6.2 GHz Wi-Fi 6E & 7 Coexistence BAW Filter A10162

Description

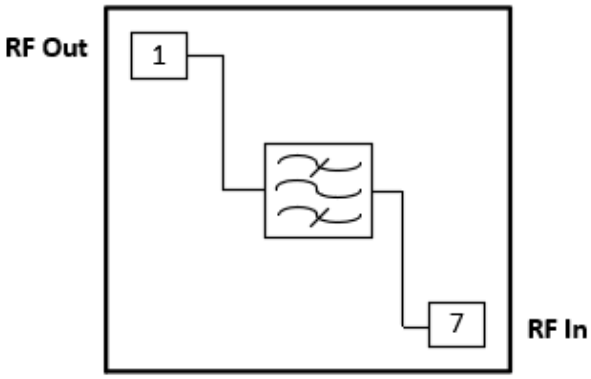
Akoustis' A10162 is a high-performance, wide bandwidth BAW RF Filter for use in Wi-Fi 6E & 7 applications covering U-NII-5. A10162 utilizes Akoustis' patented, XBAW® technology which provides leading RF filter performance. This BAW RF filter provides low insertion loss and meets the stringent rejection requirements enabling coexistence with U-NII-1 thru 4 and U-NII-7 & 8. This device exhibits high-power handling capabilities necessary for demanding power requirements of the latest Wi-Fi 6E & 7 standards. A10162 uses standard laminate packaging and is compatible with high volume, lead-free SMT soldering processes.

- Small form factor 1.6mm x 1.8mm x 0.63mm
- Single-ended Tx/Rx ports.
- Wide bandwidth covering 480MHz
- High rejection enables coexistence with adjacent Wi-Fi UNII bands
- Low insertion loss bandpass filter
- Temperature range -20 C to +95C
- RoHS compliant, Pb-free package

Applications

- Wi-Fi 6E & 7 tri & quad band routers, integrated cable modem
- Wi-Fi 6E & 7 tri & quad band access points

Functional Block Diagram



Ordering Information

Part Number	Description
A10162EVB	Evaluation board
A10162SP	(5) Loose pcs
A10162SR	(100) Short Reel (7" Reel)
A10162TR1	(1000) Tape & Reel (7" Reel)
A10162TR2	(2500) Tape & Reel (7" Reel)

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Datasheet: Rev 07162024
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Absolute Maximum Ratings

Parameter	Conditions	Rating
Storage Temperature		-40 to 125 °C
Max Input Power	Signal: OFDM MCS0, 160MHz, PAR 10dB	31
Max Temperature		-40 to 105°C

Exceeding any one limit or a combination of AMR conditions may result in damage to the device.

Operating Parameters[7] (Temp = -20°C to 95 °C unless otherwise noted)

Parameter	Conditions	Units	Min.	Typ.	Max.
Passband		MHz	5945	6185	6425
Insertion Loss	5945 – 6425 MHz[5]	dB		2.0[1]	3.5[3]
	5965 – 6425 MHz[5]	dB		2.0[1]	5.4[2]
	5945 – 5965 MHz[6]	dB		5.5[2]	7.5[2]
Amplitude Variation	5945 – 6425 MHz[4]	dB		3.8	
Attenuation	30 – 2450 MHz	dB	35	41	
	3300 – 4200 MHz	dB	30	36	
	4200 – 5000 MHz	dB	32	38	
	5170 – 5625 MHz	dB	45	50	
	5625 – 5745 MHz	dB	50	55	
	5745 – 5875 MHz	dB	45	50	
	5875 – 5895 MHz	dB	50	55	
	6525 – 6745 MHz[5]	dB	50	65	
	6745 – 7125 MHz	dB	45	58	
	11890 – 12850 MHz	dB	18	23	
	17835 – 19275 MHz	dB	30	45	
Return Loss	5945 – 6425 MHz	dB	10[4]	15[1]	
Load Impedance		Ω		50	
Power Handling:	OFDM MCS0, 160 MHz, PAR 10dB	dBm			29

Notes: 1) Averaged over specified frequency at 25C; 2) Averaged over 20MHz channel; 3) Averaged over 160MHz channel; 4) Averaged over passband; 5) For temperature > 25C; 6) For 95C; 7) Performance based on Akoustis EVB

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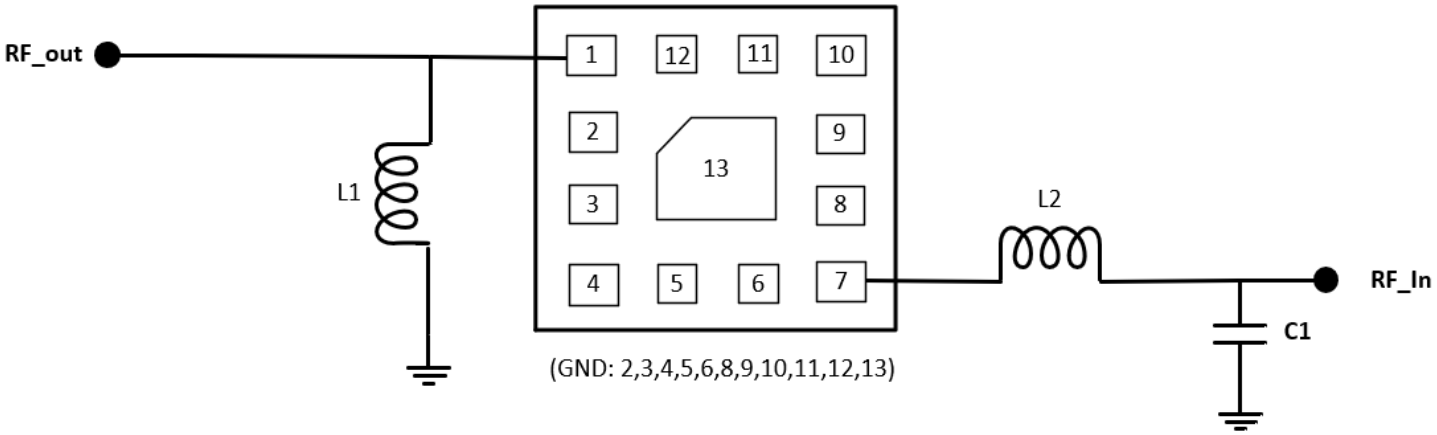
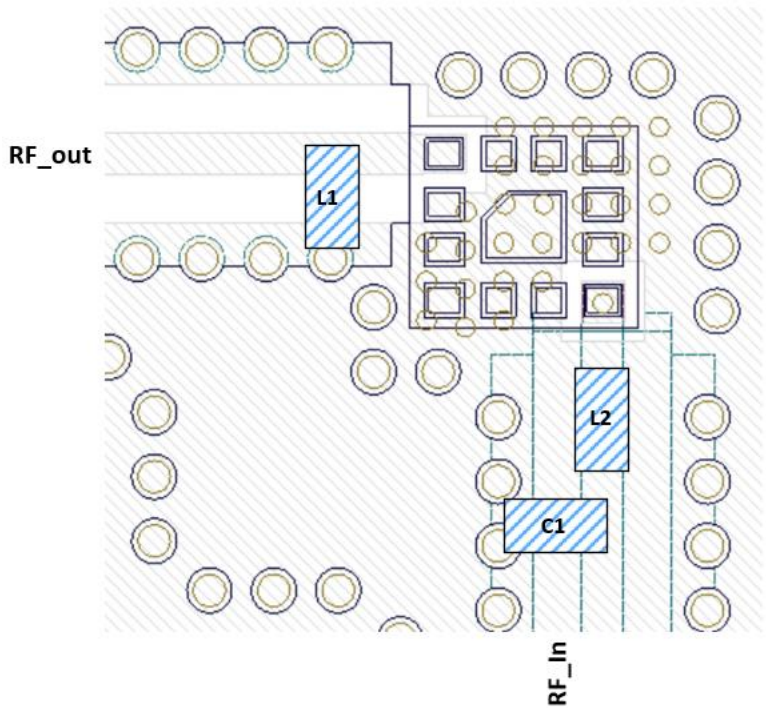
EVB Schematic & Layout





Notes:

1) Center ground pad via: 6mil; outer via: 10mil
2) “RF in” trace located on bottom layer
3) Place tuning components as close as possible to filter package
4) Emulate Akoustis EVB as close as possible, particularly the via ground patttern

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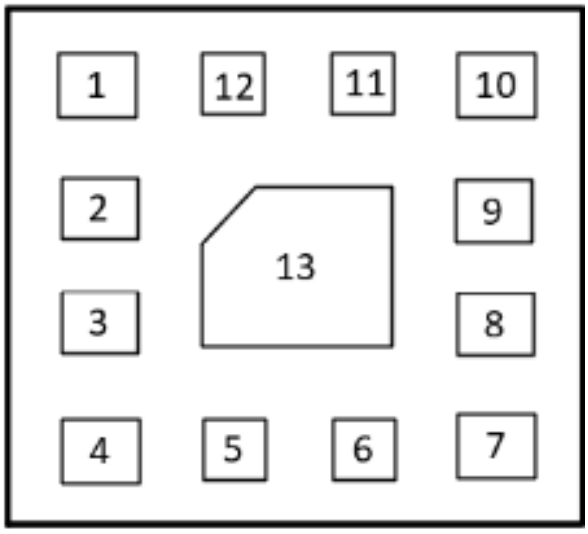
Bill of Materials

Reference Des.	Value	Description	Manufacturer	Part Number
PCB	N/A	Multi layer	Multiple	AA41816_412_A10_5_1
U1	N/A	6.2 GHz BAW Filter	Akoustis	A10162
L1	2.4nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ2N4B02D
L2	1.1nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ1N1B02D
C1	0.3pF	Chip capacitor, 0201, ±0.05nH	Murata	GJM0335C1ER30WB01D

Pin Description



Top View

Pin	Name	Description
1	RF Out	Antenna
7	RF In	TX (high power input)
2, 3, 4, 5, 6**, 8, 9, 10, 11, 12, 13**	GND	Ground

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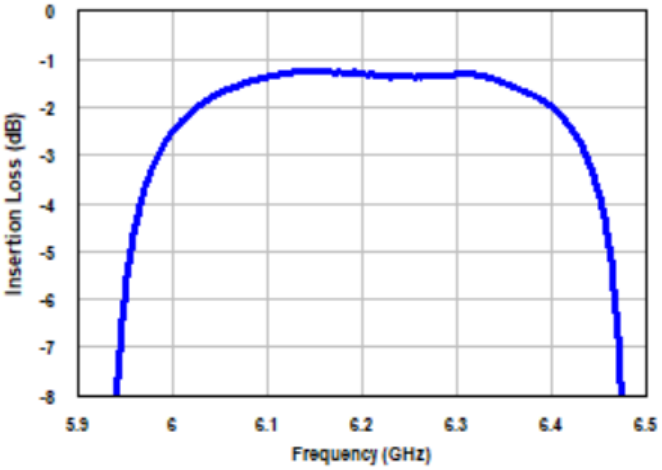
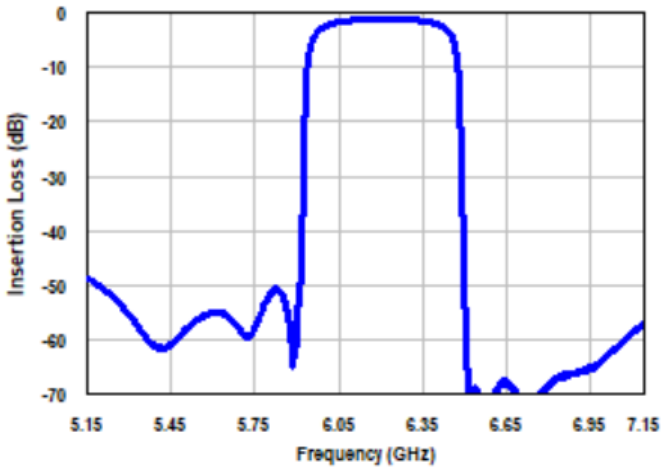
Performance Plots (Temp = 25°C unless otherwise noted)

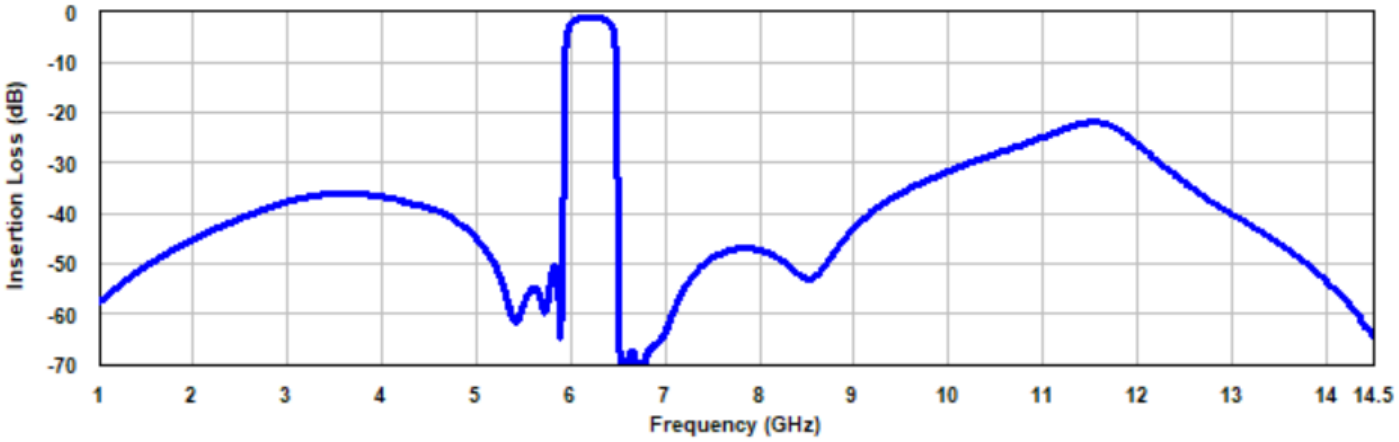
A10162 Passband



A10162 Narrowband



A10162 Wideband



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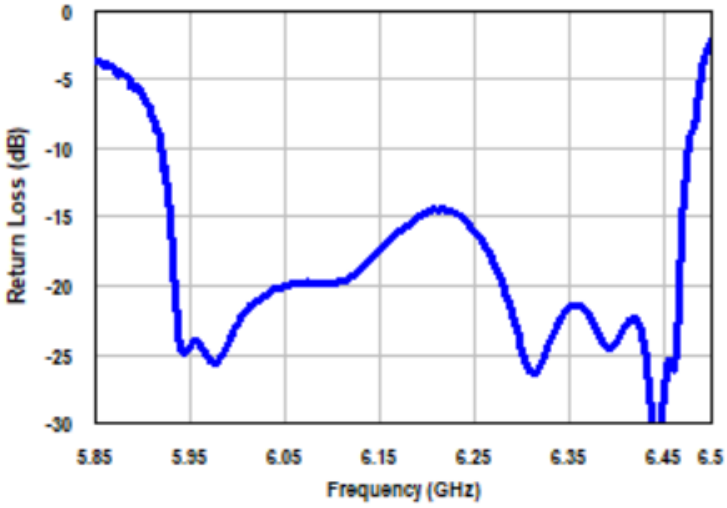
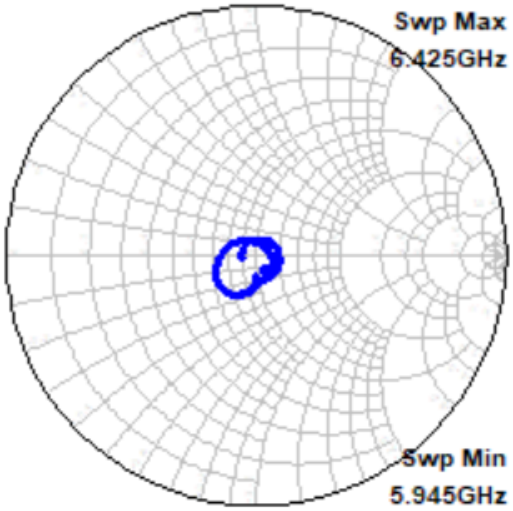
Performance Plots…continued (Temp = 25°C unless otherwise noted)

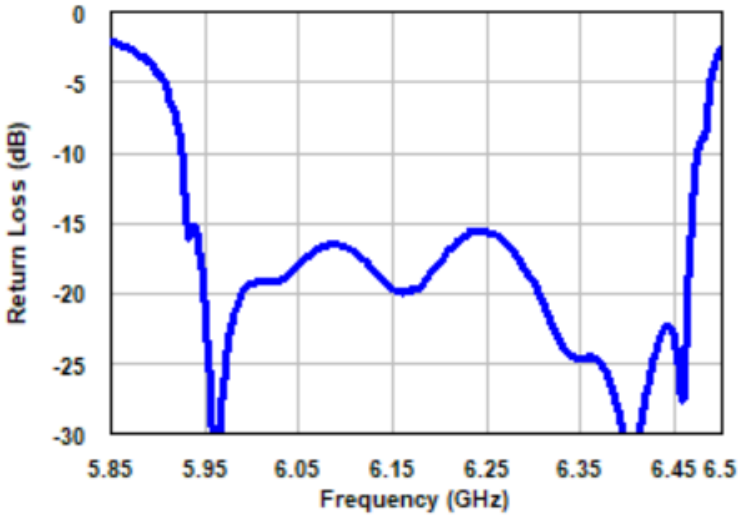
A10162 Input RL



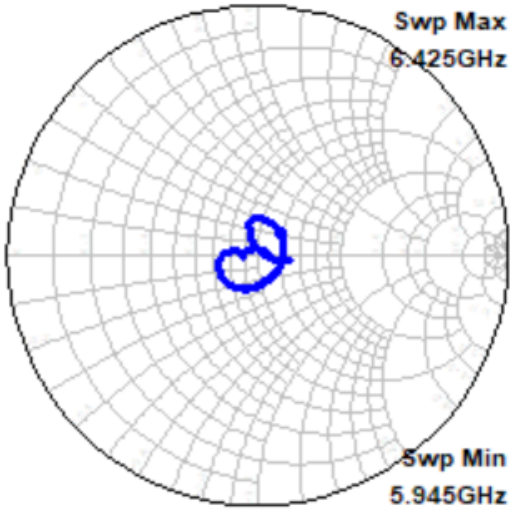
A10162 Impedance



A10162 Output RL



A10162 Impedance



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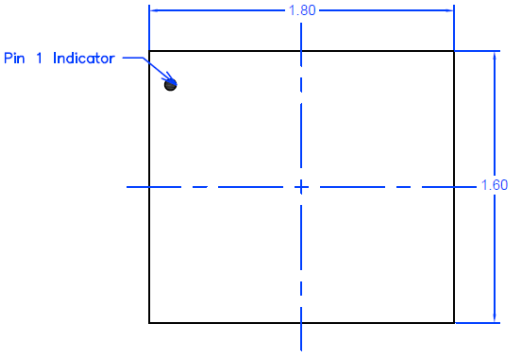
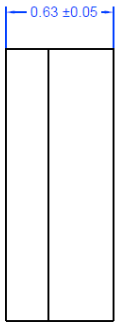
Package Outline Drawing (POD)

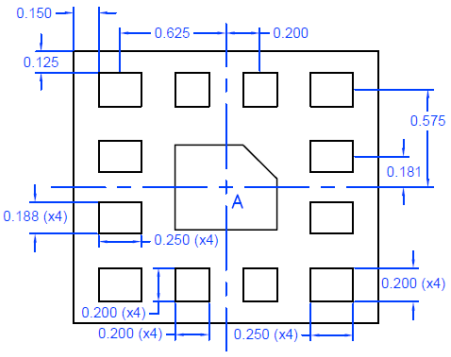
- All units in mm

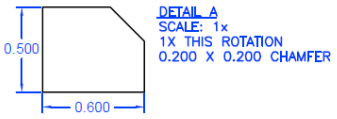


Top View



Side View



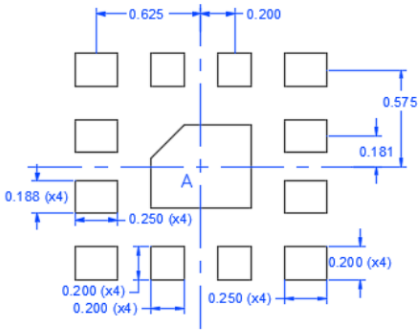


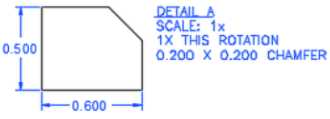
Bottom View

NOTES:

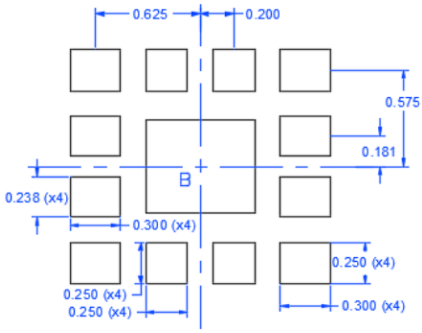
1. Terminal Finish:
   Electroless Ni/Electroless Pd/Immersion Au

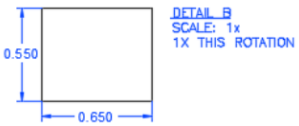
PCB Mounting Pattern



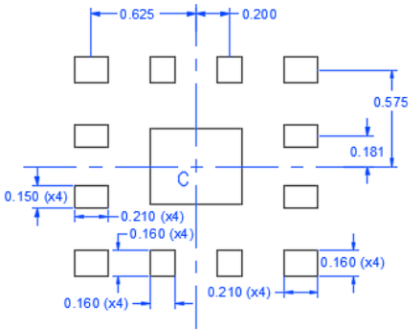


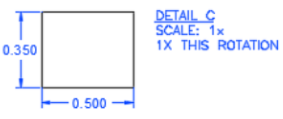
Recommended PCB Metal Top View





Recommended Solder Mask Opening Top View





Recommended Stencil Pattern Top View

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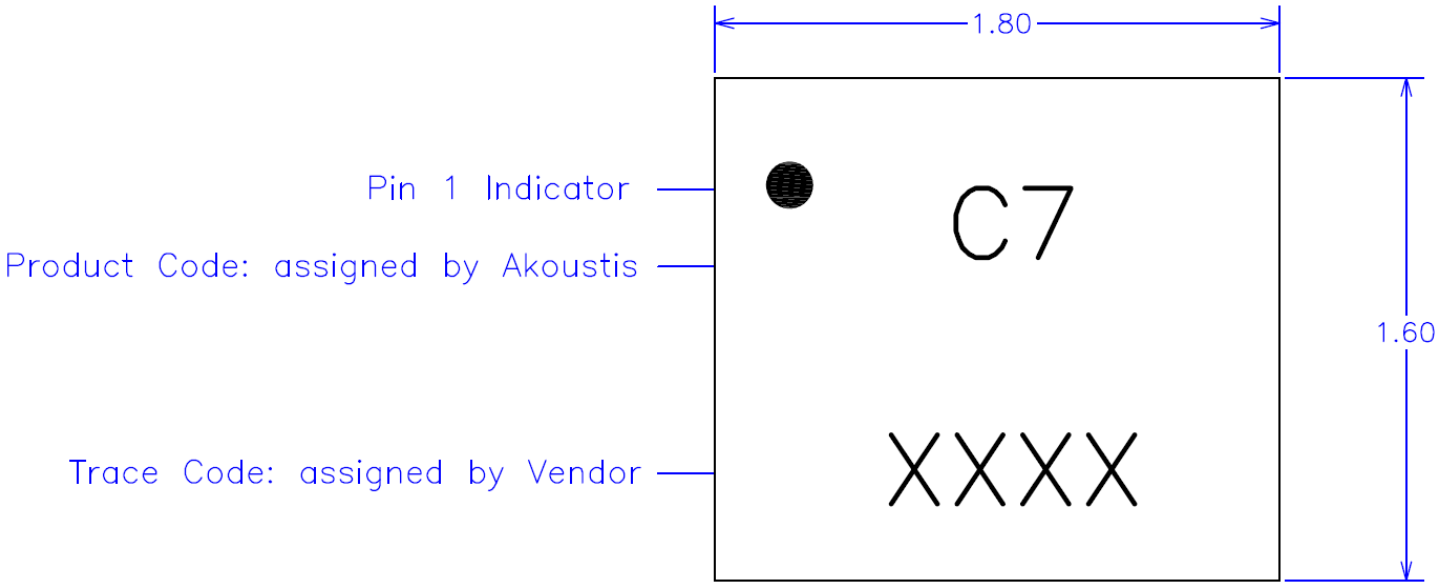
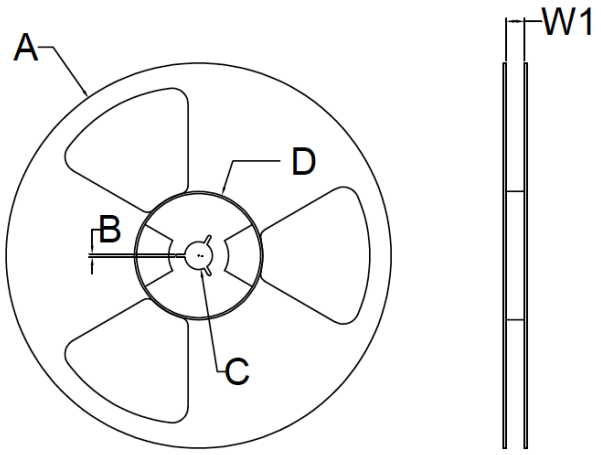
Typical Part Marking



Reel Dimensions



Reel Dimensiones						
Reel Size	Tape Width	A	B	C	D	W1 *measured at hub
7 Inch	8 mm	180 +0/-2.0 mm	2.0mm +/-0.5	13.0 + 0.5 / -0 mm	60.0 +/- 2.0 mm	8.40 + 1.5 / -0 mm
	12 mm	180 +0/-2.0 mm	2.0mm +/-0.5	13.0 + 0.5 / -0 mm	60.0 +/- 2.0 mm	12.40 + 2.0 / -0 mm
	16 mm	180 +0/-2.0 mm	2.0mm +/-0.5	13.0 + 0.5 / -0 mm	60.0 +/- 2.0 mm	16.40 + 2.0 / -0 mm
13 Inch	8 mm	330 +/- 2.0 mm	2.0mm +/-0.5	13.0 + 0.5 / -0.2 mm	102 +/- 2.0 mm	8.8 + 2.0 / -0 mm
	12 mm	330 +/- 2.0 mm	2.0mm +/-0.5	13.0 + 0.5 / -0.2 mm	102 +/- 2.0 mm	12.8 + 2.0 / -0 mm
	16 mm	330 +/- 2.0 mm	2.0mm +/-0.5	13.0 + 0.5 / -0.2 mm	102 +/- 2.0 mm	16.8 + 2.0 / -0 mm

Note: 7 Inch Reel Only Has One Opening

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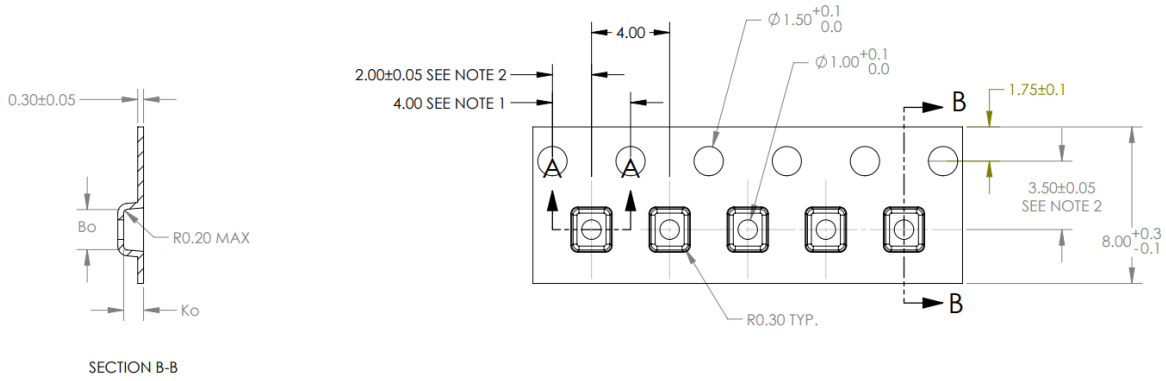
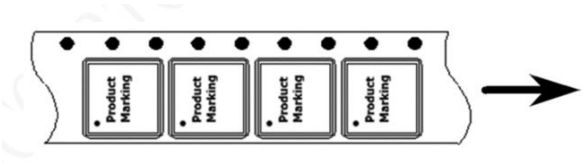
Tape Dimension

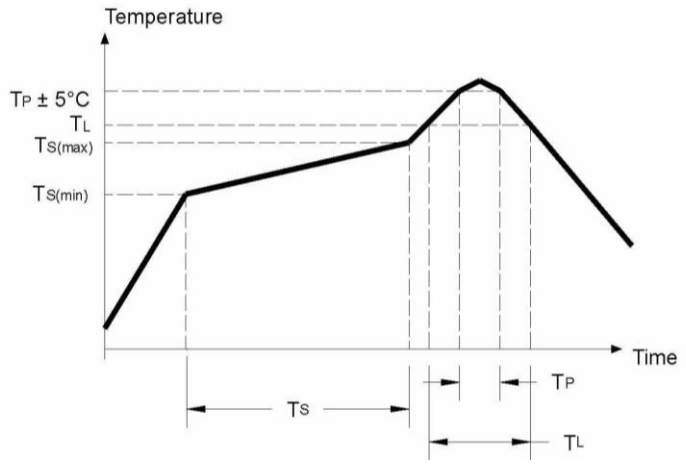


	DIM	±
Ao	1.85	0.1
Bo	2.05	0.1
Ko	1.02	0.1



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: CLASS 1A
Standard: ANSI/ESDA/JEDEC JS-001-2017

Charged Device Model (CDM)
Rating: CLASS C3
Standard: ANSI/ESDA/JEDEC JS-002-2018

MSL Rating

MSL3

RoHS

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

Contact Information

All contents specified in the datasheet are subject to change without notice. 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