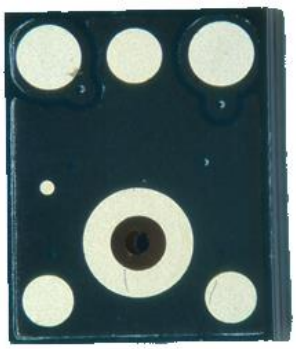


Data Sheet AUMM-3842

The all-new PUI Audio AMM-3842T **MEMS uni-directional** microphone features a -42dBV sensitivity and a 59dBA (typical) signal-to-noise ratio.

The 3.76mm x 2.95mm surface-mount AMM-3842 features a cardioid/uni-directional sensitivity pattern using both a top-port and bottom-port configuration. This achieves a focused capture of acoustic sources directly on-axis with the microphone's bottom acoustic port.

Features:

- Small, 3.76mm x 2.95mm surface-mount package
- Short, 1.7mm height
- -42dB sensitivity
- 59dB signal-to-noise ratio
- Cardioid pickup pattern

Specifications (V_{DD} = 2.0V, T_A = 23 ±2°C, RH = 55 ±10% unless otherwise specified.)

Parameter	Test Condition	Value	Unit
Sensitivity	94dBSPL, f_{IN} = 1 kHz	-43 (min) -42 (typ) -41 (max)	dBFS
Signal-to-Noise Ratio	94dBSPL, f_{IN} = 1kHz, A-weighted	59 (typ)	dB
Attenuation	-180° ±20° between bottom-port and top-port	15 (typ)	dB
Frequency Range	See Frequency Response Curve for limits	20 – 20k	Hz
Total Harmonic Distortion	94dBSPL, f_{IN} = 1 kHz	0.5 (max)	%
Acoustic Overload Point (AOP)	(1kHz, 10% THD)	132 (typ)	dB
	(1kHz, 3% THD)	129 (typ)	
Output Impedance		400 (typ)	Ω
Supply Voltage		2.0 (typ)	V_{DD}
Supply Voltage Range		1.6 (min) 3.6 (max)	V_{DD}
Supply Current	$1.6V_{DC} \leq V_{DD} \leq 3.6V_{DC}$	150 (typ)	µA
Power Supply Rejection	V_{IN} = 100mV_{P-P} square wave, f_{IN} = 217Hz, A-weighted	-108 (typ)	dB

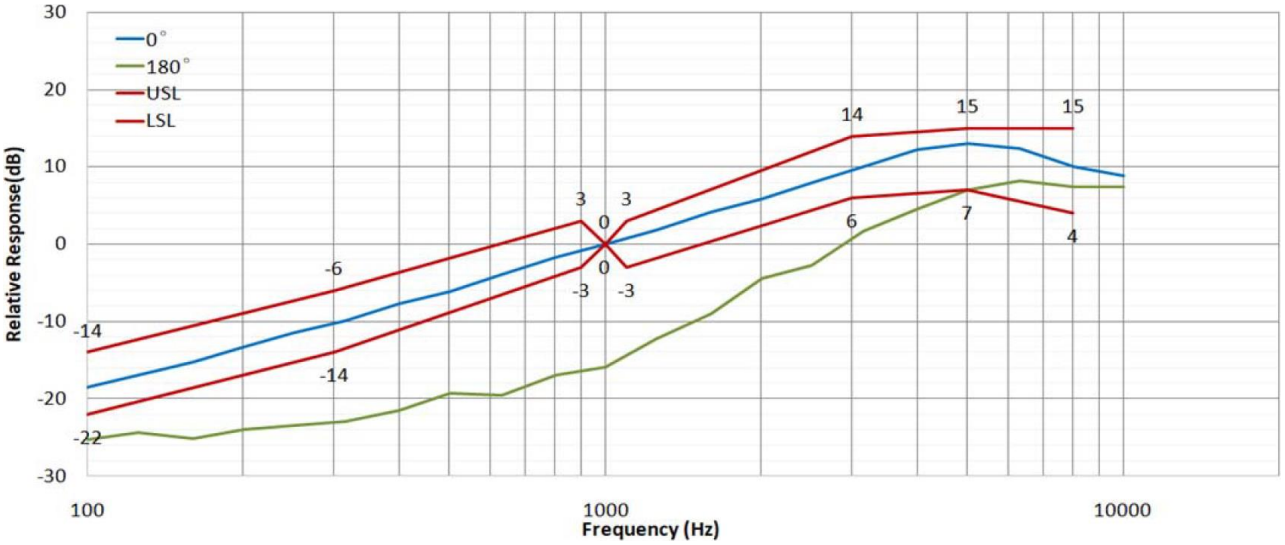
Specifications, continued (V_{DD} = 2.0V, T_A = 23 ±2°C, RH = 55 ±10% unless otherwise specified.)

Moisture Sensitivity Level		Class 1	

Absolute Maximum Ratings

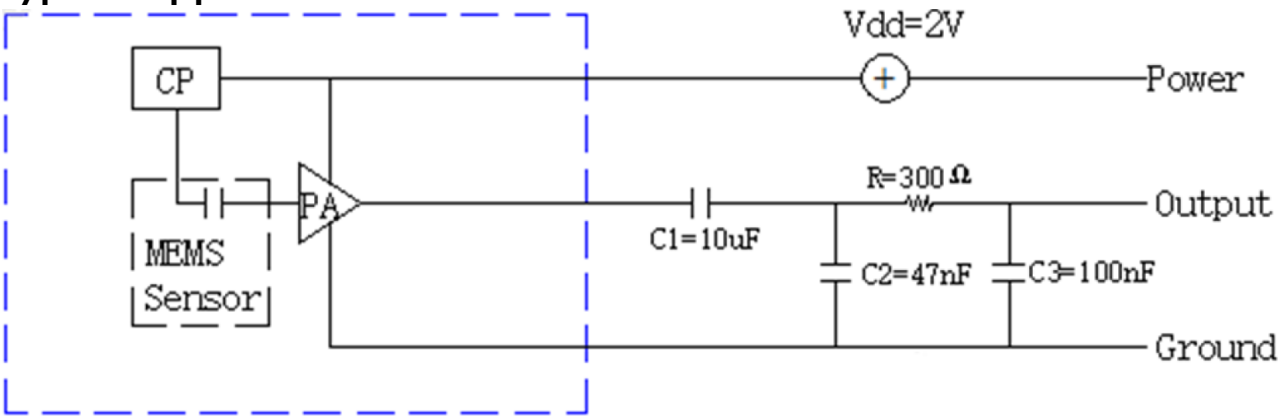
V_{DD} with respect to GND ..... -0.3V ≤ V_{DD} ≤ 4.2V
All other pins with respect to GND ..... -0.3V ≤ V ≤ (V_{DD} + 0.3V)
Maximum Sound Pressure Level 160dBSPL
Maximum Mechanical Shock 10000G
Maximum Mechanical Vibration ..... Per MIL-STD_883 Method 2007, Test Condition A
Operating Temperature Range ..... -40°C ≤ T_A ≤ 85°C
Storage Temperature Range ..... -65°C ≤ T_A ≤ 100°C

Typical Frequency Response (Driven by a 94dBSPL excitation source)

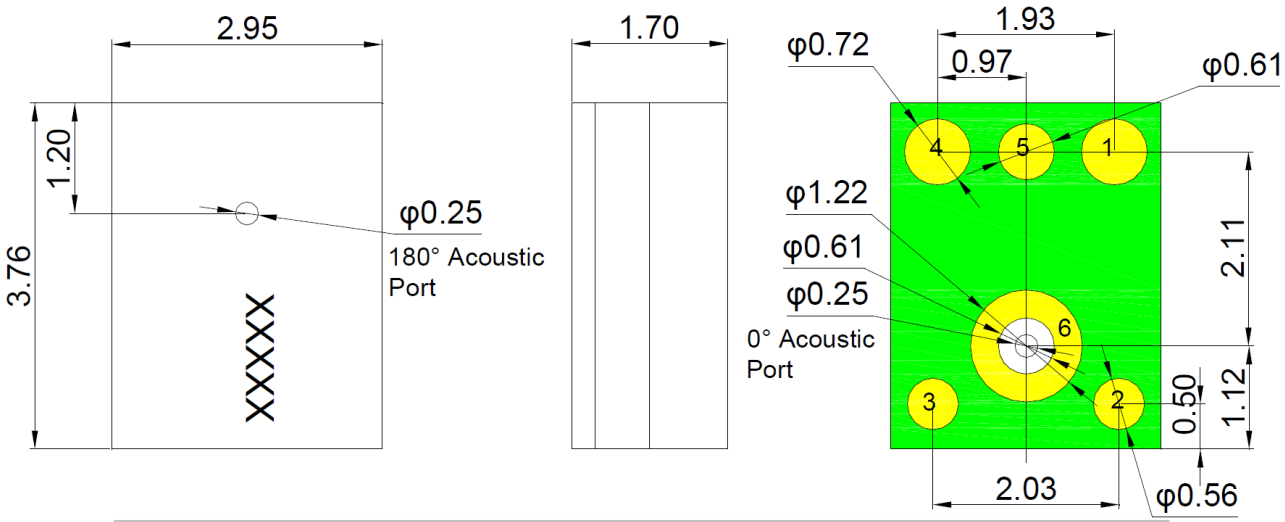


Frequency (Hz)	100	300	900	1000	1050	3000	5000	10000
Upper Limit (dB)	-14	-6	3	0	3	14	15	15
Lower Limit (dB)	-22	-14	-3	0	-3	6	7	4

Typical Application Circuit



Dimensions (All dimensions are in millimeters (mm), with a tolerance of ±0.15mm unless otherwise specified.)

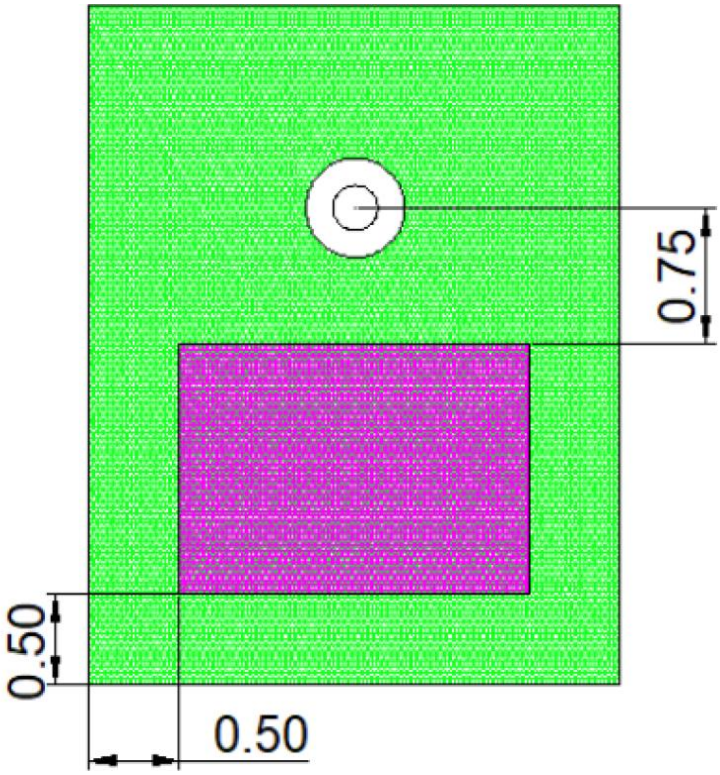


Item	Dimension	Tolerance(+/-)	Units
Length(L)	3.76	0.10	mm
Width(W)	2.95	0.10	mm
Height(H)	1.75	0.10	mm
Acoustic Port(AP)	Ø0.25	0.05	mm

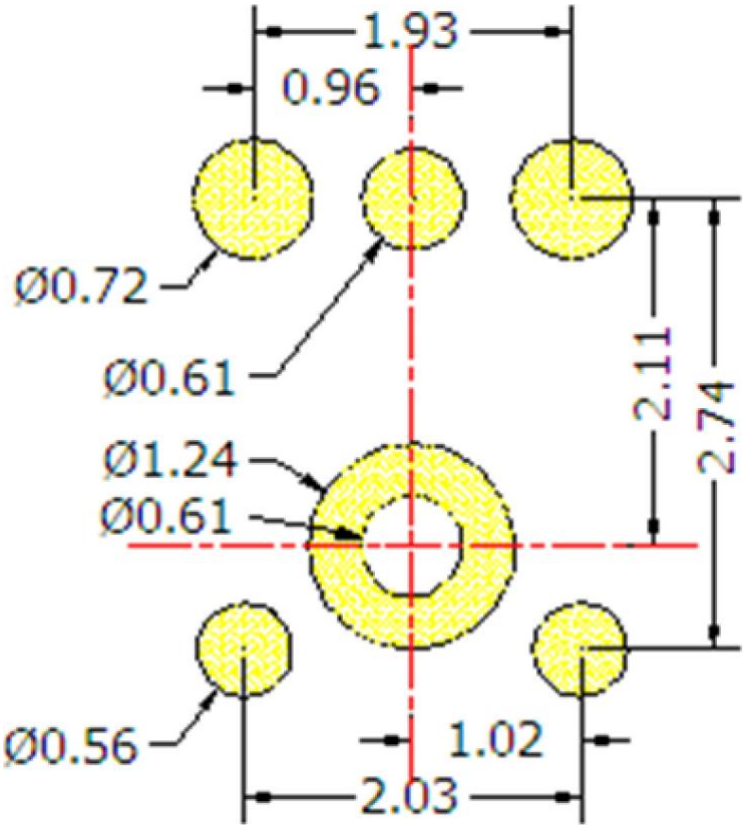
Pin Description

Pin #	Pin Name	Type	Description
1	Output	Signal	Output Signal
2	GND	Ground	Ground
3	GND	Ground	Ground
4	V_{DD}	Power	Power Supply
5	GND	Ground	Ground
6	GND	Ground	Ground

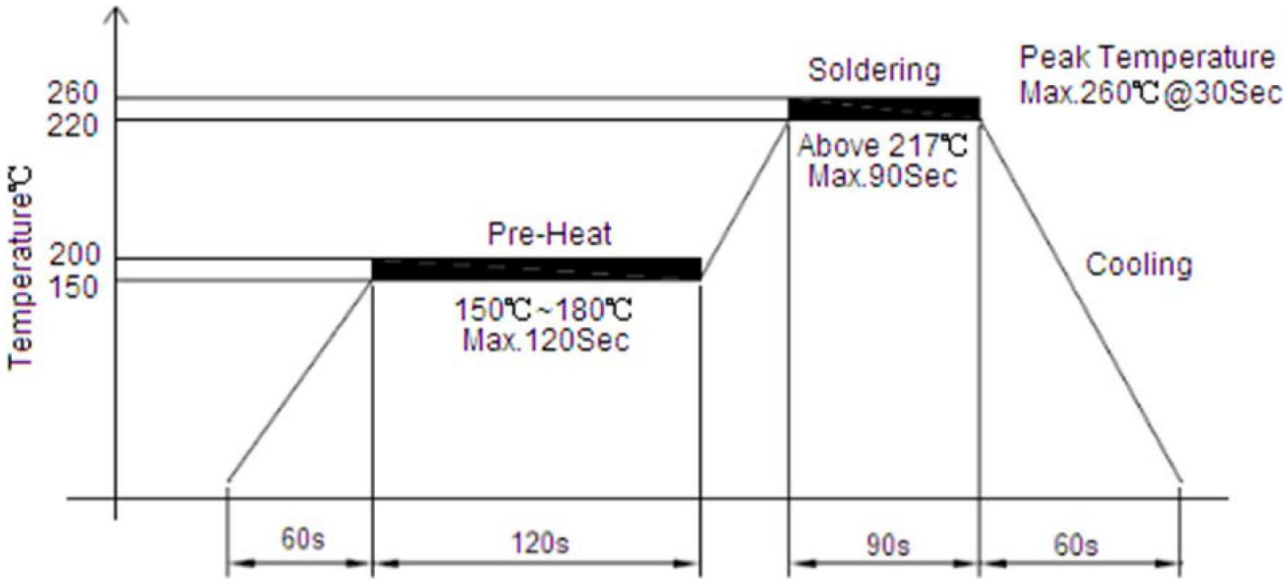
Pick and Place Tool Location



PCB Landing Pad Locations



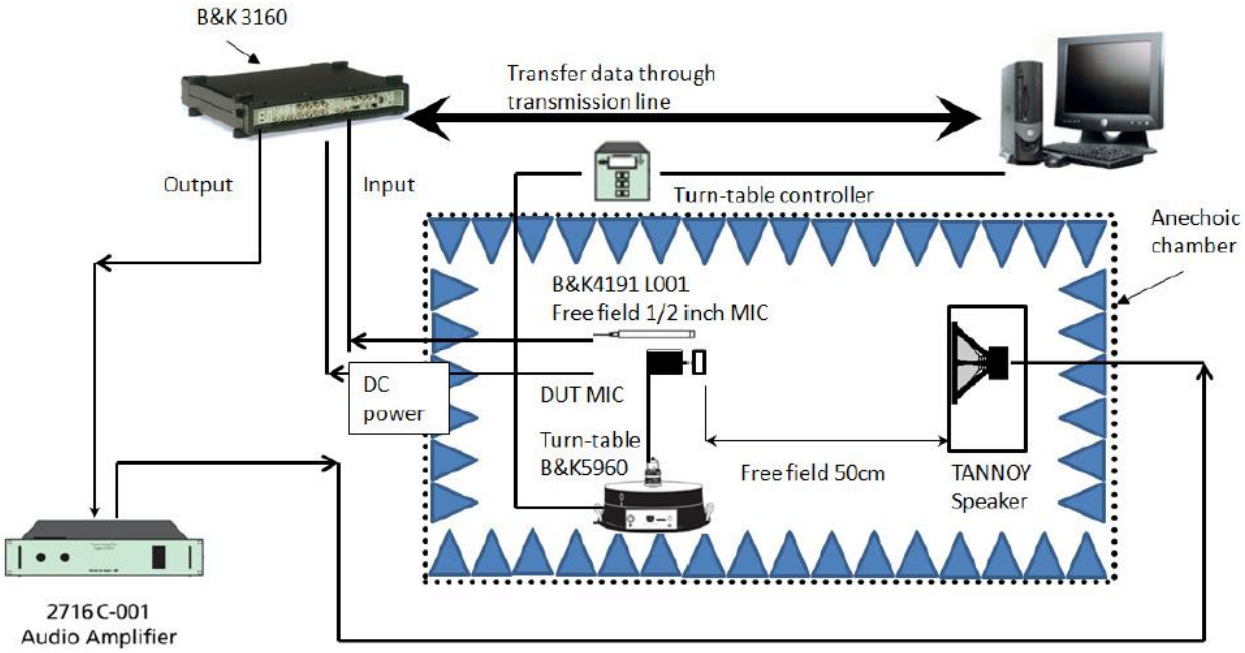
Recommended Solder Reflow Process Temperature Profile



Notes

1. Do not wash or clean PCBs after the reflow process.
2. Do not apply the airflow at a pressure exceeding 0.3MPa into the audio port hole at a distance less than 5cm.
3. Do not expose the PCB to ultrasonic processing or cleaning.
4. Do not place a vacuum over either audio port.

Measurement Method



Standard Conditions	Temperature	Humidity	Air Pressure
Environment Conditions	22±5°C	30% ≤ RH ≤ 70%	86kPa ≤ AP ≤ 106kPa
Arbitration Conditions	20±5°C	60% ≤ RH ≤ 70%	86kPa ≤ AP ≤ 106kPa

Microphone Handling Precautions

High temperature and/or static electricity may damage microphones. To ensure careful handling, we suggest following these precautions:

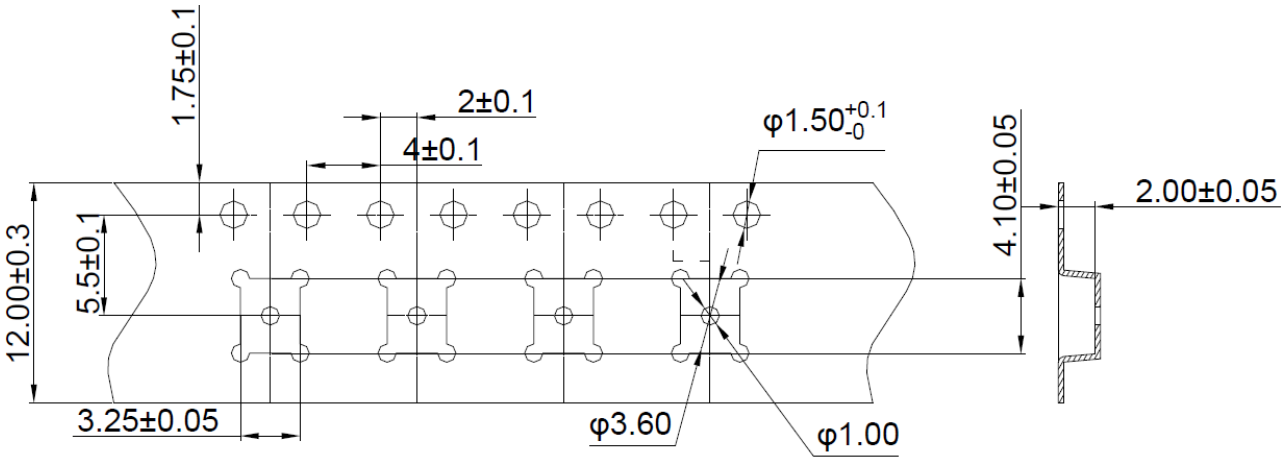
- Ensure the power rating of the soldering iron is below 90 watts
- The temperature of the soldering iron must be limited to 360°C ±10°C (680°F ±50°F)
- Soldering duration for each terminal shall be at or under 2 seconds
- Avoid the rear sound holes when soldering
- If practical, use a metal fixture to hold the microphone in-place and to act as a heatsink. A fixture should have appropriate diameter holes drilled through the entire fixture to prevent pressure from being placed on the diaphragm (as below)

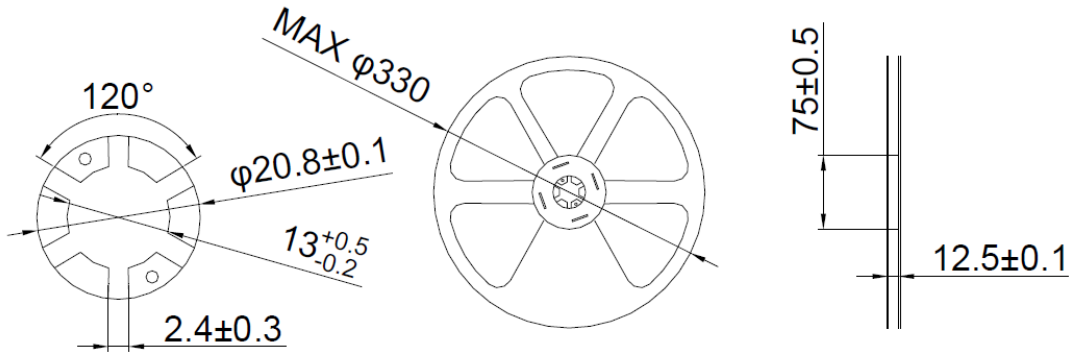
Reliability Testing

Type of Test	Test Specifications
High Temperature Test	200 hours at +70°C ± 3°C followed by two hours in normal room temperature
Low Temperature Test	200 hours at -25°C ± 3°C followed by two hours in normal room temperature
Humidity Test	200 hours at +40°C ± 3°C with relative humidity at 90% to 95% followed by 2 hours in normal room temperature
Temperature Cycle Testing	30 minutes at -25°C, 10 minutes at 20°C, 30 minutes at +70°C, 10 minutes at 20°C for five cycles, followed by 2 hours in normal room temperature
Vibration Test	10 to 55 Hz for 1 minute with 1.52mm distance, followed by a two-hour 3 axis test in packaging
Drop Test	Drop microphones in packaging onto concrete floor from 1 meter height in each of 3 axis
ESD Test (according to IEC 6100)	1. Contact discharge - Discharge 6000 VDC from capacitor into microphone output through 330Ω resistor ten times. 2. Air discharge - Discharge 8000 VDC into sound hole of the microphone ten times.

After each test, the speaker's SPL shall be ±3 dB of the original SPL.

Packaging (Note: all dimensions are in millimeters (mm).)





Packaging Quantity:
1 Reel=3000pcs
1 Inner Carton =5Reels=15000pcs
1 Outer Carton=2 Inner Cartons=30000pcs

Specifications Revisions

Revision	Description	Date
A	Datasheet developed by Engineering	11/15/2023

Note:

1. Unless otherwise specified:
   A. All dimensions are in millimeters.
   B. Default tolerances are ±0.5mm and angles are ±3°.
2. Specifications subject to change or withdrawal without notice.
3. This part is RoHS 2015/863/EU Compliant.