



# PUIaudio



## Data Sheet

AMM-3742-3-T

The PUI Audio AMM-3742-3-T analog-output MEMS omni-directional microphone features a nominal -42dBV sensitivity, 57.5dB(A) signal-to-noise ratio, and top port.

### Features:

- 2.95mm x 3.76mm package
- 1.1mm height
- -42dBV sensitivity
- 57.5dB (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	-42 ±1	dBV
Typical Signal-to-Noise Ratio 20Hz ≤ f ≤ 20kHz bandwidth A-weighted	57.5	dB
Typical Frequency Range	60 ≤ f ≤ 20,000	Hz
Maximum Total Harmonic Distortion 94dB SPL @ 1kHz, S=Typ, Rload > 3kΩ	0.2	%
Typical Acoustic Overload Point (AOP) THD = 10%, VDD = 3.6V, Rload > 3 kΩ	133	dB SPL
Operating Voltage Range	1.5 ≤ Vs ≤ 3.6	V <sub>DC</sub>
Maximum Power Supply Current	140	μA
Maximum Output Impedance	300	Ω
Directivity	Omnidirectional	-
Environmental Compliances	RoHS/Halogen Free	-
Typical Power Supply Rejection (PSR) 100mVpp Square Wave f <sub>NOISE</sub> = 217Hz A-weighted	-95	dBV(A)
Typical Power Supply Rejection (PSRR) 200mVpp Sinewave 1kHz A-weighted	65	dB
Weight	<0.3	Gm

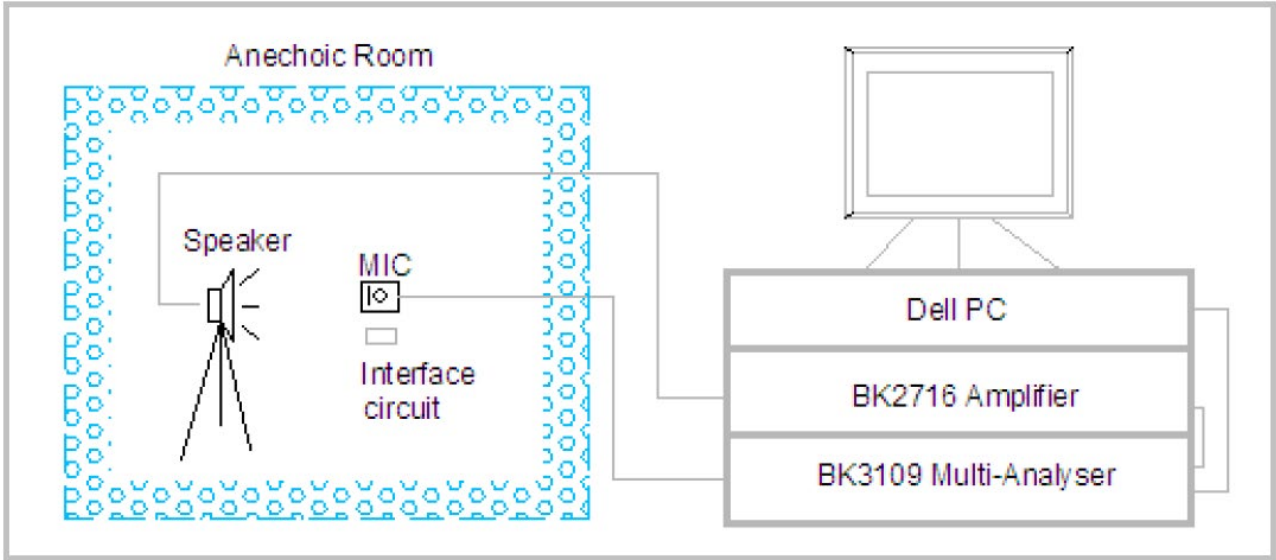
Operating Temperature	$-40 \leq T_O \leq 85$	°C
Storage Temperature	$-40 \leq T_S \leq 120$	°C
MSL (Moisture Sensitivity Level)*	1	-

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

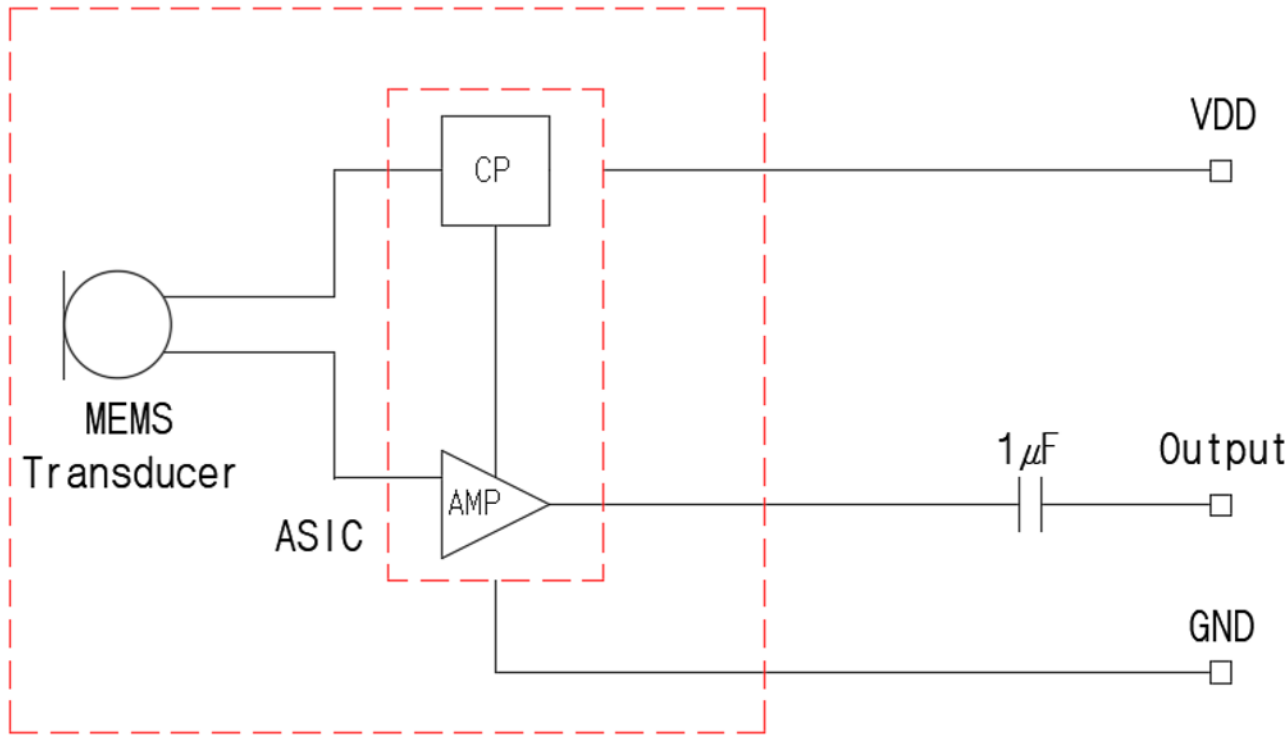
Absolute Maximum Ratings

Parameters	Values	Units
Maximum Voltage on VDD with respect to Ground	5	V <sub>DC</sub>

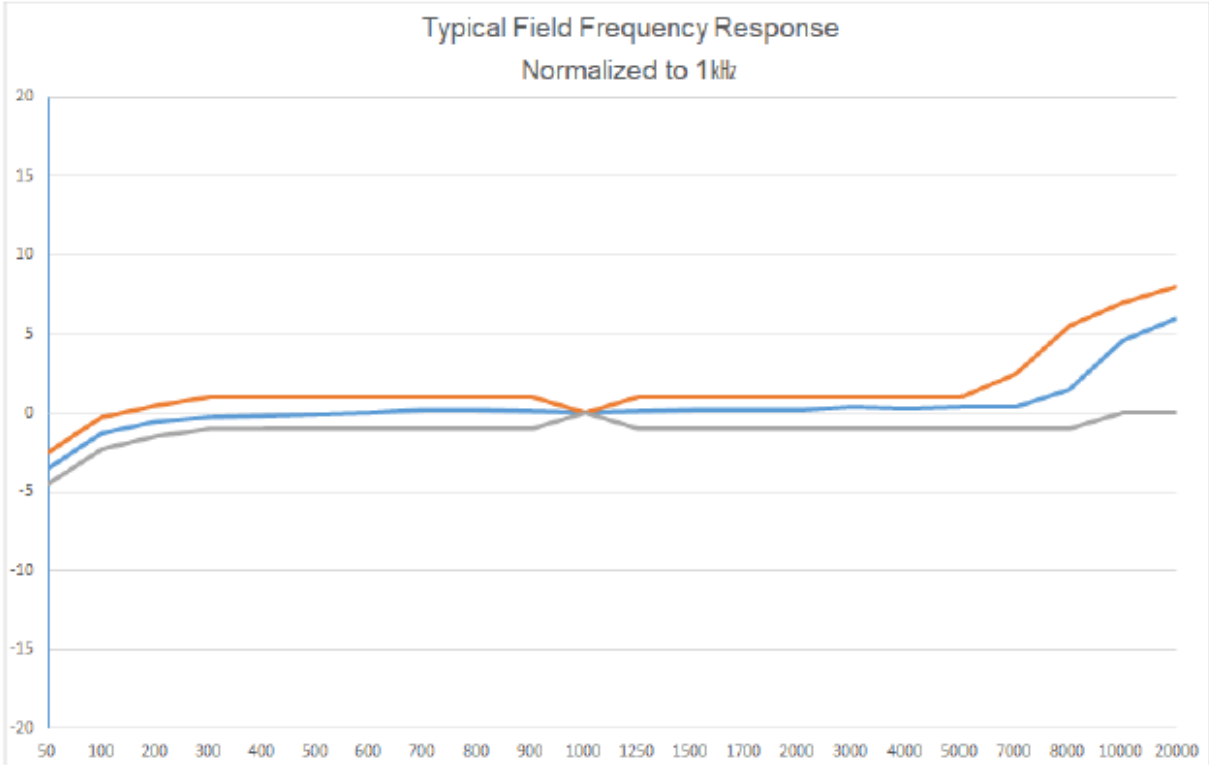
Measurement Method Acoustic input applied to the microphone has a 94dB SPL amplitude.



Recommended Drive Circuit



Typical Frequency Response

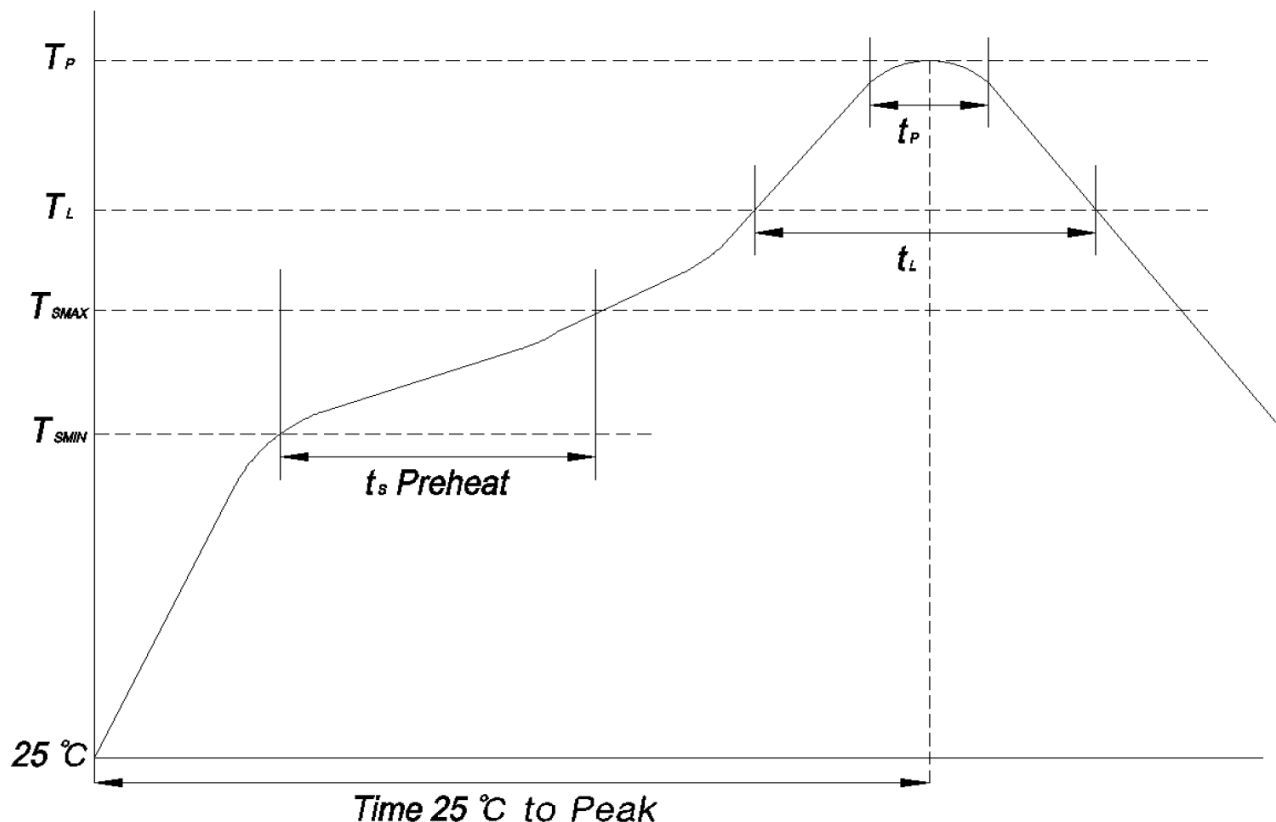


TEST CONDITION : 23±2°C, 65±20% R.H., Typical specifications are measured at VDD = 1.8V  
Speaker : 1Pa (94dB SPL@1kHz) at 50cm distance from a loud-speaker

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

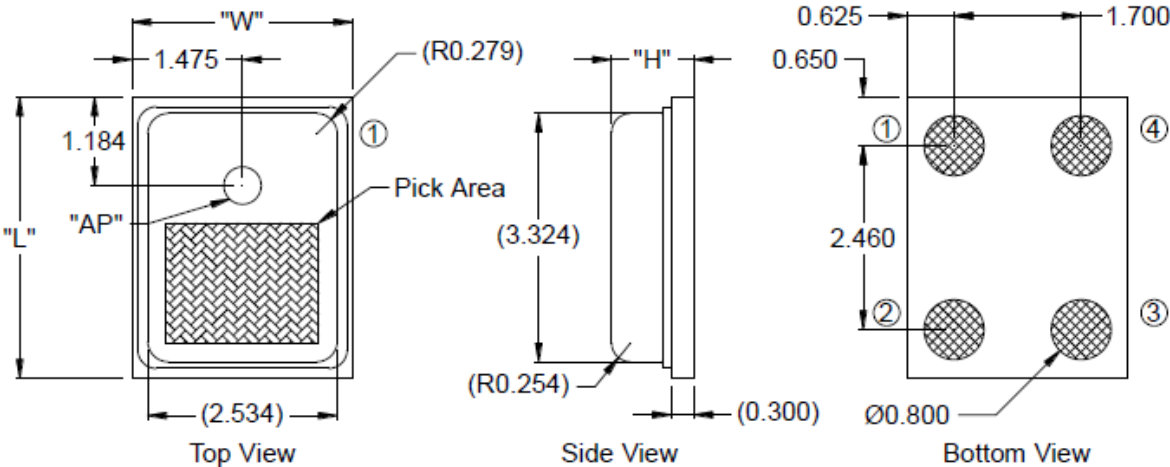
Type of Test	Test Specifications
Simulated Reflow (Without Solder)	Samples for qualification testing require 3 passes 260±5 °C reflow solder profiles. 2 hours of setting time is required between each reflow profile test.
Static Humidity	Precondition at +25°C for 1 hour. Expose to +85°C with 85% relative 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



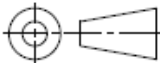
Profile Feature		Lead(Pb) Free Solder
Preheat	Temperature min. ( $T_{SMIN}$ )	150 °C
	Temperature max. ( $T_{SMAX}$ )	200 °C
	Time ( $t_s$ )	60-120 Seconds
Liquidus	Temperature ( $T_L$ )	217 °C
	Time ( $t_L$ )	60-150 Seconds
Peak	Temperature ( $T_P$ )	260 °C
	Time within 5 °C of actual peak temperature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

Dimensions (±0.15mm tolerance)



Item	Dimension	Tolerance
Length(L)	3.76	±0.10mm
Width(W)	2.95	±0.10mm
Height(H)	1.10	±0.10mm
Acoustic Port(AP)	Ø0.50	±0.05mm

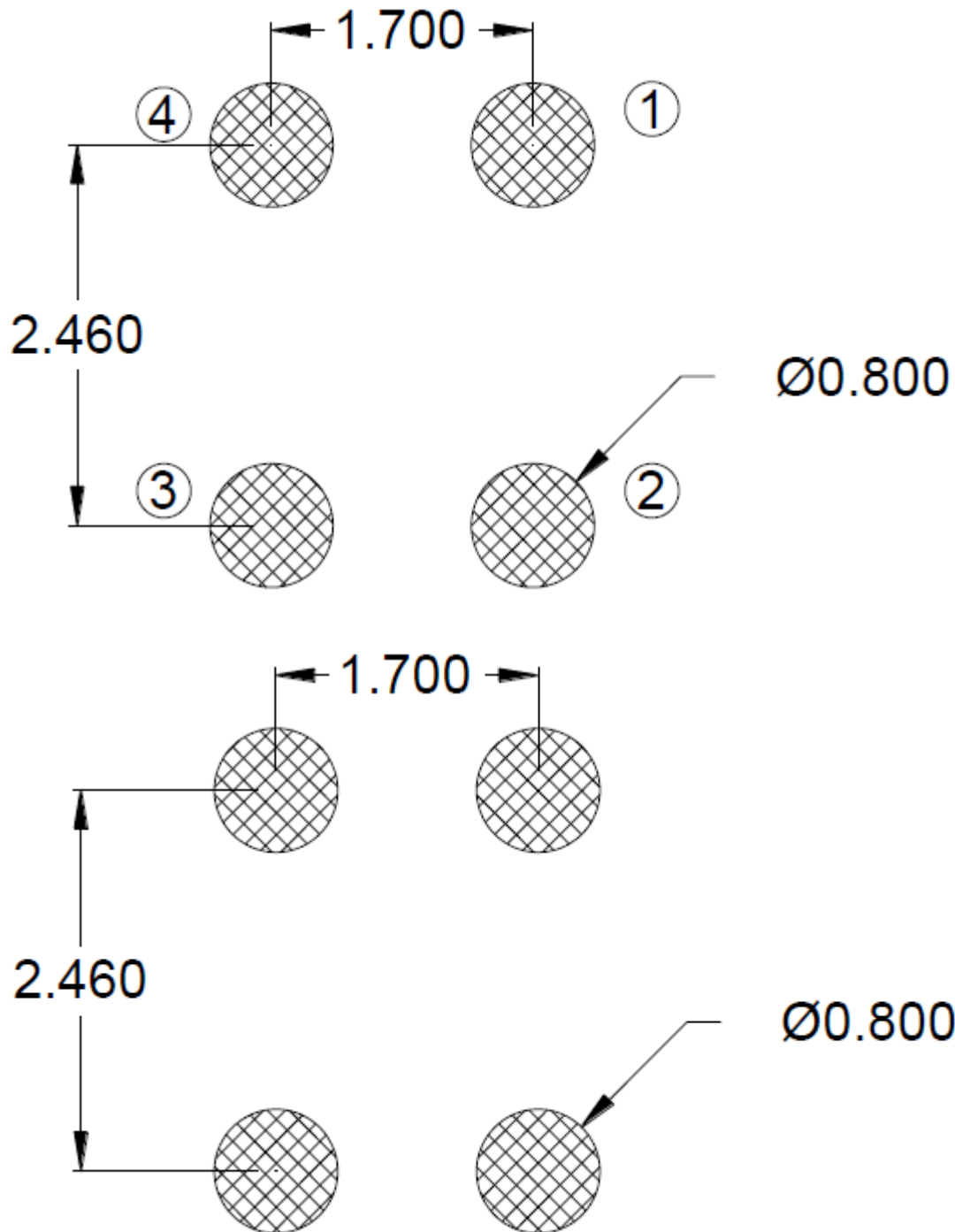
Note : Pick Area only extends to 0.25mm of any edge or hole unless otherwise specified.



Dimension are in millimeters unless otherwise specified. Tolerance : ±0.15mm

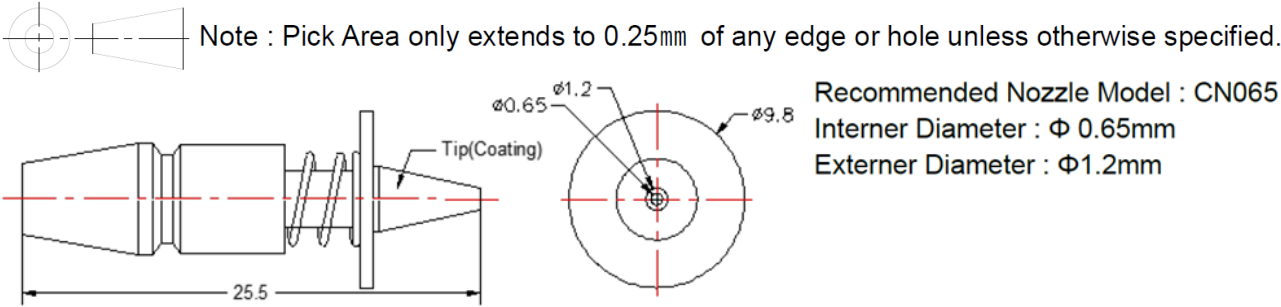
Pin 1	Pin 2	Pin 3	Pin 4
VDD	Ground	Ground	Output

**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.)

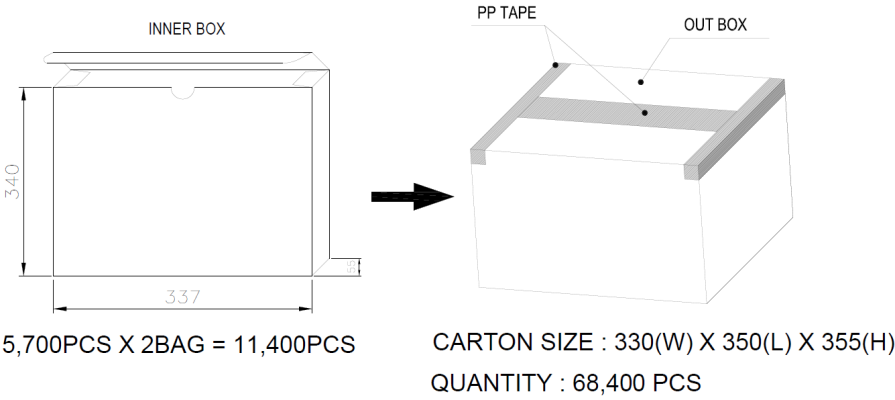
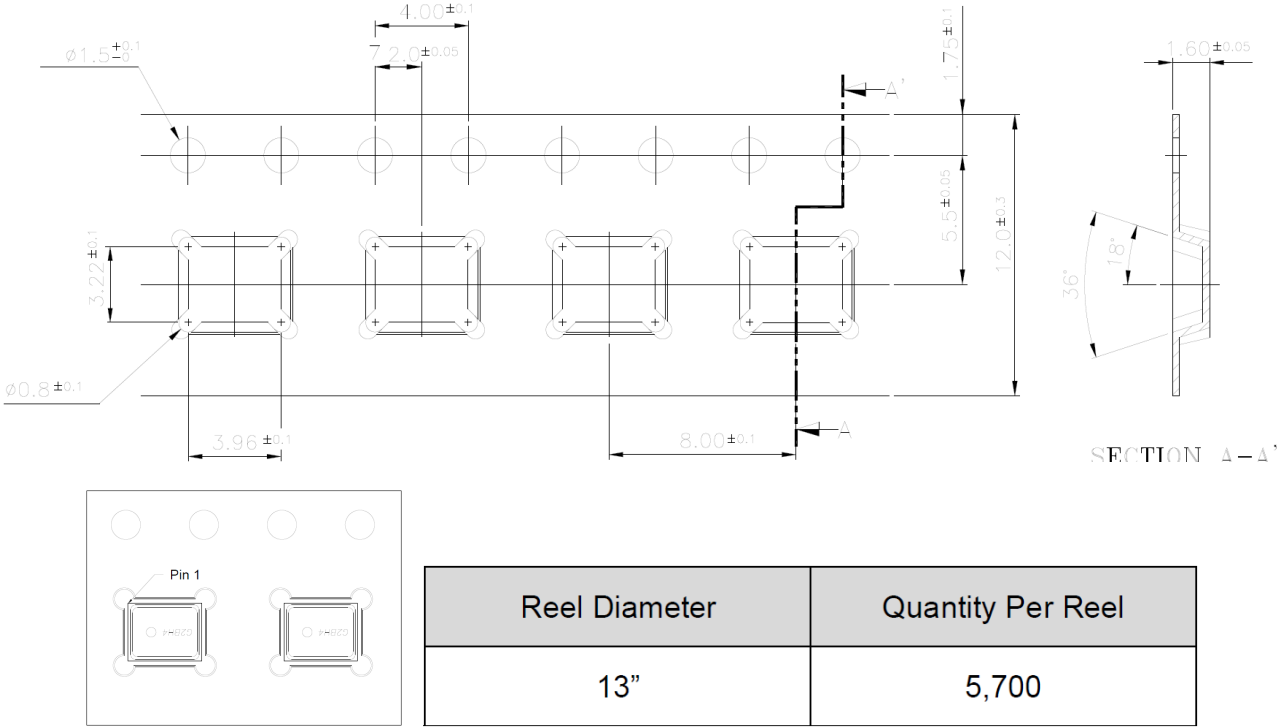


Note : Dimension are in millimeters unless otherwise specified

Pick and Place Tool Recommendations



Packaging



**Specifications Revisions**

<b>Revision</b>	<b>Description</b>	<b>Date</b>	<b>Approval</b>
A	Datasheet released from Engineering	04/21/2025	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.