

Part name	MEMS micphones	Date	2026-06-24
Part number	MIC-EMM4030-261	Edition	V1
Department		Page	1 / 9

1. Scope

This specification shall be applied to KLS Micro-Electro-Mechanical System microphone(MEMS)

2. Microphone model number

MIC-EMM4030-261

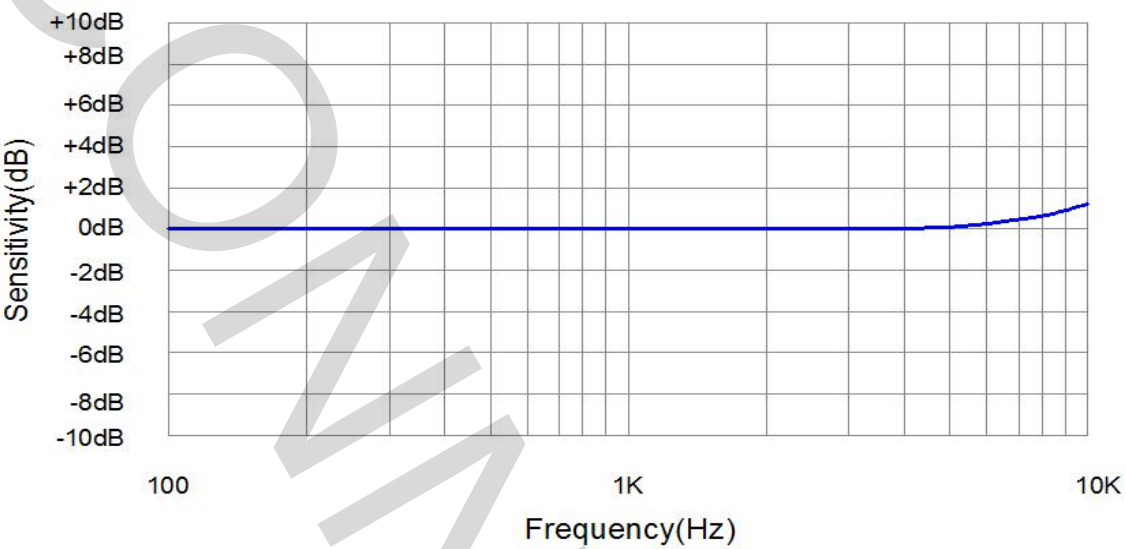
3. Acoustic and Electrical Characteristics

(Test Conditions: 23±2°C, 55±20% R.H.V_{DD}=2.0V.f_{clock}=2.4MHz)

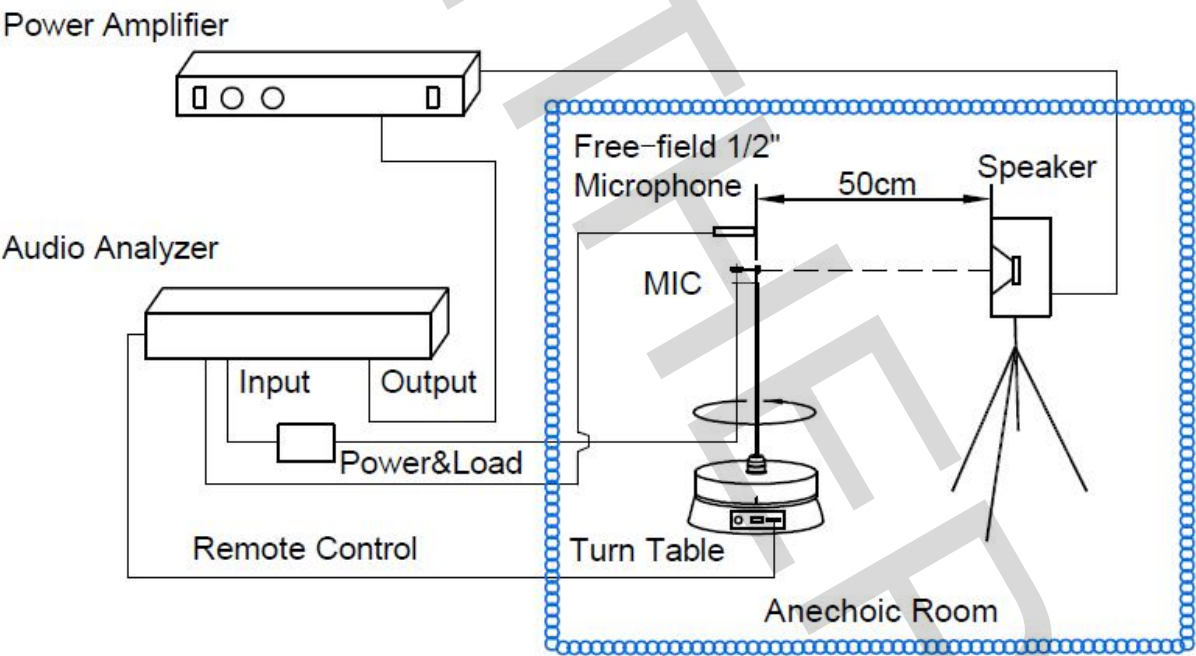
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Directivity	D(θ)	Omni-Directional				
Sensitivity	S	94dB SPL @1kHz	-27	-26	-25	dBFS
Supply Voltage	V _{DD}	-	1.6	-	3.6	V
Current Consumption	I _{DD}	-	-	0.54	-	mA
S/N Ratio	S/N	94dB SPL @1kHz (A-weighted)	-	65		dB
Sleep Current	I _{SLEEP}	F _{CLOCK} < 1 kHz	-	3	4	uA
Total Harmonic Distortion	THD	94dB SPL @1kHz	-	-	1	%
		120dB SPL @1kHz	-	-	10	%
Power Supply Rejection	PSR	100 mVpp square wave @ 217 Hz, A-weighted	-	-90	-	dBFS
Fall-asleep Time	-	(F _{CLOCK} <1kHz)	-	-	50	usec
Wake-up Time	-	(F _{CLOCK} ≥1MHz)	-	-	52	msec
Short Circuit Current	I _{SC}	Grounded Data Pin	-	1	10	mA
Output Load	C _{LOAD}	-	-	-	100	pF
Data Format	-	-	1-Bit PDM			
Clock Frequency	F _{CLOCK}	-	1.0	2.4	3.2	MHz
Clock Duty Cycle	F _{DC}	-	40	-	60	%
Clock Rise Time	t _{CR}	-	-	-	10	nsec
Clock Fall Time	t _{CF}	-	-	-	10	nsec
Logic Input / Output Low	V _{IOL}	I _{OUT} =1mA	-0.30	-	0.35xV _{DD}	V
Logic Input / Output Hight	V _{IOH}	I _{OUT} =1mA	0.65xV _{DD}	-	V _{DD} +0.3	V
Delay Time for Valid Data	t _{DV}	-	18	-	60	nsec
Delay Time for Hight z	t _{DH}	-	0	-	16	nsec

Part name	MEMS micphones	Date	2026-06-24
Part number	MIC-EMM4030-261	Edition	V1
Department		Page	2 / 9

4. Frequency Response Curve

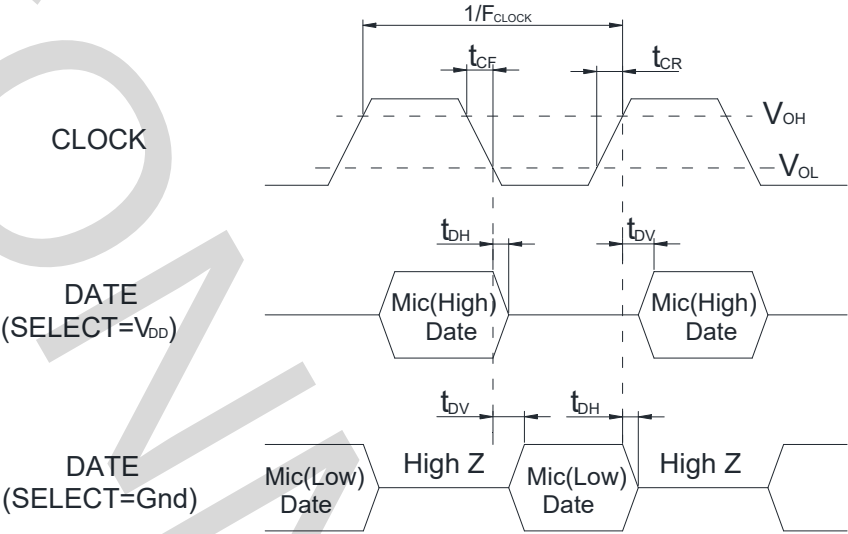


5. Test Setup Drawing



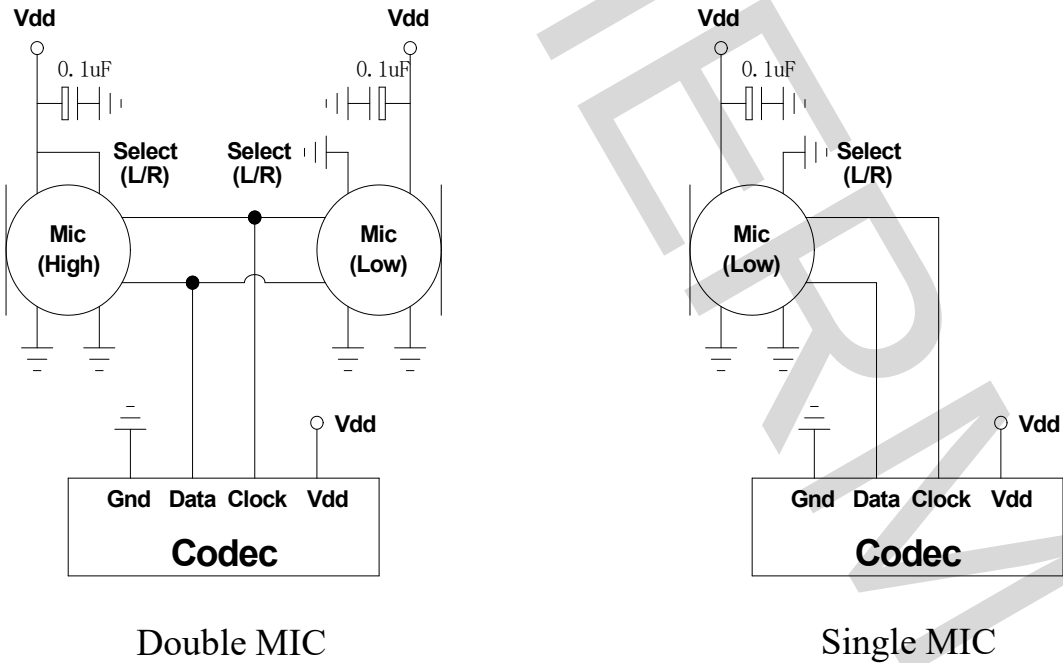
Part name	MEMS micphones	Date	2026-06-24
Part number	MIC-EMM4030-261	Edition	V1
Department		Page	3 / 9

6.Timing Diagram



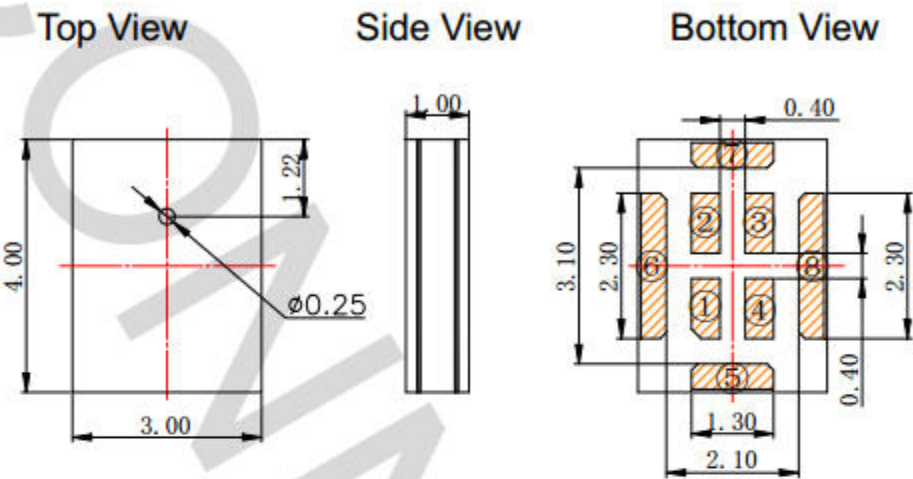
Microphone	Select (L/R)	Asserts DATA On	Latch DATA On
Mic(High)	V_{DD}	Rising clock edge	Falling clock edge
Mic(Low)	GND	Falling clock edge	Rising clock edge

7.Recommended interface circuit & timing diagram



Part name	MEMS micphones	Date	2026-06-24
Part number	MIC-EMM4030-261	Edition	V1
Department		Page	4 / 9

8. Mechanical Specifications



Item	Dimension	Tolerance	Units
Length(L)	4.00	± 0.10	mm
Width(W)	3.00	± 0.10	mm
Height(H)	1.00	± 0.10	mm
Acoustic port(AP)	$\phi 0.25$	± 0.10	mm

Pin Output	
Pin#	Function
1	VDD
2	L/R
3	CLOCK
4	DATA
5	GND
6	GND
7	GND
8	GND

Note:

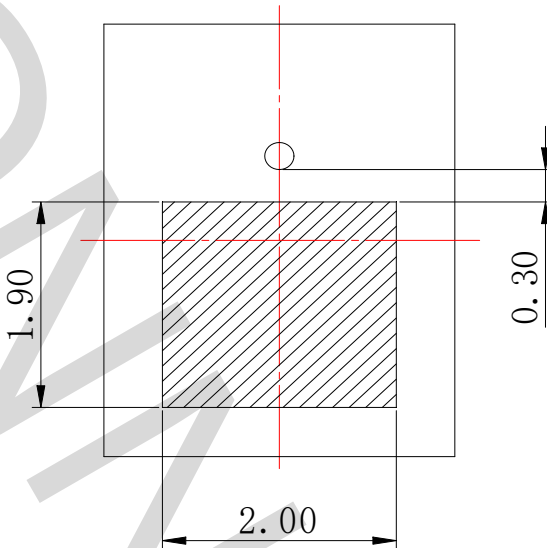
All dimensions are in millimeter(mm).

Tolerance: ± 0.1 mm unless otherwise specified.

Weight: $0.024 \pm 10\%$ g

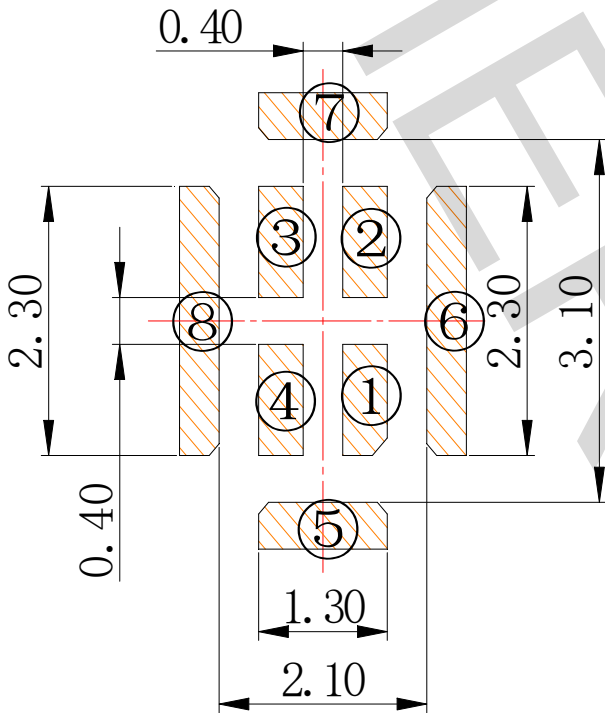
Part name	MEMS microphones	Date	2026-06-24
Part number	MIC-EMM4030-261	Edition	V1
Department		Page	5 / 9

9.Vacuum nozzle pickup location



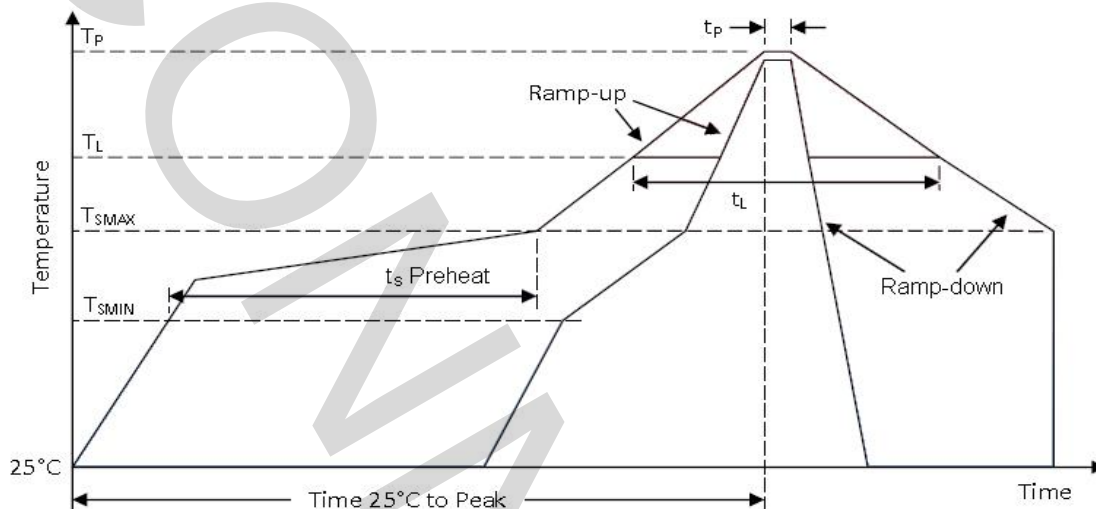
Recommended area for vacuum nozzle pickup location

10.Example solder stencil pattern



Part name	MEMS microphones	Date	2026-06-24
Part number	MIC-EMM4030-261	Edition	V1
Department		Page	6 / 9

11. Reflow Guarantee



Profile Feature	Pb-Free
Average Ramp-up rate (T_{SMAX} to T_P)	3°C/second max.
Preheat	
Temperature Min (T_{SMIN})	150°C
Temperature Max (T_{SMAX})	200°C
Time (T_{SMIN} to T_{SMAX}) (t_s)	60-180 seconds
Time maintained above:	
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)	20-40 seconds
Ramp-down rate(T_P to T_{SMAX})	6°C/second max
Time 25°C to Peak Temperature	8 minutes max

Notes:

1. Vacuuming over acoustical hole of the microphone is not allowed, because the Devices can be damaged by vacuum.
2. Washing the board after reflow process is not allowed, because board washing and Cleaning agents can damage the device. A device should not be exposed to ultrasonic processing or cleaning.
3. Recommended number of reflow is no more than 5 times.

	Part name	MEMS micphones	Date	2026-06-24
	Part number	MIC-EMM4030-261	Edition	V1
	Department		Page	7 / 9

12. Reliability Specifications

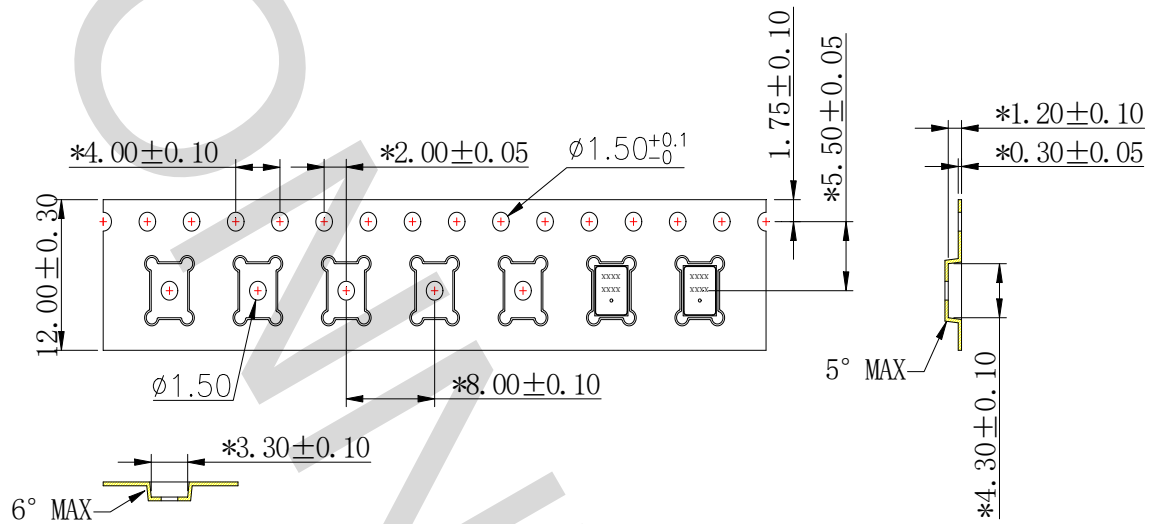
Note: The microphone sensitivity after stress must deviate by no more than $\pm 3\text{dB}$ from the initial value.

Test Item	Detail
Thermal Shock	100 cycles of air-air thermal shock from -40°C to $+100^{\circ}\text{C}$ with 15 minute soaks
High Temperature Bias	$+125^{\circ}\text{C}$ environment while under bias for 240 hours
Low Temperature Bias	-40°C environment while under bias for 240 hours
Temperature/Humidity Bias	$+85^{\circ}\text{C}/85\%$ R.H. environment while under bias for 240 hours
Mechanical Shock	3 pulses of 10000g in the X,Y and Z direction
Vibration Test	10~60Hz : 0.35mm; 60~500Hz:5g 1 oct/min Duration:15 minutes per plane
Drop Test	1.5-meter height onto a concrete surface each time at three directions in state of packaging
Reflow	2 reflow cycles with peak temperature of $+260^{\circ}\text{C}$
ESD	150pF,330Ohm,contact discharge $\pm 2\text{KV}$ /air discharge $\pm 4\text{KV}$, 10 times,apply voltage to I/O pins

	Part name	MEMS micphones	Date	2026-06-24
	Part number	MIC-EMM4030-261	Edition	V1
	Department		Page	8 / 9

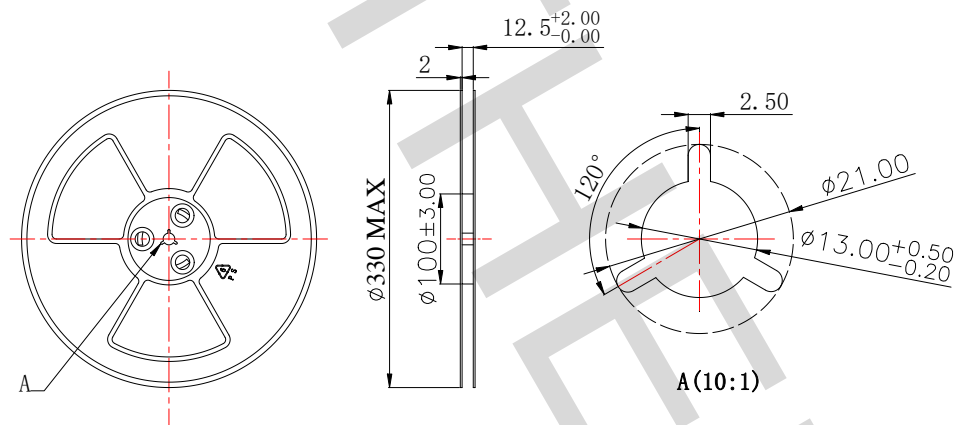
13. Packaging Specifications

13.1* Tape Specification.



13.2 Reel Dimension

13" reel dimensions (unit:mm)



Small-reel	7"	1000PCS
Big-reel	13"	5000PCS

Part name	MEMS micphones	Date	2026-06-24
Part number	MIC-EMM4030-261	Edition	V1
Department		Page	9 / 9

13.3*The Content of Box(13" reel)

