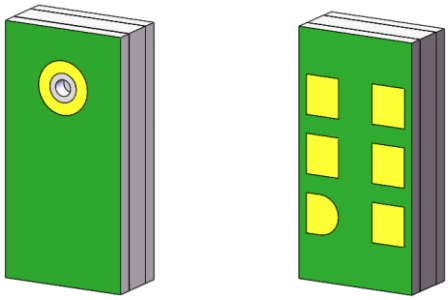
Specification of MEMS Microphone

RoHS Compliance & Halogen Free

LinkMems P/N: LMD4020T261-OAS03



Designed by	Checked by	Approved by
Kevin	Thomas	Hary

Customer Approval

Approved by:_____

IATF16949 ISO9001

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MEMS Microphone

1. Introduction

The LMD4020T MEMS Microphones are integrated with specialized Pre-amplification ASIC to provide high sensitivity, high SNR output from a capacitive audio sensor. It's packaged for surface mounting and high temperature reflow assembly. Data format is a single bit PDM.

2. Electrical Characteristics

Test Condition: V_{DD}=1.8V, 23+/-2℃, 55+/-10%R.H., unless otherwise specified.

Electrical Characteristics

Parameter	Symbol	Note/Test Condition	Values			Unit
			Min.	Typ.	Max.	
Power supply voltage	V_{DD}		1.62	1.8	3.6	V

Standard Mode

Test Condition: Measurement Clock Frequency 2.4 MHz, VDD = 1.8 V

Specification	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Directivity			Omni-directional			
Sensitivity Range	S	94dB SPL @1kHz	-27	-26	-25	dB
Current Consumption	I			750		μA
S/N Ratio	SNR	94dB SPL @1kHz A-Weighted		64		dB(A)
Total Harmonic Distortion	THD	94dB SPL @1kHz			0.5	%
Acoustic Overload Point	AOP	10% THD @1kHz		120		dBSPL
Power Supply Rejection	PSR	100mVpp Square wave@217Hz, A-weighted		-80		dB

Low Power Mode

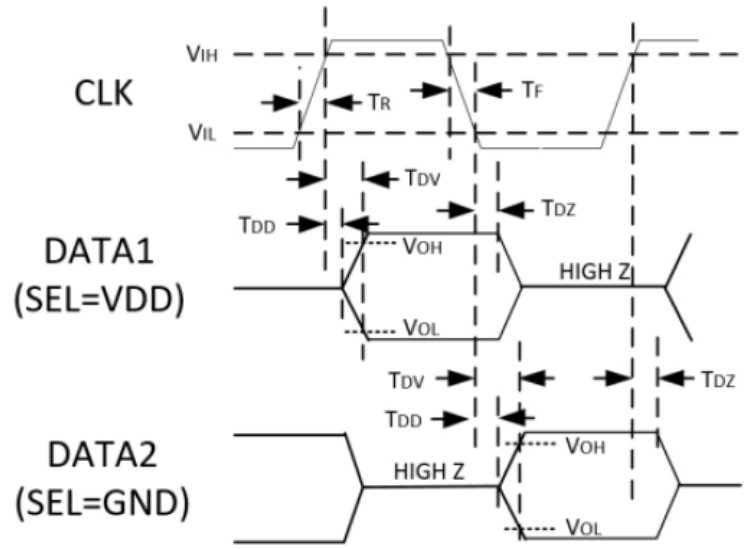
Test Condition: Measurement Clock Frequency 768 kHz, VDD = 1.8 V

Specification	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Directivity			Omni-directional			
Sensitivity Range	S	94dB SPL @1kHz	-27	-26	-25	dB
Current Consumption	I			320		μA
S/N Ratio	SNR	94dB SPL @1kHz A-Weighted		64		dB(A)
Total Harmonic Distortion	THD	94dB SPL @1kHz			0.5	%
Acoustic Overload Point	AOP	10% THD @1kHz		120		dBSPL
Power Supply Rejection	PSR	100mVpp Square wave@217Hz, A-weighted		-80		dB

Operation Ratings

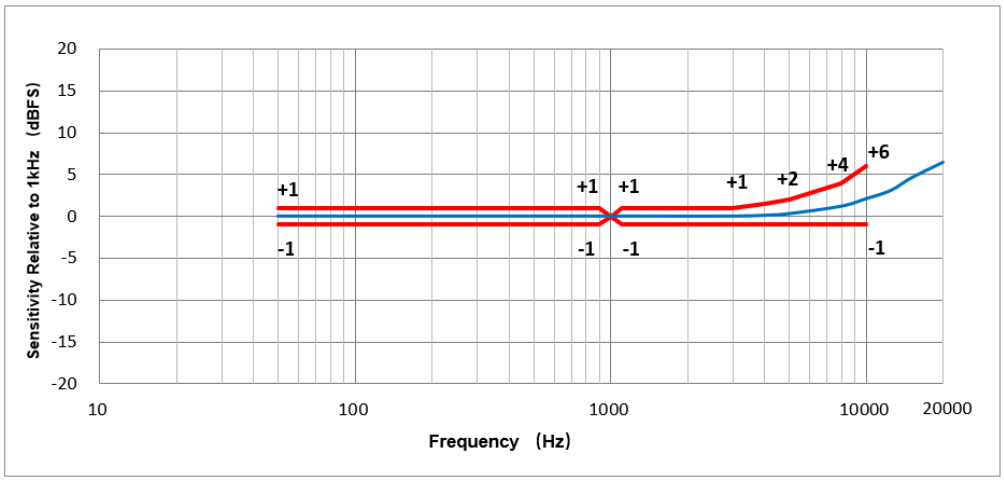
Parameter		Symbol	Note/Test Condition	Vales			Unit
				Min	Typ.	Max	
Power supply voltage		V_{DD}		1.62		3.6	V
Frequency Range	Sleep Mode			0		10	kHz
	Low Power Mode			150	768	900	kHz
	Standard Mode			1300		4800	kHz
Clock Duty Cycle				40	50	60	%
Logic Input High				0.65*V_{DD}		V_{DD}+0.3	V
Logic Input Low				-0.3		0.35*V_{DD}	V
Logic Output High				V_{DD} -0.45			V
Logic Output Low						0.45	V
Load Capacitance						100	pF

3. Timing Characteristics

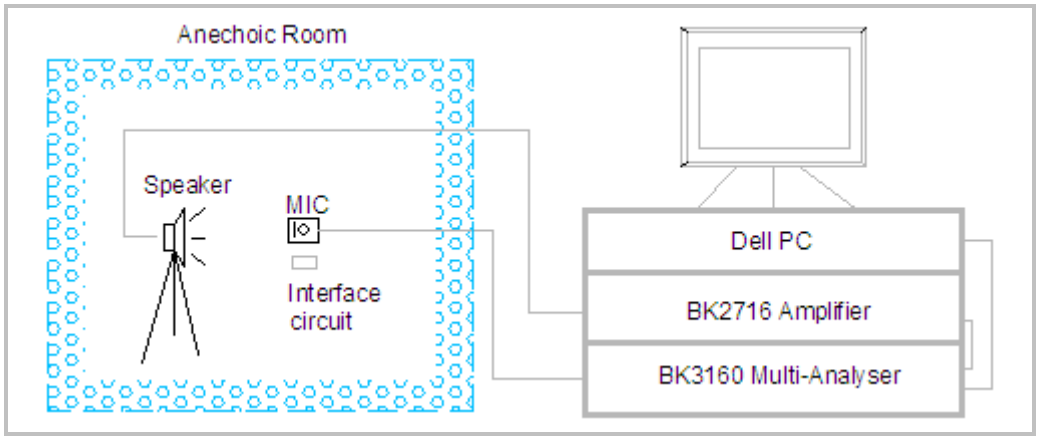


Parameter	Symbol	Vales			Unit	Comments
		Min	Typ.	Max		
Clock Rising Time	T_R			15	ns	
Clock Falling Time	T_F			15	ns	
DATA in to Hi Z Time	T_{DZ}	5		20	ns	
DATA Valid Time	T_{DV}	40		100	ns	RL=100KΩ CL=100pF
Delay Time for Data Driven	T_{DD}	25		50	ns	

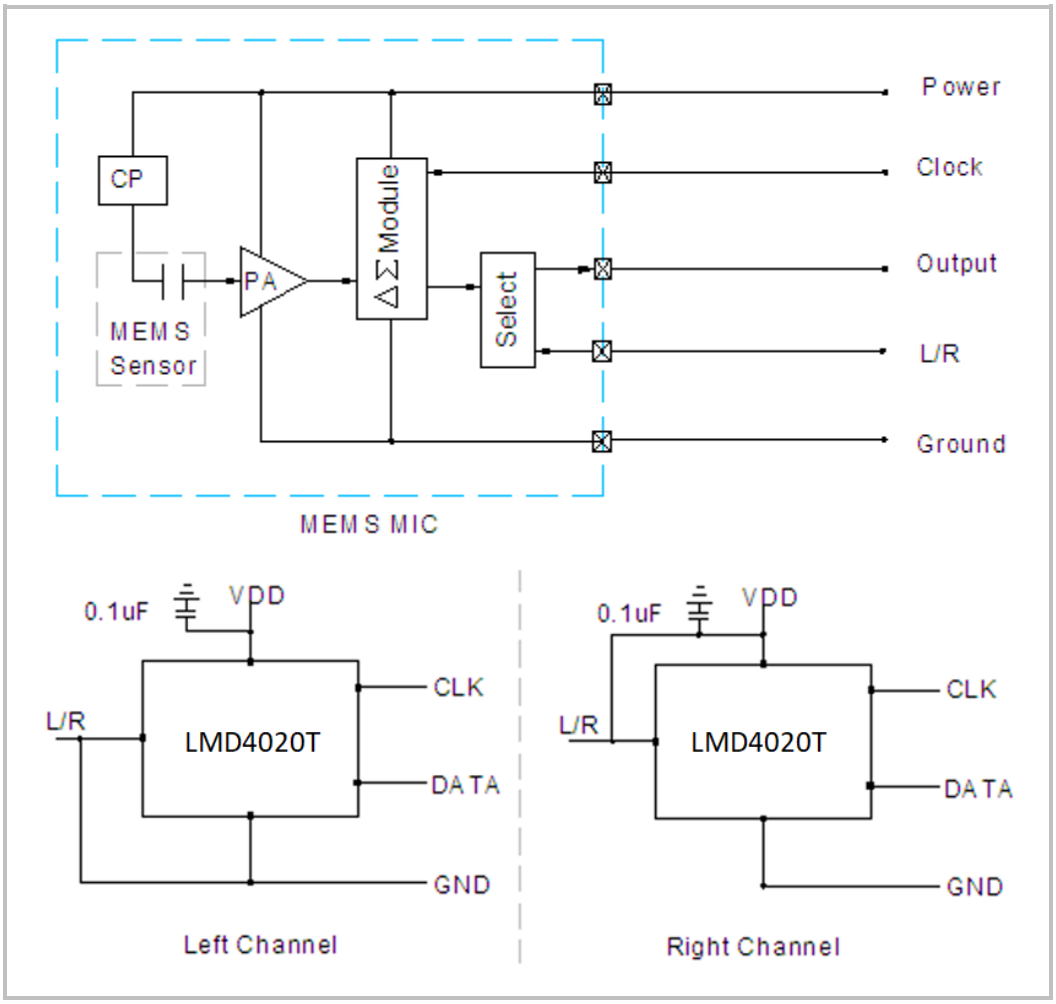
4. Frequency Response Curve



5. Test Setup (Sensitivity Test in Anechoic Room)



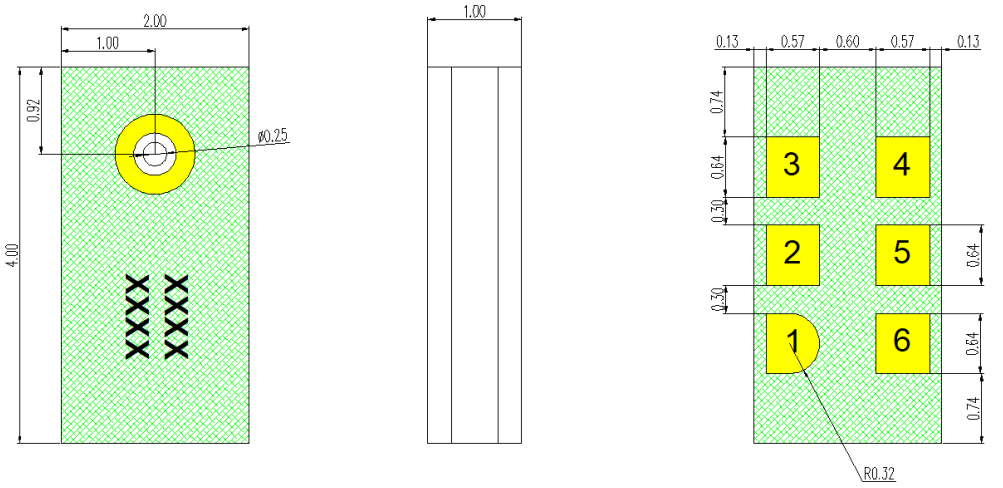
6. Measurement Circuit



7. Mechanical Characteristics

7.1 Weight： Less than 0.03g

7.2 Appearance Drawing (unit: mm)



Top view Side view Bottom view

Laser Mark	Description
XXXX XXXX	Date Code

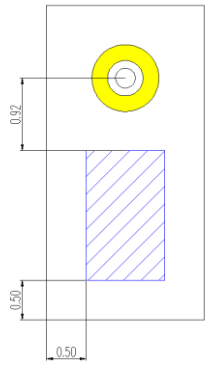
Item	Dimension	Tolerance(+/-)	Units
Length(L)	4.00	0.10	mm
Width(W)	2.00	0.10	mm
Height(H)	1.00	0.10	mm
Acoustic Port(AP)	Ø0.25	0.05	mm

Pin #	Pin Name	Type	Description
1	VDD	Power	Power Supply
2	GND	Ground	Ground
3	DATA	Signal	Output Signal
4	CLK	Clock	Clock Input
5	GND	Ground	Ground
6	L/R	L/R Channel	Channel Select

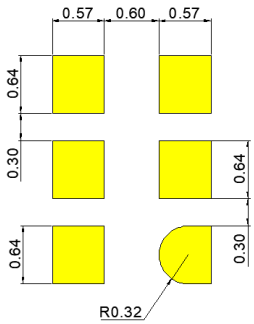
Notes:
All dimensions are in millimeter (mm).
Tolerance±0.1mm unless otherwise specified.

8. Application

8.1 Pickup Tool Pick Location& PCB Solder Pad Layout



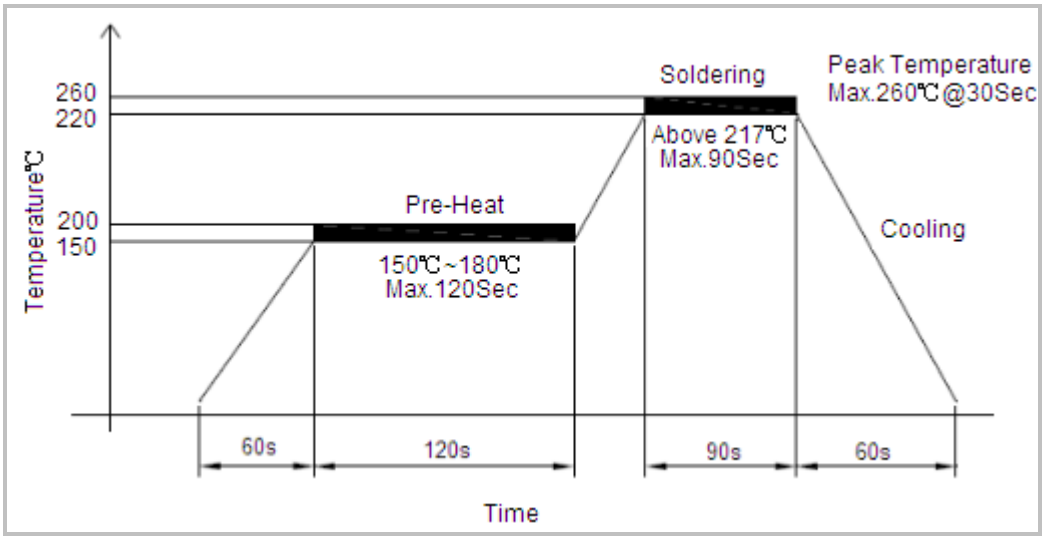
Recommended Pickup Location



Recommended Solder Pad Layout

8.2 Recommended Reflow Process Condition

Recommend reflow profile, solder reflow <=260℃ (for 30s Max of peak temperature).



Important Notes

In order to minimize device damage:

1. Do not wash or clean the boards after the reflow process.
2. Do not apply the airflow which pressure over 0.3MPa blow into the port hole within a distance of less than 5 cm.
3. Do not exposed to ultrasonic processing or cleaning.
4. Do not pull a vacuum over port hole of the microphone.

8.3 Storage Condition

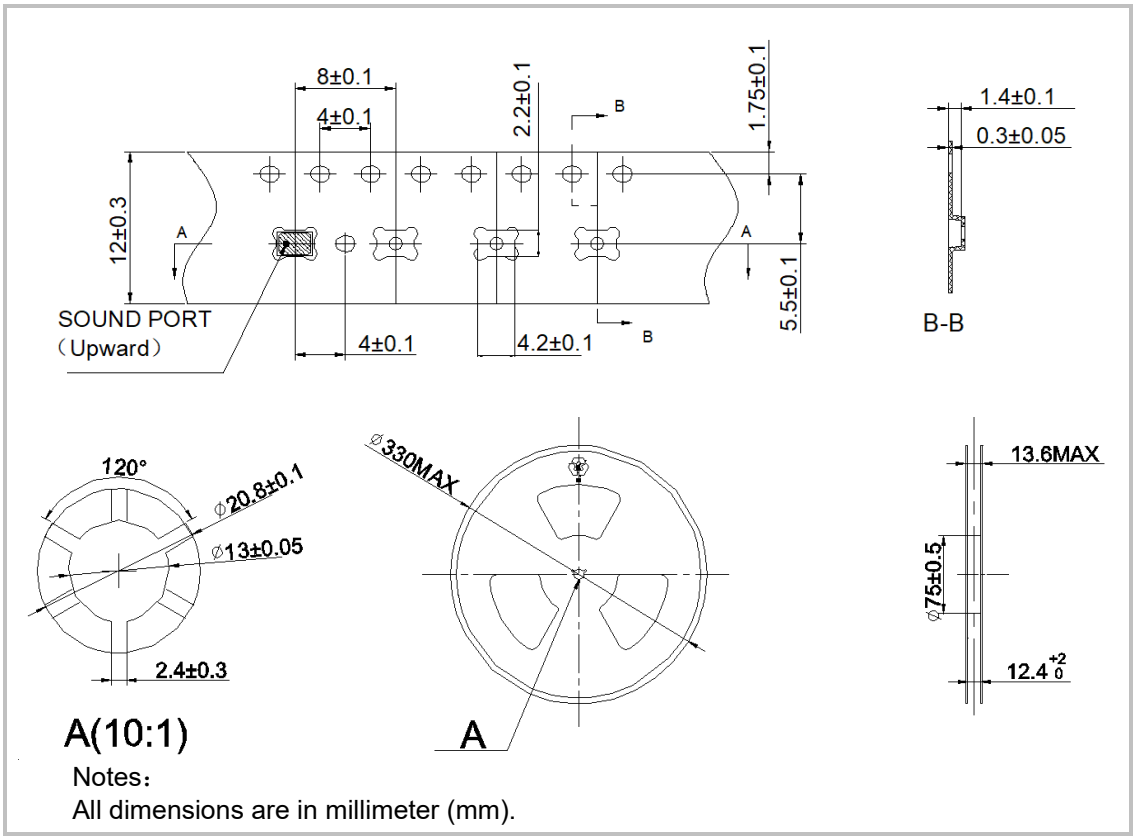
8.3.1 Storage temperature range:-40～+100℃,and humidity is less than 75%.

8.3.2 Operating temperature range:-40～+85℃.

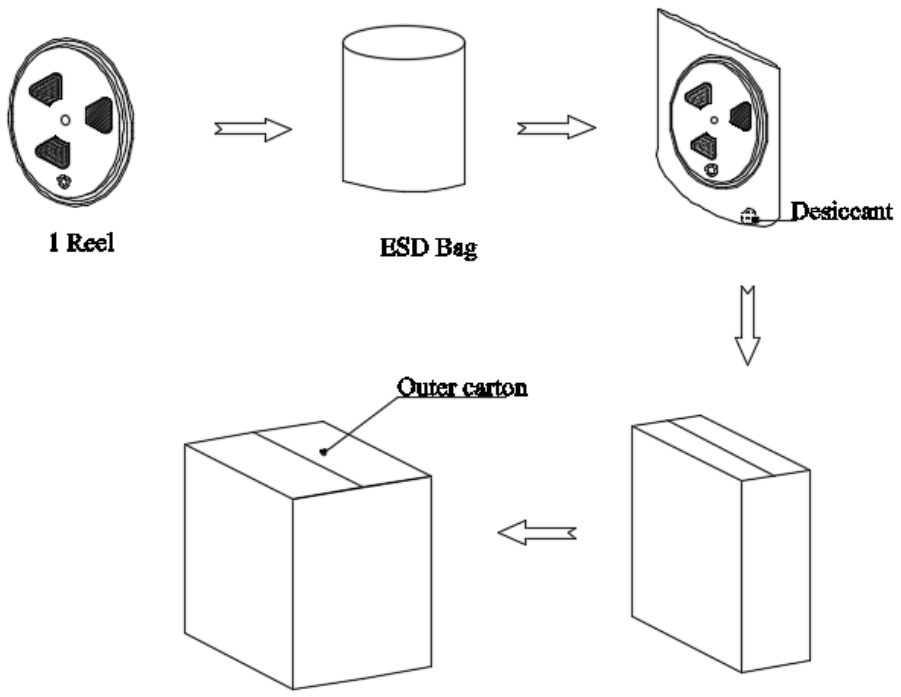
8.3.3 MSL (moisture sensitivity Level) is Class 1.

9. Packaging

9.1 Tape &Reel Specification



9.2 Packaging Information



Packaging Quantity：
1 Reel=5000pcs
1 Outer Carton=50000pcs

10. Reliability Test

The samples should be placed in the room with 23+/-2℃, 55+/-10%R.H. for 2 hours at least before final measurement, unless otherwise specified.

Item	Detail	Standard
Simulated Reflow (Without Solder)	Samples for qualification testing require 3 times 260±5℃ reflow solder profiles. 2 hours of setting time is required between each reflow profile test.	±3 dB
Static Humidity	Precondition at +25℃ for 1 hour. Then expose to +85℃ with 85% relative humidity for 240 hours.	±3 dB
Temperature Shock	Each cycle shall consist of 30 minutes at -40℃, 30 minutes at +125℃ with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature.	±3 dB
ESD Sensitivity	According to MIL-STD-883G, Method 3015.7 for Human Body Model. Discharge Position: I/O pins Charge Voltage: ±3000V Discharge Network: 100pF & 1500Ω	±3 dB
Random Vibrations	Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4 cycles from 20Hz~2000Hz with a peak acceleration 20g.	±3 dB
Mechanical Shock	Subject samples to half sine shock pulses (3000g±15% for 0.3ms) in each direction, totally 18 shocks.	±3 dB
High temperature Storage	Microphone unit must maintain sensitivity after storage at +105℃ for 240 hours.	±3 dB
Low temperature Storage	Microphone unit must maintain sensitivity after storage at –40℃ for 240 hours.	±3 dB
Drop Test	The test was repeated in six directions for 3 times, Dropped from 1.5m height on to a steel surface, total 18 times and inspected for mechanical damage.	±3 dB

Specification Revisions

Revision	Description	Approved	Date
1.1	New Version Released	Hary	14/09/2026