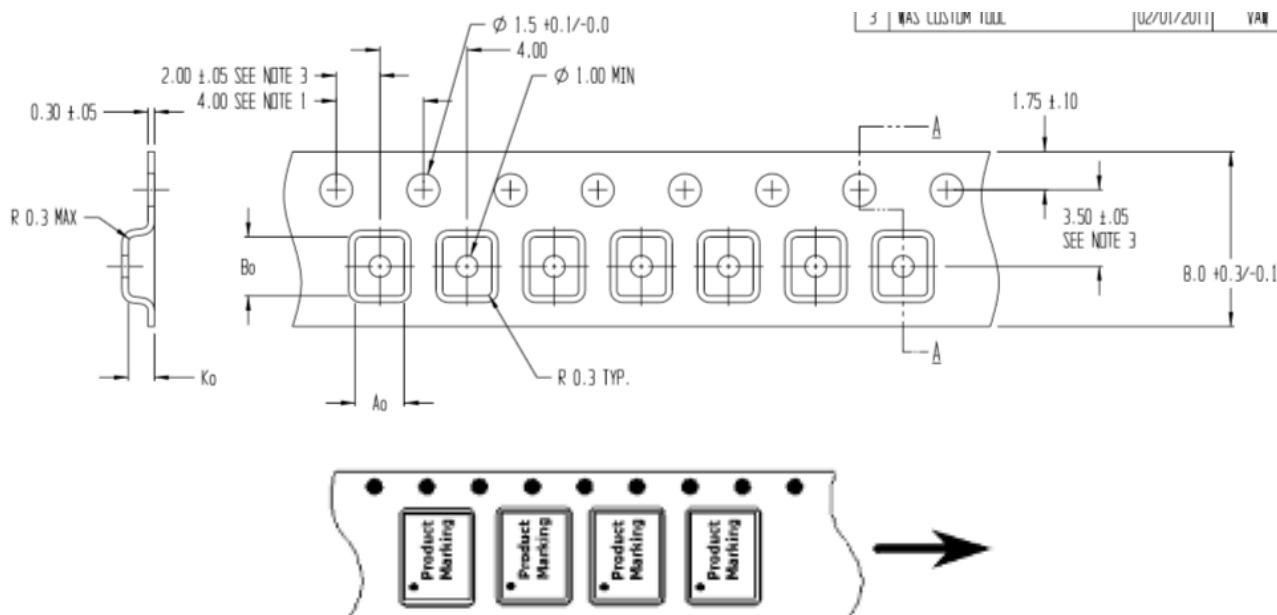
Reel Dimension



Item	Parameters	Method	Min	Max
1	ϕA (180mm + 0 / - 2.0)	Caliper	178.96	179.00
2	B (1.5mm Min)	Caliper	2.33	2.36
3	ϕC (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	

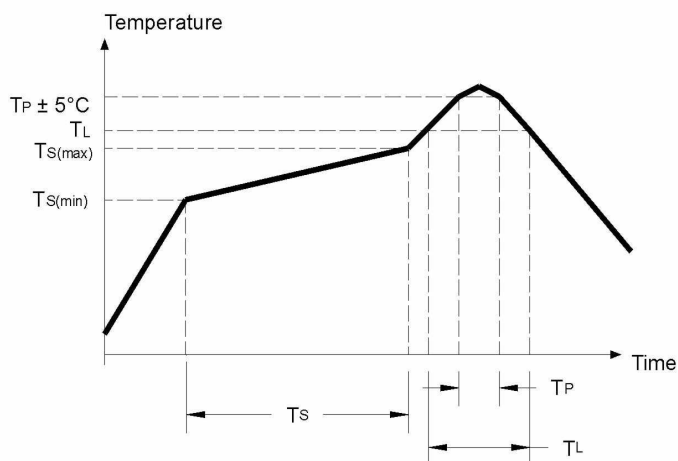
Tape Dimension

$A_0 = 2.25$
 $B_0 = 2.70$
 $K_0 = 1.20$



Recommended Solder Profile

Parameter	Eutectic Sn/Pb	Pb Free
Max Ramp Up Rate	6 Deg C/Second	6 Deg C/Second
Soak Temp Time $T_S(\text{min}) - T_S(\text{max})$	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



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.

Email: sales@akoustis.com

Website: www.akoustis.com

Telephone: +1 704.997.5735

Fax: +1 704.997.5734