

SPECIFICATION FOR APPROVAL

承 認 書

Description : **MEMS Microphone**

Kingstate Part No. : **KMM3526983866AF1BE**

Customer's Model No. :

Specification No. : **DRO-S340**

Number Of The Edition : **1.1**

CUSTOMER'S APPROVED SIGNATURE		



KINGSTATE 志豐電子股份有限公司 **KINGSTATE ELECTRONICS CORP.**

Address :10F, No. 69-11, Sec. 2, Chung Cheng E. Rd., Tamshui County, Taipei Hsien, Taiwan, R.O.C.

International sales dept.: TEL:886-2-2809-5651 FAX:886-2-2809-7151

Domestic sales dept.: TEL:886-2-2809-0668 FAX:886-2-28096748

<http://www.kingstate.com.tw>

Approved by	Checked by	Issued by
		Ice 12.04.24'

A. SCOPE 範疇

This specification applies MEMS Microphone, KMM3526983866AF1BE

此規格書適用於 MEMS 麥克風 KMM3526983866AF1BE

B. SPECIFICATION 規格

Parameter	Maximum Ratings	Unit
Supply voltage	3.6	V
Supply current	1	mA
Output current	1	mA
Operation temperature range	-40~100	°C
Storage temperature range	-40~100	°C

Stresses at the maximum ratings shown in Table 1 may cause permanent damage to the device. These are stress ratings only at which the device may not function when an operation at these or any other condition beyond those specified under “Electro-Acoustic Specifications”.

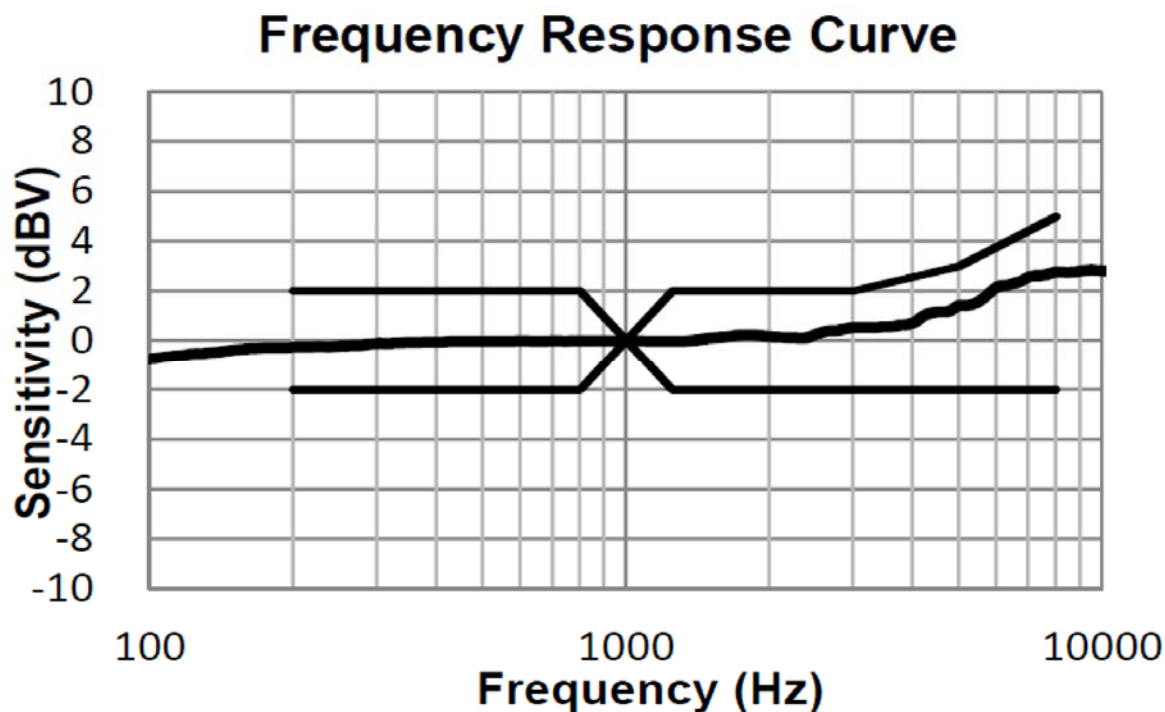
Electrical Specifications

Test condition: +25±2°C, 60% ~ 70% RH, 86~106Kpa, V_{dd}=2V, no load, unless otherwise specified.

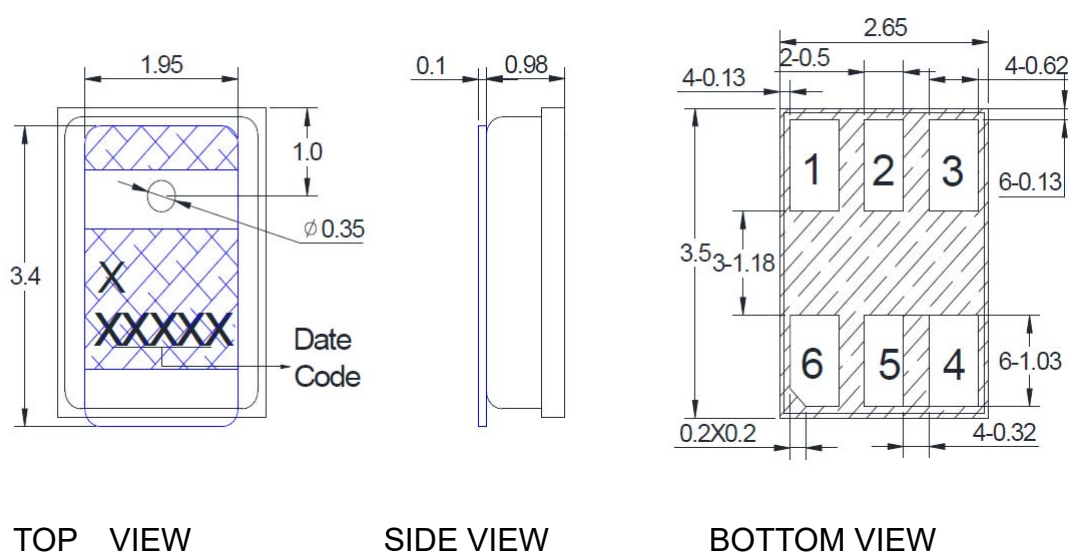
No.	Parameter	Symbol	Condition	Min.	Nom.	Max.	Unit
1	Sensitivity	S	f=1kHz, P _{in} =1Pa, 0dB=1V/Pa	-39	-38	-37	dB
2	Operating Voltage	V _{DD}		1.6	2	3.3	V
3	Directivity			Omni-directional			
4	Polarity		Sound pressure increase	Output voltage increase			
5	Sensitivity vs. Voltage	ΔS	V _s = 3.3V to 1.6V	< 0.5			dB
6	Output Impedance	Z _{OUT}	f=1kHz			400	Ω
7	Current Consumption ¹	I	1.6 V to 3.3V		85	200	μA
8	S/N Ratio	S/N	20-20KHz Bandwidth, A-Weighted	64.5	66.5		dBA
9	Total Harmonic Distortion	THD	94dB SPL @1KHz		0.1	0.5	%
			116dB SPL @1KHz		1		
10	Acoustic Overload Point	AOP	THD 10%@1KHz		124		dB SPL
11	Power Supply Rejection	PSR	100mVpp Squarewave @217Hz, A-weighted		-99	-80	dB
12	Power Supply Rejection Ratio	PSRR	200mVpp Sinewave @1KHz	60	67		dB
13	DC output	VDC			0.85		V
14	Output load	C _{load}				150	pF
		R _{load}		10		100	KΩ

Environmental Protection Regulation	HF
Piece weight Max(g)	0.03
MSL	class 1

C. Typical Frequency Response Curve 頻率響應曲線



D. Apperance Drawing 外觀尺寸圖



Unit : mm Unmarked Tolerance: ± 0.1 (mm)

PIN function description

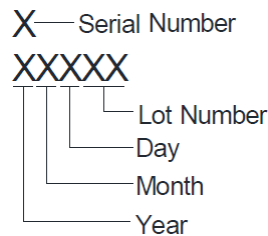
Item	Dimension	Tolerance
Length	3.5	± 0.1
Width	2.65	± 0.1
Height	0.98	± 0.1
Acoustic Port	0.35	± 0.05

PIN	Definition	Description
1	GND	Ground
2	GND	Ground
3	GND	Ground
4	Output	Signal Output
5	GND	Ground
6	VDD	Power Supply

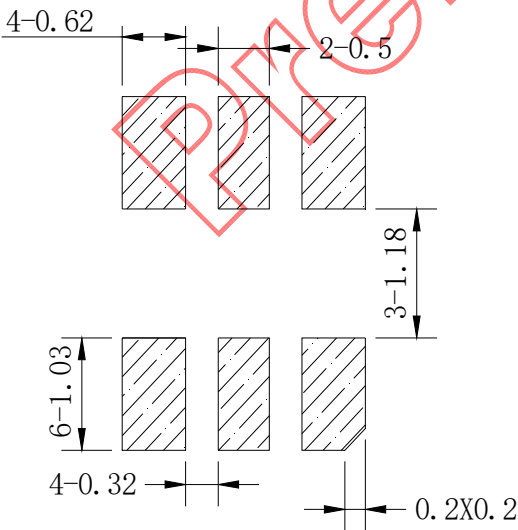
Note:

All Ground Pin must be connected to the ground in end application

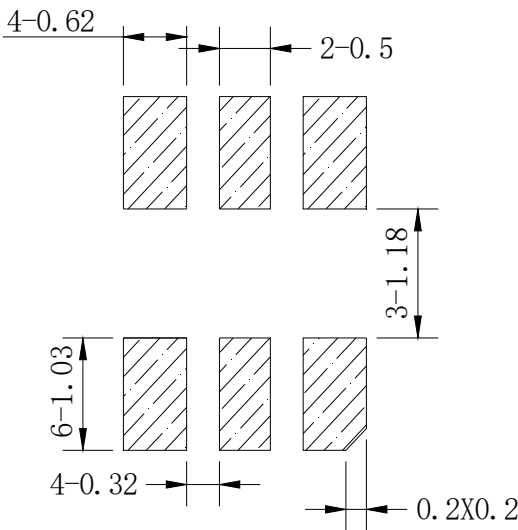
Identification Marking



E. Recommended Customer Land Pattern



Example Land Pattern



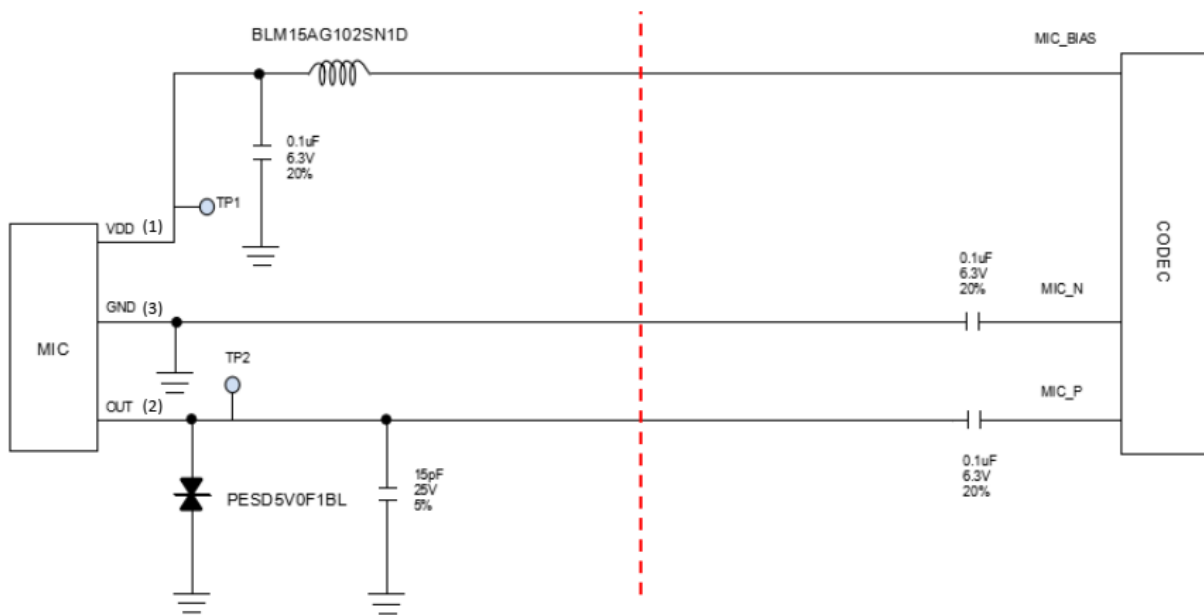
Example Solder Stencil Pattern

Notes:

Dimensions are in millimeters unless otherwise specified.

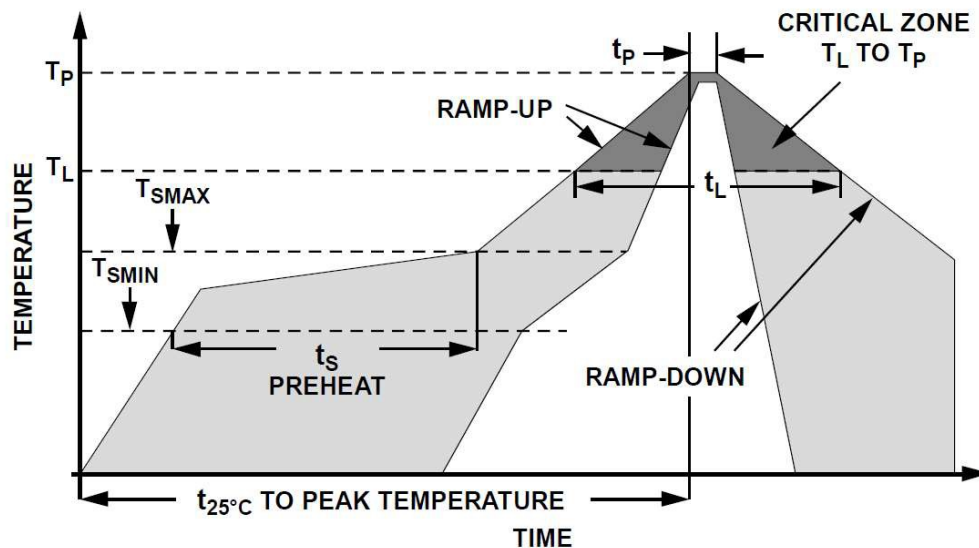
Tolerance is ± 0.1 mm unless otherwise specified.

F. Interface Circuit Example 接口線路舉例



NOTE : It is recommended that the components on the left side of red line be placed close to MIC, and components on the right side of red line be placed close to codec.

G. Solder Reflow Conditions



Parameter		Reference	Specification
Average Ramp Rate		T _L to T _P	3°C/sec max
Preheat	Minimum Temperature	T _S MIN	150°C
	Maximum Temperature	T _S MAX	200°C
	Time T _S MIN to T _S MAX	t _s	60 sec to 180 sec
Ramp-Up Rate		T _S MAX to T _L	1.25°C/sec
Time Maintained Above Liquidous		t _L	60 sec to 150 sec
Liquidous Temperature		T _L	217°C
Peak Temperature		T _P	260°C
Time Within +5°C of Actual Peak Temperature		t _P	20 sec to 40 sec
Ramp-Down Rate		T _P to T _S MAX	6°C/sec max
Time +25°C (t ₂₅ °C) to Peak Temperature			8 min max

Additional Notes :

Mic should cool to room temp before next flow cycle if more reflow is needed.

No more than 3 times reflow is recommended.

Do not board wash by liquid or ultrasonic after the reflow process.

Do not pull a vacuum over port hole of the microphone.

Do not insert any object in port hole of device at any time.

Suggest SMT the microphone at last time if double side PCBA used.

Do not seal sound port during reflow.

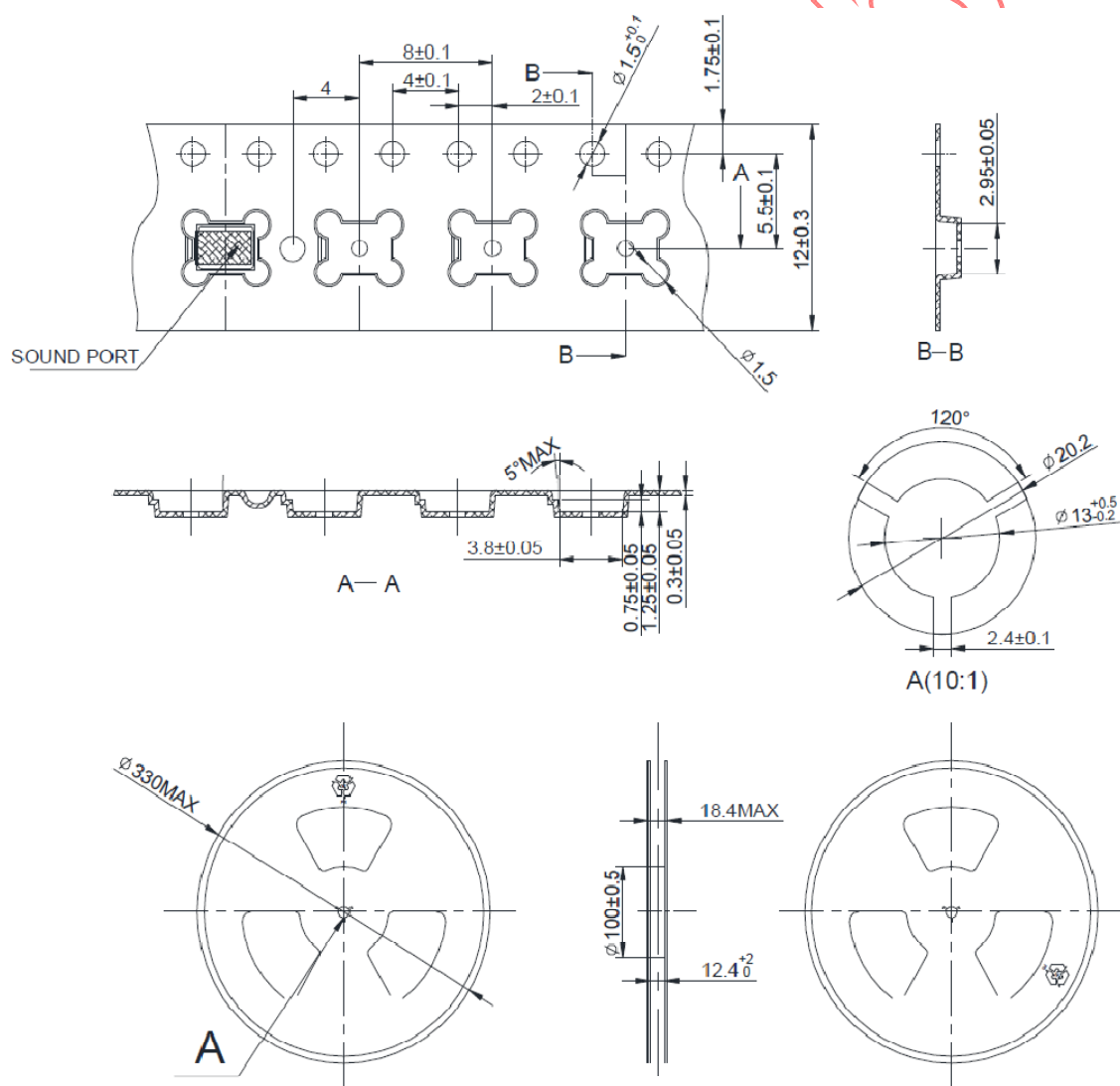
If there is any leakage risk, the peak temperature should be set to less than 240°C or more than 255°C.

H. Reliability Specifications

No.	Item	Test condition
1	Preconditioning	24 hour bake at 125°C, followed by 168 hours at 85°C, 85%RH, followed by 3 passes solder reflow Only for the following three tests: High Humidity & High Heat operating Test High Humidity & High Heat operating Test Thermal Shocking Test
2	Hi-Temperature Storage Test	105±3°C, 1000h, recover for two hours
3	Hi-Temperature operating Test	105±3°C, under upper limit bias, 1000h, recover for two hours
4	Low-Temperature storage Test	-40±3°C, 1000h, recover for two hours
5	Low-Temperature operating Test	-40±3°C, under upper limit bias, 1000h, recover for two hours
6	High Humidity & High Heat operating Test	85±3°C, 85%RH, under upper limit bias, 1000h, recover for two hours, there should be no corrosion and deformation inside of microphone after testing
7	High Humidity & High Heat operating Test	65±3°C, 95%RH, under upper limit bias, 168h, recover for two hours, there should be no corrosion and deformation inside of microphone after testing
8	Thermal Shocking Test	Double-Case Method, -40°C for 15mins → 125°C for 15 mins, 100 cycles, recover for two hours
9	Vibration Test	Each 12mins for X, Y and Z axes, Frequency: 20~2000Hz, Peak Acceleration 20g, recover for two hours
10	Drop Test	Height: 1.5m Fixture Weight: 150g (Sound Hole Diameter in the fixture is ≥0.8mm) Reference Surface: slippery marble floor Duration: 4 corners*4 times, 6 faces*4 times The sensitivity change should be less than 1dB after testing
11	Tumbling Test	Height: 1.0m Fixture Weight: 150g (Sound Hole Diameter in the fixture is ≥0.8mm) Duration: 300 times Recommended Time: 10-11 times/Min The sensitivity change should be less than 1dB after testing
12	ESD Test 1	a. HMB Discharge Position: I/O pins Charge Voltage: ±3000V Discharge Network: 100pF & 1500Ω b. CDM Discharge Position: I/O pins Charge Voltage: ±250V

13	ESD Test 2	The tests are performed acc. to IEC61000-4-2 level 3: a. Contact Discharge Discharge Position: Output of Microphone Charge Voltage: $\pm 6000\text{VDC}$ Discharge Network: 150pF & 330Ω b. Air Discharge Discharge Position: Sound Hole Charge Voltage: $\pm 8000\text{VDC}$ Discharge Network: 150pF & 330Ω
14	Structure Shock Test	10000g, Duration: 0.1ms, each 3 shocks for X/Y/Z 3 axes, The sensitivity change should be less than 1dB after testing
15	Reflow	3 reflow cycles with peak temperature of $+260^{\circ}\text{C}$ according to reflow profile

I. PACKING STANDARD 包裝規格

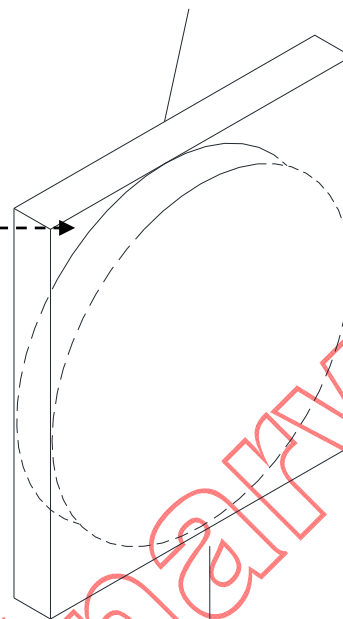


Reel Diameter	Quantity Per Reel
13 inch	5500

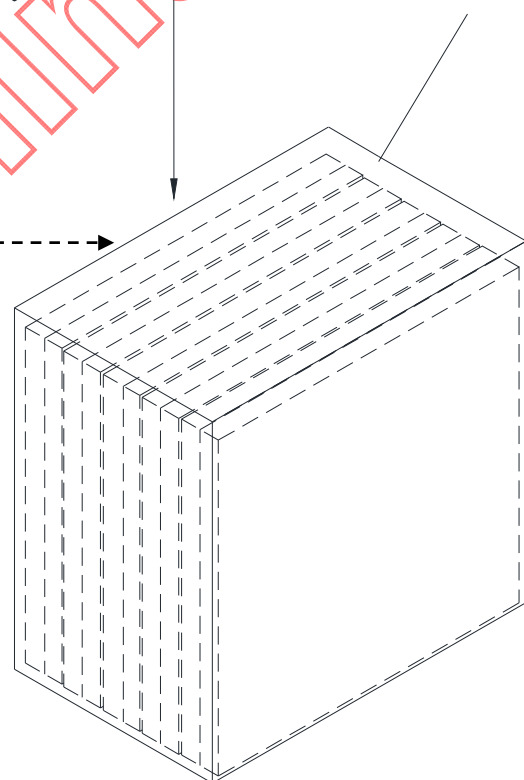
防靜電袋，勿抽真空

Lot No.	XXXXXXXXXX	
Part No.	XXXXXXXXXX	
Quantity	XXXX	PCS
Date:	DD MM YY 蘇州	
		
 KINGSTATE ELECTRONICS CORP.		

* The label sticked on inner boxes
and the outer of carton.



Carton Box
(5 Reel)

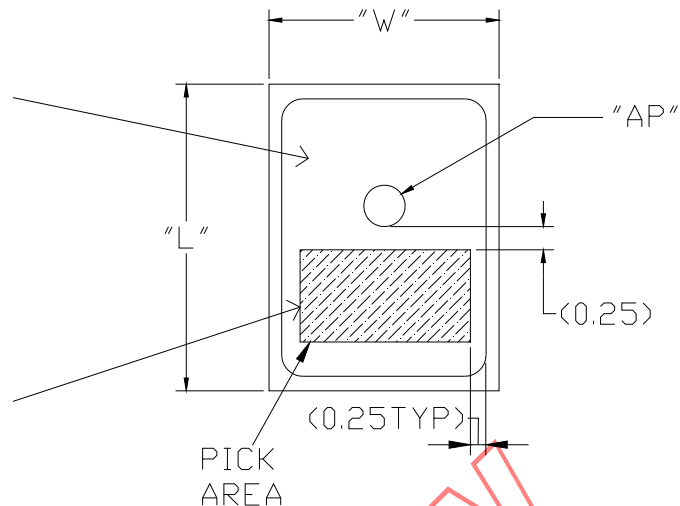


Reel	Ø330mm	1x5500PCS=5500PCS
Carton Box	350mmx175mmx355mm	5x5500PCS=27500PCS

J. MIC Application Notes for SMT

Vacuum pick-up
over the port hole
is prohibited

pick up nozzle
should stay within
acceptable pick-up
area



【In order to minimize device damage, please

Not suggest blow air heavily from human mouth or fanner which has risk to induce particles or saliva inside mic to make mic function influenced

Not suggest to do board wash or clean after the reflow process if without tape cover acoustic hole

Not suggest to brush board with or without solvents after the reflow process

Not suggest airtly expose to ultrasonic processing or cleaning

Not suggest instert any object in port hole of device at any time

Not suggest apply over 30psi of air pressure into the port hole

Not suggest pull a vacuum over port hole of the microphone

Not suggest apply a vacuum when repacking into sealed bags at a rate faster than 0.5 atm/sec

In case mic-on-flex are covered with tape delivered from cm's, do not peet tape very sharp during assembling to cause minus air-pressure to make diaphragm damaged

Not suggest to clean rable or carried plate with air-gandaring system production nearly which will induce particle floating inside mic

▽為減少對麥克風的損傷，請幫忙考慮：

- 請不要使用人員嘴吹或用風扇直接對麥克風吹，以防止導致人體唾沫或灰塵等進入麥克風導致功能問題。
- 如果要清洗板子，建議把麥克風聲孔用乾淨的TAPE堵住再進行。
- 建議不要把麥克風放到超聲波清洗，超聲波的震動會損傷振膜。
- 不要用刷子刷麥克風，無論刷子上有沒有揮發物質，應為刷子絨毛會損傷金線及MEMS。
- 不要把尖銳物體放進聲孔內避免損傷內部部件。
- 不要使用空氣壓力達到及超過30psi的氣流吹麥克風。
- 不要把麥克風抽真空，會導致振膜破損。
- 在有抽氣包裝（非真空）時，抽氣小於0.5atm/秒。
- 如果在SMT之後有點膠帶，在撕掉點膠帶的時候，不要過於猛烈以造成麥克風負壓過快，振膜受損。
- 不建議在麥克風沒有點膠帶的時候使用氣槍清潔桌面，載盤等，導致風帶著灰塵進入麥克風。