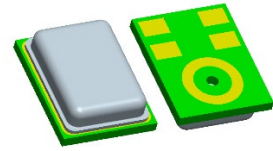




PUIaudio



Data Sheet

AMM-3538-4-B

The PUI Audio AMM-3538-4-B analog-output MEMS omni-directional microphone features a nominal -38dBV sensitivity, 65dB(A) signal-to-noise ratio, and bottom port.

Features:

- 3.5mm x 2.65mm package
- 1.0mm height
- -38dBV sensitivity
- 65dB (minimum) signal-to-noise ratio
- Omni-directional polar response

Specifications $V_{SUPP} = 1.8V_{DC}$, $f_{IN} = 1kHz$, Acoustic Input = 94dB SPL (1Pa), 0 dBV = 1V @ 1Pa, unless otherwise stated.

Parameters	Values	Units
Typical Sensitivity	-38 ±1	dBV
Typical Signal-to-Noise Ratio 20Hz ≤ f ≤ 20kHz bandwidth A-weighted	65	dB
Typical Frequency Range	20 ≤ f ≤ 20,000	Hz
Maximum Total Harmonic Distortion	0.2	%
Typical Acoustic Overload Point (AOP) THD = 10%	128	dB SPL
Operating Voltage Range	1.5 ≤ V _S ≤ 3.6	V _{DC}
Maximum Power Supply Current	160	μA
Maximum Output Impedance	400	Ω
Directivity	Omnidirectional	-
Environmental Compliances	RoHS/Halogen Free	-
Typical Power Supply Rejection (PSR) 100mVpp Square Wave f _{NOISE} = 217Hz A-weighted	-95	dBV(A)
Typical Power Supply Rejection (PSRR) 200mVpp Square Wave 1kHz A-weighted	63	dB
Weight	<0.3	gm
Operating Temperature	-40 ≤ T _O ≤ 105	°C

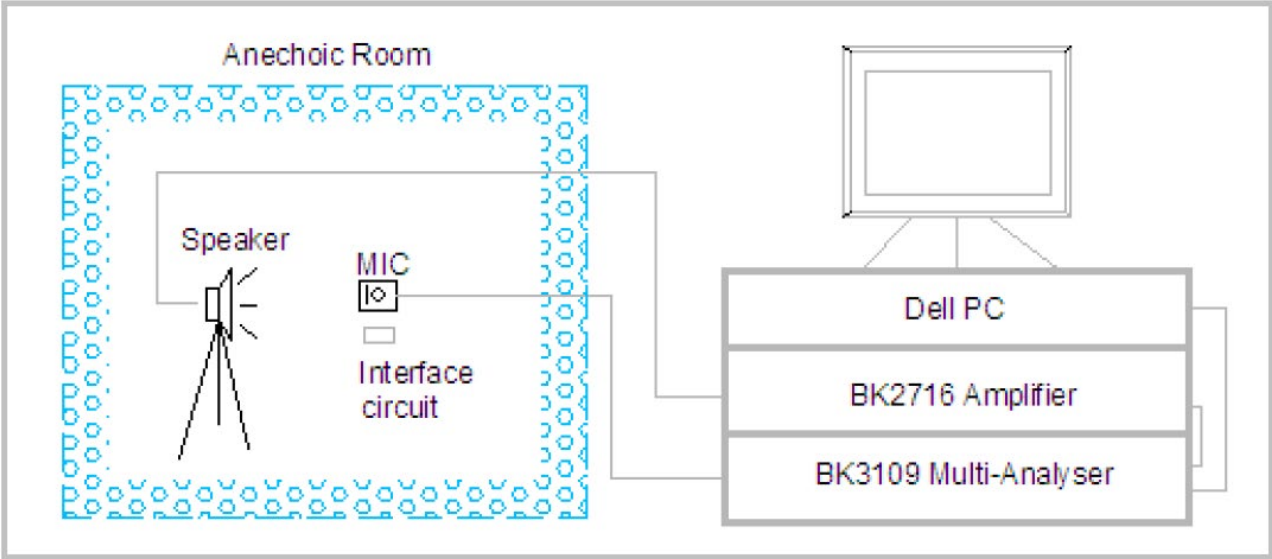
Storage Temperature	$-40 \leq T_s \leq 125$	°C
MSL (Moisture Sensitivity Level)*	1	-

*MSL level dependent on product remaining in sealed packaging until use

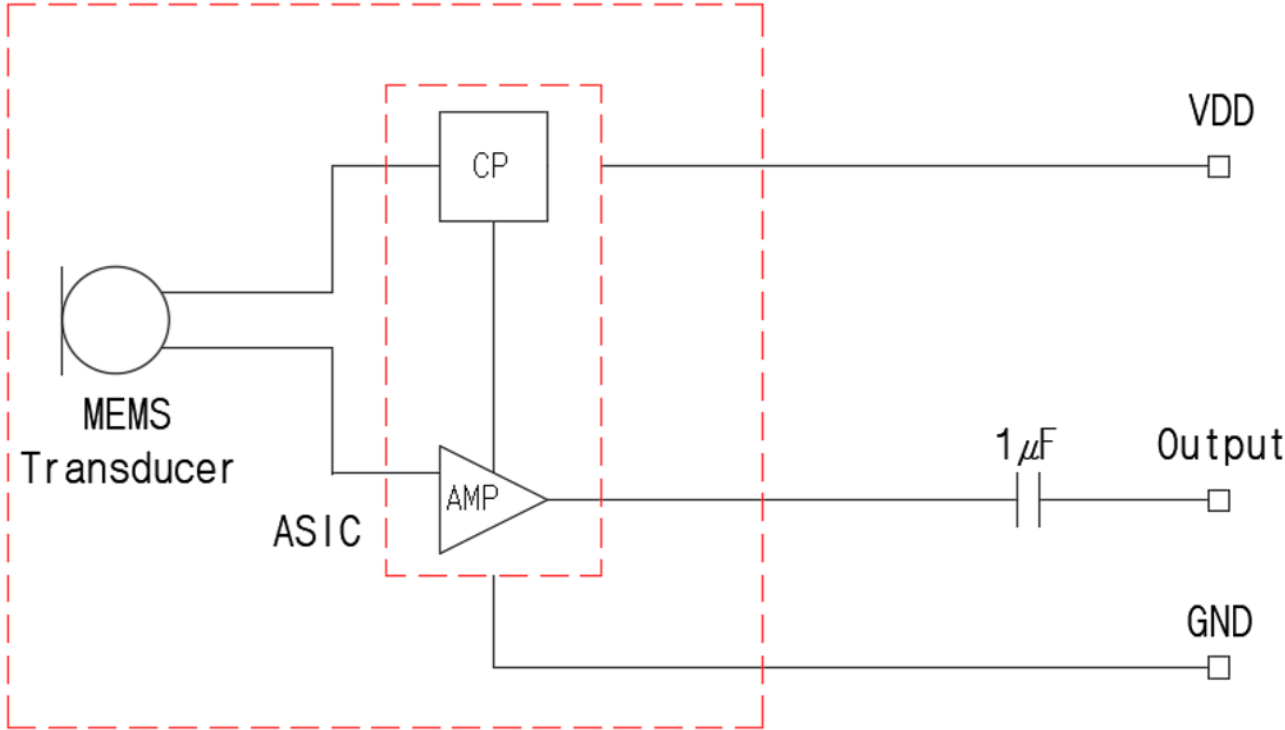
Absolute Maximum Ratings

Parameters	Values	Units
Maximum Voltage on VDD with respect to Ground	5	V _{DC}

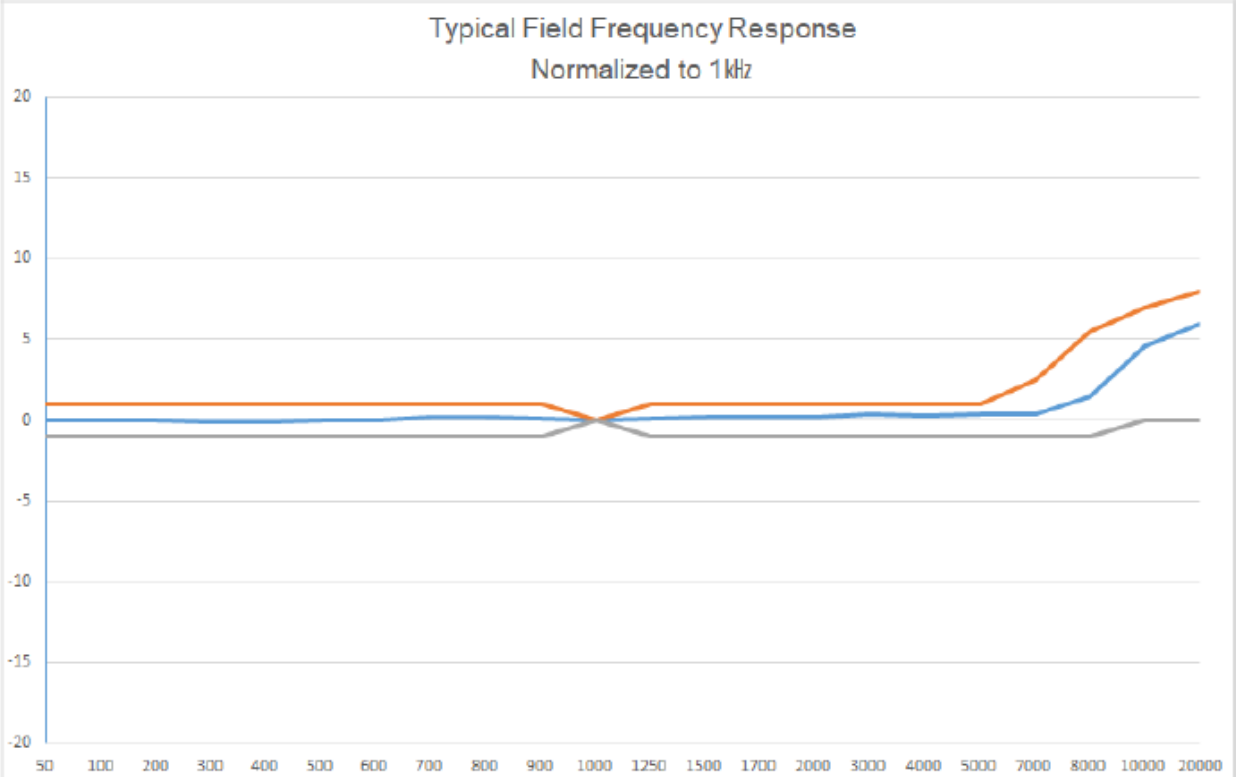
Measurement Method Acoustic input applied to the microphone has a 94dB SPL amplitude.



Recommended Drive Circuit



Typical Frequency Response

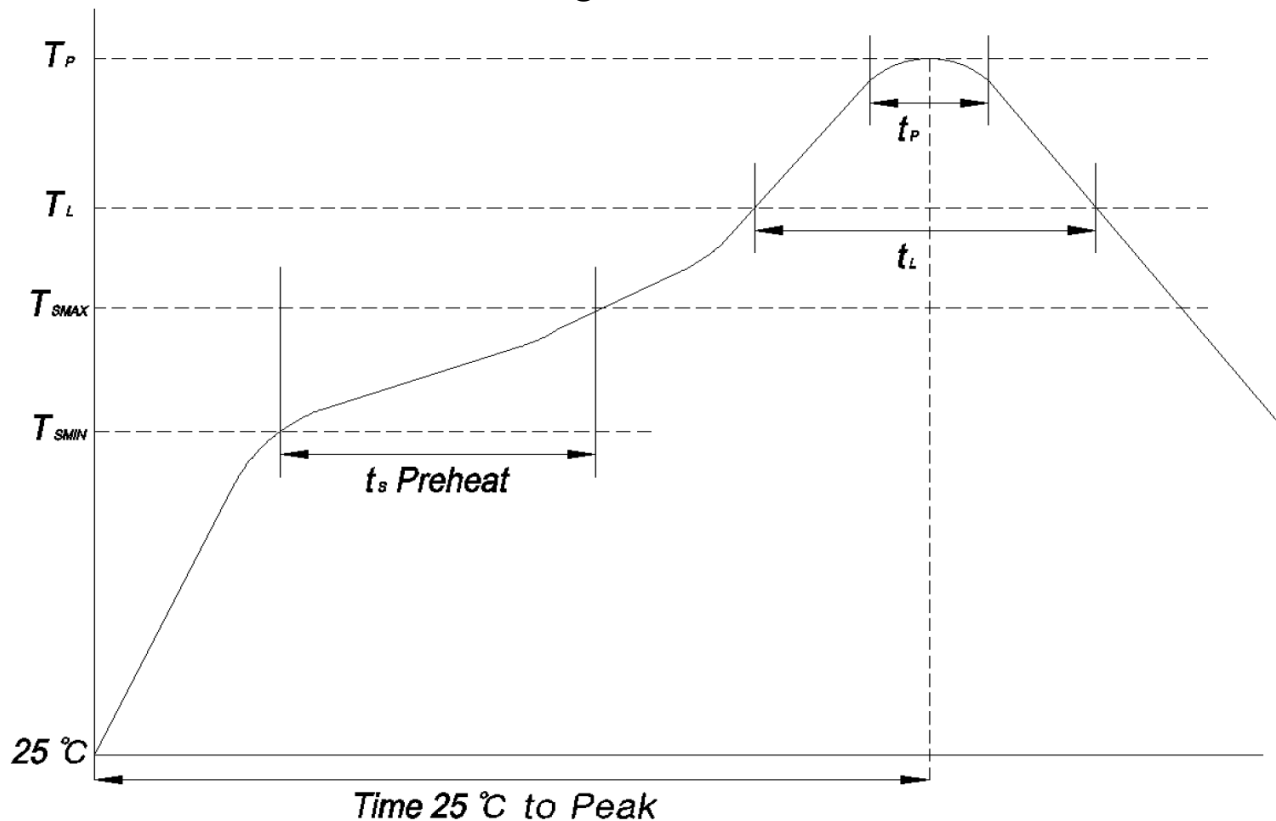


TEST CONDITIONS: 23±2°C, 65±20% R.H., Typical specifications are measured at VDD = 1.8V
Speaker: 1Pa(94dB SPL@1kHz) at 50cm distance from a loudspeaker

Reliability Testing Microphone frequency response and sensitivity shall not deviate more than ±3 dB.

Type of Test	Test Specifications
Simulated Reflow (Without Solder)	Samples for qualification testing require 3 passes 260±5 °C reflow solder profiles. 2 hours of setting time is required between each reflow profile test.
Static Humidity	Precondition at +25°C for 1 hour. Expose to +85°C with 85% relative humidity for 120 hours. Finally, dry at room ambient for 3±1 hour before taking final measurement.
Temperature Shock	Each cycle shall consist of 30 minutes at -40°C, 30 minutes at +85°C with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature.
ESD Sensitivity	Perform ESD sensitivity threshold measurements for each contact according to MIL-STD-883G, Method 3015.7 for Human Body Model. Identify the ESD threshold levels indicating passage of 8000V Human Body Model.
Vibration Test	Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4 cycles from 10Hz to 55 Hz with a peak acceleration of 20 Gs.
Shock Test	Subject samples to half-sine shock pulses (3000±15% Gs for 0.3ms) in each direction, for a total of 18 shocks.
Drop Test	Drop samples from 1.5m height onto a steel surface, total 18 times and inspected for mechanical damage.

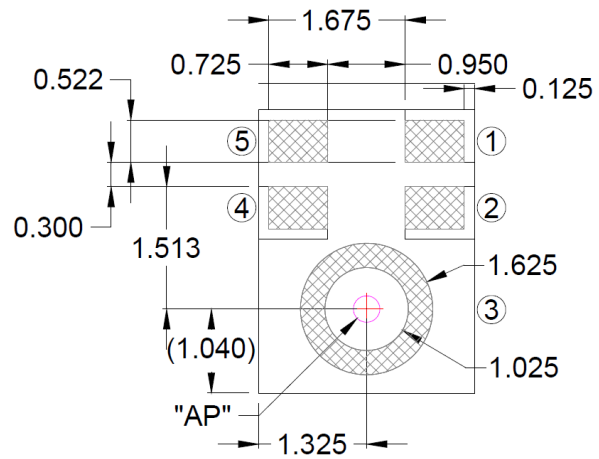
Recommended Reflow Soldering Procedure



Profile Feature		Lead(Pb) Free Solder
Preheat	Temperature min. (T_{SMIN})	$150\text{ }^{\circ}\text{C}$
	Temperature max. (T_{SMAX})	$200\text{ }^{\circ}\text{C}$
	Time (t_s)	60-120 Seconds
Liquidus	Temperature (T_L)	$217\text{ }^{\circ}\text{C}$
	Time (t_L)	60-150 Seconds
Peak	Temperature (T_P)	$260\text{ }^{\circ}\text{C}$
	Time within $5\text{ }^{\circ}\text{C}$ of actual peak temperature (t_P)	30 Seconds Max.
Ramp up	Average ramp up rate T_{SMAX} to T_P	$3\text{ }^{\circ}\text{C} / \text{Second Max.}$
Ramp down	Average ramp down rate T_P to T_{SMAX}	$6\text{ }^{\circ}\text{C} / \text{Second Max.}$
Time $25\text{ }^{\circ}\text{C}$ to Peak temperature		8 Minutes Max.

Technical drawing of a rectangular label. The drawing includes the following dimensions and features:

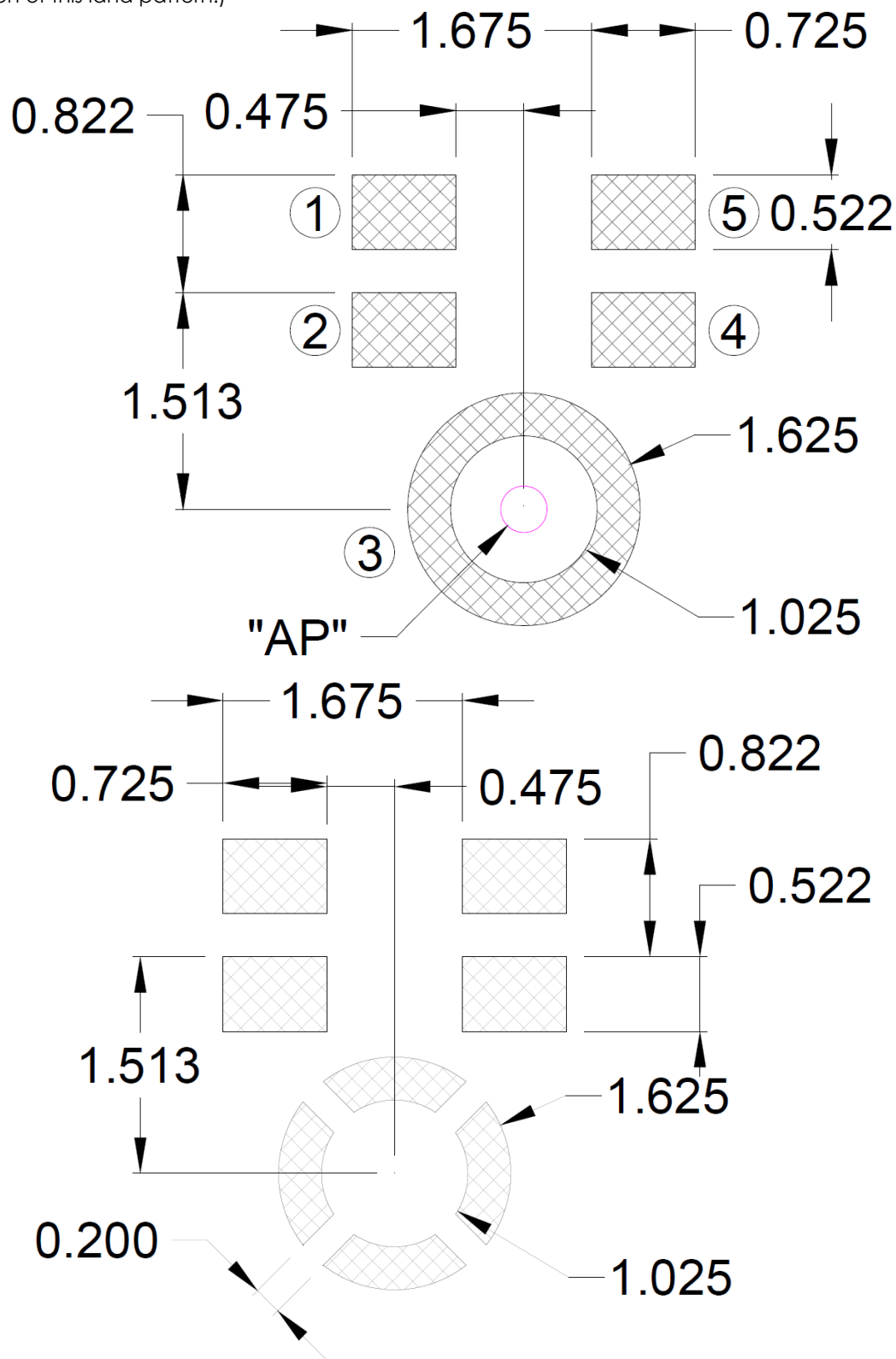
- Overall width: "W"
- Overall height: "L"
- Inner width: (2.300)
- Inner height: (3.094)
- Label thickness: (0.300)
- Dimension (0.250) TYP. is shown at the top right.
- A "Pick Area" is indicated by a dashed line within the inner rectangle.
- A circular feature is located in the top left corner of the inner rectangle.
- A circled number "1" is located in the top left corner of the overall rectangle.



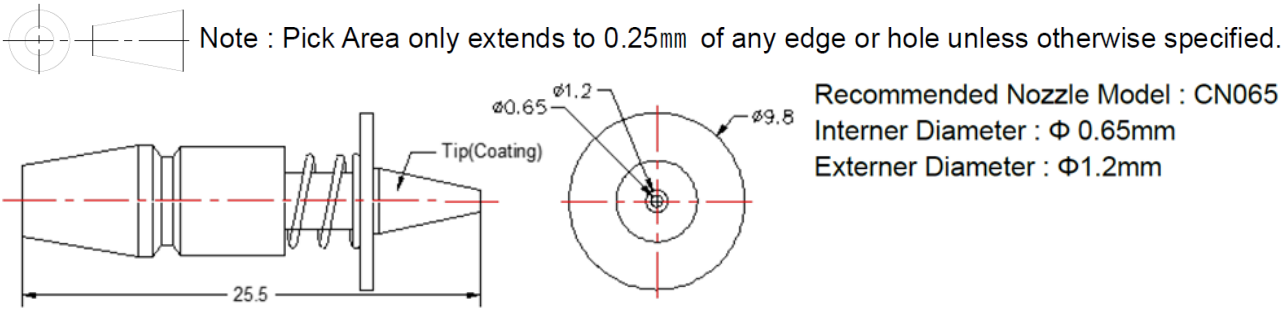
Item	Dimension	Tolerance
Length(L)	3.50	±0.10mm
Width(W)	2.65	±0.10mm
Height(H)	1.00	±0.10mm
Acoustic Port(AP)	Ø0.325	±0.05mm

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Output	Ground	Ground	Ground	VDD

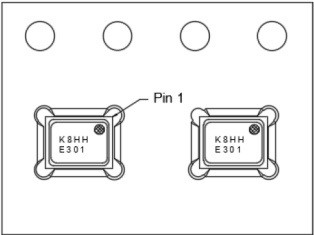
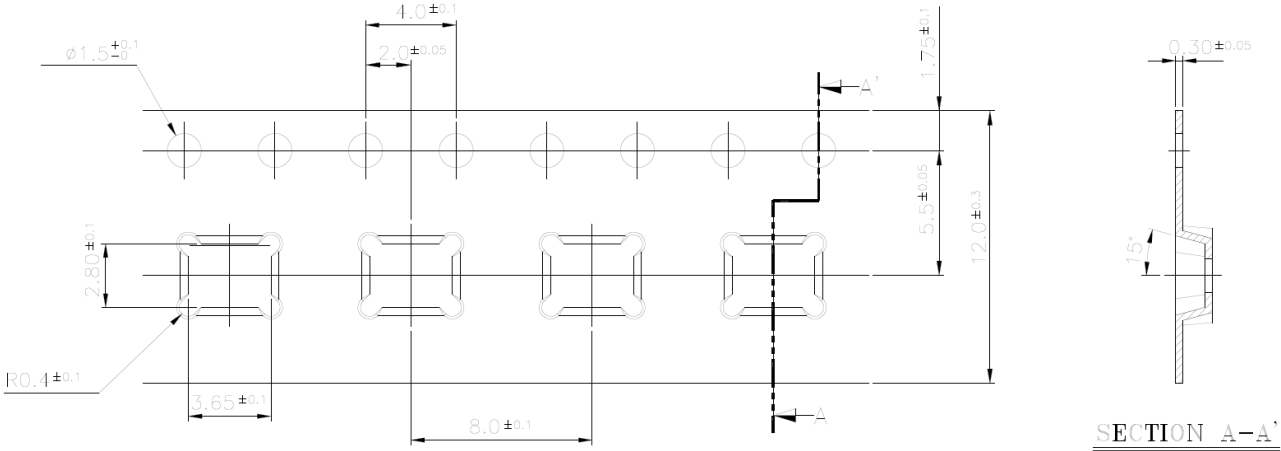
PCB Land and Stencil Pattern (This land pattern is advisory only and its use or adaptation is entirely voluntary. PUI Audio disclaims all liability of any kind associated with the use, application, or adaptation of this land pattern.)



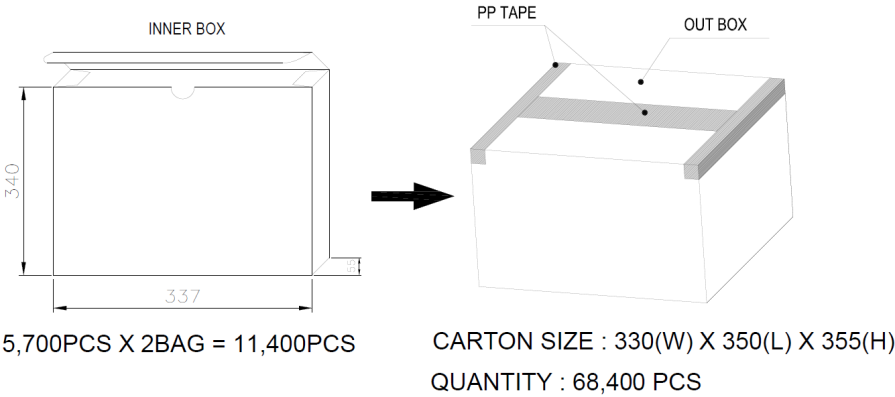
Pick and Place Tool Recommendations



Packaging



Reel Diameter	Quantity Per Reel
13"	5,700



Specifications Revisions

Revision	Description	Date	Approval
A	Datasheet released from Engineering	04/20/2025	KH

Note:

1. Unless otherwise specified:
 - A. All dimensions are in millimeters.
 - B. Default tolerances are $\pm 0.5\text{mm}$ and angles are $\pm 3^\circ$.
2. Specifications subject to change or withdrawal without notice.