SPECIFICATION OF
DIGITAL MEMS MICROPHONE

(TO : 하드커널)

MODEL NO : DMO-B125T26-6P
DIRECTIVITY : OMNI-DIRECTIONAL
DATE : 2011. 06. 21

하드커널		Prepared	Checked	Checked	Approved
	Name				
	Sign				
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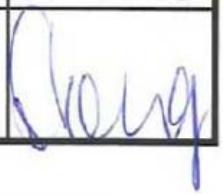
	Sign				

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SPECIFICATION HISTORY

Version	Date	Comments
V1.0	June. 21, 11	1ST Submission of Electro-Acoustical specification

1. INTRODUCTION

This specification is for the SMD possible Digital MEMS Microphone which has endurable reflow temperature of up to 260℃ for over 15 seconds.

The output of microphone is a digital serial bit stream.

2. MODEL NO

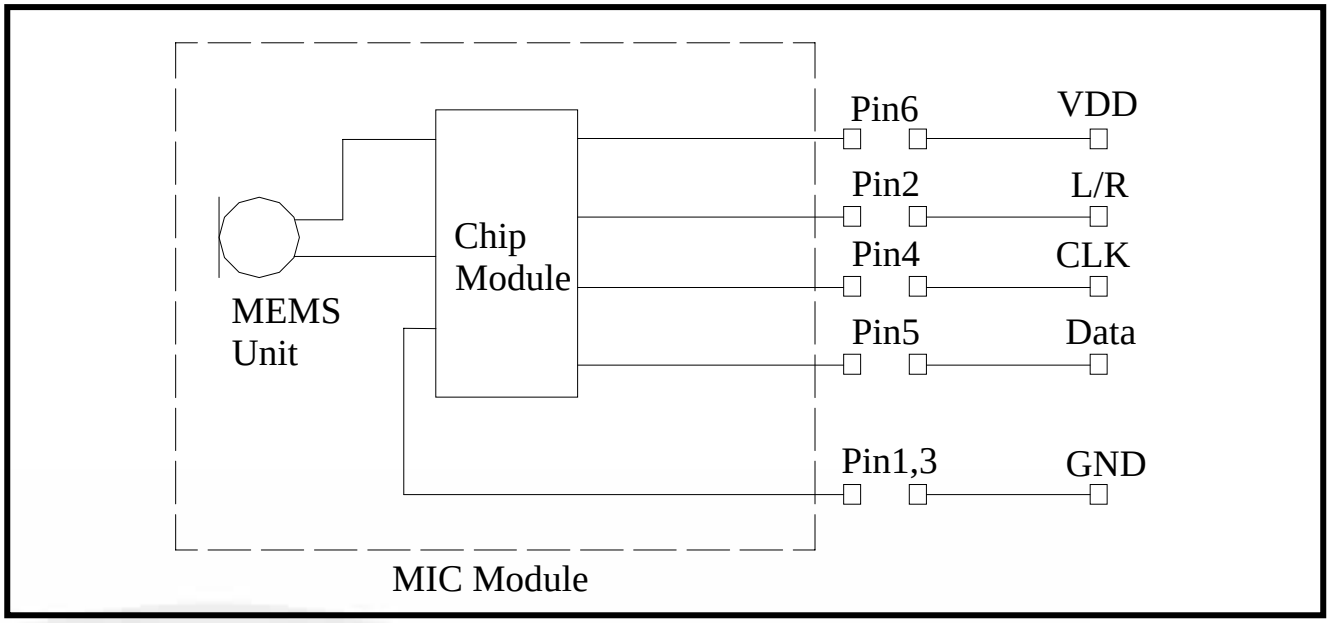
DMO-B125T26-6P

3. ELECTRICAL CHARACTERISTICS

TEST CONDITION : Vdd = 3.3V, Clock Frequency = 2.4MHz Temp. = 23 ± 2 ℃ Room Humidity = 65 ± 5 %

NO.	Parameter	Symbol	Condition	Limits			Unit
				Min.	Center	Max.	
1	Sensitivity	S	1kHz, 1Pa (94dBSPL)	-29	-26	-23	dBFS
2	Current consumption	Idd	Output OPEN Circuit			700	㎂
3	Signal to Noise Ratio	S/N	A-weighting at 1kHz 1Pa		56		dB(A)
4	Operating Voltage	Vdd		1.64	3.3	3.6	V
5	Power Supply Rejection	PSR	Measured with 217㎐ square wave and broad band noise, both 100mVpp			-70	dBFS
6	Total Harmonic Distortion	THD	At 115dB SPL @1kHz			5	%
			At 120dB SPL @1kHz			10	%

4. MEASUREMENT CIRCUIT



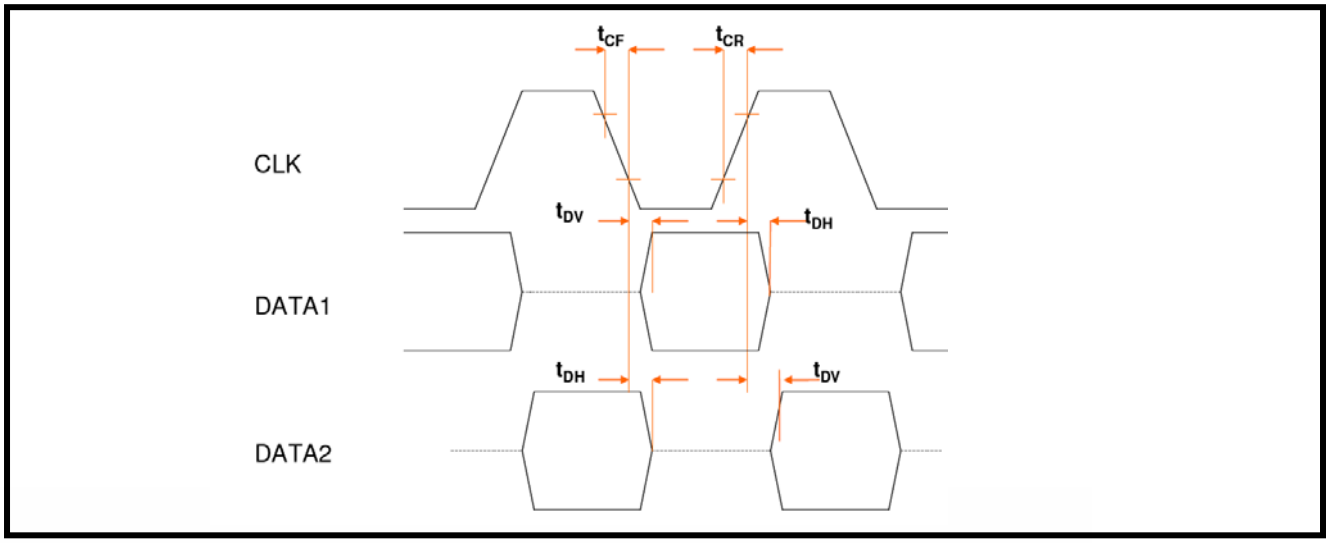
5. PIN DESCRIPTION

Pin Name	Description
CLOCK	Clock input signal
GND	Ground
DATA	PDM digital data output
POWER	Supply voltage
L/R	Left/right channel selection

6. INTERFACE PARAMETERS

Parameter	Symbol	Min	Typ	Max	Unit
Clock freq. (sample rate)	f_{CLK}	1	2.4	3.25	MHz
Clock duty cycle	f_{DC}	40	50	60	%
Power supply	V_{DD}	1.64	3.3	3.6	V
Input/Output voltage low	V_{IOL}	-0.3		$0.35*V_{DD}$	V
Input/Output voltage high	V_{IOH}	$0.65*V_{DD}$		$V_{DD}+ 0.3$	V

7. INTERFACE TIMING CHART



Parameter	Symbol	Min	Typ	Max	Unit
Clock rise time	t_{CR}		10		ns
Clock fall time	t_{CF}		10		ns
Delay time for data valid	t_{DV}	18		40	ns
Delay time for data high Z	t_{DH}	0		15	ns

8. CHANNEL SELECTION

Channel	L/R pad connection
DATA1	GND’
DATA2	VDD

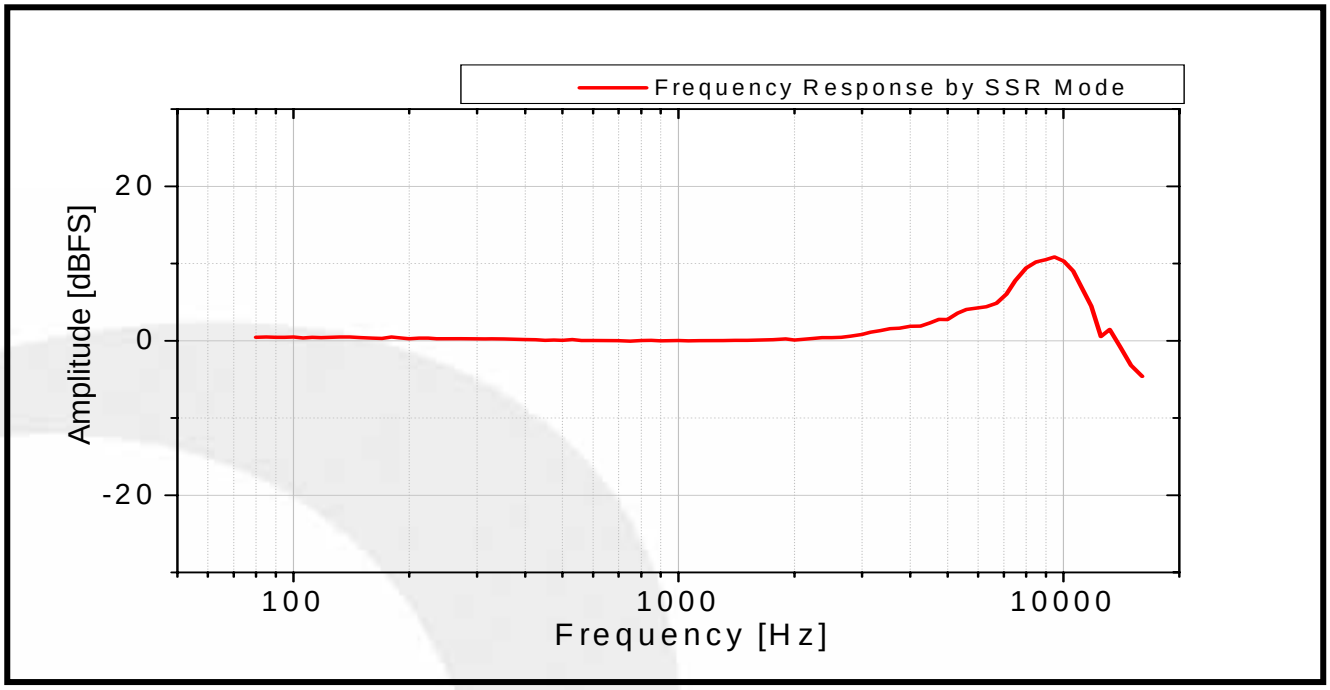
9. STANDBY MODE

The stand-by mode is entered by stopping the clock or lowering the clock frequency below stand-by clock frequency.

Parameter	Symbol	Min	Typ	Max	Unit
Wake-up time	t_{UP}			10	ms
Fall-asleep time	t_{DOWN}			10	ms
Standby current	I_{SB}		38	50	μA
Standby clock frequency	f_{CLKSBM}			1	kHz

10. TYPICAL FREQUENCY RESPONSE CURVE (FAR FIELD)

Far Field Measurement Condition
Temperature : 23 ± 2 ℃
Supply Voltage : 3.3V
Acoustic stimulus : 1Pa (94dB 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

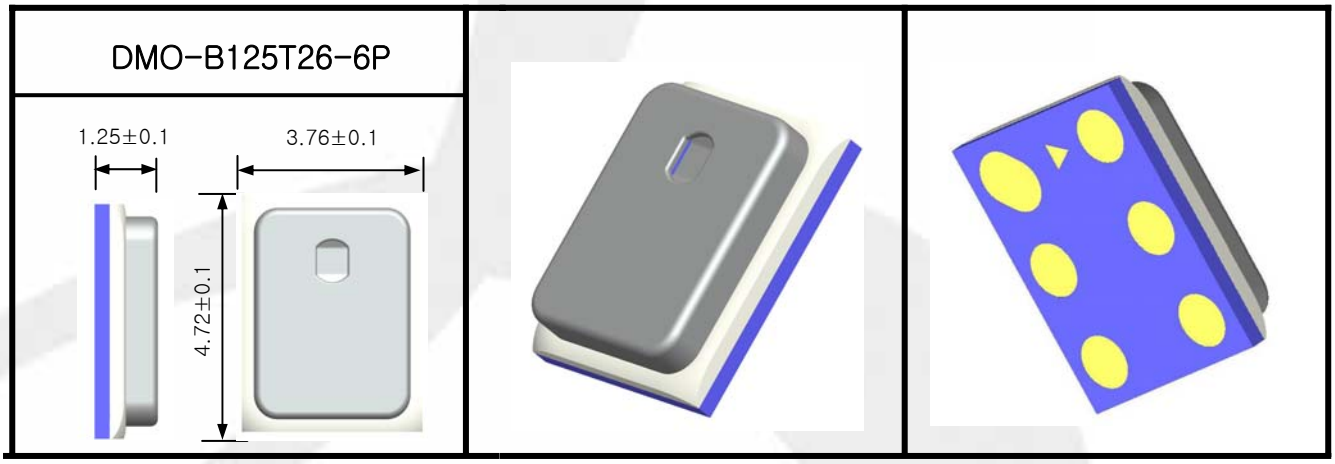


11. MECHANICAL CHARACTERISTICS

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

■ SMD Type

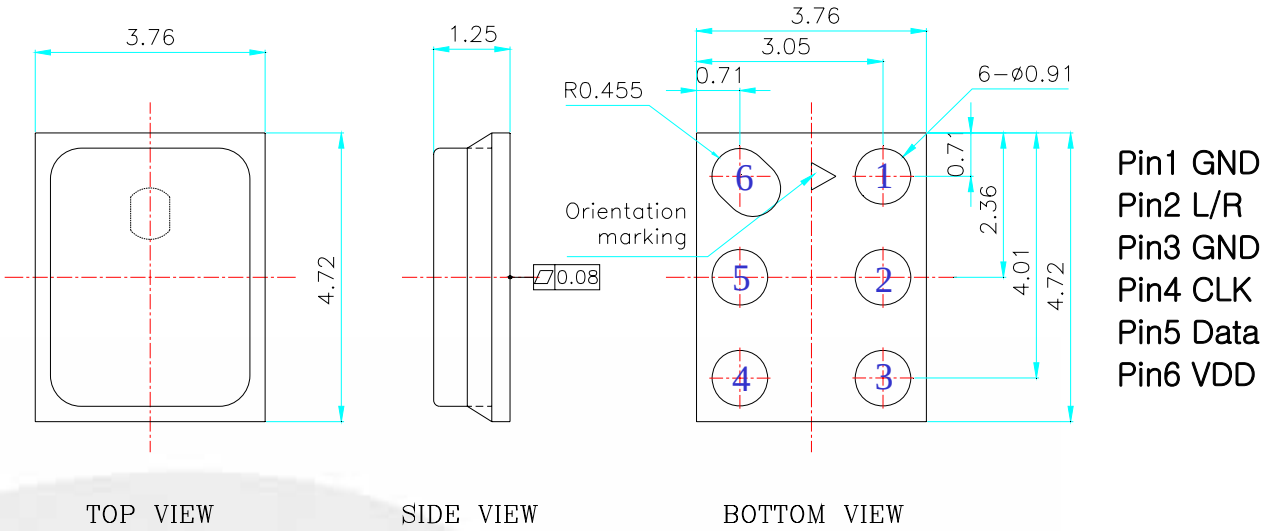
DMO-B125T26-6P



– Mechanical dimensions, Land Pattern

Dimensions

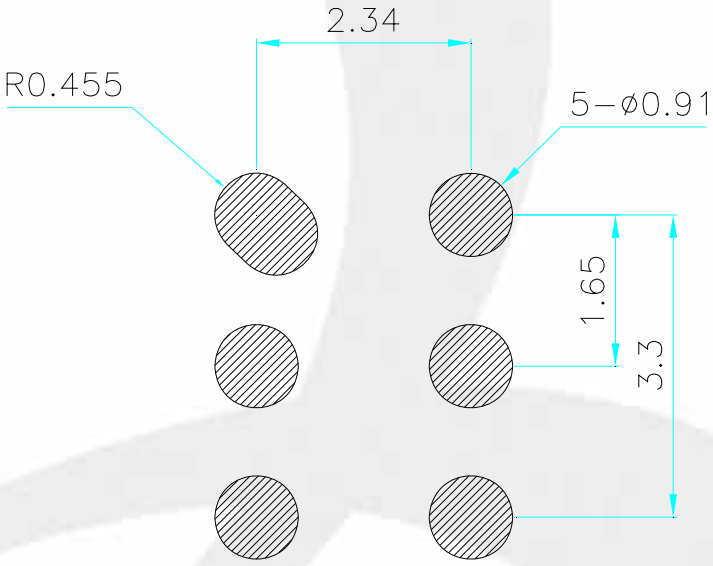
(Unit: mm)



Pin1 GND
Pin2 L/R
Pin3 GND
Pin4 CLK
Pin5 Data
Pin6 VDD

Recommended PCB land pattern

(Unit: mm)



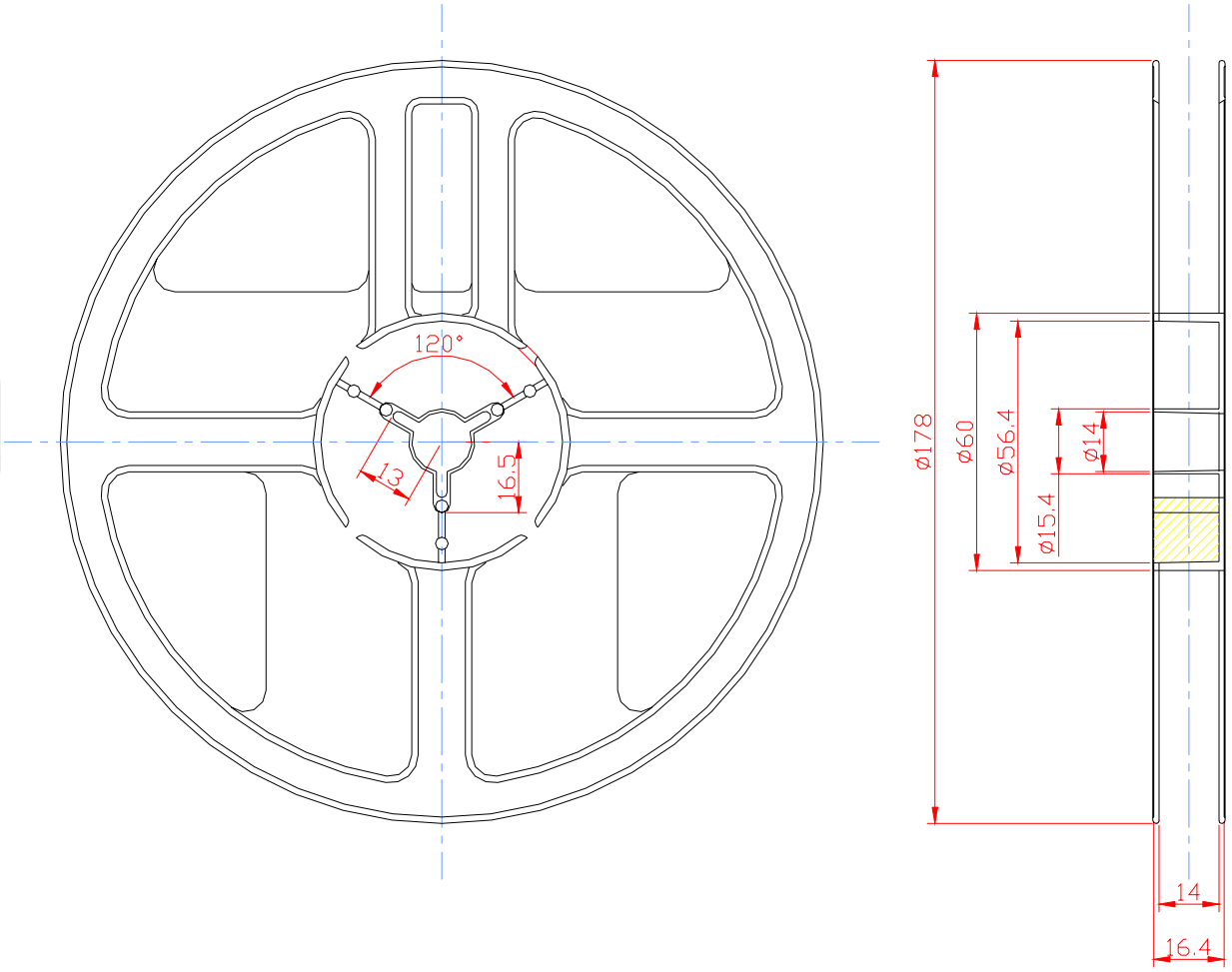
- thickness of metal mask: 0.12 mm

12. Packaging Specification

– Reel

(Unit : mm)

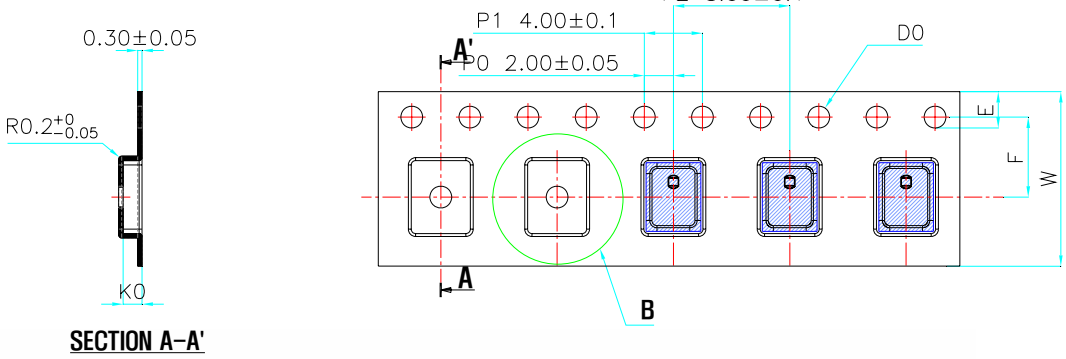
• 7" reel for sample stage



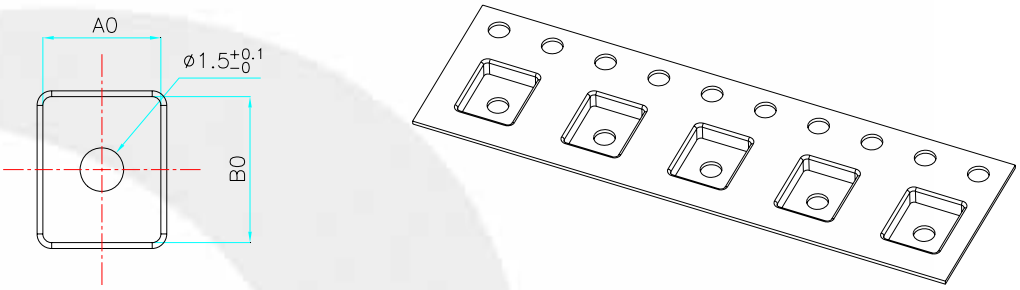
• 13" reel will be provided for the mass production stage

13. Packaging Specification

- Taping



SECTION A-A'



DETAIL B (2:1)

[Note]
1. 13" Reel = 4,800 pcs

Unit : mm

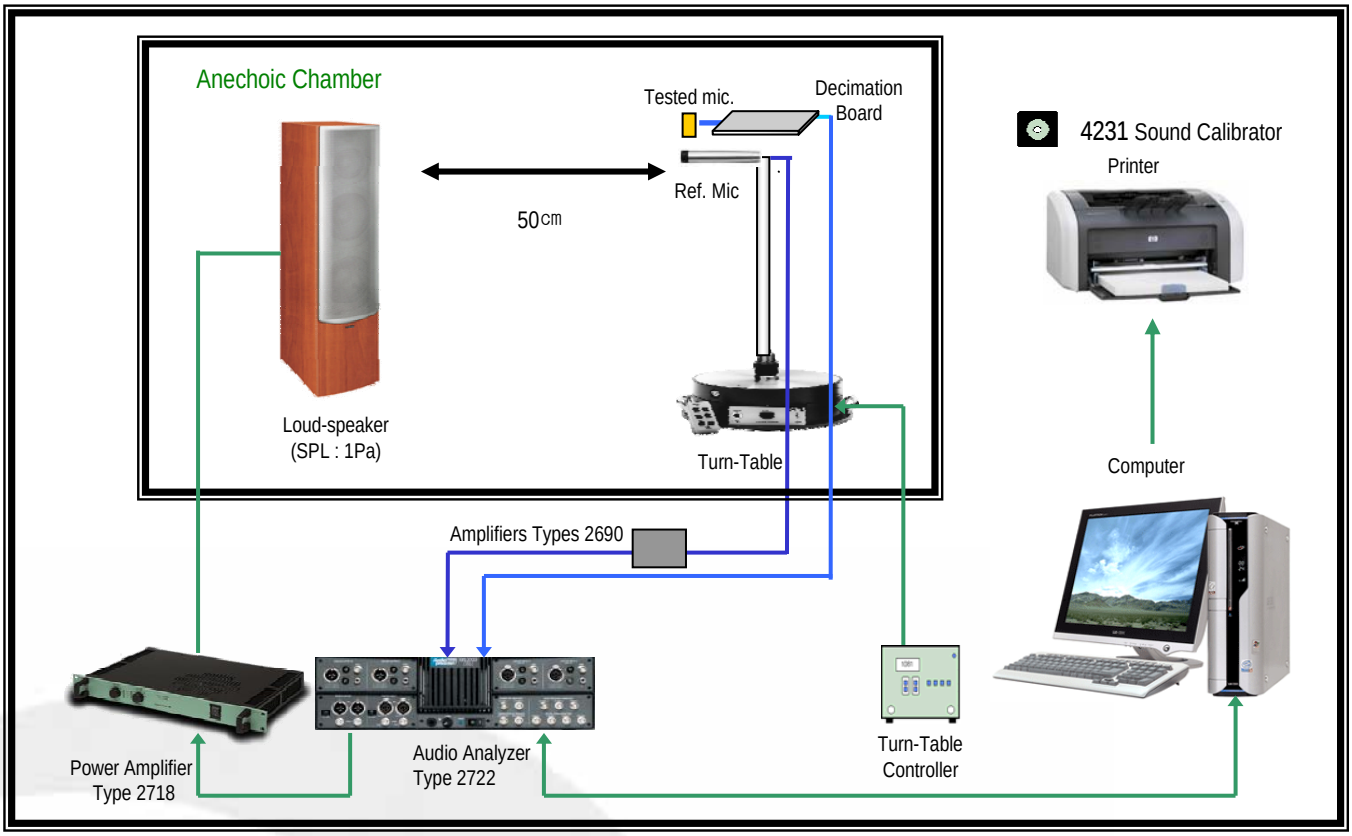
A0	4.06±0.10	E	1.75±0.10
B0	5.02±0.10	F	5.50±0.05
K0	1.30±0.10	T	0.30±0.05
D0	1.50±0.10	W	12.00±0.30

14. RELIABILITY TEST CONDITIONS

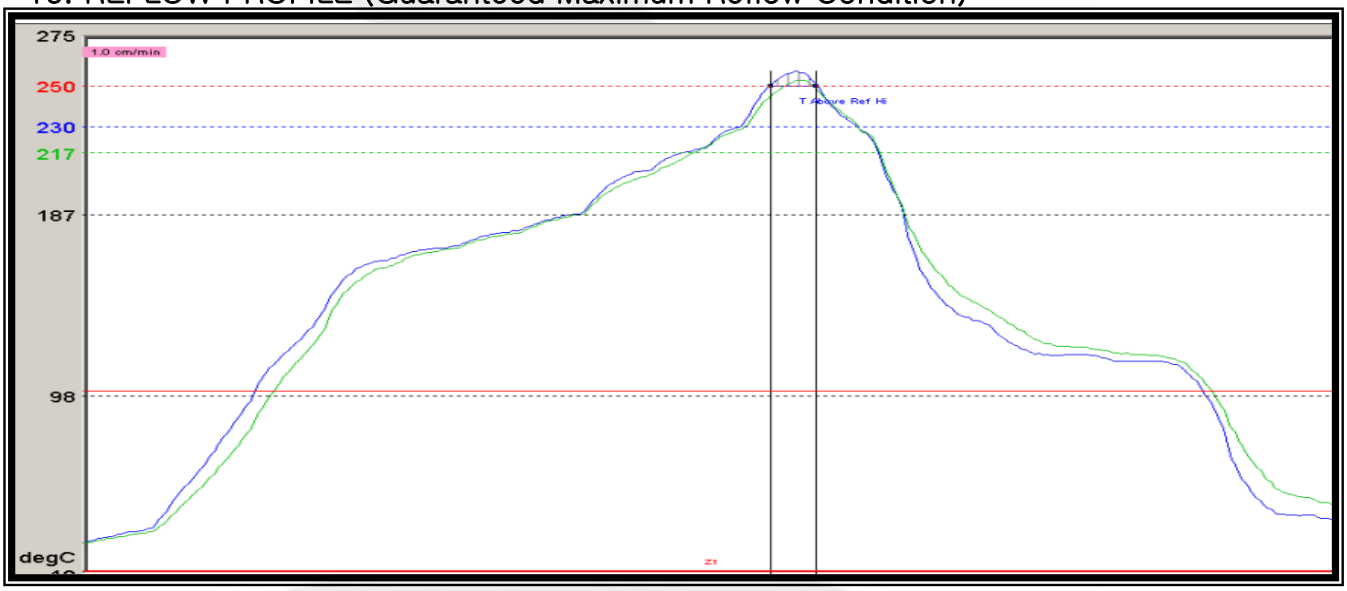
Test can be performed, after 2 passes reflow.

Item	Test Method and conditions	Duration
ESD Test (ESD Mil-Std 883E spec.)	JESD22-A114-B level 2 'Human body Model' ((2KV / 100pF 1500Ω / 10times / each pin (VDD, DATA, L/R, CLK) JESD22-A115-A level A 'Machine Model' ((200V / 200pF 0Ω / 10times / each pin(VDD, DATA, L/R, CLK) JESD22-C101-A level III 'Charged device model' ((500V / 0pF 0Ω / 10times / each pin (VDD, DATA, L/R, CLK)	
Low storage Temperature	-40℃, Temp. change 1℃/min	1000 hrs
Dry heat storage	+125℃ Dry heat, Temp. change 1℃/min	1000 hrs
Dry heat operation	+85℃, Temp. change 1℃/min, Bias voltage applied	1000 hrs
Chang of Temperature	-40℃/+85℃, Change time < 3 min	1000 cycles
THB (Thermal Humidity Bias)	+85℃, 85%RH, Bias voltage applied	400 hrs
Vibration	2~200Hz, X,Y,Z axis	15 min
Reflow Optimization	After reflow test 2 times, sensitivity must be within ±3.0dB from initial sensitivity.	
Bending	The quality board is supported from two ends. 1mm bending is applied to the board by pressing from the center of the board.	Samples @ room temperature samples assembled on QBs. Microphone output is monitored to observe possible abnormal behavior.
Twisting	Quality board PWB shall be mounted from the other end of the board while the other end is twisted 5° to both clockwise and counter clockwise.	

15. MEASUREMENT SYSTEM

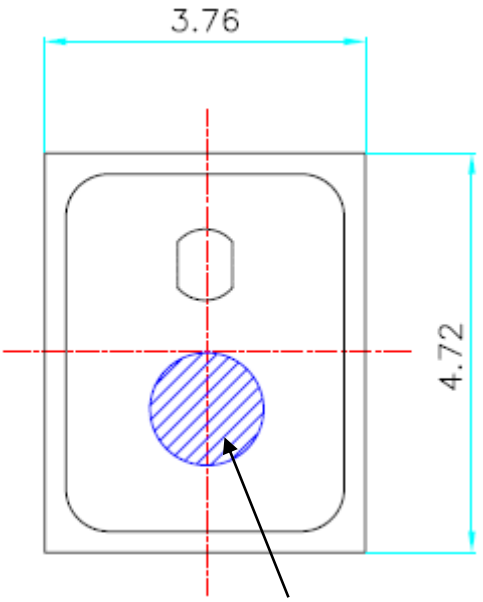


16. REFLOW PROFILE (Guaranteed Maximum Reflow Condition)



Parameter	Specification	Parameter	Specification
Average temp. gradient in preheating	2.5℃/s	**Time above 250℃**	Max. 10 s
Soak time	2-3 minutes	**Peak temp. in reflow**	255℃(-0/+5℃)
Time above 217℃	Max. 60 s	**Temp. gradient in cooling**	Max. -5℃/ s
Time above 230℃	Max. 50 s		

17. Recommended Pick-up Location



Recommended Pick-up Location.