6.6 GHz Wi-Fi 6E & 7 Coexistence BAW Filter A10466

Description

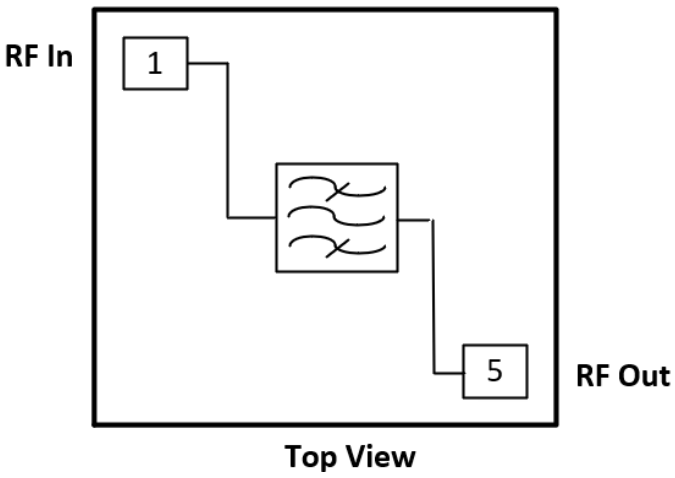
Akoustis' A10466 is a high-performance, ultra-wide bandwidth BAW RF Filter for use in Wi-Fi 6E & 7 applications covering portions of U-NII-5 thru U-NII-8 bands. A10466 utilizes Akoustis' patented, XBAW® technology which provides leading RF filter performance. This BAW RF filter provides low insertion loss and meets the stringent rejection requirements enabling coexistence with U-NII-1 thru 4. This device exhibits high-power handling capabilities necessary for demanding power requirements of the latest Wi-Fi 6E & 7 standards. A10466 uses standard laminate packaging and is compatible with high volume, lead-free SMT soldering processes.

- Small form factor 1.4mm x 1.8mm x 0.63mm
- Single-ended Tx/Rx ports
- Ultra-wide bandwidth Passband covering 1020 MHz
- 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-band routers, integrated cable modem
- Wi-Fi 6E & 7 tri-band access points

Block Diagram



Ordering Information

Part Number	Description
A10466EVB	Evaluation board
A10466SP	(5) Loose pcs
A10466SR	(100) Short Reel (7" Reel)
A10466TR1	(1000) Tape & Reel (7" Reel)
A10466TR2	(2500) Tape & Reel (7" Reel)

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Datasheet: Rev 06272024
Pat. 10,256,786

Absolute Maximum Ratings

Parameter	Conditions	Rating
Storage Temperature		-40 to 125 °C
Input Power	Signal: OFDM MCS0, 160 MHz, 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[5] (Temp = -20°C to +95°C unless otherwise noted)

Parameter	Conditions	Units	Min.	Typ.	Max.
Passband		MHz	6105	6615	7125
Insertion Loss	6105 – 7125 MHz	dB		2.5[1]	3.0[4]
					4.0[3]
					5.8[2]
Amplitude Variation	6105 – 7125 MHz	dB		1.5[2]	2.7[2]
Attenuation	30 – 2400 MHz	dB	45	50	
	2400 – 2500 MHz	dB	40	47	
	3300 – 4200 MHz	dB	30	38	
	4400 – 4960 MHz	dB	20	26	
	5170 – 5330 MHz	dB	45	54	
	5490 – 5735 MHz	dB	45	52	
	5735 – 5875 MHz	dB	44	48	
	5875 – 5895 MHz	dB	45	55	
	7700 – 8300 MHz	dB	40	50	
	12210 – 13000 MHz	dB	25	38	
	18315 – 21375 MHz	dB	25	38	
Return Loss	6105 – 7125 MHz	dB	10[4]	12	
Load Impedance		Ω		50	
Power Handling:	OFDM MCS0, 160 MHz, PAR 10dB	dBm			29

Notes: 1) Averaged over specified frequency at room temperature; 2) Average over 20MHz; 3) Average over 160MHz; 4) Average over passband; 5) Performance based on Akoustis EVB

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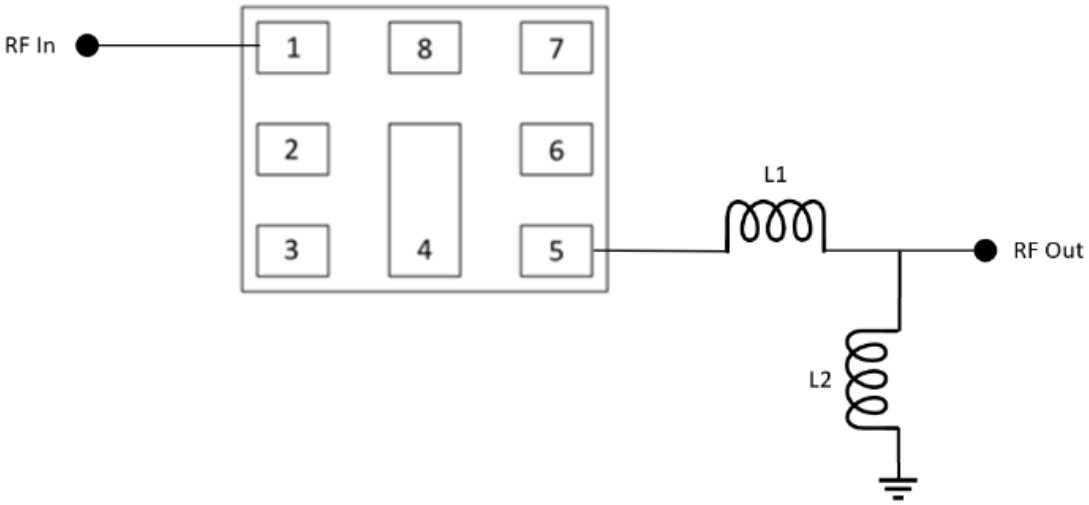
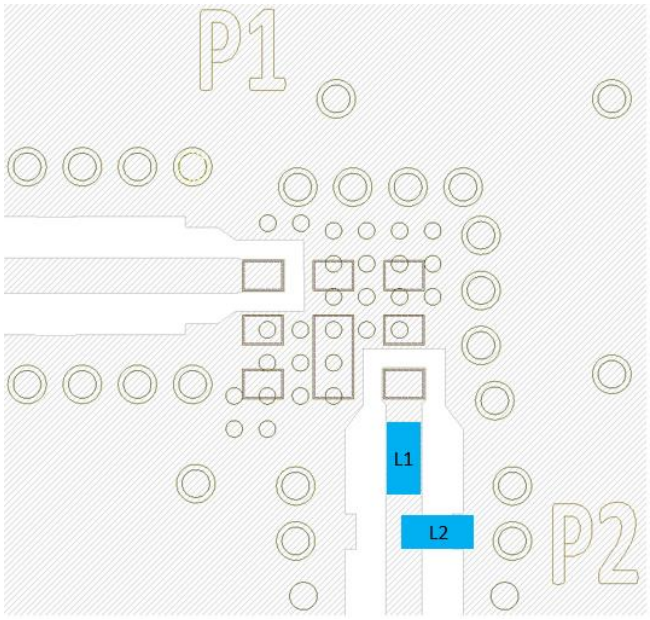
EVB Schematic & Layout





Notes:

1) Center ground pad via: 6mil; outer via: 10mil.
2) Place tuning components as close as possible to filter package.
3) Emulate Akoustis EVB as close as possible, particularly the via ground patttern

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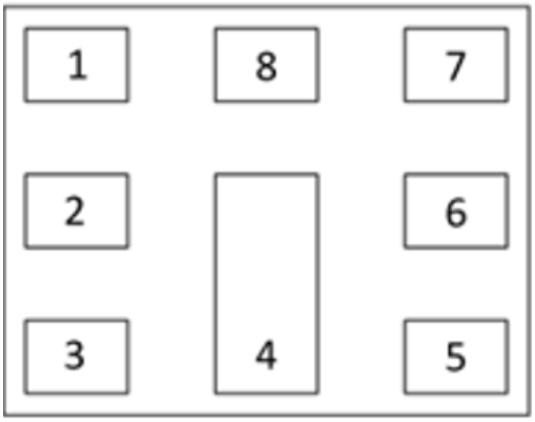
Bill of Materials

Reference Des.	Value	Description	Manufacturer	Part Number
PCB	N/A	Multi-layer	Multiple	A10466-412-A10-3-1
U1	N/A	6.6 GHz BAW Filter	Akoustis	A10466
L1, L2	1.0nH	Chip inductor, 0201, ±0.05nH	Murata	LQP03HQ1N0W02

Pin Description



Pin	Name	Description
1	RF in	TX (high power input)
5	RF out	Antenna
2, 3, 4, 6**, 7, 8**	GND	Ground

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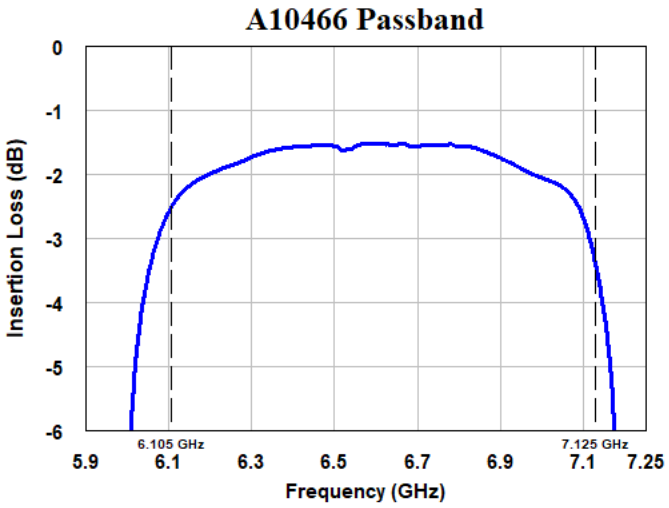
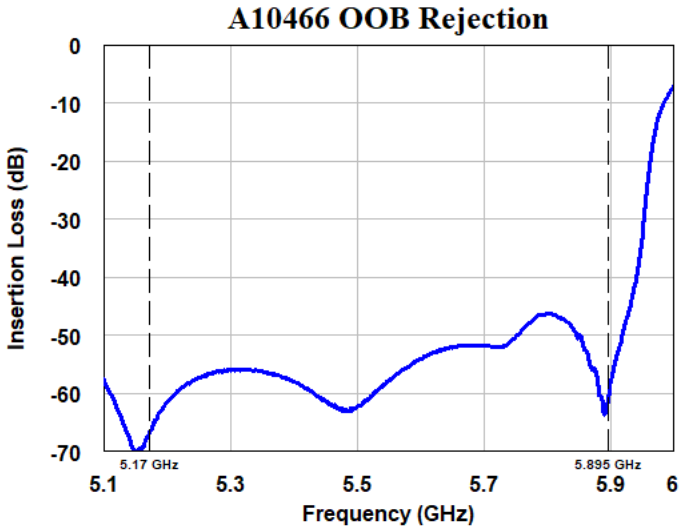
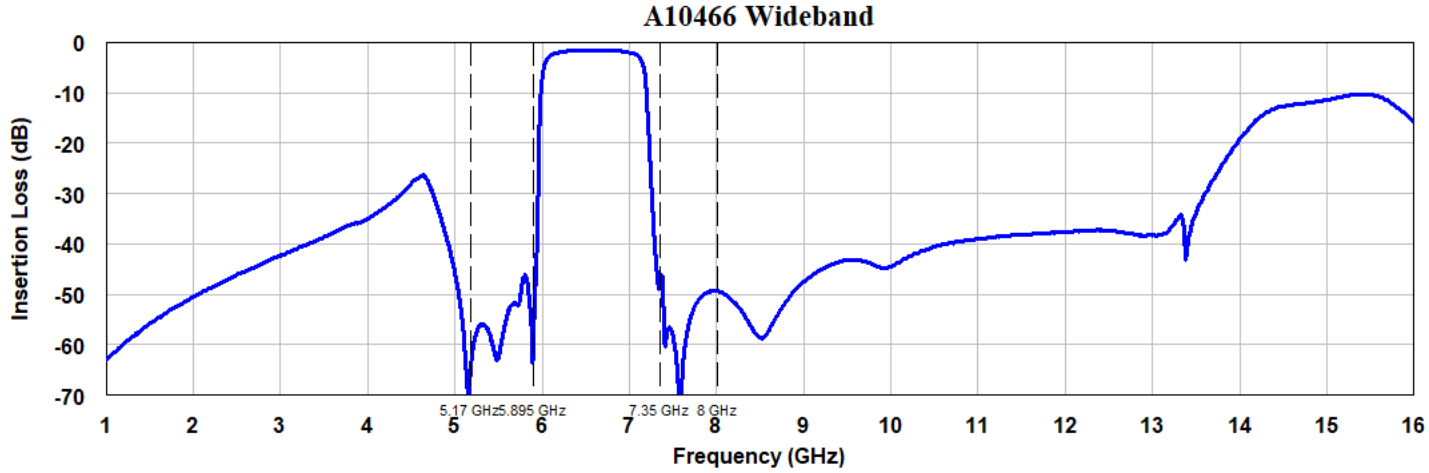
Performance Plots (Temp = +25°C unless otherwise noted)







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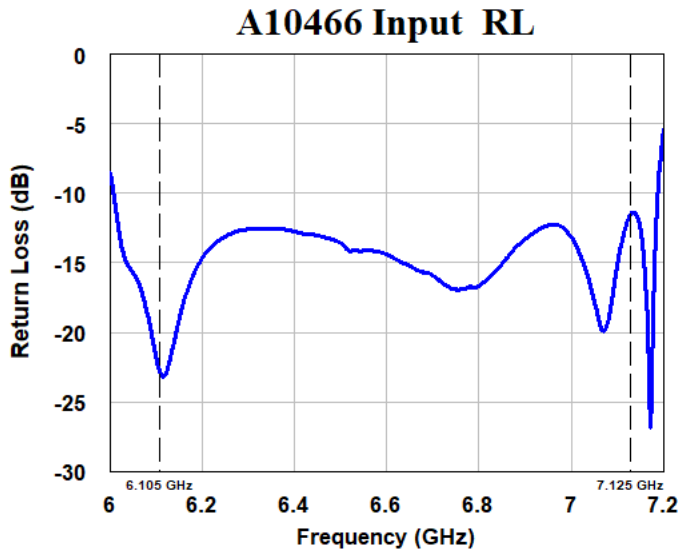
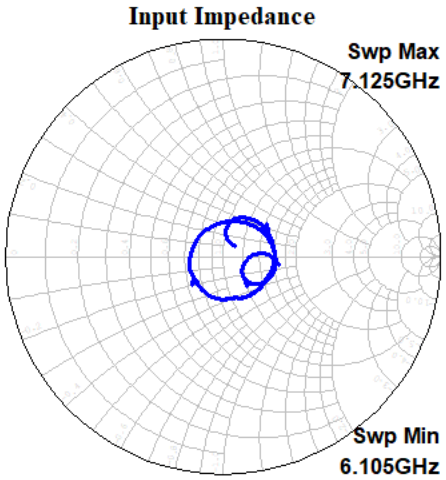
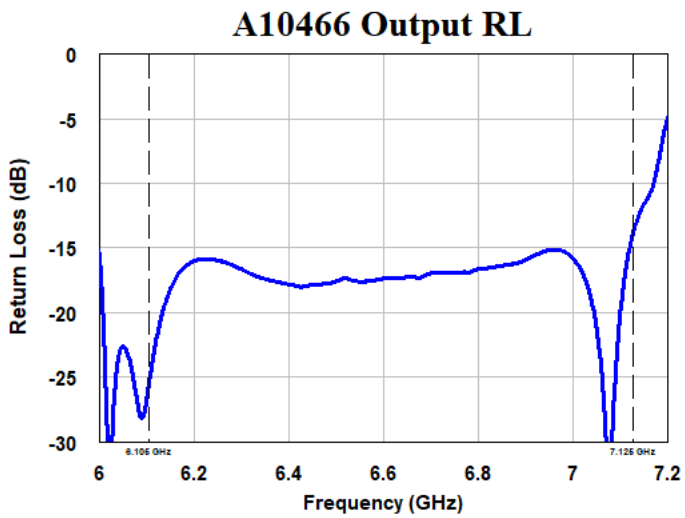
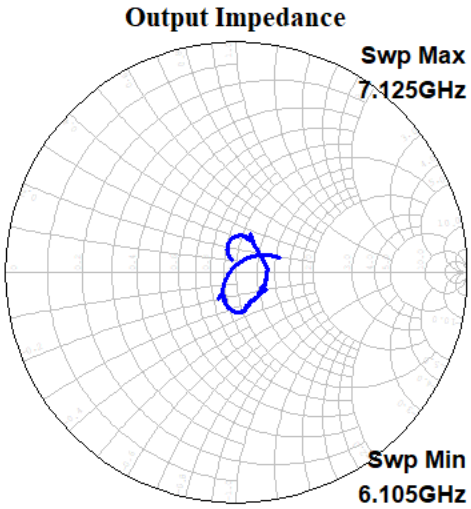
Performance Plots…continued (Temp = +25°C unless otherwise noted)









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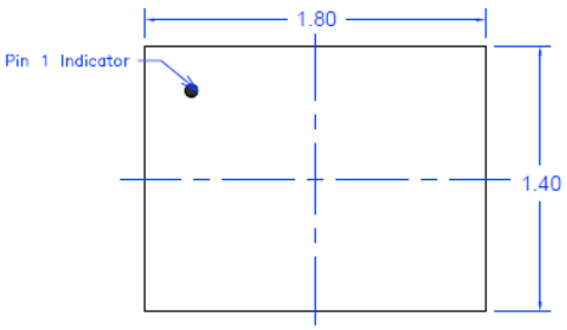
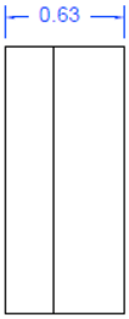
Package Outline Drawing (POD)

Notes:

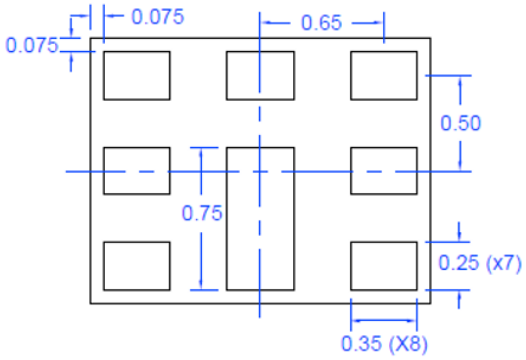
- All units in mm
- Terminal Finish: Electroless Ni/Electroless Pd/Immersion Au



Top View

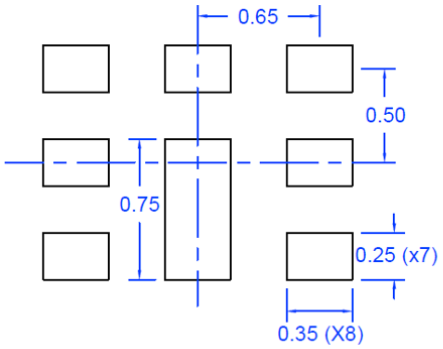


Side View

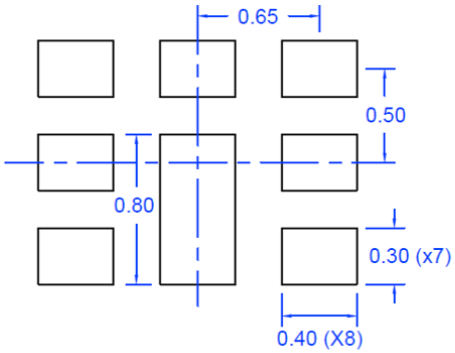


Bottom View

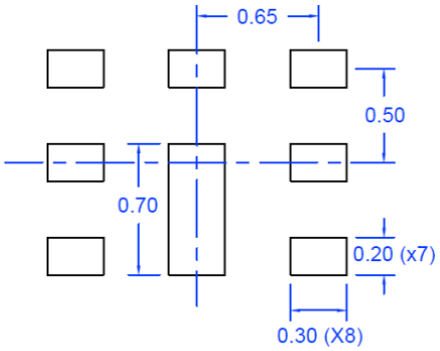
PCB Mounting Pattern



Recommended PCB Metal Top View



Recommended Solder Mask Opening Top View



Recommended Stencil Pattern Top View

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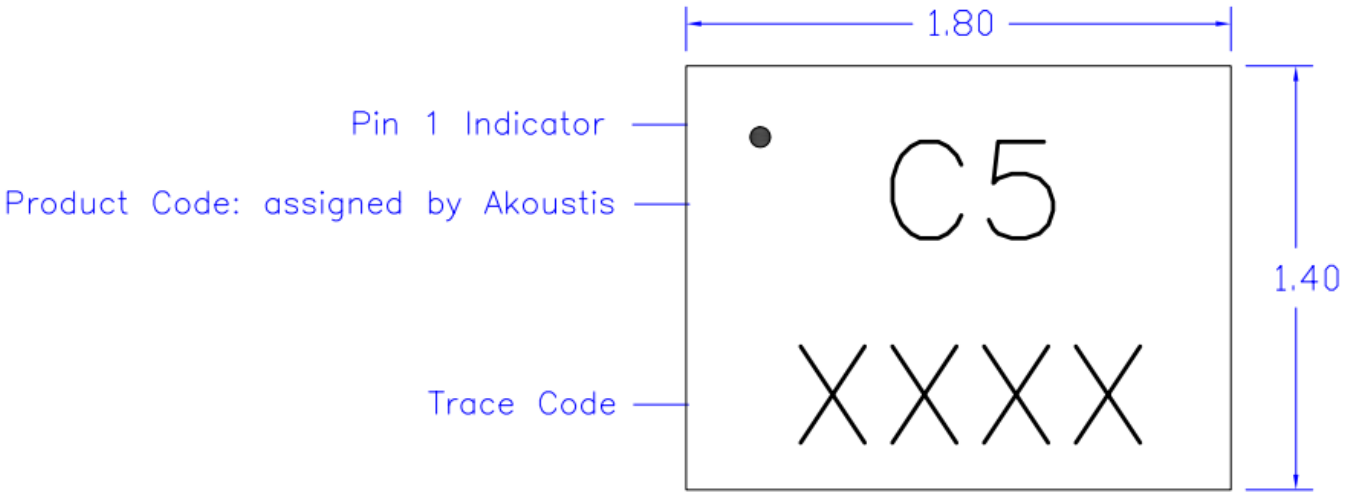
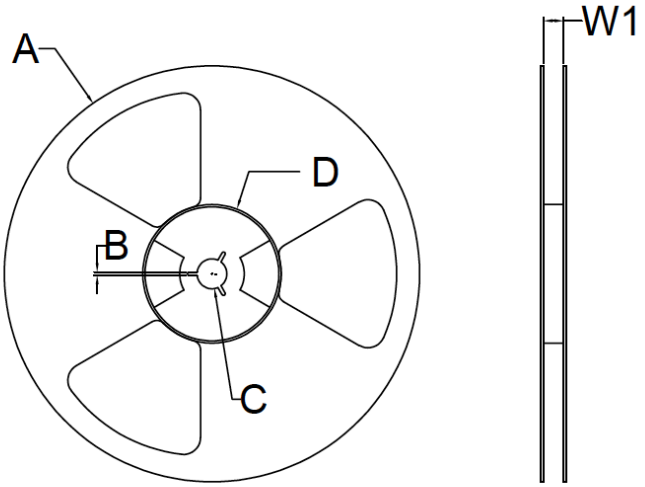
Typical Part Marking



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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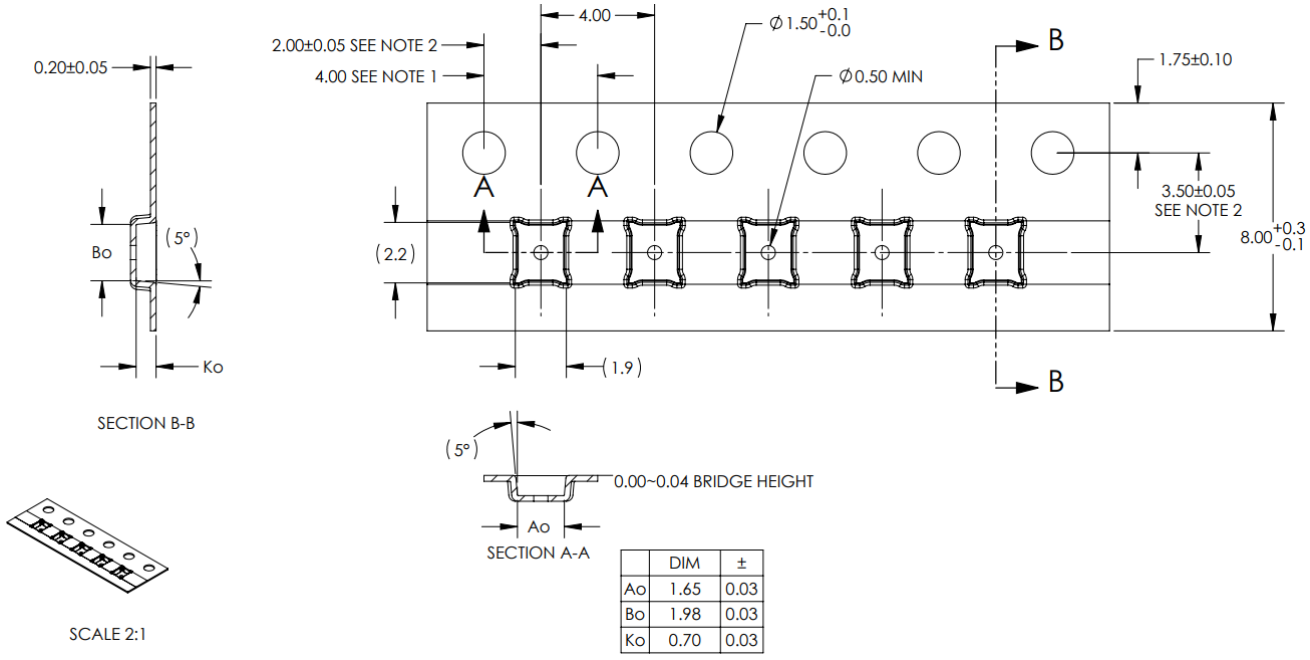
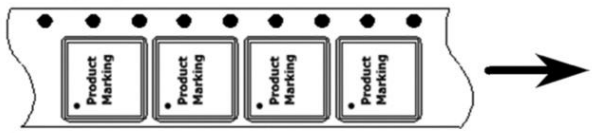
Tape Dimension



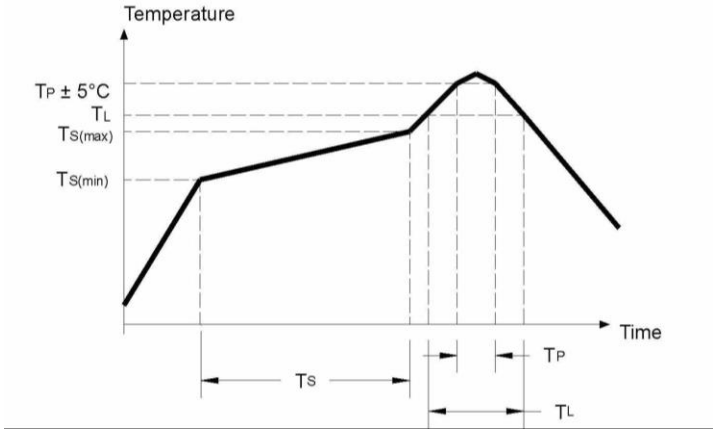
	DIM	±
Ao	1.65	0.03
Bo	1.98	0.03
Ko	0.70	0.03

SCALE 2:1



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.

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