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Specification

MCUSD16A40S12RO

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Midas Ultrasonic Sensors Part Number System

MC	US	T	16	P	40	B	12	R	S
1	2	3	4	5	6	7	8	9	10

1 = **MC:** Midas Components

2 = **US:** Ultrasonic Sensor **PV**: Piezo Vibration

3 = **T:** Transmitter **R:** Receiver **D:** Dual

4 = **Diameter** (e.g. 16 = 16mm)

5 = **P:** Plastic **A:** Aluminium

6 = **Frequency** (e.g. 40 = 40KHz)

7 = **B:** Black **S:** Silver

8 = **Height** (e.g. 12 = 12mm)

9 = **RoHS**

10 = **O:** Open **S:** Splash Proof

1.Applications

This specification covers the water proof type ultrasonic ceramic transducer which are used for receiver and transmitter of ultrasonic waves.

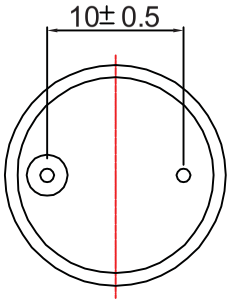
2. Features

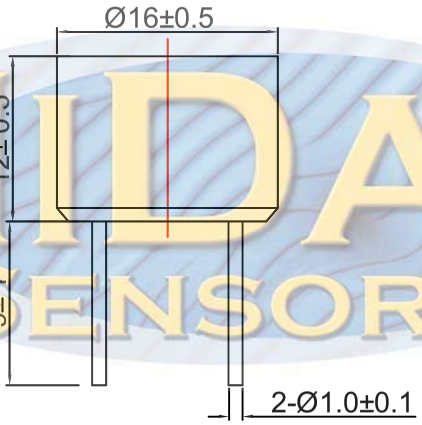
2.1) Open Structure and dual use
2.2) Compact and light weight.
2.3) High sensitivity and sound pressure.
2.4) Less power consumption.
2.5) High reliability

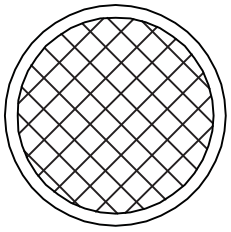
3.Technical terms

No.	Item	Specification
1.	Construction	Open Structure
2.	Using Method	Dual Use
3.	Center Frequency	40±1K Hz
4.	Output Sound Pressure	min.110dB (40.0KHZ) 0dB=0.0002μbar
5.	Sensitivity at 40.0KHz	min. -65dB /V/μbar
6.	Capacitance	2500pF±25% at 1KHz
7.	Directivity	50deg
8.	Operating Tem.Range	-35 to +85℃
9.	Storage Tem.Range	-35 to +85℃
10.	Detectable Range	0.7...18m
11.	Housing Material	Aluminium

4.Drawing



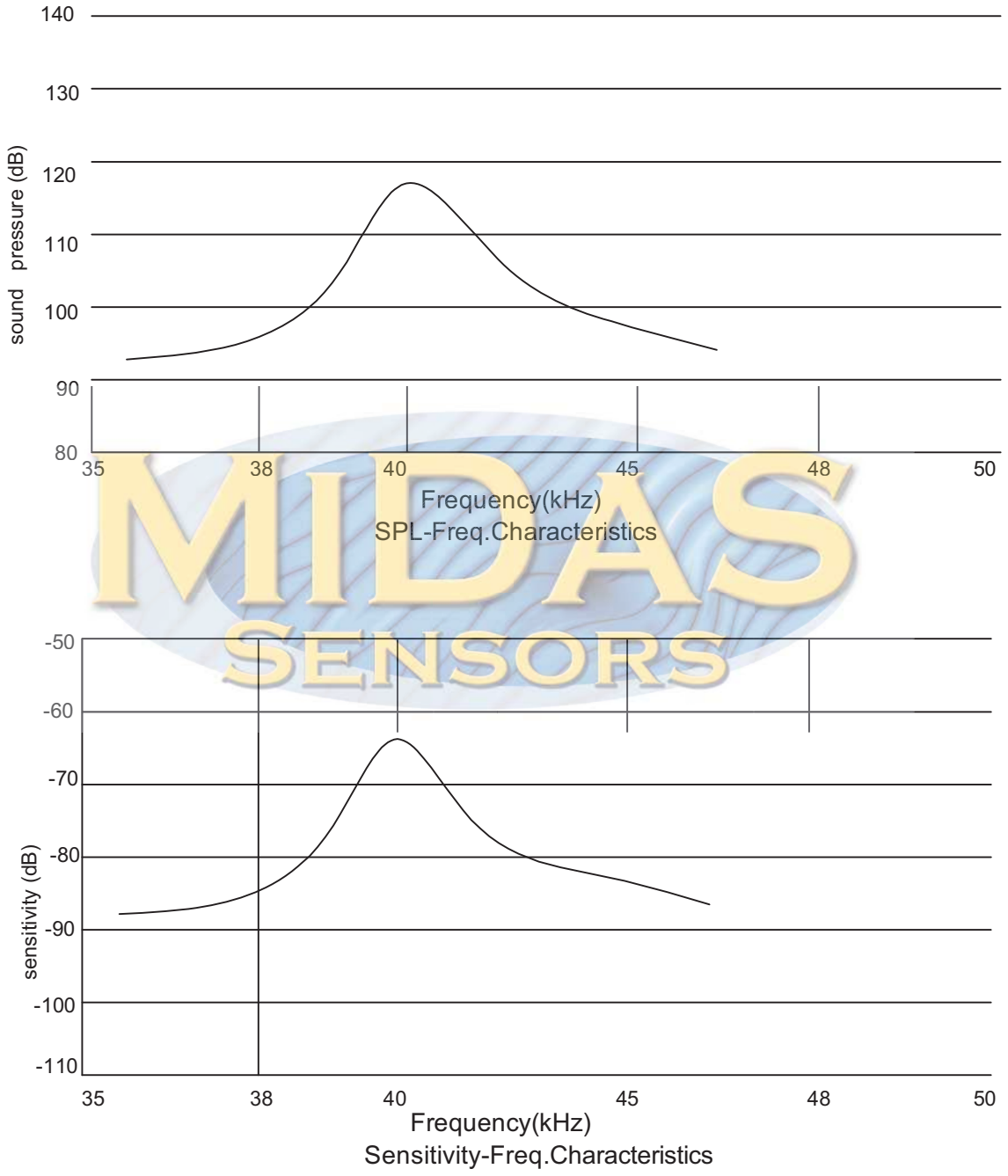


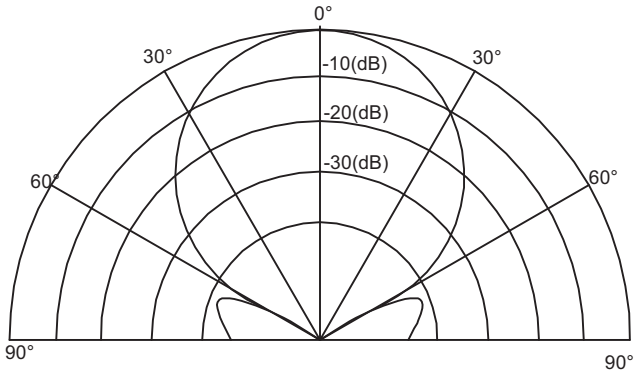


unit:mm

tolerance： ±0.5

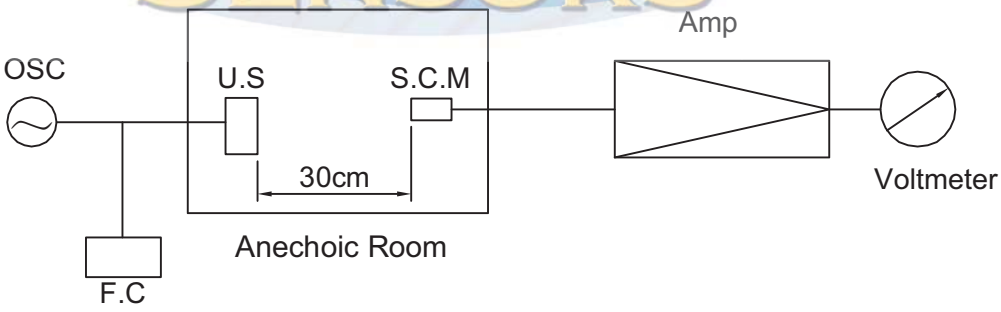
5. Beam Pattem





Directivity in Overall Sensitivity

6.Test Circuit



OSC. :Oscillator
F.C :Frequency Counter
U.S :Ultrasonic Sensor
S.C.M:Standard Cappacitor Microphone
Amp. :Ampifier

7.Reliability Test

7.1 High temp.life test

Temperature	+85±3℃
Duration	72hrs

7.2 Low temp.life test

Temperature	-40±3℃
Duration	72hrs

7.3 Heat Cycle Test

Temperature	+85±3℃ 1hour
	-40±3℃ 1hour
Cycles	10cycles

7.4 Humidity Test

Temperature	+60±2℃
Relative Humidity	90~95%
Duration	72hrs

Tests above should be measured after leaving normal temperature for24hrs.

7.5 Vibration Test

Vibration Frequency	10~55Hz
Sweep Period	1min
Amplitude(peak to peak)	1.5mm
Direction	3(x.y&z)
Time	2hours/direction

7.6 Shock test

Acceleration	sine 100G
Direction	3directions
Shock time	3 time/directions

7.7 Drop test

Height	1m on concrete floor
Times	10times

7.8 Connector soldering check:

Immersing terminal up to 1mm below base in soldering bath at 260℃ 10 seconds

Notice:

The variation of the S.P.L or the sensitivity at 40KHz is within 3dB compared with initial figures at 25℃ in 24 hours after above test condition.

8. Caution

8.1 Limitation of Applications

Please contact us before using our product for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life,body or property.

1) Aircraft equipment
2) Aerospace equipment
3) Undersea equipment
4) Power plant control equipment
5) Medical equipment
6) Transportation equipment (vehicles,train,ships,etc.)
7) Traffic signal equipment
8) Disaster prevention/crime prevention equipment
9) Data-processing equipment
10) Application of similar complexity and/or reliability requirement to the applications listed in the above

8.2 Fail -safe

Be sure to provide an appropriate fail-sate function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product

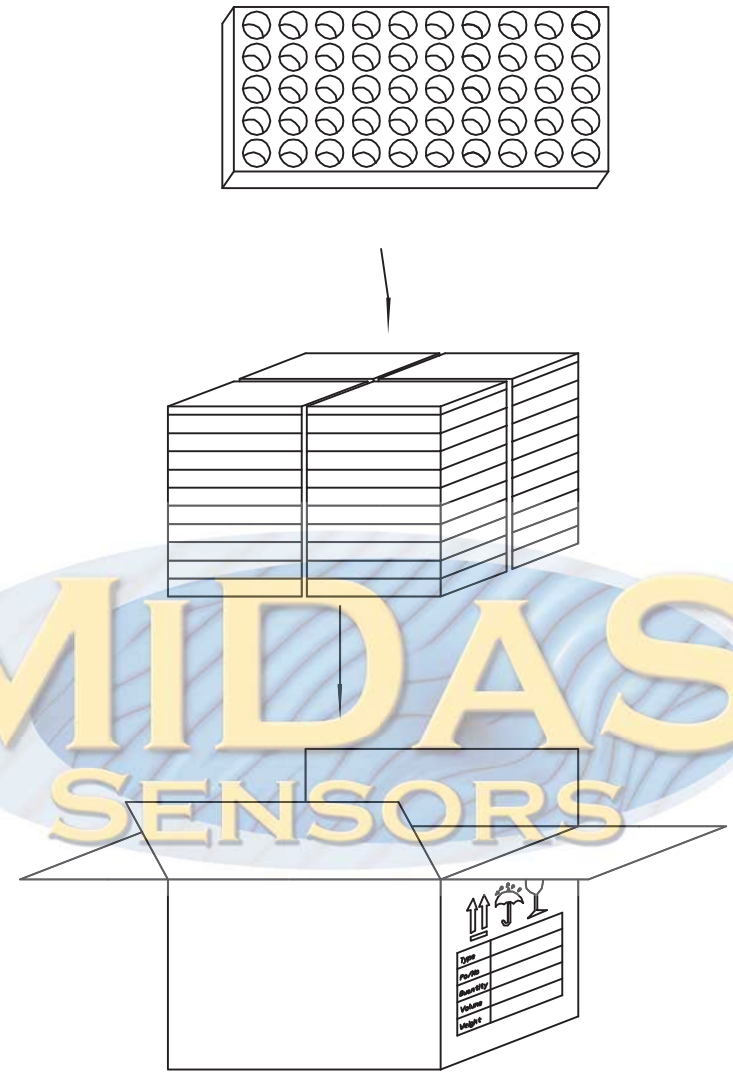
9. Caution in use

1) Please avoid applying an excessive stress to the transducer because it might be damaged.
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.
3) Please do not applying DC voltage to the transducer.
4) Please do not use the transducer in water.
5) The piece of sensor may be damaged by force pressure from back of sensor.
6) Please do not use the sensor without painting on the surface.
7)Please well evaluate the painting and electrical characteristic for your coating.

10. Note

1) Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
2) You are requested not to use our product deviating from the agreed specifications.
3) We consider it not to appropriate to include any terms and conditions with regard to the business transaction in the product specifications,drawings or other technical documents. Therefore, of your technical documents as above include such terms and conditions such as warranty clause, product liability clause,or intellectual property infringement liability clause, they will be deemed to be invalid

11.Packing



Quantity:
- 50 PCS/Foam tray
- 40 Foam tray/Box
- 2000 PCS/Box

12. History change record

version No.	Change Items		Date	Drawn	Approved
	Before	After			
A			06.09.07	姜文金	郭敏
B	C^T=3000pF±25% at 1KHz	C^T=2500pF±25% at 1KHz	09.03.11	耿亚	张秀琴
C	Water proof type、10±0.5	Open type 、 9±1	10.11.19	倪雪晴	李红元