

**MODEL:** CMM-4020DT-261Z-TR | **DESCRIPTION:** MEMS MICROPHONE**FEATURES**

- top port
- unique size
- low-power mode
- low current consumption

**ELECTRICAL**

parameter	conditions/description	min	typ	max	units
directivity	omnidirectional				
sensitivity [S]	at 94 dB SPL, 1 kHz	-27	-26	-25	dB FS
supply voltage [V _{DD}]		1.65		3.60	V
current consumption [I _{DD}]	low-power mode	180	280	400	μA
	normal mode	580	680	900	μA
signal to noise ratio [S/N]	BW = 20 Hz~20 kHz (A-weighted)				
	low-power mode	61	63	65	dBA
	normal mode	62	64	66	dBA
total harmonic distortion [THD]	at 94 dB SPL, 1 kHz	0.05	0.10	0.50	%
acoustic overload point [AOP]	at 10% THD, 1 kHz	118	120	122	dB SPL
phase	low-power mode: 100~8 kHz @ 94 dB	-5	0	5	deg
	normal mode: 100~10 kHz @ 94 dB	-5	0	5	deg
power supply rejection [PSR]	100 mVp-p square wave @ 217 Hz (A-weighted)				
	low-power mode	-91	-81	-71	dB FS
	normal mode	-90	-80	-70	dB FS

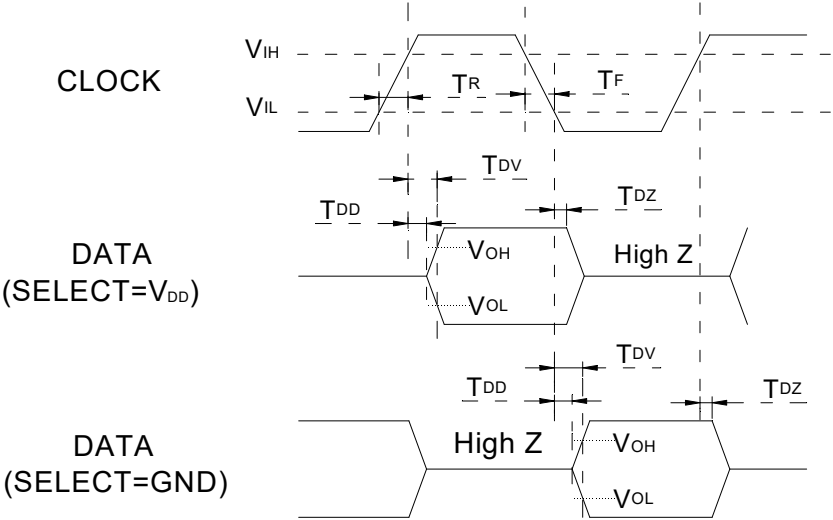
DIGITAL INTERFACE

parameter	conditions/description	min	typ	max	units
clock frequency	sleep mode	0		10	kHz
	low-power mode	150		900	kHz
	normal mode	1.3		4.8	MHz
sleep current (ISLEEP)	FCLOCK = 250 kHz		3		µA
DC output	full scale= ±100		4		%FS
polarity	input higher voltage		increasing density of 1's		
data format	1/2 cycle PDM				
short circuit output current (Isc)	grounded data pin	1		20	mA
output load (CLOAD)				100	pF
fall-asleep time	FCLOCK < 1 kHz			20	µs
wake-up time	FCLOCK ≥ 40 kHz			20	ms
startup time (Tstart)	time to start up in any mode after VDD and CLOCK are applied			20	ms
mode switch time	time to switch between modes, VDD remains on			20	ms
clock duty cycle		40		60	%
logic input high (VIH)	IOUT = 1 mA	0.65XVDD		VDD+0.3	V
logic input low (VIL)	IOUT = 1 mA	-0.3		0.3XVDD	V
logic output high (VOH)	IOUT = 1 mA	VDD-0.45			V
logic output low (VOL)	IOUT = 1 mA			0.45	V

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, VDD = 2.0 V, FCLOCK = 2.4 MHz (normal mode), FCLOCK = 768 kHz (low-power mode), L/R pin grounded, no load, unless otherwise noted.

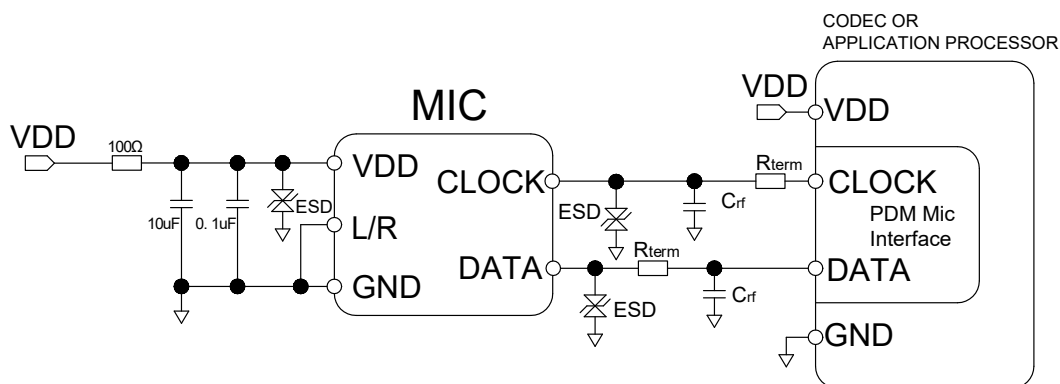
TIMING CHARACTERISTICS

parameter	conditions/description	min	typ	max	units
clock rise/fall time	TR/TF			15	ns
DATA into hi Z time	tDZ	5		20	ns
delay time for data driven	tDD	25		50	ns
data valid time	tDV	40		100	ns

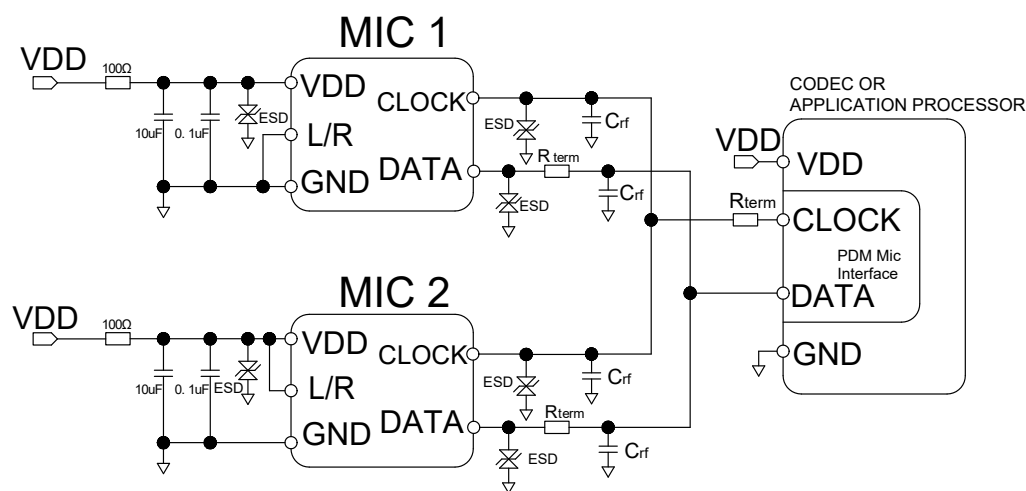


Microphone	Select [L/R]	Asserts DATA On	Latch DATA On
Mic[High]	VDD	rising clock edge	falling clock edge
Mic[Low]	GND	falling clock edge	rising clock edge

RECOMMENDED INTERFACE CIRCUIT



Single MIC



Double MIC

Notes:

2. Power supply decoupling capacitors (0.1 μF, 10 μF, 100 ohm resistor, and the ESD diode) should be placed as near as possible to V_{DD} of the device.
3. Crf and Rterm are all used for debugging. Actually their values or NC are based on the debugging result.

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-40		100	°C
storage temperature	in packaging	-40		100	°C
RoHS	yes				

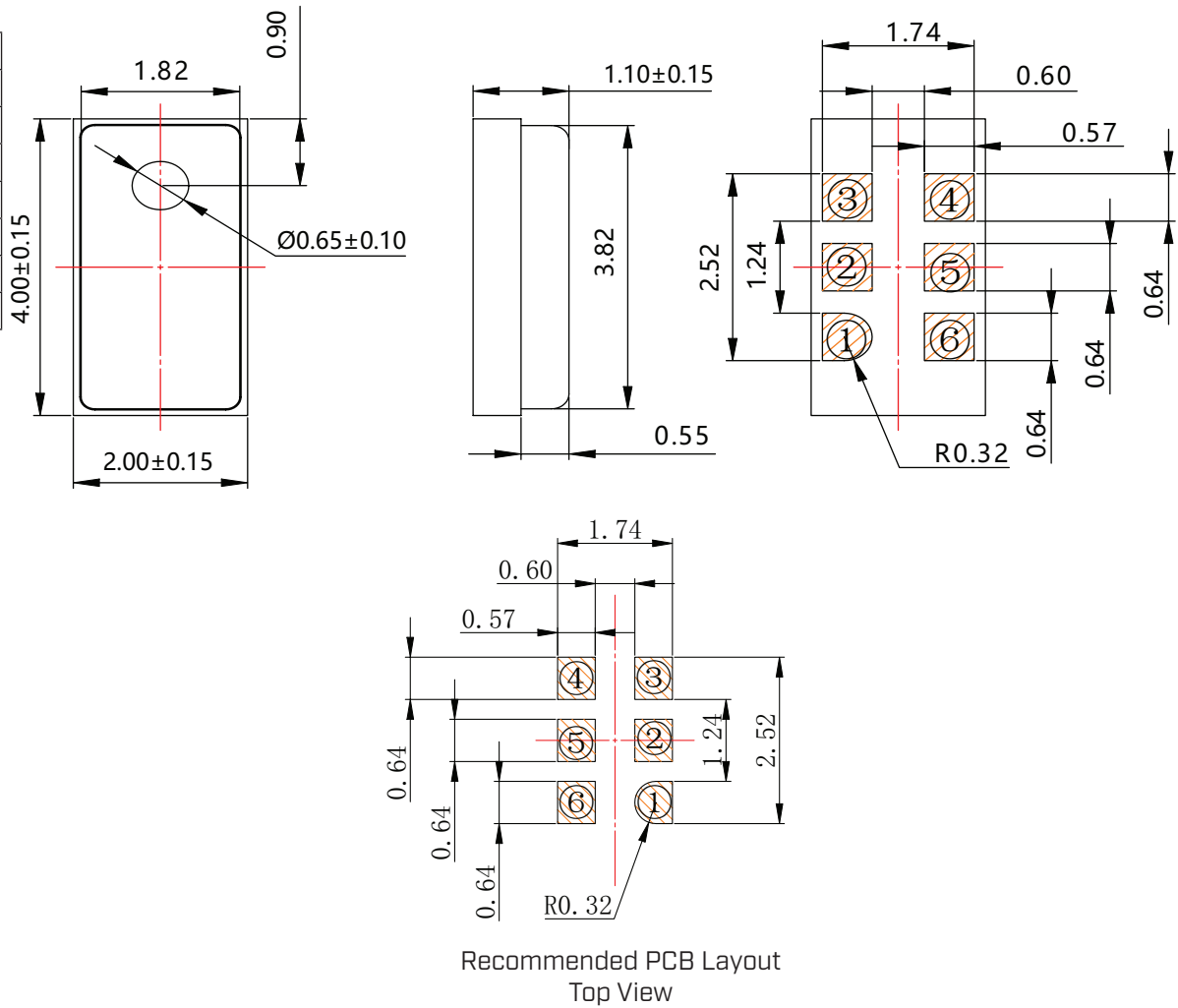
MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	4.00 x 2.00 x 1.10				mm
acoustic port	top				mm
terminals	surface mount				
weight		0.0157	0.0187	0.0217	g

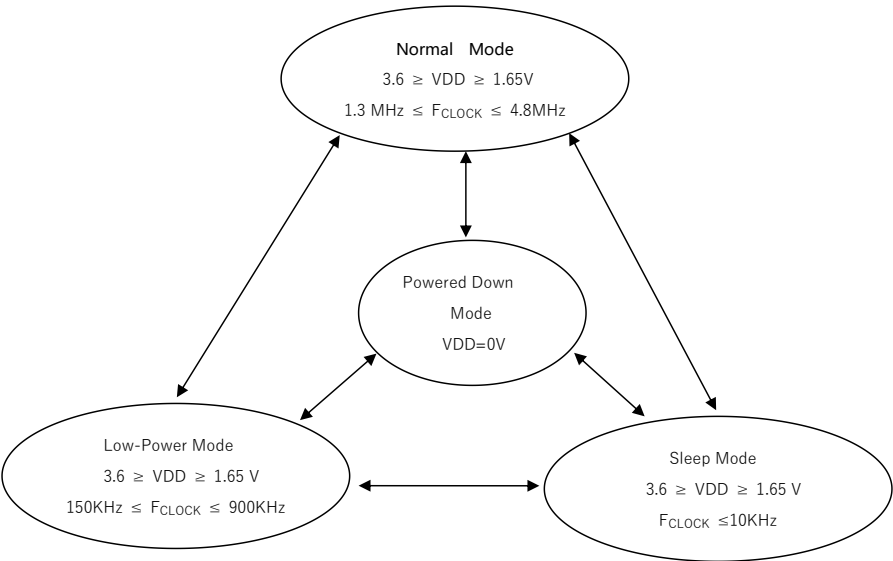
MECHANICAL DRAWING

units: mm
tolerance: ±0.10 mm

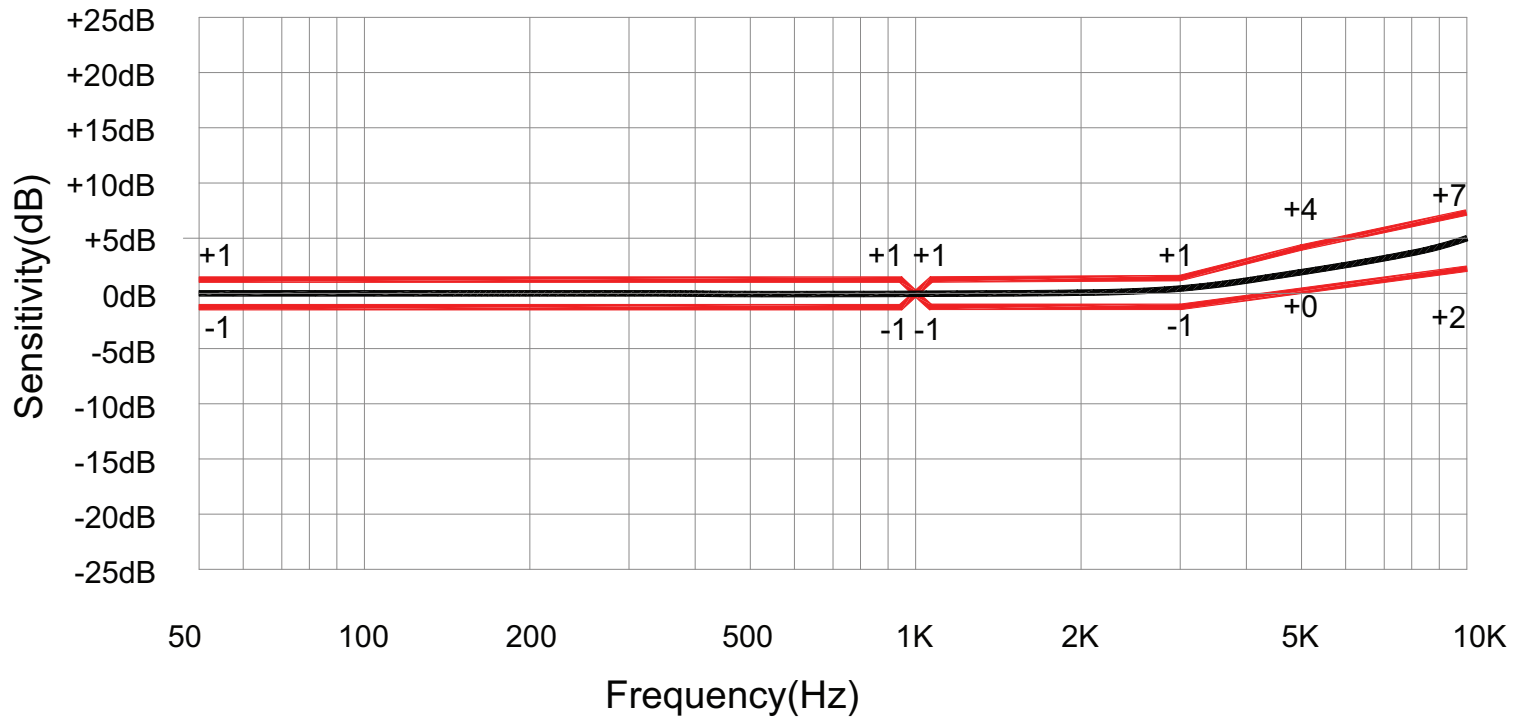
TERMINAL CONNECTIONS	
TERM.	FUNCTION
1	VDD
2	GND
3	DATA
4	CLOCK
5	GND
6	L/R



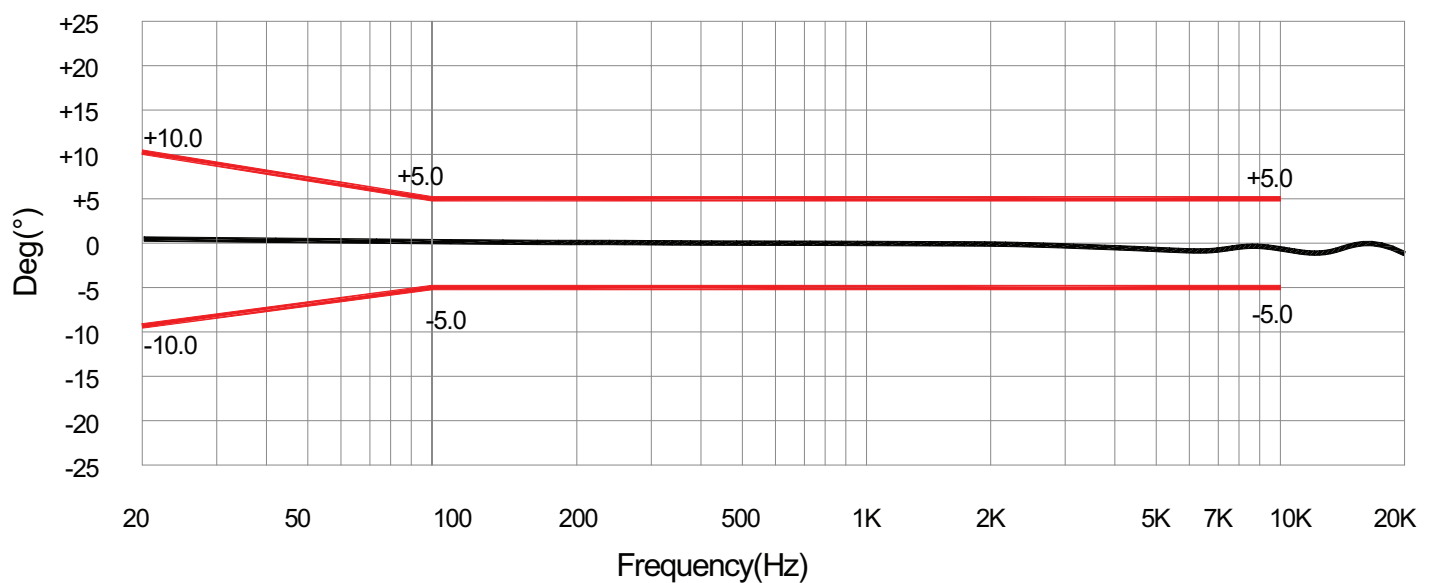
MICROPHONE STATE



FREQUENCY RESPONSE CURVE



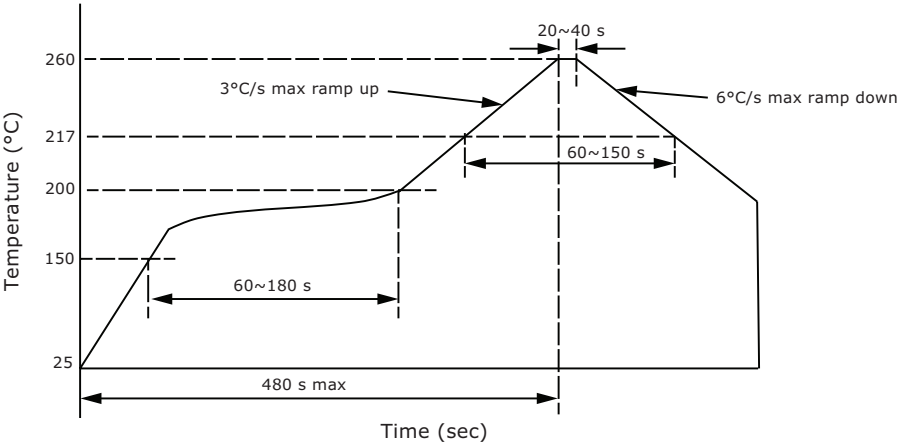
PHASE CURVE



SOLDERABILITY

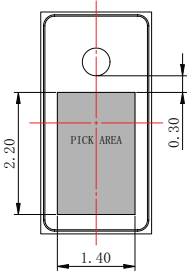
parameter	conditions/description	min	typ	max	units
reflow soldering ²	see reflow profile			260	°C

Note: 2. Not recommended to exceed 3 reflow cycles.



HANDLING RECOMMENDATIONS

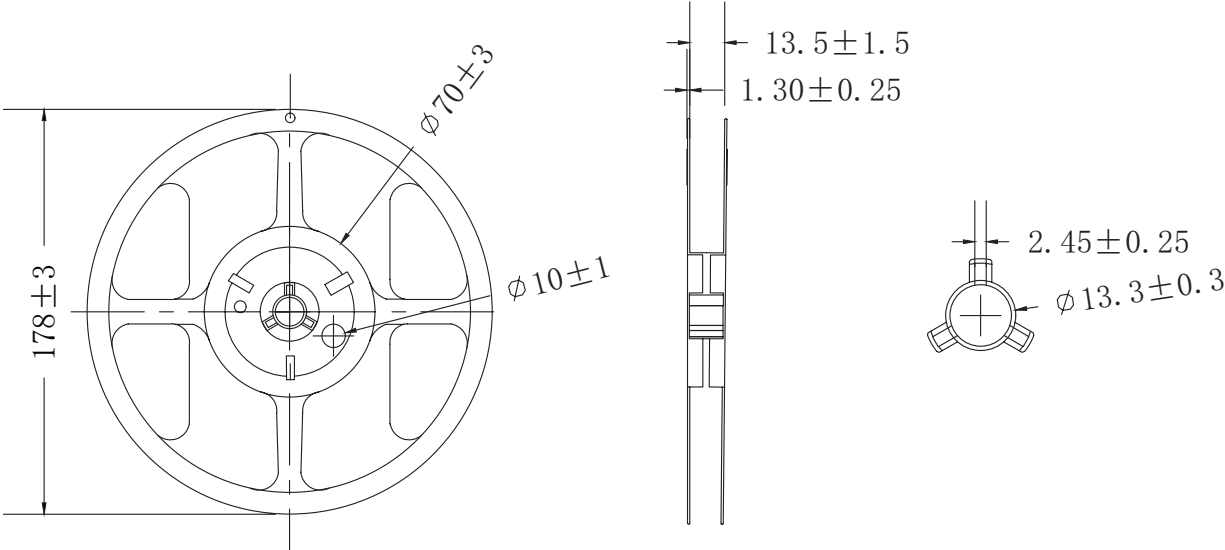
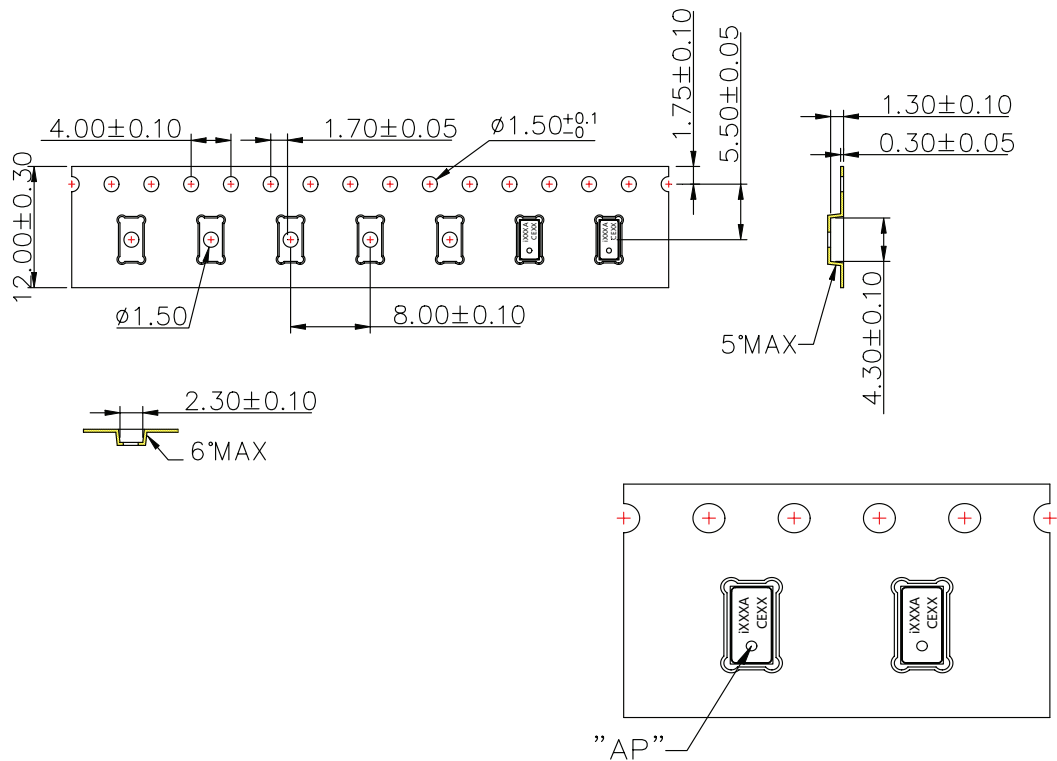
1. Not recommended to blow air heavily over acoustic port as debris could impact mic function.
2. Not suitable for wash process after reflow.
3. Not recommended to brush board with or without solvents after reflow process.
4. Not recommended to directly expose to ultrasonic processing or cleaning.
5. Not recommended to insert any object in port of device at any time.
6. Not recommended to apply over 30 psi of air pressure into the port hole.
7. Not recommended to pull a vacuum over port hole.
8. Not recommended to apply a vacuum when repackaging into sealed bag a rate faster than 0.5 atm/sec.
9. Not recommended to clean table or carried plate with air guarding system that could induce particle floating inside mic.



Recommended Vacuum Nozzle Pickup
Top View

PACKAGING

parameter	conditions/description	min	typ	max	units
reel size	Ø178 mm				
reel QTY	1,000 pcs per reel				
carton size	415 x 235 x 215 mm				
carton QTY	20,000 pcs				



REVISION HISTORY

rev.	description	date
1.0	initial release	09/15/2026

The revision history provided is for informational purposes only and is believed to be accurate.



Same Sky offers a one (1) year limited warranty. Complete warranty information is listed on our website.

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