

	Product Specification
Model: MDO-A1640H12TR	RoHS
Revision: original version	Effective Date: 2016-08-16
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Revision

The first version.

1 Applications

Mainly used for ultrasonic ranging, smoke detector, parking system, robot R&D, liquid level measurement and so on.

2 Features

- 2.1 Dual Use:Transmitter/Receiver
- 2.2 Compact and light weight.
- 2.3 High sensitivity and sound pressure
- 2.4 Less power consumption
- 2.5 High reliability



3 Technical Specifications



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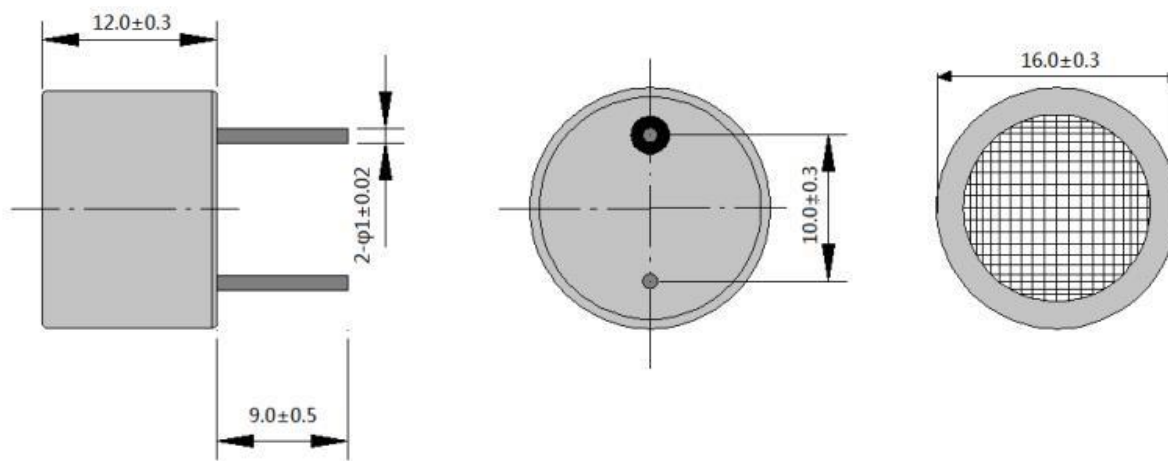
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Item	Value
Using method	Transmitter/Receiver
Nominal Frequency	40±1.0KHZ
Sensitivity	≥-68dB
S P L	≥115dB(10V/30cm/sine wave)
Directivity	80deg
Capacitance	2400pF±20%@1KHz
Detectable range	0.2~18m
Allowable input voltage	120Vp-p(39KHz)
Operating Temperature	-20~ +70℃
Ringing	Max 2.8ms
Housing material	Aluminum
Weight	2.31g

4 Mechanical Drawing

unit: mm



5 Beam Pattern



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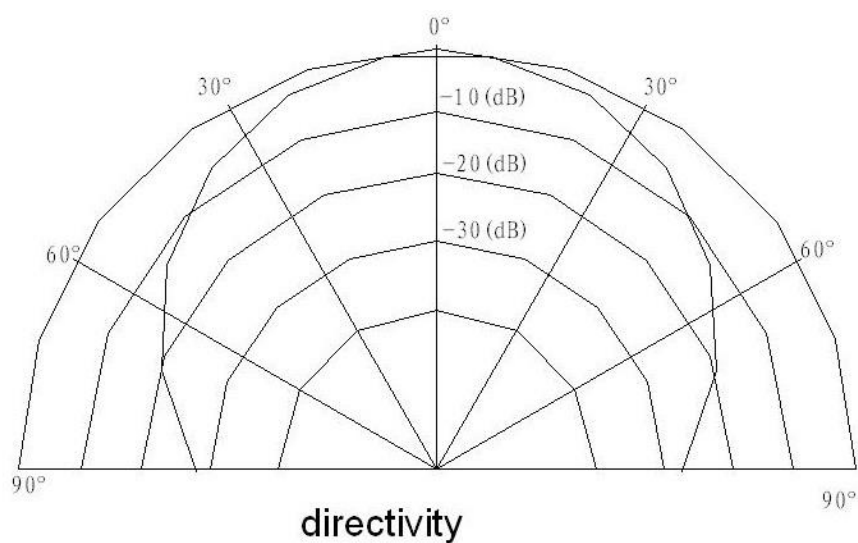
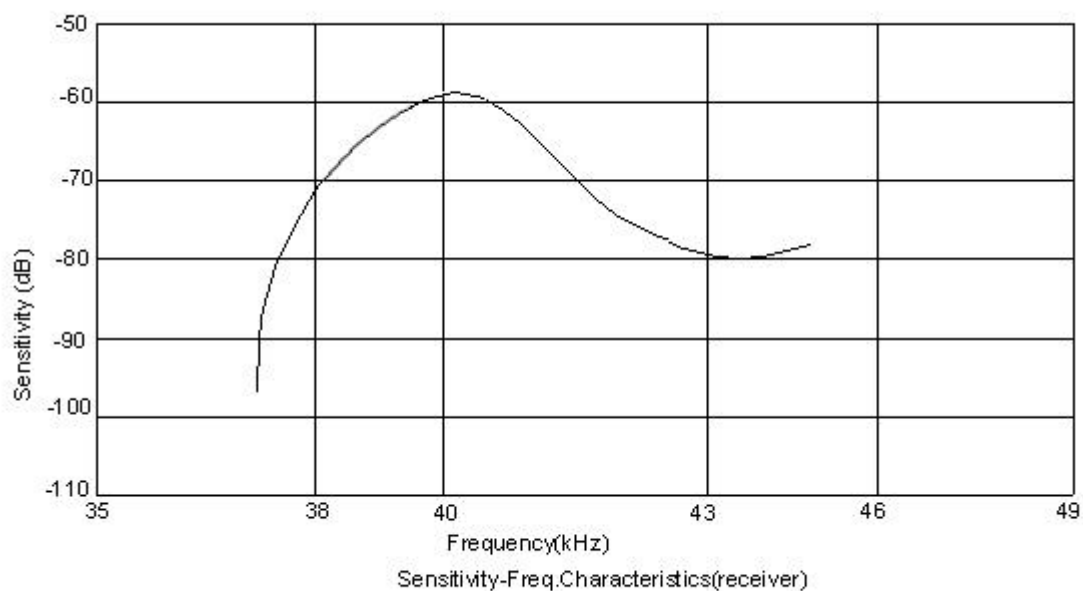
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6 Test Circuit



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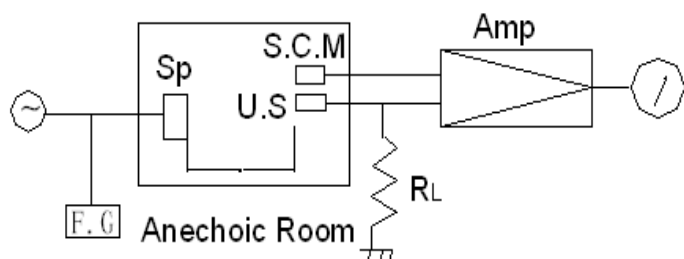
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Receiver



RL: $3.9K\Omega$

U.S.: Ultrasonic Sensor

S.C.M.: Standard Capacitor Microphone

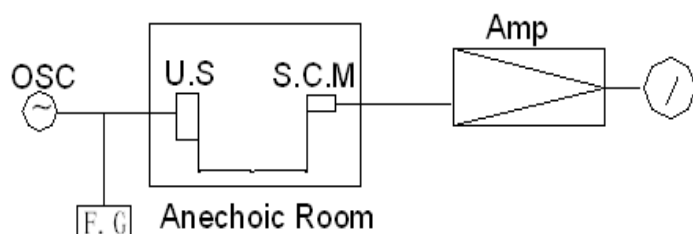
Amp.: Amplifier

OSC.: Oscillator

Sp.: Tweeter

F.C.: Frequency Counter

Transmitter



U.S.: Ultrasonic Sensor

S.C.M.: Standard Capacitor Microphone

Amp.: Amplifier

Input voltage: 10Vrms

F.C.: Frequency Counter

7 Reliability Test

7.1 High Temp. Life Test

Temperature

$+85 \pm 3^{\circ}\text{C}$

Duration

100 hrs

7.2 Low Temp. Life Test

Temperature

$-40 \pm 3^{\circ}\text{C}$

Duration

100 hrs

7.3 Heat Cycle Test

Temperature

$+85 \pm 3^{\circ}\text{C}$ 1hour

$-40 \pm 3^{\circ}\text{C}$ 1hour

Cycles

10 cycles

7.4 Humidity Test

Temperature

$+60 \pm 2^{\circ}\text{C}$

Relative Humidity

90~95%

Duration

100 hrs

7.5 Vibration Test

Vibration Frequency

10~55Hz

Sweep Period

1.5 min



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Direction	x,y&z
Time	2 hours/direction
7.6 Shock Test	
Acceleration	sine 100G
Direction	x,y&z
Shock Time	3 times/direction
7.7 Drop Test	
Height	1 m on concrete floor
Times	2 times
7.8 Connector Soldering Check:	
Immersing terminal up to 1mm below in soldering bath at 260℃ 10 Seconds.	

Notice:

The variation of the S.P.L or the sensitivity at 40KHz is within 2dB compared with initial figures at 25℃ in 24 hours after above test conditions.

8 Caution in Use

- 8.1 Please avoid applying an excessive stress to the transducer because it might be damaged.
- 8.2 The transducer may generate surge voltage by mechanical or thermal shock. Care should be taken to protect from it in designing your application circuit.
- 8.3 Please do not apply DC voltage to the transducer.
- 8.4 Please do not use the transducer in water.
- 8.5 The piece of sensor may be damaged by force pressure from back of sensor.
- 8.6 Please well evaluate the painting and electrical characteristic for your coating.
- 8.7 When used to distinguish between positive and negative.

9 Note

- 9.1 please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- 9.2 You are requested not to use our product deviating from the agreed specifications.
- 9.3 We consider it not appropriate to include any terms and conditions with regard to the business transaction in the product specifications, drawings or other technical documents.

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10 Packaging Details

