

## PIEZO ULT RASONIC SENSOR

Part Number: VT-US40D1805



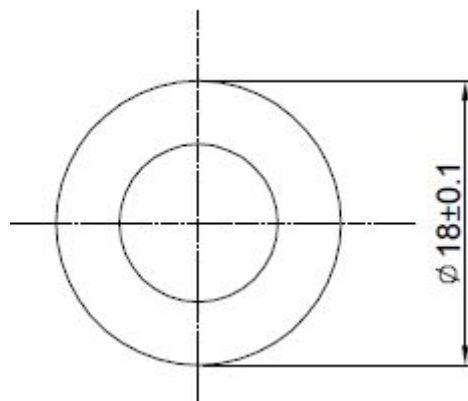
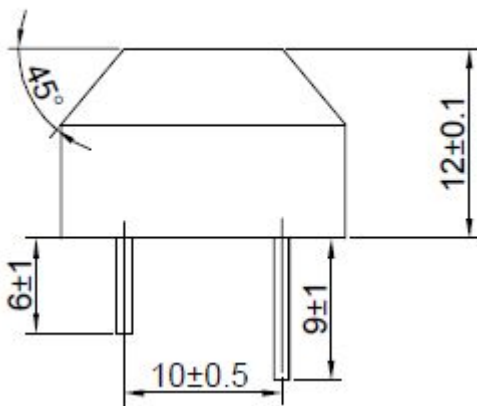
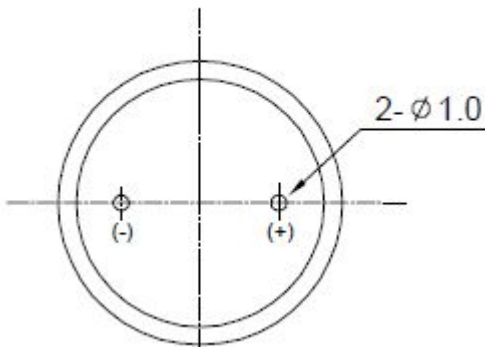
### Applications

Back sonar of automobiles, parking meters.  
Water level meters

### Features

- 2.1) Water proof 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

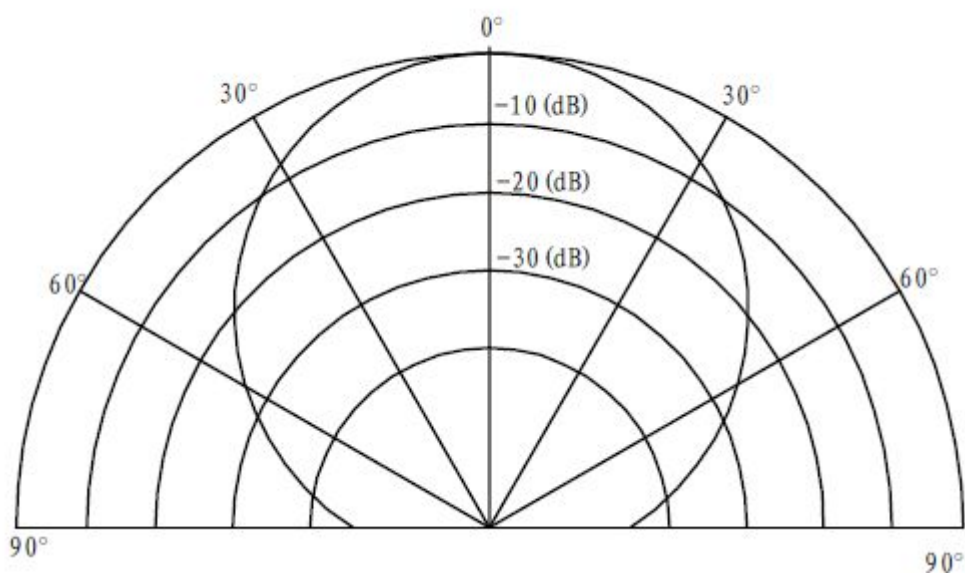
### 1.Dimension (Unit: mm)



2.Electrical Characteristics

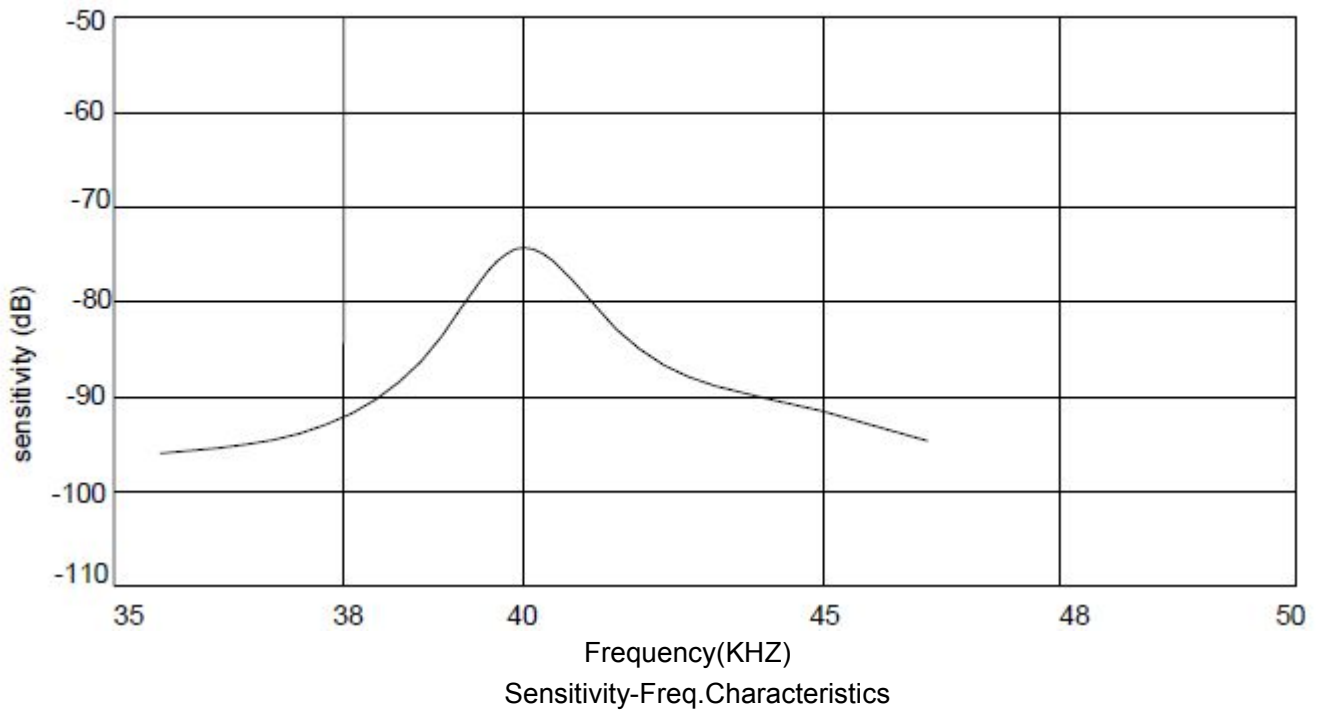
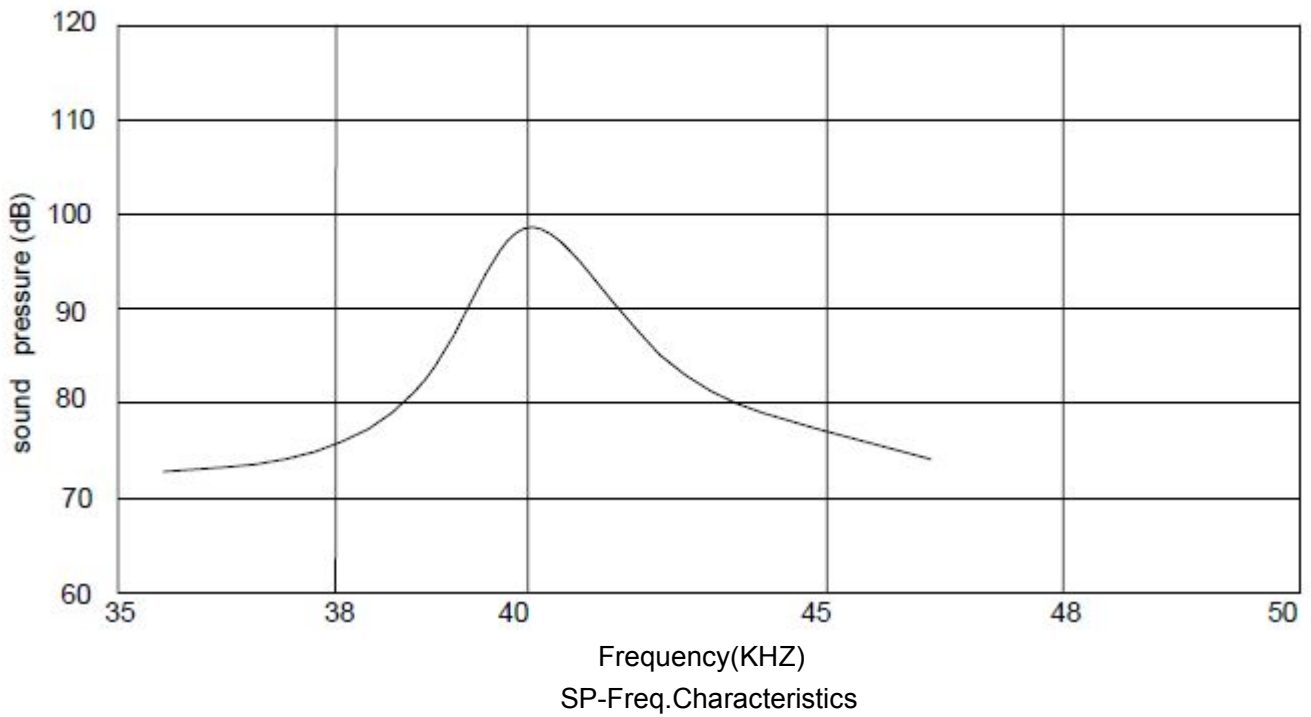
No.	Item	Unit	Specifications
1	Construction		Water Proof
2	Using Method		Dual Use
3	Center Frequency	Khz	40±1khz
4	Sound Pressure Level	dB	≥97(30cm/10Vrms)
5	Sensitivity	dB	≥-75dB /V/ μ bar
6	Echo Pulse Width	us	≥360us(at 1.2m)
7	Ringing Time	ms	≤1.8ms
8	Capacitance	pF	2100pF±25% at 1KHz
9	Directivity	°	110×50deg
10	Operating Tem.Range	°C	-40 to +85°C
11	Storage Tem.Range	°C	-40 to +85°C
12	Allowable Input Voltage	Vp-p	160Vp-p
13	Housing Material		Aluminum

3.Directivity



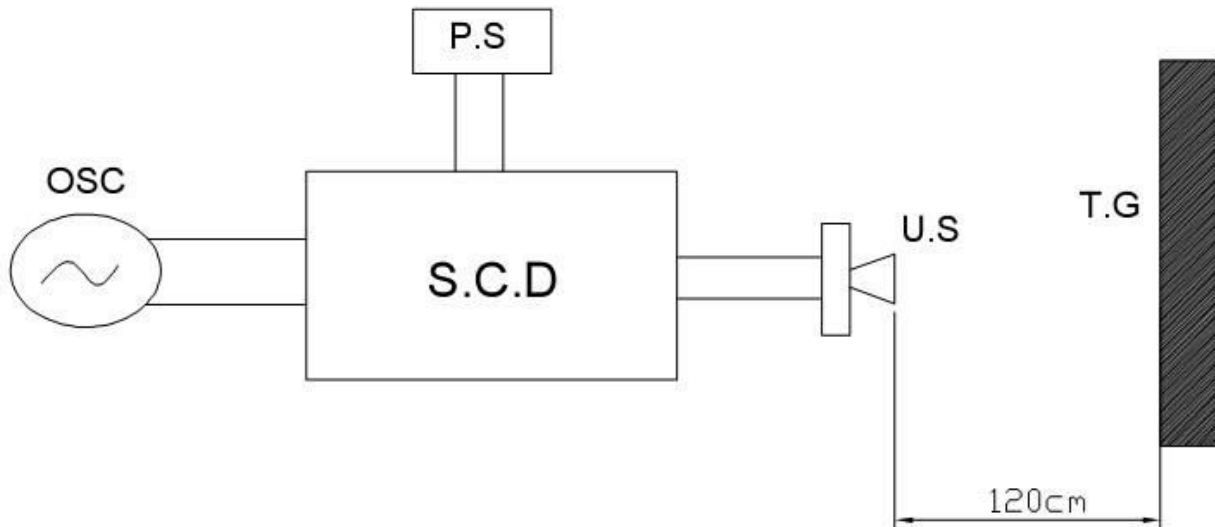
Directivity in Overall Sensitivity

4.Beam pattern



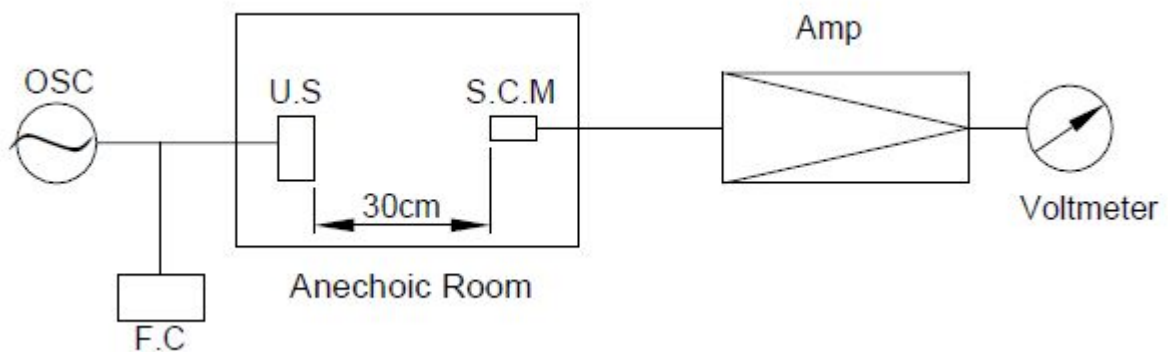
5. Test circuit

Echo&Resonant Time test circuit



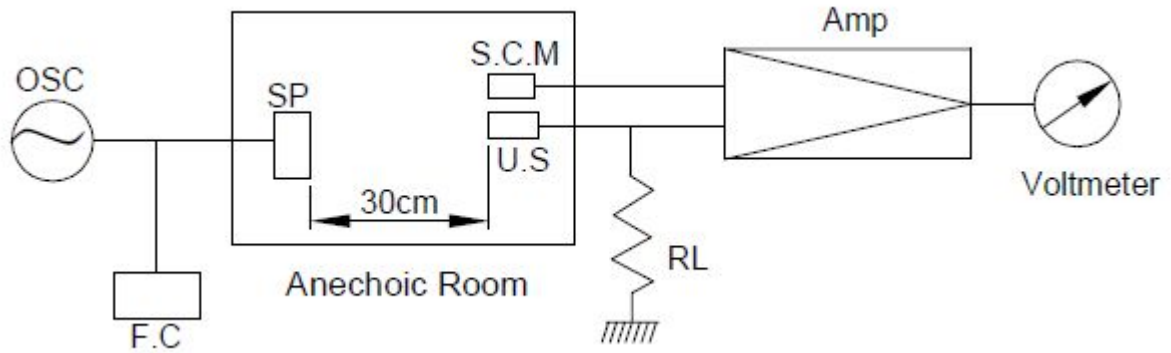
OSC:Oscillator  
P.S:Power supply  
S.C.D:Special circuit diagram  
U.S :Ultrasonic Sensor  
T.G:Target

S.P.L test circuit



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

Sensitivity test circuit



- OSC.:Oscillator
- F.C :Frequency Counter
- U.S :Ultrasonic Sensor
- S.C.M:Standard Cappacitor Microphone
- Amp.:Ampifier
- SP:Tweeter
- RL:3.9KΩ

## 6. Reliability Test

### 6.1 High temp. life test

Temperature	+ 85±3°C
Duration	500hrs

### 6.2 Low temp. life test

Temperature	-40±3°C
Duration	500hrs

### 6.3 Heat Cycle Test

Temperature	+ 85±3°C 1hour -40±3°C 1hour
Cycles	100cycles

### 6.4 Humidity Test

Temperature	+65±2°C
Relative Humidity	90~95%
Duration	500hrs

### 6.5 Vibration Test

Vibration Frequency	10~ 200Hz
Sweep Period	1 5min
Acceleration	43.12m/s <sup>2</sup> (4.4G)
Direction	3(x.y&z)
Time	96hours/direction

### 6.6 Shock test

Acceleration	sine 980 m/s <sup>2</sup> (100G)
Direction	3directions
Shock time	3 time/directions

### 6.7 Drop test

Height	1m onto concrete floor
Times	10 times

### 6.8 Connector soldering check:

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

#### Notice:

The variation of the S.P.L at 40 kHz is within 3dB compared with initial figures at 25°C in 2 4 hours after above test condition.

## 7. Notice

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- c) Medical equipment and Transportation equipment (vehicles, trains, ships, etc.)
- d) Traffic signal equipment i Disaster prevention / crime prevention equipment
- e) Data-processing equipment including Application of similar complexity and/or reliability requirements to the applications listed above

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