Best Sound Electronics
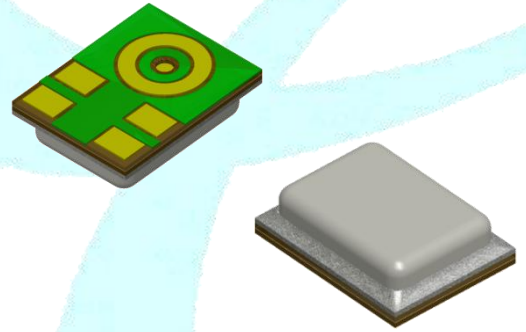
Digital
MEMS Microphone

DATA SHEET

A5-(S)DE-J098R26

High SNR / Multiple Clock Mode / Narrow Sensitivity

OMNI-DIRECTIONAL
BOTTOM PORT

Best sound electronics
Value no1. Micro sound provider

Creative technology starts from respecting of life of the individuals

Creative technologies to respect human life

Best sound electronics
Value no1. Micro sound provider

We offer you happiness with our excellent technology beyond an ordinary sound what you expect

Superior technology to deliver happiness

Best sound electronics
Value no1. Micro sound provider

Keep basic fundamentals to fill sound with new innovations

Creative technologies to respect human life

INDEX

1. INTRODUCTION

- Digital MEMS Microphone - ½ Cycle PDM 1bit, Full Scale=120dBSPL
- Bottom Port Type – Sensitivity is Typical -26dBFS at LPM and STM
- **High Signal to Noise Ratio(SNR) – Typical 64.0dB (A-weighted, 20^{Hz}~20^{kHz}) at fclk=2.4^{MHz}**
- **Multiple Clock Mode – Stand by Mode, Low-Power Mode(LPM), Standard Mode(STM)**
- **Narrow Sensitivity – +/-1dB**
- Omni-directional
- Dual Channel supported
- RF Shielded – with embedded Capacitor
- Compatible with Sn/Pb and Halogen-free solder process
- RoHS compliant
- SMD reflow temperature of up to 260℃ for over 30 seconds

2. APPLICATIONS

- Smartphones
- Ear-sets, Bluetooth Headsets
- Smart Speaker, Set Top Box
- Remote Controller
- Tablet Computers
- Wearable Devices
- Electrical Appliances
- Voice Recognition Systems of Appliances

3. MODEL NO.

A5-(S)DE-J098R26

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4. ABSOLUTE MAXIMUM RATINGS

Parameter	Absolute maximum rating	Units
Vdd to Ground	3.6	V
Digital Input & Output to Ground	Vdd+0.3	V
Input Current	5	mA
Short Circuit Current to/from Data	Infinite to Ground or Vdd	sec

Caution : Stresses above those listed in "Absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation at these or any other conditions beyond those indicated under "ELECTRO-ACOUSTIC CHARACTERISTICS" is not implied. Exposure beyond those indicated under "ELECTRO-ACOUSTIC CHARACTERISTICS" for extended periods may affect device reliability.

5. GENERAL MICROPHONE SPECIFICATIONS

Test Condition : $23 \pm 2℃$, Room Humidity = 55 ± 20 %, Vdd=1.8V, fclk = 2.4^{MHz}, SELECT Pin is grounded, CLOAD = 1$^{\mu F}$, unless otherwise noticed

Parameter		Conditions	Min	Typ	Max	Units
* Clock Frequency Range	Standby Mode	f_{CLK}	150		310	Hz
	Low-Power Mode	f_{CLK}	380		980	kHz
	Standard Mode	f_{CLK}	1.17		3.1	MHz
Standby mode Current		f_{CLK} = 250^{Hz}		25		μA
Short Circuit Current		Grounded DATA pin	1	-	20	mA
Vdd Ramp-up Time (Power-up)		Vdd ≥ Vdd (min)	-	-	50	ms
Startup Time		Time to start up in any mode after VDD and CLOCK applied	-	-	50	ms
Reset Time		Time to start up in any mode after VDD has been off for more than10ms, while CLOCK remained on	-	-	50	ms
Mode-Change Time		Time to switch between modes. VDD remains on during the mode switch	-	-	50	ms

* Note : Must be consulted when used another clock frequency without the typical clock frequencys.

6. ELECTRO-ACOUSTIC CHARACTERISTICS

Test Condition : 23 $\pm$ 2℃, Room Humidity = 55 $\pm$ 20 %, Vdd=1.8V, fclk = 2.4MHz, SELECT Pin is grounded, CLOAD = 1μF, unless otherwise noticed

Parameter	Conditions	Min	Typ	Max	Units
Directivity			Omni-directional		
Supply Voltage (Vdd)		1.62	-	3.6	V
Sensitivity Change across Voltage	Vdd=1.62~3.6V, fclk=3.072MHz		No change		dB
Data Format			½ Cycle PDM 1bit		-
Full Scale Acoustic Level			120		dBSPL
Current Consumption (Idd)	fclk = 0.768kHz, no load on DATA output		125		μA
	fclk = 2.4MHz, no load on DATA output		555		
	fclk = 3.072MHz, no load on DATA output		580		

● **Standard Mode**
  Test Conditions : Measurement Clock Frequency=2.4MHz, Vdd=1.8V

| Parameter	Conditions	Min	Typ	Max	Units
Current consumption (Idd)	No load on DATA output		555		μA
Sensitivity	94dB SPL at 1kHz	-27	-26	-25	dBFS
Signal to Noise Ratio (SNR)	94dBSPL at 1kHz, A-weighted (20Hz~20kHz)	-	64	-	dB(A)
Total Harmonic Distortion (THD)	94dBSPL at 1kHz	-	0.2	-	%
	100dBSPL at 1kHz	-	1	-	%
	120dBSPL at 1kHz	-	10	-	%
Acoustic Overload Point (AOP)	THD>10%, at 1kHz		120	-	dBSPL
Power Supply Rejection Raito (PSRR)	Measured with 1kHz sine wave and broad band noise, both 200mVpp	-	50	-	dBV/FS
Power Supply Rejection (PSR)	Measured with 217Hz square wave and broad band noise, both 100mVpp, A-weighted	-	-81	-	dBFS(A)

● **Low Power Mode**
  Test Conditions : Measurement Clock Frequency=768kHz, Vdd=1.8V

Parameter	Conditions	Min	Typ	Max	Units
Current consumption (Idd)	No load on DATA output	-	125	-	μA
Sensitivity	94dB SPL at 1kHz	-27	-26	-25	dBFS
Signal to Noise Ratio (SNR)	94dBSPL at 1kHz, A-weighted (20Hz~8kHz)	-	64	-	dB(A)
Total Harmonic Distortion (THD)	94dBSPL at 1kHz	-	0.2	-	%
	100dBSPL at 1kHz	-	1	-	%
	120dBSPL at 1kHz	-	10	-	%
Acoustic Overload Point (AOP)	THD>10%, at 1kHz		120	-	dBSPL
Power Supply Rejection Raito (PSRR)	Measured with 1kHz sine wave and broad band noise, both 200mVpp	-	51	-	dBV/FS
Power Supply Rejection (PSR)	Measured with 217Hz square wave and broad band noise, both 100mVpp, A-weighted	-	-82	-	dBFS(A)

7. INTERFACE PARAMETER

| Parameter	Conditions	Min	Typ	Max	Units
Clock Duty Cycle		40	50	60	%
Input Logic Low Level		-0.3	-	0.35 x Vdd	V
Input Logic High Level		0.65 x Vdd	-	Vdd + 0.3	V
Output Load Capacitance on DATA		-	-	200	pF
Clock Rise / Fall Time		-	-	10	ns
Time required for data valid on the rising edge clock (Tdvr)	RL=1MΩ, CL=12pF	18	-	40	ns
Time required for data valid on the falling edge clock (Tdvf)	RL=1MΩ, CL=12pF	18	-	40	ns
Time required for data to be Z (Tdz)	RL=1MΩ, CL=12pF	0	-	15	ns

8. MEASUREMENT CIRCUIT
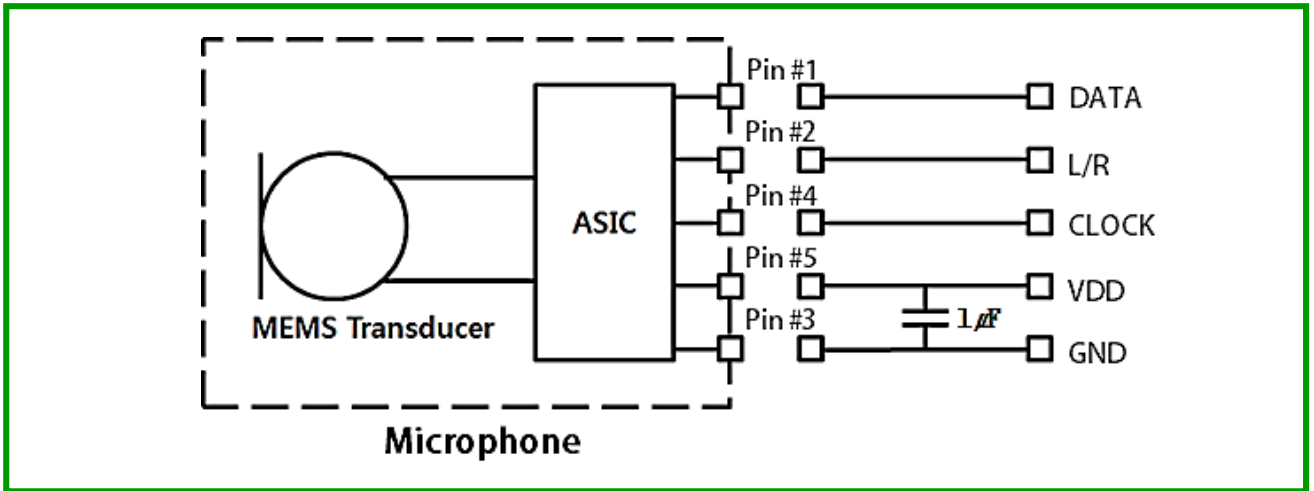
9. PIN DESCRIPTION

Pin Name	Description
Vdd	Supply and IO voltage for the microphone
L/R Select	Left/Right (DATA2 / DATA1) Channel selection
CLOCK	Clock input to the microphone
DATA	PDM data output from the microphone
GND	Ground

10. INTERFACE CIRCUIT & CHANNEL DATA CONFIGURATION
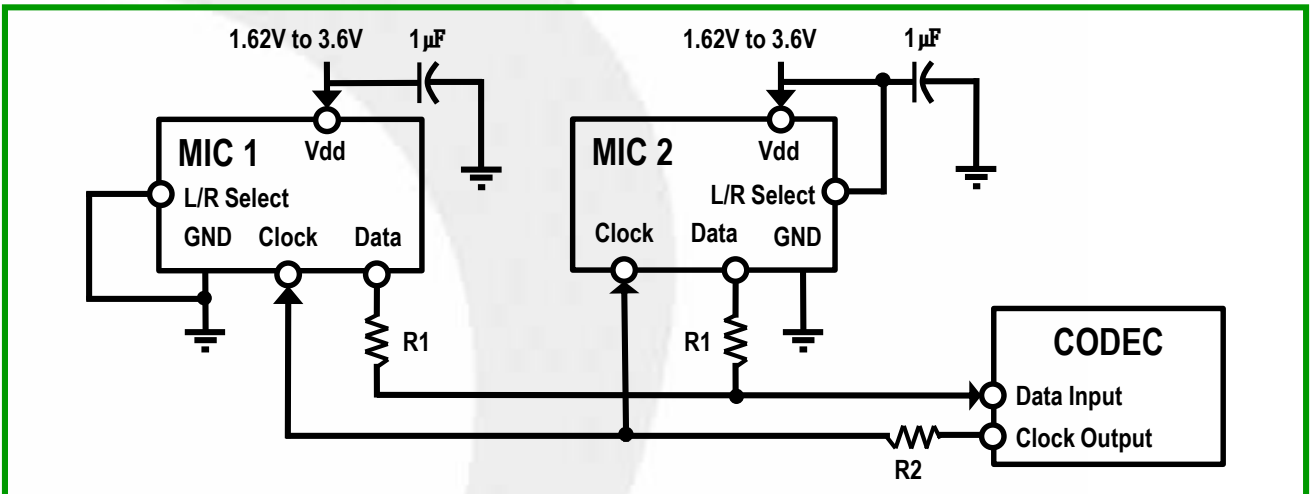
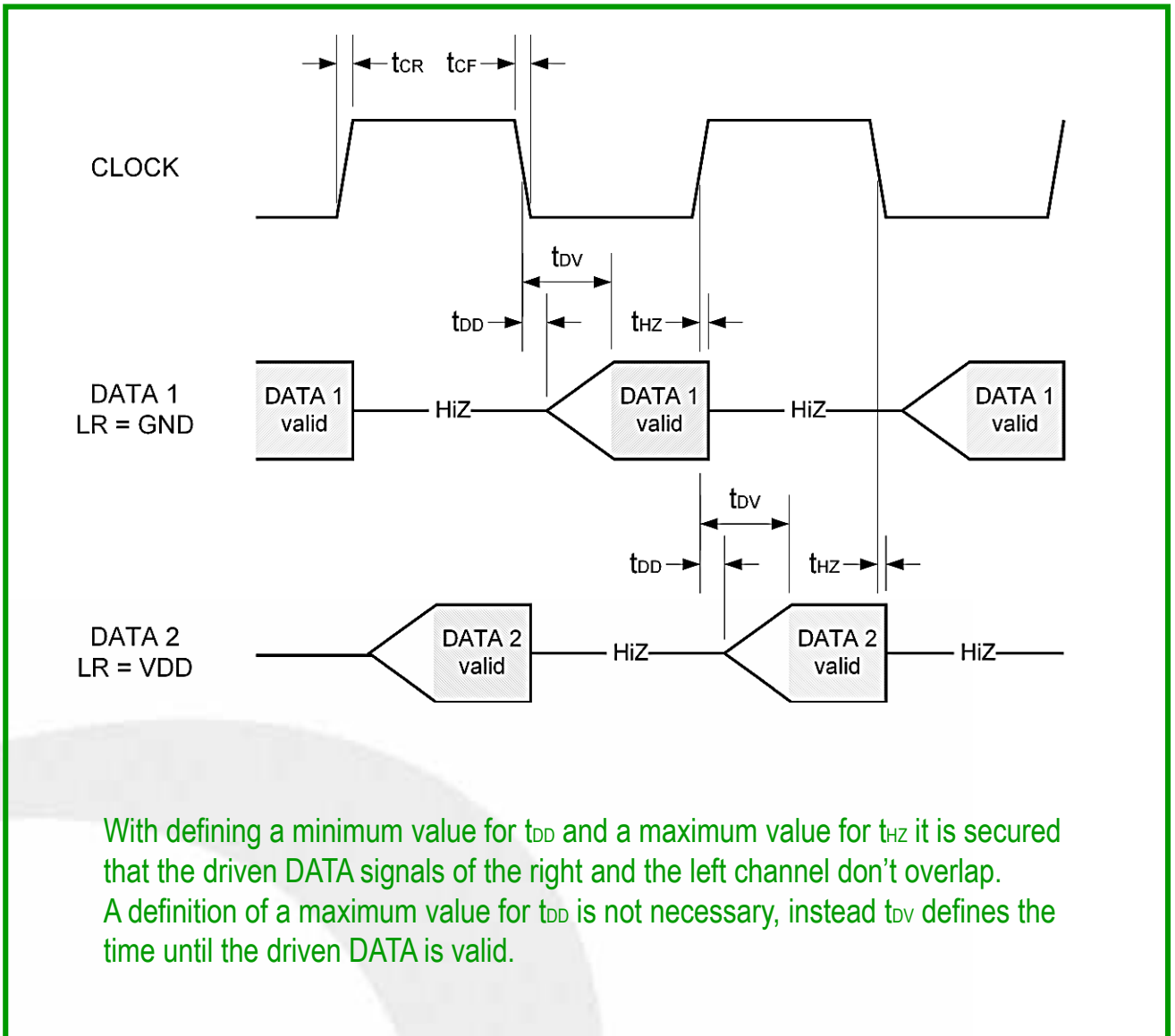| Data symbol in interface timing chart	L/R Select connected to	Data asserted at	Data sampled at
DATA1 [MIC1(Low)]	GND	Falling clock edge	Rising clock edge
DATA2 [MIC2(High)]	Vdd	Rising clock edge	Falling clock edge

Note 1 : Stereo operation is accomplished by connecting the L/R Sel. pin either to Vdd or GND on the phone PWB.
Bypass Capacitors near each MIC. on Vdd are recommended to provide maximum SNR performance.
Note 2 : R1(Data source termination Resister) should be as close as possible to each the MIC. (50Ω~100Ω)
Note 3 : R2(Clock source termination Resister) should be as close as possible to the CODEC. (50Ω~100Ω)

11. INTERFACE TIMING CHART

CLOCK

t_{CR} t_{CF}

DATA 1
LR = GND

t_{DV}

t_{DD} t_{HZ}

| DATA 1 valid | HiZ | DATA 1 valid | HiZ | DATA 1 valid |

DATA 2
LR = VDD

t_{DV}

t_{DD} t_{HZ}

| DATA 2 valid | HiZ | DATA 2 valid | HiZ |

With defining a minimum value for t_{DD} and a maximum value for t_{HZ} it is secured that the driven DATA signals of the right and the left channel don't overlap.
A definition of a maximum value for t_{DD} is not necessary, instead t_{DV} defines the time until the driven DATA is valid.

12. ENVIRONMENTAL CHARACTERISTICS AND STANDARD CONDITIONS

Item	Min	Typ	Max	Unit
Operating temperature range	-40	-	+100	℃
Storage temperature range	-40	-	+100	℃
Relative humidity	25	-	85	%
Air Pressure	860	-	1060	mBar
Standard temperature range	15	20	25	℃
Standard Relative humidity	40	-	60	%

13. TYPICAL FREQUENCY RESPONSE CURVE

Far Field Measurement Condition
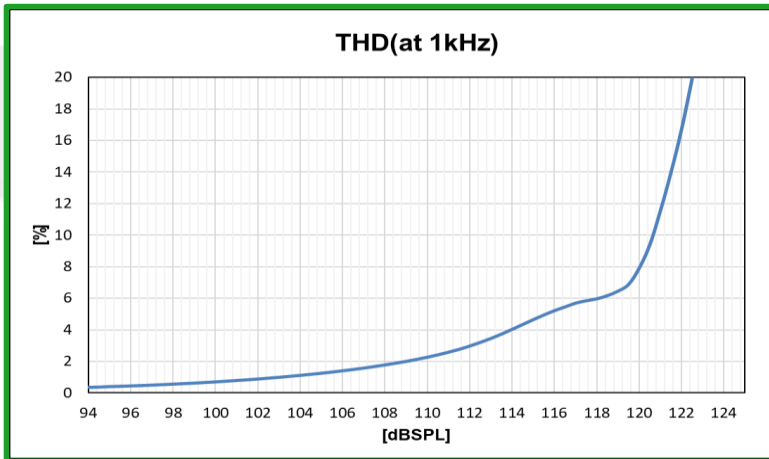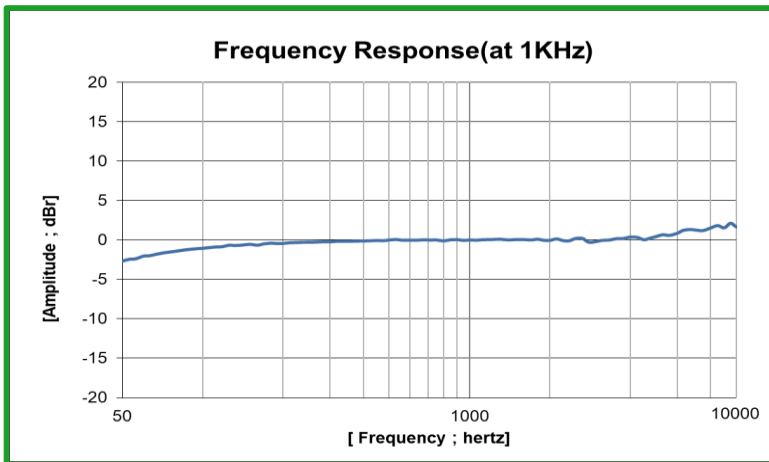**Temperature :**   23 ± 2 ℃
Supply Voltage :   1.8V
Clock Frequency :   2.4㎒
Acoustic stimulus : 1Pa (94㏈ SPL at 1㎑) at 50 ㎝ from the loud-speaker.
                        The loud-speaker must be calibrated to make a flat frequency response input signal.
Position :   The frequency response of microphone unit measured at 50㎝ from the loud-speaker

Frequency Response(at 1KHz)

THD(at 1kHz)

■ Frequency Mask Specification

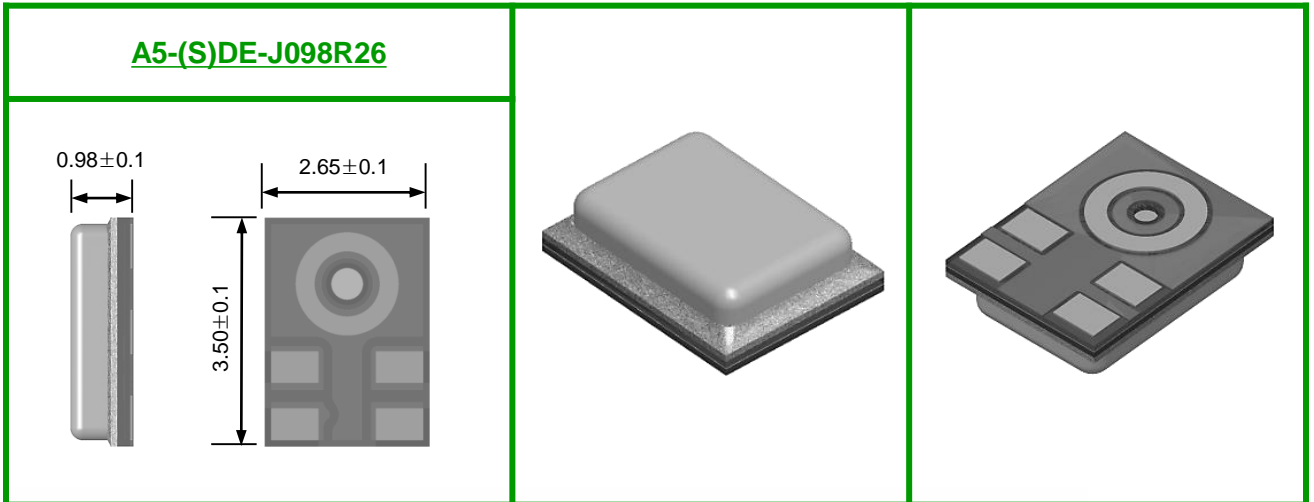| Frequency [Hz]	Lower Limit [dBr]	Upper Limit [dBr]	Note
50	-4	+2	
100 ~1000	-2	+2	
1000	0	0	0dBr = dBFS at 1㎑
1000 ~ 5000	-2	+2	
10000	-2	+5	
15000	-2	+8	

Note : Band Frequency Range
   1. Narrow Band   : 300㎐ ~ 3.4㎑
   2. Wide Band   : 100㎐ ~ 7㎑
   3. Super Wide Band :   50㎐ ~ 14㎑

14. MECHANICAL CHARACTERISTICS

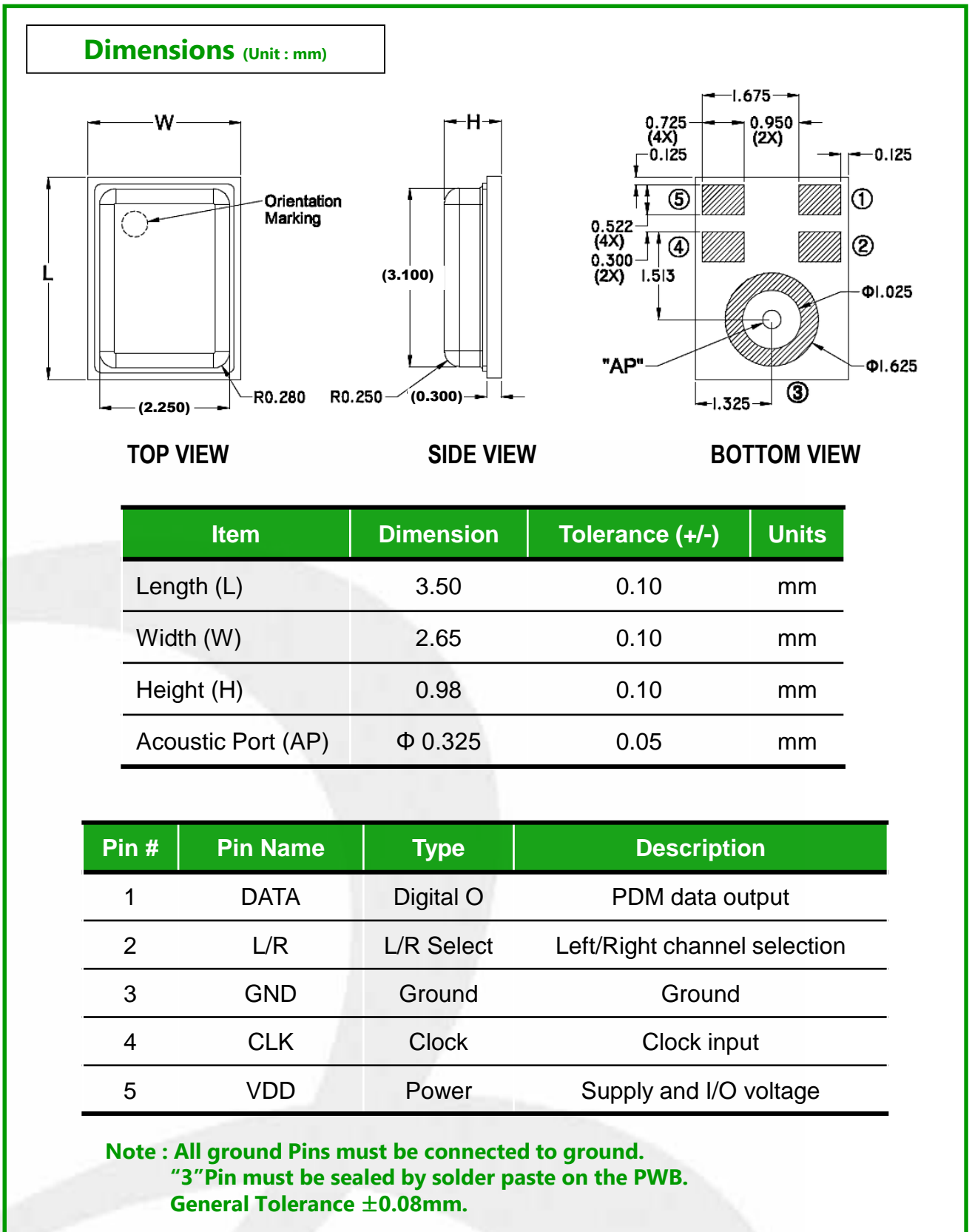※ **PCB design & Pin size can be changed by model No.**

■ SMD Type

| A5-(S)DE-J098R26 |
|---|

0.98±0.1   2.65±0.1

3.50±0.1

■ Lettering

V1.0F4H
ME 1817

V1.0 F 4 H

E : Engineering Sample
P : Pre-Production
M : Mass Production   **M E 18 17**

● Version1

● Week

Version2 ●   ● Year

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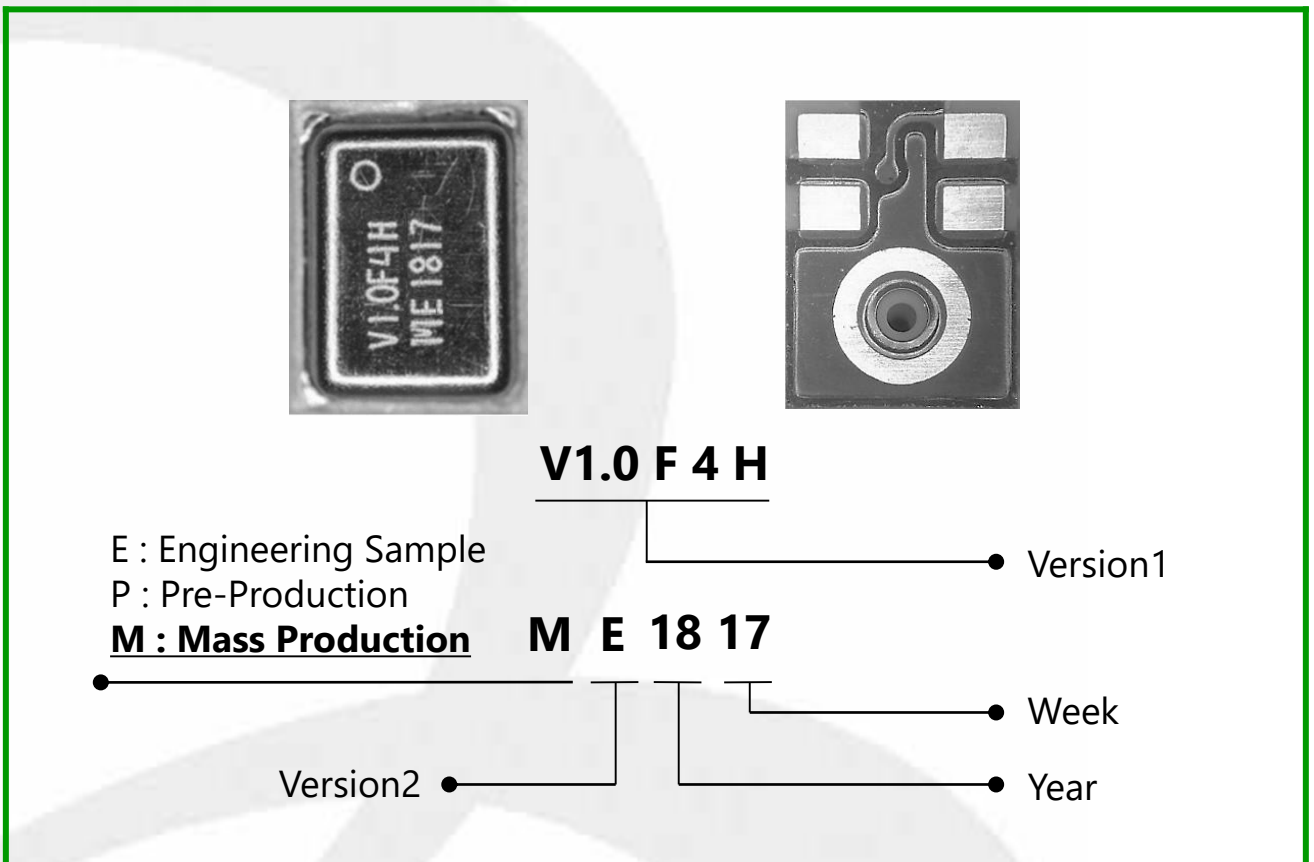
14. MECHANICAL CHARACTERISTICS

- Mechanical dimensions & Pad Lay-out

Dimensions (Unit : mm)

TOP VIEW   SIDE VIEW   BOTTOM VIEW

Item	Dimension	Tolerance (+/-)	Units
Length (L)	3.50	0.10	mm
Width (W)	2.65	0.10	mm
Height (H)	0.98	0.10	mm
Acoustic Port (AP)	Φ 0.325	0.05	mm

Pin #	Pin Name	Type	Description
1	DATA	Digital O	PDM data output
2	L/R	L/R Select	Left/Right channel selection
3	GND	Ground	Ground
4	CLK	Clock	Clock input
5	VDD	Power	Supply and I/O voltage

Note : All ground Pins must be connected to ground.
"3"Pin must be sealed by solder paste on the PWB.
General Tolerance ±0.08mm.

14. MECHANICAL CHARACTERISTICS

- Recommended Land Pattern & Stencil Pattern

Recommended PCB land pattern
(Unit : mm)

Recommended solder stencil pattern
(Unit : mm)

(thickness of metal mask: 0.10T)
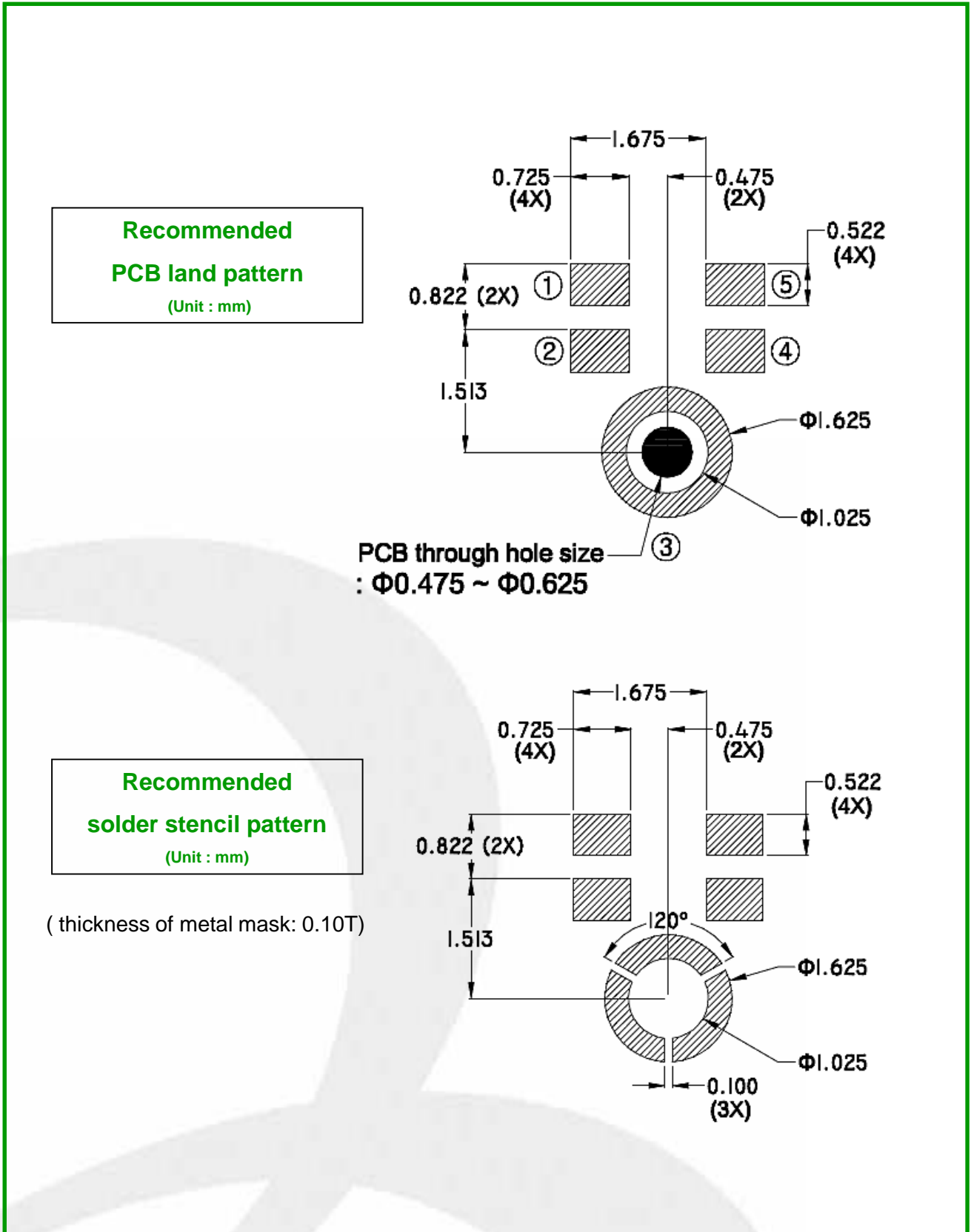
15. RELIABILITY TEST CONDITIONS

Note : After test conditions are performed, the sensitivity of the microphone shall not deviate more than ±1dB from its initial value.

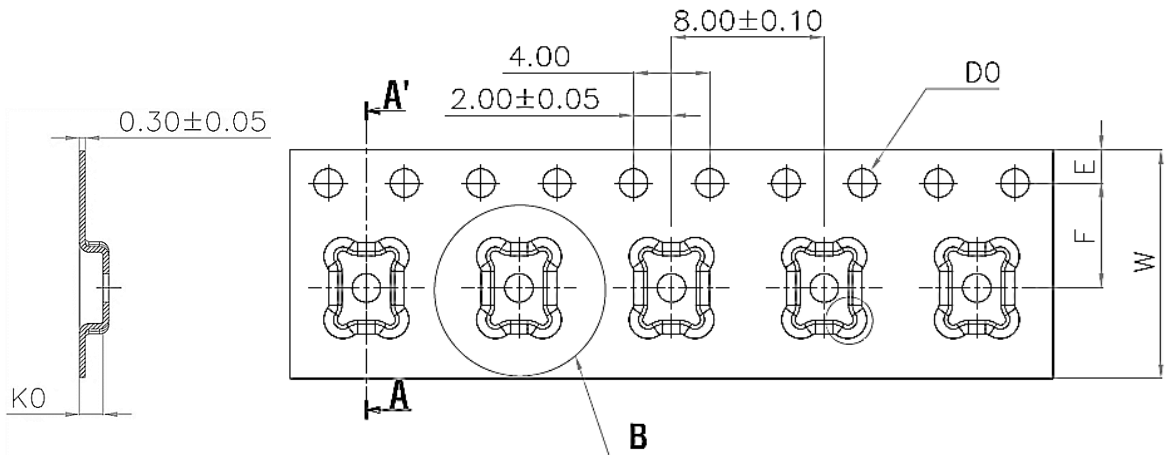| TEST	DESCRIPTION
TEMPERATURE STORAGE	[High Temperature Storage] +80℃±3℃ x 200hrs (The measurement to be done after 2 hours of conditioning at room temperature)
	[Low Temperature Storage] -30℃±3℃ x 200hrs (The measurement to be done after 2 hours of conditioning at room temperature)
TEMPERATURE CYCLE	(-25℃±2℃ x 30min -> +20℃±2℃ x 10min -> +70℃±2℃ x 30min -> +20℃±2℃ x 10min) x 5cycles (The measurement to be done after 2 hours of conditioning at room temperature)
THERMAL SHOCK	(+85℃±2℃ -> -40℃±2℃Change time : 20sec) x 96cycles Maintain : 30min (The measurement to be done after 2 hours of conditioning at room temperature)
HIGH TEMPERATURE AND HUMIDITY	+85℃±2, 85±%RH, Bias(3.6V) x 200hrs (The measurement to be done after 2 hours of conditioning at room temperature)
	+70℃±2, 95±%RH x 200hrs (The measurement to be done after 2 hours of conditioning at room temperature)
ESD (Electrostatic Discharge)	Air discharge : ±8kV, ±10kV, ±12kV, ±15kV Vdd, Data, CLK, L/R, GND Pad each 5 times (Non-ground)
	Contact discharge : ±2kV, ±4kV, ±6kV, ±8kV Vdd, Data, CLK, L/R, GND Pad each 5 times (Non-ground)
VIBRATION	Signal 5Hz to 500Hz, acceleration spectral density of $0.01g^2$/Hz in each of 3 axes, 120 min in each axis (360min in total)
DROP	To be no interference in operation after dropped to steel floor 18 times from 1.52 meter height in state of packing
REFLOW SENSITIVITY	5 reflow cycles. Refer to reflow profile from specification item 18.

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16. PACKAGING SPECIFICATION

- Reel

(Unit : mm)

WIDTH	A	B	C	D	N	W1	W2	W3
12mm	330 $^{+2.0}_{-2.0}$	2.0 $^{+0.5}_{-0.2}$	13 $^{+1.0}_{-0.2}$	22.5 $^{+2.0}_{-2.0}$	80 $^{+3.0}_{-1.0}$	12.4 $^{+3.0}_{-0.0}$	16.4 $^{+2.0}_{-2.0}$	13.6 $^{+2.0}_{-2.0}$

DETAIL "K"

● 13" reel will be provided for the mass production stage
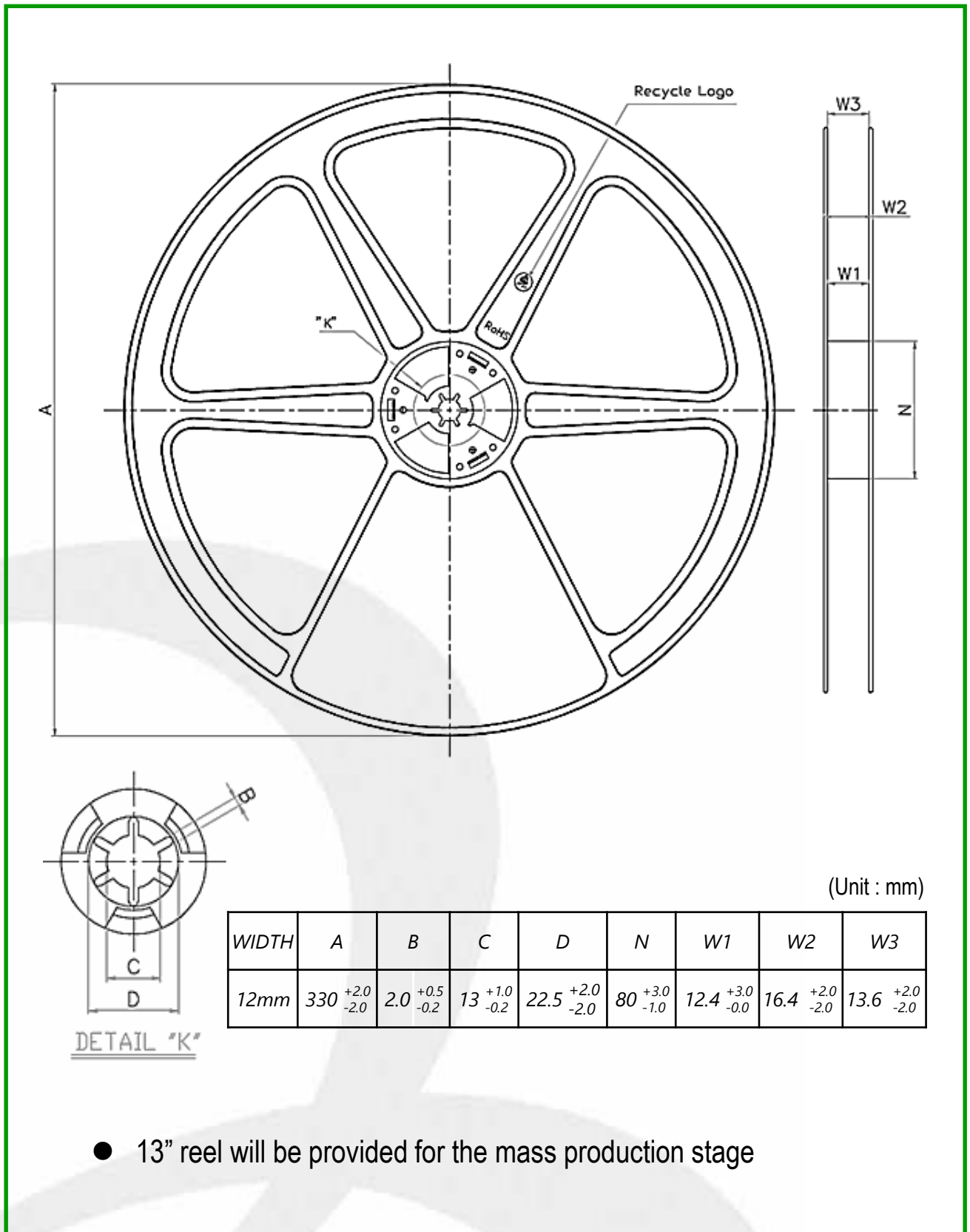
16. PACKAGING SPECIFICATION

- Taping

SECTION A–A'

DETAIL B (2:1)

Pin 1   Cover Tape

Sound Hole

9.3
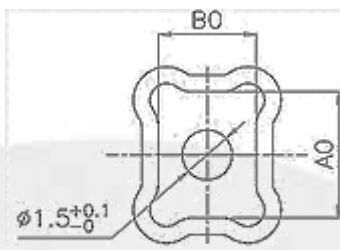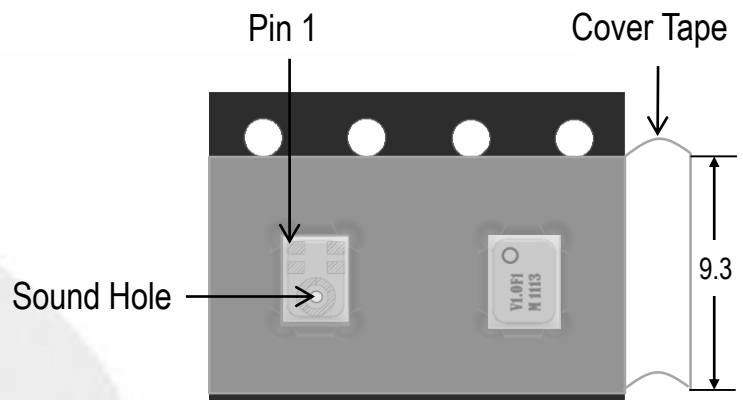
[Note]
1. Direction of parts : See above pictures.
2. Microphone total quantity (13" Reel) : 5,000pcs
3. Carrier Tape ESD : $10^2 \sim 10^{10}\Omega$
4. Cover Tape Inside ESD : $10^2 \sim 10^{10}\Omega$
5. Carrier Tape Material & Color : PS, Black
6. Thermo Compression Bonding

Unit : mm

A0	3.80±0.10	E	1.75±0.10
B0	2.95±0.10	F	5.50±0.05
K0	1.25±0.10	T	0.30±0.05
D0	1.50±0.10	W	12.00±0.30

16. PACKAGING SPECIFICATION

- Packing

1 Inner Box included 2 reels
→ Microphone total quantity : 10,000 pcs

[Note]
1. Inner Box ESD : $1*10^4 \sim 1*10^{10}\Omega$

ANTI ESD POLYBAG
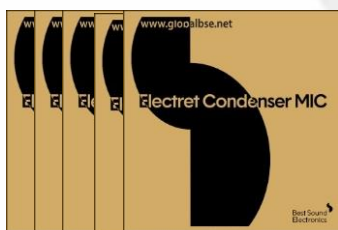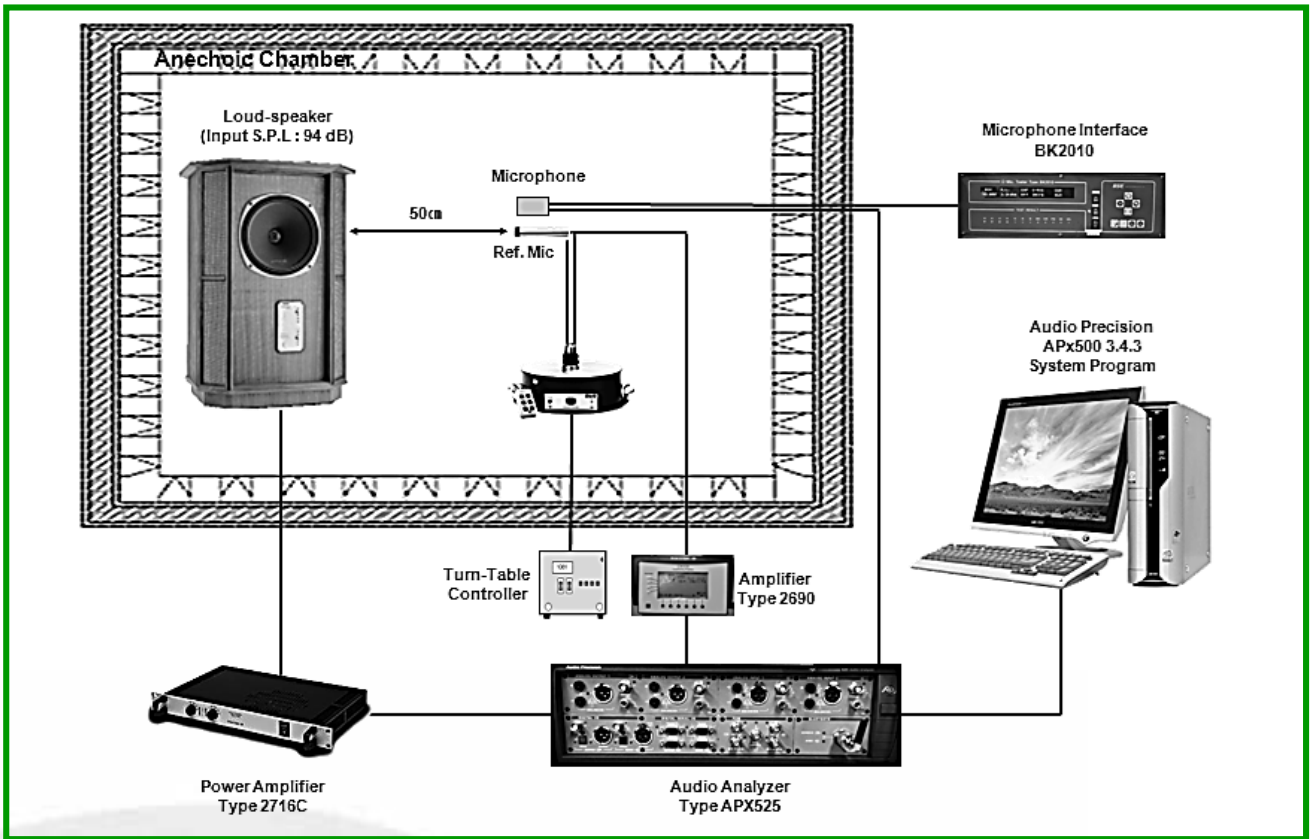
340㎜

50㎜

347㎜

PART NO : 3003-001270   SPEC : MIC
PO TYPE: EX
LOT NO. : 210901D003
QTY   : 5,700   2021.09.02
VENDOR P/N: A2-(S)E-N090R38
VENDOR NAME: BSE VIETNAM CO., LTD

PART NO : 3003-001270   SPEC : MIC
PO TYPE: EX
LOT NO. : 210901D003
QTY   : 11,400   2021.09.02
VENDOR P/N: A2-(S)E-N090R38
VENDOR NAME: BSE VIETNAM CO., LTD
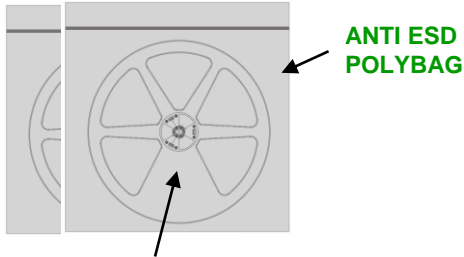
< 2 Reels >
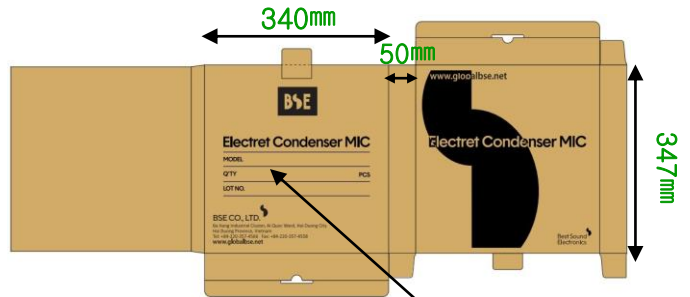
< Inner Box >

2 Outer Box included 5 Inner Boxes
→ Microphone total quantity : 50,000 pcs

[Note]
1. Outer Box ESD : $1*10^4 \sim 1*10^{10}\Omega$

355㎜

285㎜

375㎜

PART NO : 3003-001270   SPEC : MIC
PO TYPE: EX
LOT NO. : 210901D003
QTY   : 57,000   2021.09.02
VENDOR P/N: A2-(S)E-N090R38
VENDOR NAME: BSE VIETNAM CO., LTD

< 5 Inner Box >

< Outer Box >

17. MEASUREMENT SYSTEM

### 17.1 Measurement Condition

(a) Supply voltage : 2.0V
(b) Acoustic stimulus : 94dB SPL at 1kHz
(c) Distance between MIC & SPK : 50cm
(d) Measurement frequency : 50 (Hz) ~ 20 (kHz)

Machine	Model No	Purpose
Standard MIC	4191	Revision of input signal & SPK spec
Audio Analyzer	APX525	Audio Analysis (include Power Supply)
Loud-speaker	GRF Memory HE	SPK (Input sound Signal occur)
Power Amplifier	2716C	Power amplification
Charging Conditioning Amplifier	2690	Ref. MIC Signal Transformation
Microphone Interface	BK2010	Voltage & impedance supply to MIC
Operating Software	APx500 3.4.4	A-D Freq. Resp.
Sound Level Calibrator	4231	Standard MIC Calibration purpose

18. SOLDER REFLOW PROFILE
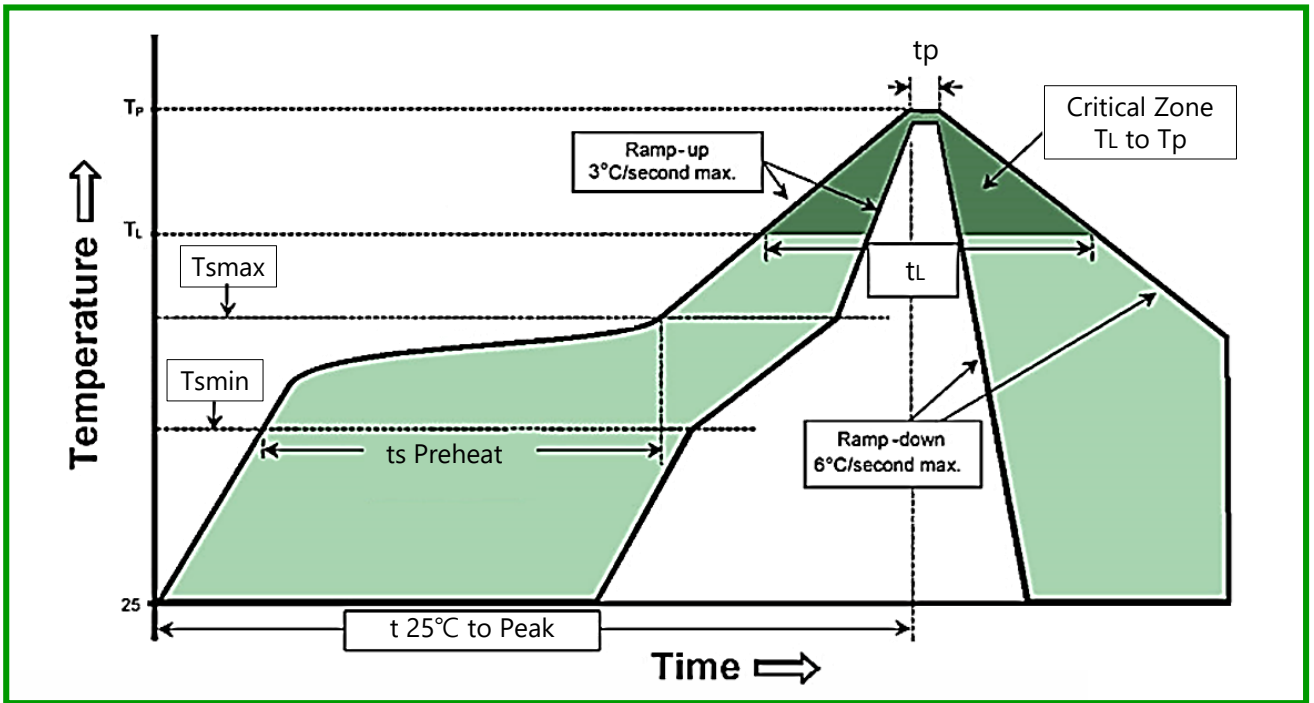
Profile Feature	Pb-Free Assembly
Preheat/Soak	
Temperature Min (Tsmin)	150℃
Temperature Min (Tsmax)	200℃
Time(ts) from (Tsmin to Tsmax)	60 ~ 120 seconds
Ramp-up rate (TL to Tp)	3℃/second max.
Liquidous temperature(TL)	217℃
Time(tL) maintained above TL	60 ~ 150 seconds
Peak package body temperature (Tp)	260℃
Time(tp) within 5℃ of the specified classification Temperature(Tc)	20 ~ 40 seconds
Ramp-down rate (Tp to TL)	6℃/second max.
Time 25℃ to peak temperature	8 minutes max.

[Notes]
1. Solder Reflow Profile based on IPC/JDEC J-STD-020 Revision D.
2. Do not pull a vacuum over the port hole of the microphone. Pulling a vacuum over the port hole can damage the device.
3. Do not board wash after the reflow process. Board washing and cleaning agents can damage the device. Do not expose to ultrasonic processing or cleaning.
4. Recommend no more than 5 cycles.
5. Shelf life : Twelve(12) months when devices are to be stored in factory supplied, unopened ESD moisture sensitive bag under maximum environmental condition of 30℃, 70% R.H.
6. Exposure : Devices should not be exposed to high humidity, high temperature environment. MSL (Moisture sensitivity level) Class 1.
7. Out of bag : Maximum of 90 days of ESD moisture sensitive bag, assuming maximum conditions of 30℃, 70% R.H.
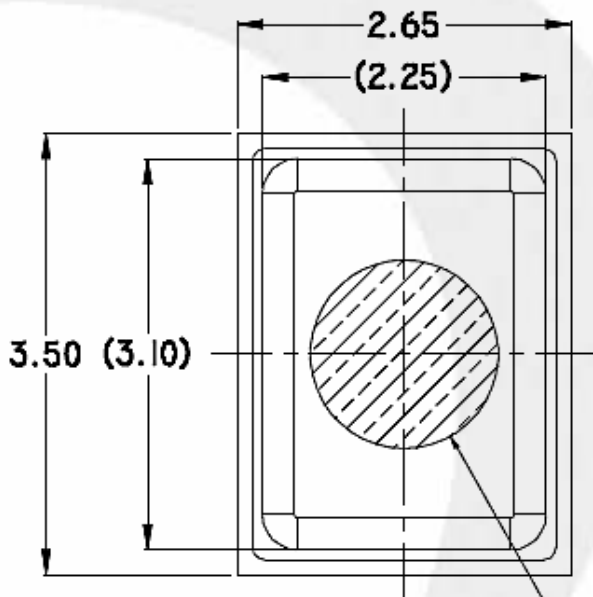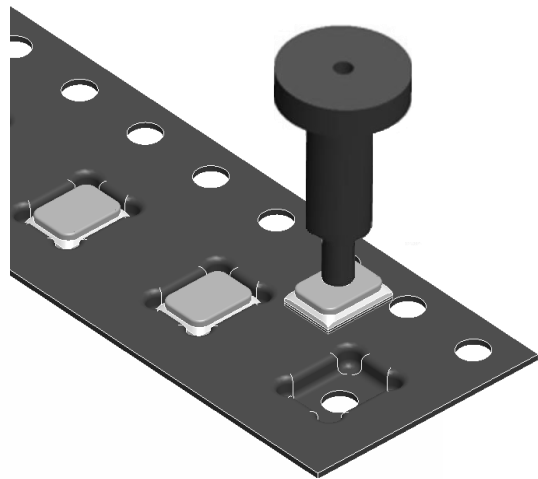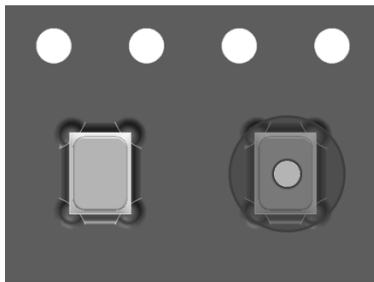
19. RECOMMENDED PICK-UP NOZZLE CONDITIONS

19.1. Nozzle material : Metal or Rubber, Etc.

19.2. Case Weight

- If tool outer size is bigger than MIC. : Max. 10N
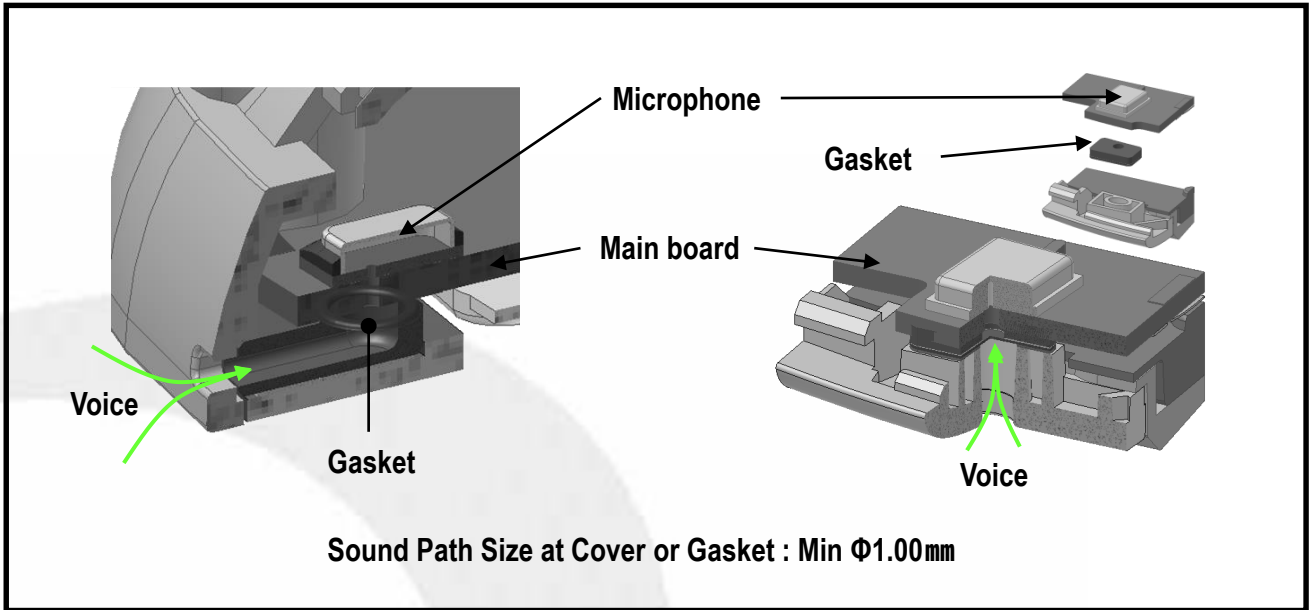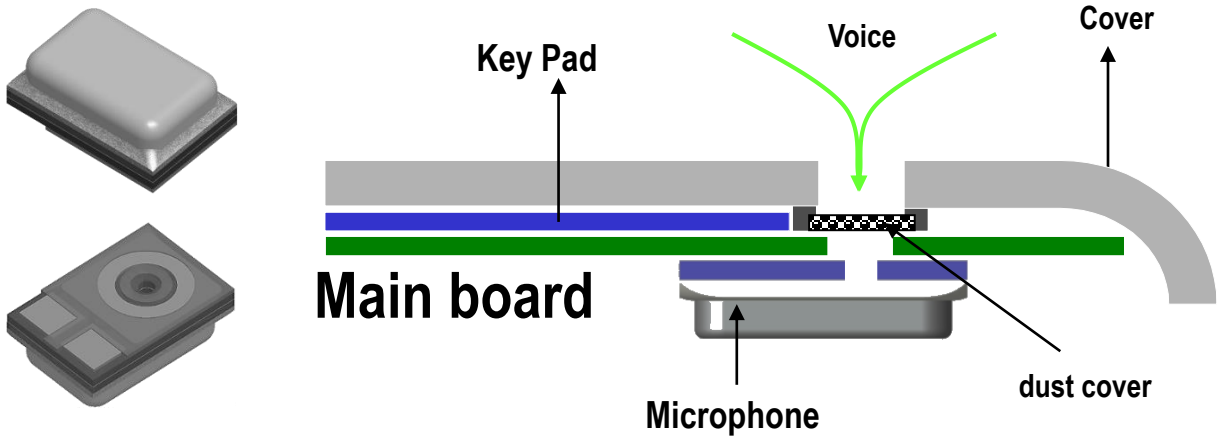
- If tool outer size is smaller than MIC. : Max. 4N

19.3. Nozzle position : MIC. Center
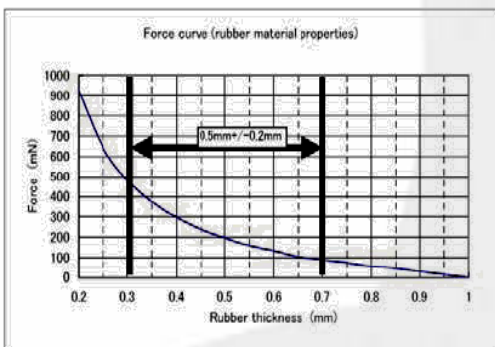
- Nozzle inner diameter size : Max. Ø1.5

2.65

(2.25)

3.50 (3.10)

Max. Φ1.50(Nozzle inner diameter)

20. APPLICATION EXAMPLE

Key Pad

Voice

Cover

Main board

Microphone

dust cover

Microphone

Gasket

Main board

Voice

Gasket

Voice

Sound Path Size at Cover or Gasket : Min Φ1.00㎜

Compression force for sealing

Force curve (rubber material properties)

0.5mm+/-0.2mm

Force (mN): 1000, 900, 800, 700, 600, 500, 400, 300, 200, 100, 0

Rubber thickness (mm): 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1

Gasket compression range for sealing
→ **0.5±0.2mm**

Gasket Layers

Adhesive tap
NITTO No.5919M (0.05T)
(or similar)

Adhesive tap
NITTO No.5000NS (0.06T)
(or similar)

Mesh (Dust cloth)
NITTOKU NT270T (0.06T)
(or Tradex PES 38/31
or similar)

Gasket
NITTO 100(0.9T)
(or Rogers PORON
92-12039 P (1.0T)
or similar)
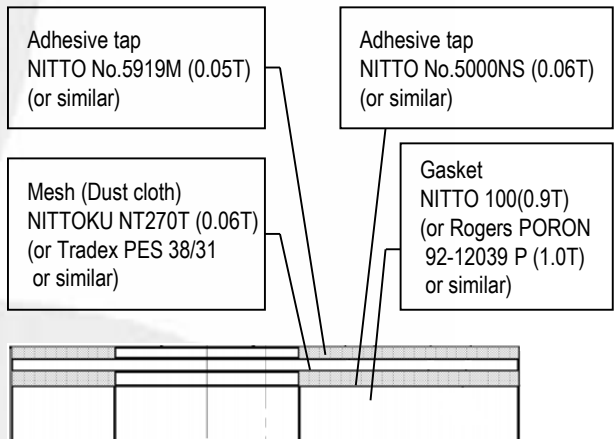
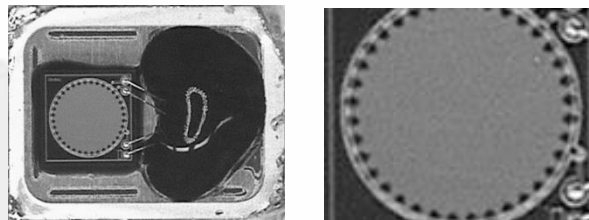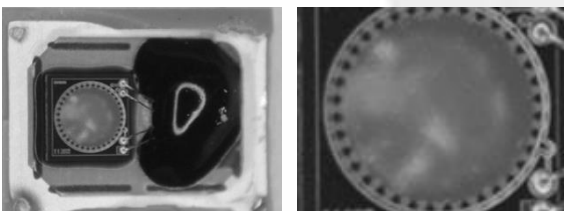# 21. HANDLING GUIDE

21.1. Handling Guide of Cleaning & Foreign Matter

* Note 1. No Liquid or/and gas should be used for washing / cleaning.

* Note 2. No board washes should be applied after reflow

* Note 3. No foreign matter should be exposed interior microphone during cleaning or washing.

if cleaning or washing is applied unavoidably, It must do additional prevention in area of

"Microphone sound hole" to avoid foreign matter.(ex. Attached protective tape)

* Note 4. No seal sound hole of microphone should be applied during reflow process

* Note 5. No ultrasonic cleaning should be applied in case of microphone unit itself or/and after

installed microphone onto board.

* Note 6. Do not reuse microphone which is defect during SMD.

Do not wash or clean to reuse microphone which is defect during SMD.
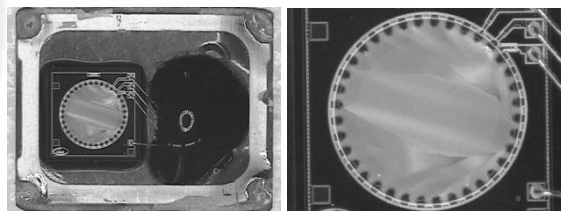
De-cap View of
Good part

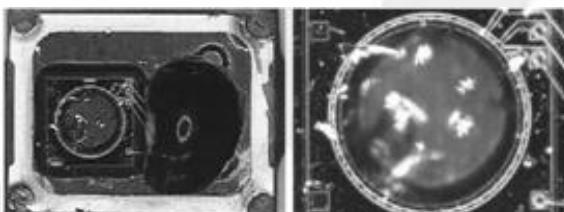► **Example) De-cap View of the NG Microphone**

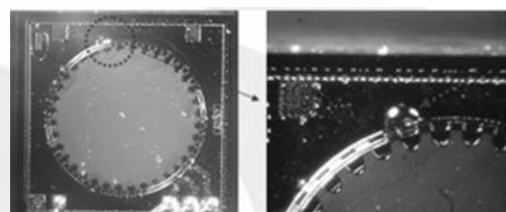**Reflow after sealing of Sound Hole**

Defect view NG MIC by Pick-up

Defect view NG MIC by ultrasonic cleaning

Defect view NG MIC by liquid foreign matter

21. HANDLING GUIDE

21.2. Handling Guide of Care of Board Routing & Cutting

* Note 1. Do work maximum distance with microphone and minimum speed machining setting
during Board Routing & Cutting

* Note 2. Do not wash or clean "Board" after Board Routing & Cutting

* Note 3. Do additional prevention in area of "microphone sound hole" to avoid foreign
matter(ex. Attached protective tape) during Board Routing & Cutting

* Note 4. Do not use strong air flow directly in order to remove foreign matter should be applied
in microphone

* Note 5. Do preventive action in area of "microphone sound hole" to avoid foreign
matter(ex. Attached protective tape) or air .
(ex. Block "Microphone sound hole" by hands as below picture)

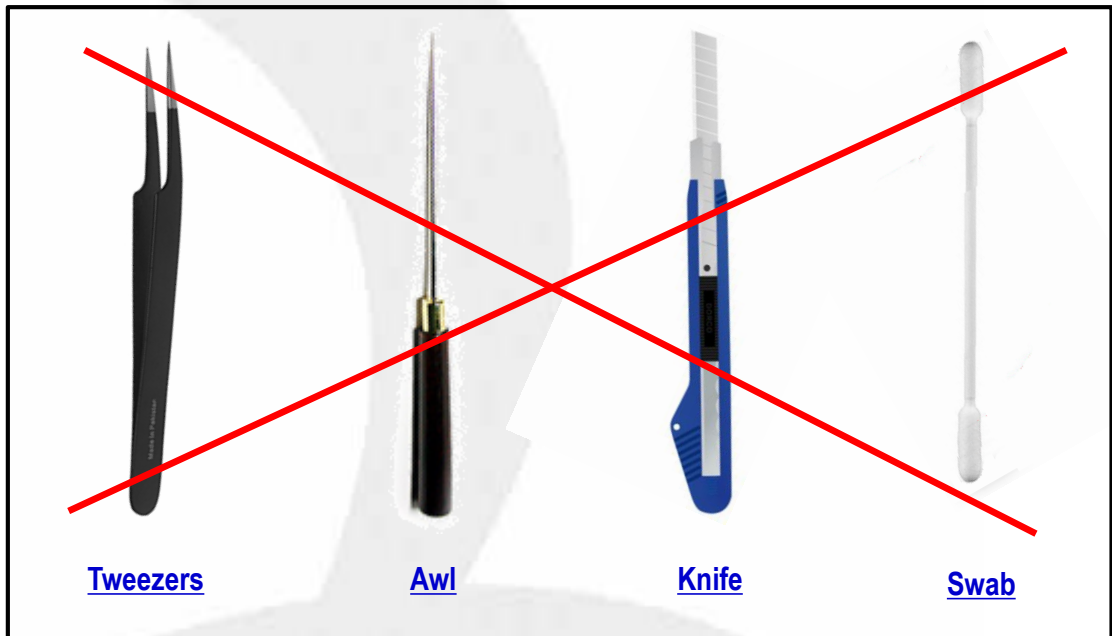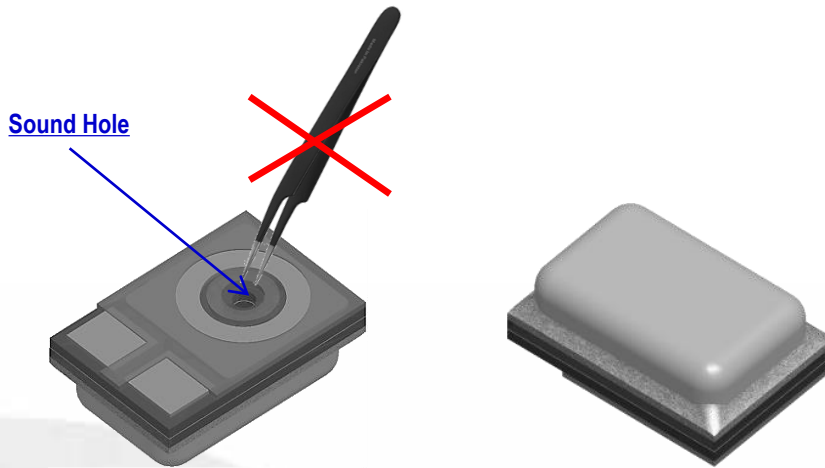► **Example) Air Blowing Condition**

N.G
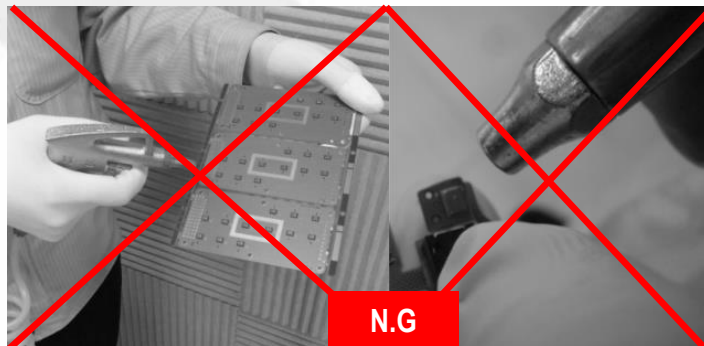
**Example) Do block "Microphone Sound Hole"
by hands during air blow**

21. HANDLING GUIDE

21.3. Broken Membrane & Back Plate of MEMS DIE

* Note 1. <u>Do not touch Sound Hole by Sharp Tools. (ex. Tweezers)</u>

* Note 2. <u>Do not rub Sound Hole by Swab. (ex. Cloth)</u>

Sound Hole

| Tweezers | Awl | Knife | Swab |

21. HANDLING GUIDE

21.4. PRECAUTION for ESD

* Note 1. Wrist straps

Since the main cause of static is people, wrist-straps is very important to reduce the
ESD damage. A wrist-strap, when properly grounded, keeps a person wearing it near
ground potential and static charges do not accumulate. Wrist-straps should be worn
by all personnel in all ESD protection areas, that is where ESD susceptible devices
and end products containing them are assembled, manufactured handled and
packaged.

Further ESD protection, similar to wrist-strap, involves the use of ESD protection floors
in conjunction with ESD control footwear or foot-straps. Static control garments (smocks)
give additional protection.

* Note 2. Work Areas

It is recommended that all areas where components that are not in ESD protective
packaging are handled should be designated as ESD protective areas. Ground mats
of ESD safe table surfaces is needed. These should be connected to the local ground
with a 1 Mega-ohm series resistor. ESD safe floor and shoes are also needed.

* Note 3. Ionizers

In situations where we have to deal with isolated conductors that cannot be grounded
and with most common plastics, air ionization can neutralize the static charge because
only air is required for ionization to be effective, air ionizers can and should be used
wherever it is not possible to ground everything.

21. HANDLING GUIDE

21.5. Inspection by X-Ray

* Note 1. <u>Do inspect X-Ray after SMD.</u>

　　　　It is different X-Ray condition by applied SMD company.

BSE **Best sound electronics**

22. REWORK

22.1. Recommended Heater Gun Specification

Manufacturer		HAKKO
Model		850B ESD
Temperature control		100 ~ 420
Top heater	Type	Hot air flow
	Flow rate	< 23 ℓ/min
Alignment		visual
Pick-up		Manual
Solder/flux		1. Removing or pre-heating the solder residue before mounting new part 2. Apply lead-free flux only or apply 2 ~ 3 points of solder paste instead

22.2. Recommended Heater Gun Setting Condition

Heater gun setting Temperature		300 ℃ ~ 400 ℃
Nozzle & MIC. Length		1.5 cm
Flow setting		2.0 ~
Alignment		Visual
Pick-up		Manual
Working Time	Remove	10 ~ 20 sec
	SMD	10 ~ 20 sec

Heater gun nozzle

1.5cm   MIC

PCB

* Note 1. According to the material & thickness & counts of layer for PCB, this condition will be change.

* Note 2. According to Rework M/C & Worker, this condition will be change.

22. REWORK

22.3. Rework Process Condition (using Heater Gun)

Bottom Heater	Recommend IR heater.
Alignment	Use magnifier for alignment. Note : it may difficult to do alignment by naked visual because MIC pad is located on soffit.
Temperature	Recommend temperature is "300℃".
Time	It is the optimized working process of 1.0 ~ 2.0mm board for 10~20sec under 300℃ temp.
Nozzle	Use heater gun without nozzle

Solder/flux Process Options	1. Removing the solder residue before mounting new part
	  - print Halogen-free solder paste on the SMD MIC
	   terminals using mask → mounting

	2-1. Pre-heating the solder residue before mounting new part - apply Halogen-free flux onto the land pattern

	2-2. Pre-heating the solder residue before mounting new part
	  - apply 2 ~ 3 points of Halogen-free solder paste onto the
	   land pattern

	3. Highly recommendation process for rework.
	  - After remove defect parts without Pre-heating,
	   It is used Halogen-free flux or 2~3 points of Halogen-free
	   solder. (It is most effective and fast for rework)

22. REWORK

22.4. Handling of Rework

* Note 1. Follow standard guide line of SMD company for Rework Condition

* Note 2. Rework conditions may variable by SMD companies' circumstance and working

  condition.

* Note 3. Do Not reuse defect microphone by SMD process.

* Note 4. Do not employ chemical board wash or cleaning, as the associated cleaning
  agents (such as liquid or air) can damage the device.

SPECIFICATION HISTORY

Version	Date	Comments
1.0	Aug. 22. 22	1st Submission of Electro-Acoustical specification

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