

Specification of Analog MEMS Microphone

RoHS Compliance & Halogen Free

Model: SA03T423-J11

Eng.No: SA1511002

Designed By: Ester 11.13

Checked By: Richard 11.13

Approved By: Nina 11.13



Customer:

P/N of Customer:

Approved By: _____

[illegible]

DO NOT REPRODUCE FOR OUTSIDE USE WITHOUT WRITTEN PERMISSION



SOUND COMPONENTS LIMITED

Contents

1. Introduction	4
2. Electrical Characteristics	4
3. Frequency Response curve	5
4. Test setup	5
5. Measurement Circuit	5
6. Mechanical Characteristics	6
6.1. Weight	6
6.2. Appearance Drawing	6
7. Application	7
7.1. Pickup Tool Pick Location & PCB Solder Pad layout	7
7.2. Recommended Reflow Process Condition	7
7.3. Storage Condition	8
8. Packing	8
8.1. Tape Specification	8
8.2. Reel Specification	9
8.3. Packing Quantity	10
8.4. Packing Information	10
9. Reliability Test	11

MEMS Microphone

1. Introduction

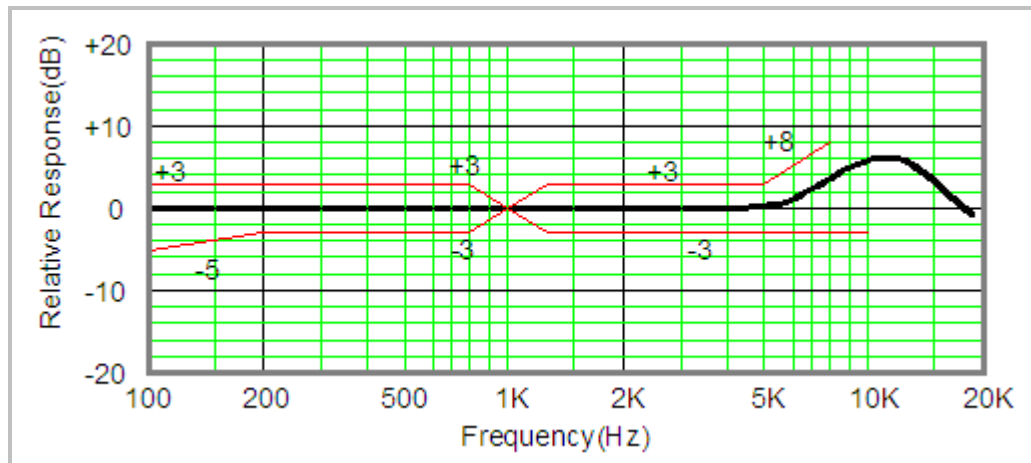
The SA03T MEMS Microphones are integrated with specialized Pre-amplification ASIC to provide high sensitivity, high SNR output from a capacitive audio sensor. It's packaged for surface mounting and high temperature re-flow assembly.

2. Electrical Characteristics

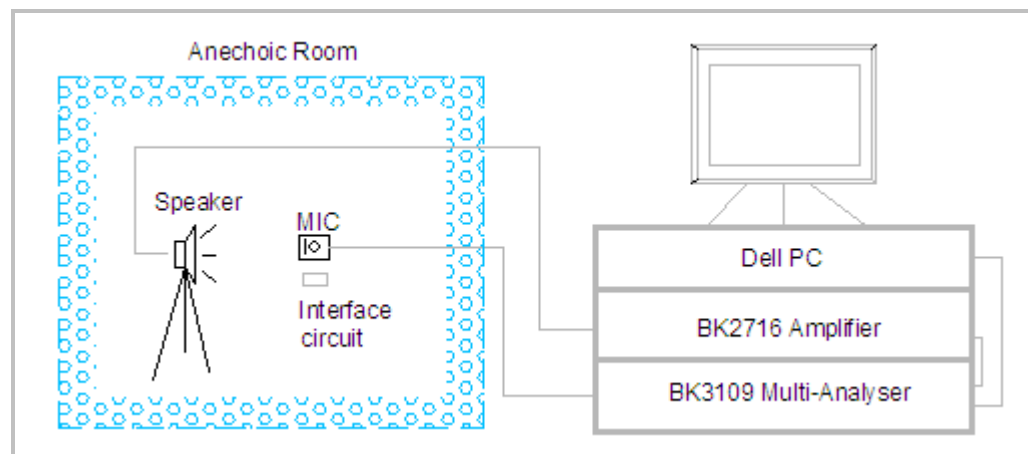
Test Condition: $V_{DD}=2V$, $23\pm 2^{\circ}C$, $55\pm 10\%R.H.$, Unless otherwise specified.

Specification	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Directivity			Omni-directional			
Sensitivity Range	S	94dB SPL @1kHz,	-45	-42	-39	dB
Output Impedance	Z_{out}	94dB SPL @1kHz,			300	Ω
Current Consumption	I	94dB SPL @1kHz,			200	μA
S/N Ratio	SNR	94dB SPL @1kHz, A-Weighted		58		dB(A)
Operating Voltage	V_{DD}		1.5	2.0	3.6	V
Total Harmonic distortion	THD	94dB SPL @1kHz, S=Typ			0.5	%
Sensitivity drop	ΔS	94dB SPL @1kHz, $V_{dd}=3.6V-1.5V$			0.5	dB
Maximum input S.P.L	AOP	10% THD @1kHz S=Typ,		120		dB
Power Supply Rejection	PSR	100mVpp Squarewave @217Hz, A-weighted		-70		dB

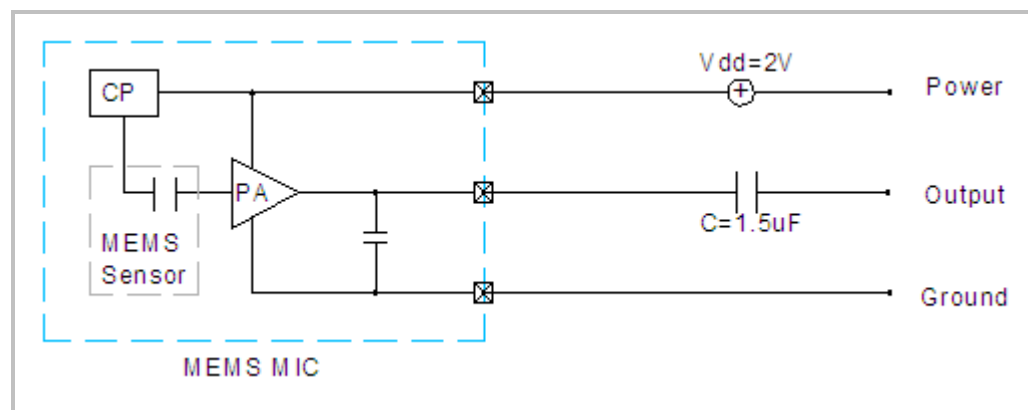
3. Frequency Response Curve



4. Test Setup (Sensitivity Test in Anechoic Room)



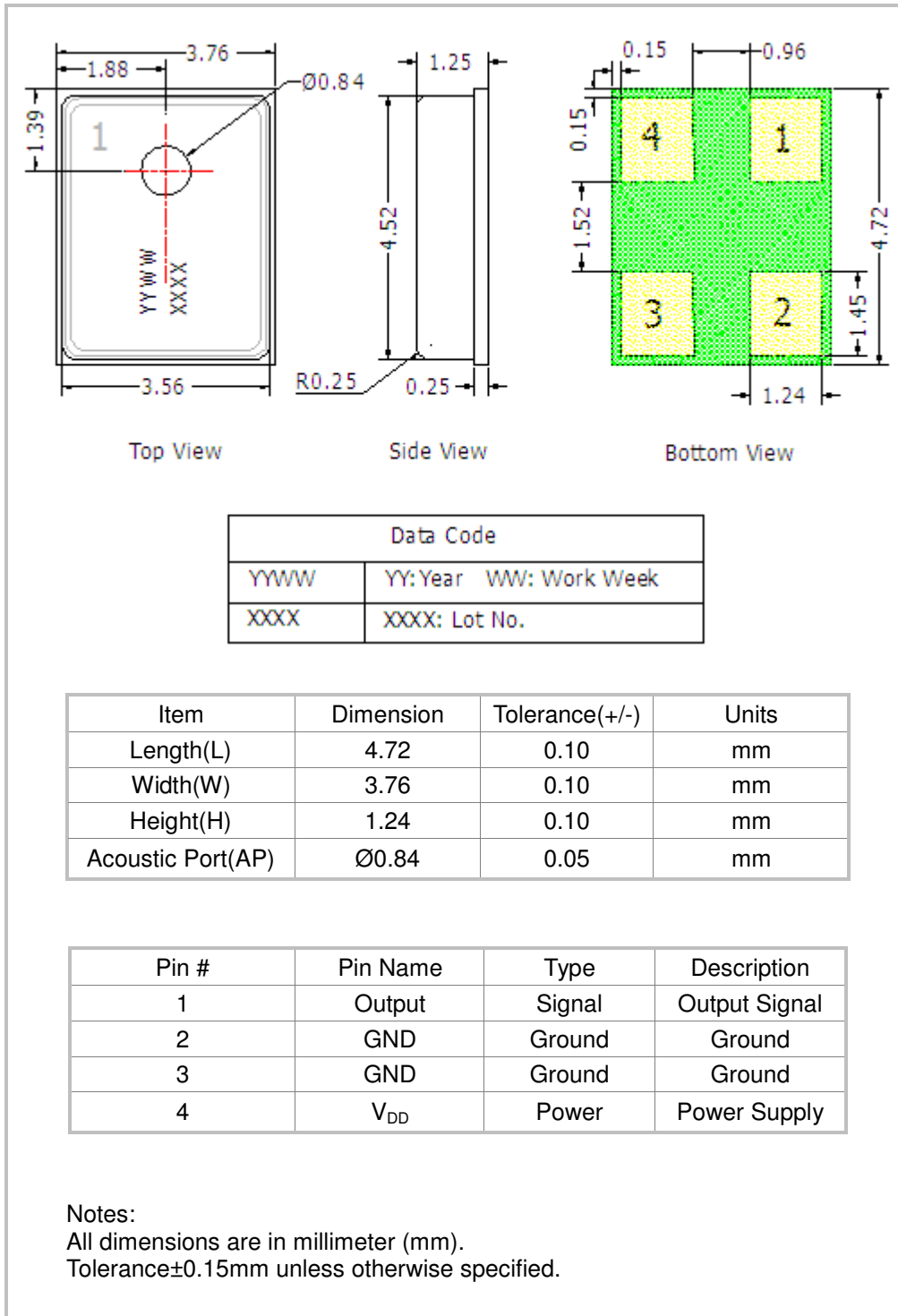
5. Measurement Circuit



6. Mechanical Characteristics

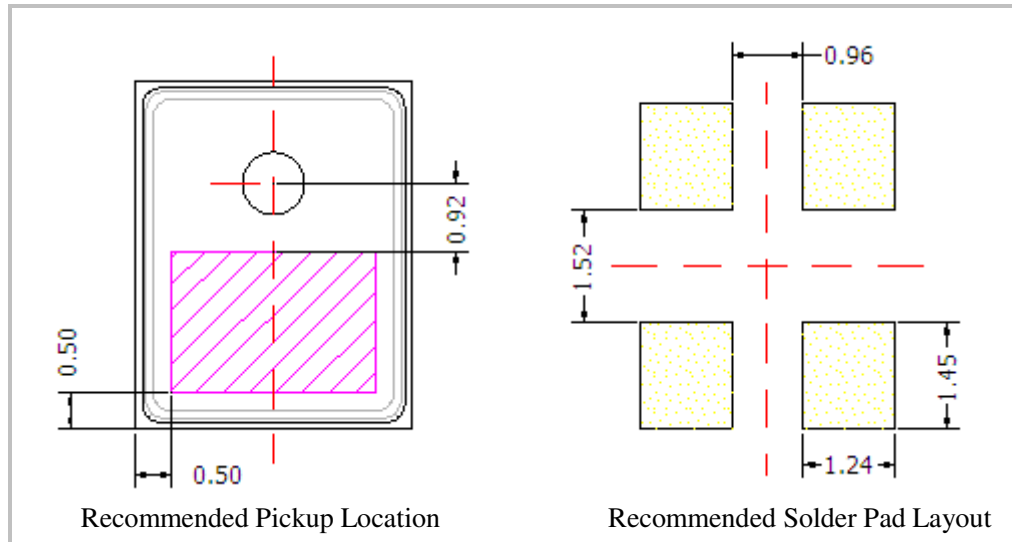
6.1 Weight: Less than 0.3g

6.2 Appearance Drawing(unit: mm)



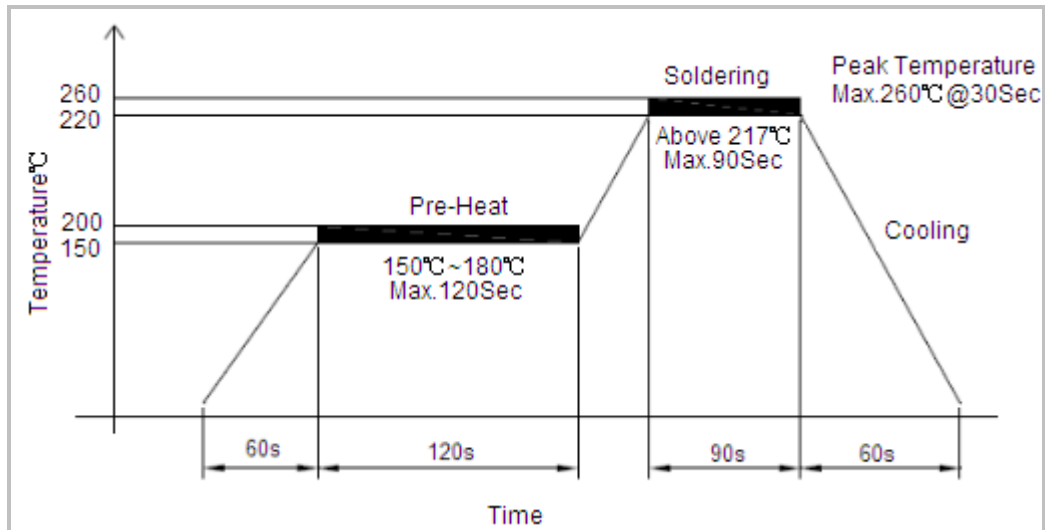
7. Application

7.1 Pickup Tool Pick Location & PCB Solder Pad Layout



7.2 Recommended Reflow Process Condition

Recommend Re-flow Profile, solder reflow $\leq 260^{\circ}\text{C}$ (for 30s Max of peak temperature).



Important Notes

In order to minimize device damage:

1. Do not board wash or clean after the reflow process.
2. Do not apply over 0.3Mpa of air pressure into the port hole.
3. Do not expose to ultrasonic processing or cleaning.
4. Do not pull a vacuum over port hole of the microphone.

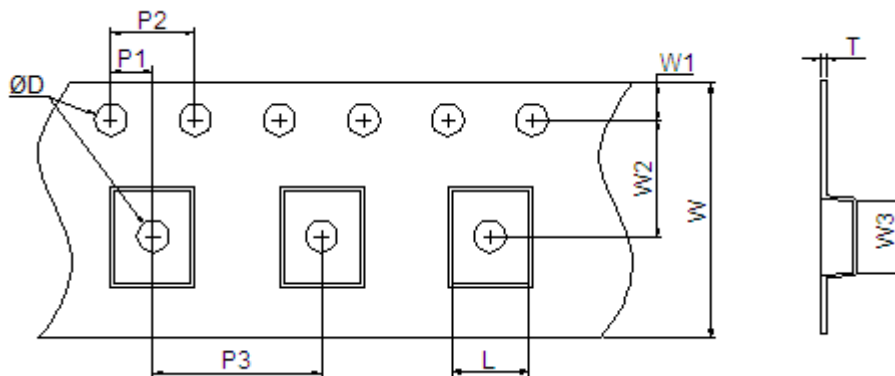
7.3 Storage Condition

7.3.1 Storage temperature range:-40~+125℃.

7.3.2 Operating temperature range:-40~+100℃.

8. Packing

8.1 Tape Specification



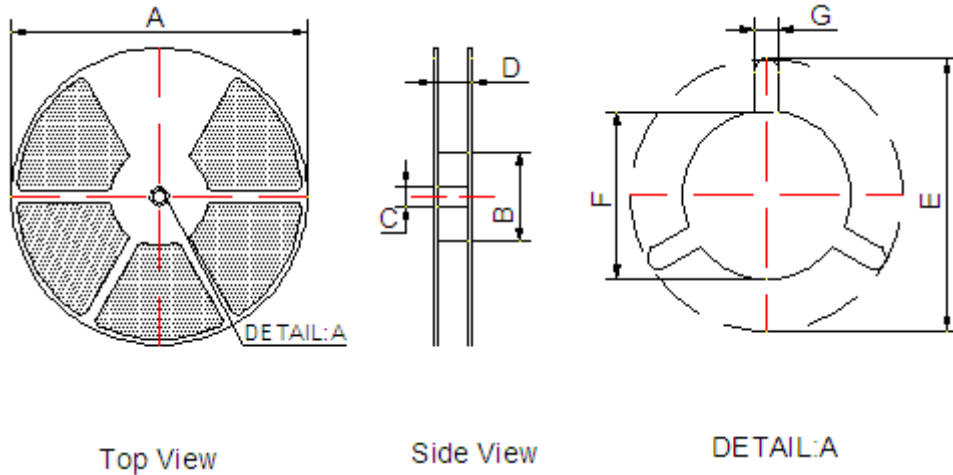
Symbol	Dimension		
	Minimum	Nominal	Maximum
ϕD	1.5	1.5	1.6
P1	1.9	2.0	2.1
P2	3.9	4.0	4.1
P3	7.9	8.0	8.1
L	4.0	4.1	4.2
W	11.7	12	12.3
W1	1.65	1.75	1.85
W2	5.4	5.5	5.6
W3	5.0	5.1	5.2
T	0.25	0.3	0.35

Notes

All dimensions are in millimeter (mm).

Tolerance ± 0.15 mm unless otherwise specified.

8.2 Reel Specification



7" Reel

Description	Symbol	Dimension (mm)		
		Minimum	Nominal	Maximum
Reel Diameter	A	-	180	-
Hub Diameter	B	58	60	62
Hub Hole Diameter	C	12.8	13	13.5
Reel Width(Measured at hub)	D	-	16	16.4
Arbor Hole	E	20.2	-	-
Arbor Hw in mm Diameter	F	12.8	13.0	13.5
Arbor Slot Width	G	1.5	-	-

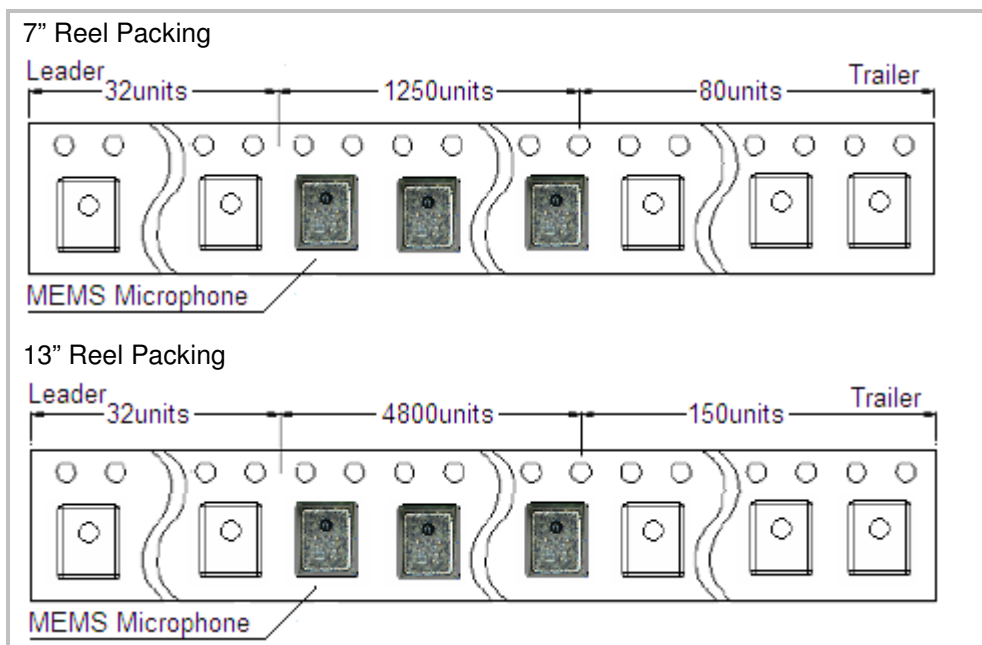
13" Reel

Description	Symbol	Dimension (mm)		
		Minimum	Nominal	Maximum
Reel Diameter	A	-	330	-
Hub Diameter	B	98	100	102
Hub Hole Diameter	C	12.8	13	13.5
Reel Width(Measured at hub)	D	-	18	18.4
Arbor Hole	E	20.2	-	-
Arbor Hw in mm Diameter	F	12.8	13.0	13.5
Arbor Slot Width	G	1.5	-	-

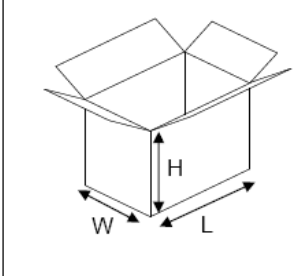
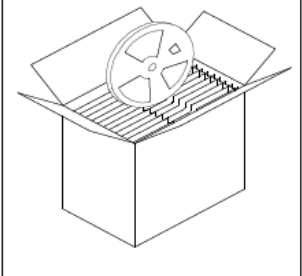
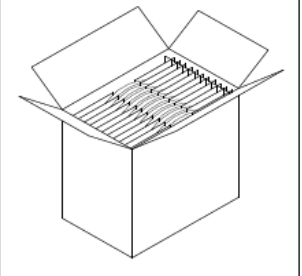
Notes

All dimensions are in millimeter (mm).

8.3 Packing Quantity



8.4 Packing Information

  						
Tape & Reel 7"						
Qty/reel	Weight/reel	Reel/Carton	Qty/carton	Weight full	Dimension carton Box	Storage
Pcs	Kg	Nos	Nos	Load(kg)	(LxWxH)mm	Temp
1250	0.25	4	5000	~3.00	272 x 159 x 236	-10℃~50℃
Tape & Reel 13"						
Qty/reel	Weight/reel	Reel/Carton	Qty/carton	Weight full	Dimension carton Box	Storage
Pcs	Kg	Nos	Nos	Load(kg)	(LxWxH)mm	Temp
4800	0.7	10	48000	~10.00	419 x 276 x 381	-10℃~50℃

9. Reliability Test

Item	Detail	Standard
Simulated Reflow (Without Solder)	Samples for qualification testing require 3 passes 260±5 °C reflow solder profiles. 2 hours of setting time is required between each reflow profile test.	± 2 dB
Static Humidity	Precondition at +25°C for 1 hour. Then expose to +85°C with 85% relative humidity for 1000 hours. Finally dry at room ambient for 3±1 hours before taking final measurement.	± 3 dB
Temperature Shock	Each cycle shall consist of 30 minutes at -40°C, 30 minutes at +125°C with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature.	± 3 dB
ESD Sensitivity	Perform ESD sensitivity threshold measurements for each contact according to MIL-STD-883G, Method 3015.7 for Human Body Model. Identify the ESD threshold levels indicating passage of 8000V Human Body Model.	± 3 dB
Random Vibrations	Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4 cycles from 20Hz~2000Hz with a peak acceleration 20g.	± 3 dB
Mechanical Shock	Subject samples to half sine shock pulses (3000g±15% for 0.3ms) in each direction, totally 18 shocks.	± 3 dB
Operation Life	Subject samples to +125°C for 168 hours under full maximum rated voltage.	± 3 dB
Drop Test	The test was repeated in six directions for three times, Dropped from 1.5m height on to a steel surface, total 18 times and inspected for mechanical damage. Note: Sensitivity should vary within +/-3dB from initial sensitivity after test conditions are performed.	± 3 dB