1. Applications
2. Features
3. Technical terms
4. Drawing
5. Beam Pattern
6. Test Circuit
7. Reliability Test
8. Notice
9. Packing
10. History change record

BESTAR SENSORETECH CO., LTD
Room 706. No. 178, YuLong South Road, Zhonglou district, ChangZhou, JiangSu Province, P.R. China
Tel: +86 519 88990131 Fax: +86 519 88990133
E-mail: li@bestarsensor.com http://www.bestarsensor.com

文件号：BS/QDTE045B
BPU1440IFAH09-01

1. Applications
This specification covers the water proof type ultrasonic ceramic transducer which are used for ultrasonic ranging and parking sensor of automobile.

2. 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.

3. Technical terms

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Unit</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Construction</td>
<td></td>
<td>Water Proof</td>
</tr>
<tr>
<td>2.</td>
<td>Using Method</td>
<td></td>
<td>Dual Use</td>
</tr>
<tr>
<td>3.</td>
<td>Center Frequency</td>
<td>KHz</td>
<td>40±1KHz</td>
</tr>
<tr>
<td>4.</td>
<td>Sound Pressure Level</td>
<td>dB</td>
<td>≥90(30cm/10Vrms)</td>
</tr>
<tr>
<td>5.</td>
<td>Sensitivity</td>
<td>dB</td>
<td>≥-75dB/V/μbar</td>
</tr>
<tr>
<td>6.</td>
<td>Echo Pulse Width</td>
<td>us</td>
<td>≥360us(at 1.2m)</td>
</tr>
<tr>
<td>7.</td>
<td>Ringing Time</td>
<td>ms</td>
<td>≤1.72ms</td>
</tr>
<tr>
<td>8.</td>
<td>Capacitance</td>
<td>pF</td>
<td>2100pF±25% at 1KHz</td>
</tr>
<tr>
<td>9.</td>
<td>Directivity</td>
<td>°</td>
<td>110×50deg</td>
</tr>
<tr>
<td>10.</td>
<td>Operating Tem.Range</td>
<td></td>
<td>-40 to +85 °C</td>
</tr>
<tr>
<td>11.</td>
<td>Storage Tem.Range</td>
<td></td>
<td>-40 to +85 °C</td>
</tr>
<tr>
<td>12.</td>
<td>Detectable Range</td>
<td>m</td>
<td>0.3...2</td>
</tr>
<tr>
<td>13.</td>
<td>Net weight</td>
<td>g</td>
<td>2.32g/pcs</td>
</tr>
<tr>
<td>15.</td>
<td>Housing Material</td>
<td></td>
<td>Aluminum</td>
</tr>
</tbody>
</table>
Ultrasonic Sensor

BPU1440IFAH09-01

Dimensions:
- Diameter: 14 ± 0.1 mm
- Hole: 2 φ0.6 mm
- Distance: 6 ± 1 mm
- Diameter: 14 ± 0.1 mm
- Distance: 5 ± 0.5 mm

Units: mm

Date: 2012.07.31

Drawn by: 邹小柯
Checked by: 邹东平
Approved by: 李松元

BESTAR SENSORTECH CO., LTD
DRG NO: BS/TEU01.345A
Page: 3 of 10
BPU1440IFAH09-01

Directivity in Overall Sensitivity

6. 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

OSC     | P.S
---      | ---
S.C.D    | U.S
120cm    | T.G

Vertical
Horizontal

Rev. Date Approved by:

Table:

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Checked by</th>
<th>Approved by</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012.07.31</td>
<td>饶小柯</td>
<td>邹东平</td>
<td>李红元</td>
<td></td>
</tr>
</tbody>
</table>

BESTAR SENSORTECH CO., LTD

www.bestarsensor.com  li@bestarsensor.com

文件号：BS/QDTE045B
BPU1440IFAH09-01

S.P.L test circuit

OSC  U.S  S.C.M  Amp  Voltmeter

Anechoic Room

30cm

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

sensitivity test circuit

OSC  U.S  S.C.M  Amp  Voltmeter

Anechoic Room

30cm

OSC. : Oscillator
F.C : Frequency Counter
U.S : Ultrasonic Sensor
S.C.M: Standard Capacitor Microphone
Amp. : Amplifier
SP : Tweeter
RL : 3.9K Ω

U.SC : Oscillator
F.C : Frequency Counter
U.S : Ultrasonic Sensor
S.C.M: Standard Capacitor Microphone
Amp. : Amplifier
SP : Tweeter
RL : 3.9K Ω
BPU14401FAH09-01

7. Reliability Test

7.1 High temp. life test
   Temperature: +85±3°C
   Duration: 500 hrs

7.2 Low temp. life test
   Temperature: -40±3°C
   Duration: 500 hrs

7.3 Heat Cycle Test
   Temperature:
   +85±3°C for 1 hour
   -40±3°C for 1 hour
   Cycles: 100 cycles

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

7.5 Vibration Test
   Vibration Frequency: 10~200 Hz
   Sweep Period: 15 min
   Acceleration: 43.12 m/s² (4.4G)
   Direction: 3 (x, y, & z)
   Time: 96 hours/direction

7.6 Shock test
   Acceleration: sine 980 m/s² (100G)
   Direction: 3 directions
   Shock time: 3 times/directions

7.7 Drop test
   Height: 1 m onto concrete floor
   Times: 10 times

7.8 Connector soldering check:
   Immersing terminal up to 1 mm below base in soldering bath at 260°C for 10 seconds
   Notice:
   The variation of the S.P.L at 40 kHz is within 3 dB compared with initial figures at 25°C in 24 hours after above test condition.
BPU1440IFAH09-01

8. Notice

8.1 Export Control <For customers outside The People's Republic of China>
No BeStar products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

8.2 Please contact our sales representatives or product engineers before using the products in the specification or catalogue for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this specification.
   a) Aircraft equipment or Aerospace equipment
   b) Undersea equipment and Power plant equipment
   c) Medical equipment and Transportation equipment (vehicles, trains, ships, etc.)
   d) Traffic signal equipment / Disaster prevention / Crime prevention equipment
   e) Data-processing equipment including Application of similar complexity and/or reliability requirements to the applications listed above

8.3 Product specifications and catalogues are subject to change and our products in them may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

8.4 Please read rating and CAUTION (for storage, operating, rating, soldering, mounting and handling) in this specifications in order to prevent smoking and/or burning, etc.

8.5 Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our specifications and catalogues. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

8.6 No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.
BPU1440IFAH09-01

9. Packing

1) 50 pcs/tray
2) 40 trays/carton
3) 2000 pcs/carton in total
4) carton size: 500X280X340mm

TYPE:
MODEL No.: BPU1440IFAH09-01
QUANTITY: 2000 pcs
GR. NET WT.: Kg
SIZE: 500X280X340mm

HANDLE WITH CARE

Ultrasonic Sensor

BESTAR SENSORTECH CO., LTD
www.bestarsensor.com  li@bestarsensor.com

文件号：BS/QDTE045B
# BPU1440IFAH09-01

## 10. History change record

<table>
<thead>
<tr>
<th>version No.</th>
<th>Change Items</th>
<th>Date</th>
<th>Drawn</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>2012.07.31</td>
<td>邹小柯</td>
<td>李红元</td>
</tr>
</tbody>
</table>

---

**Ultrasonic Sensor**

**BESTAR SENSORTECH CO., LTD**

**DRG NO:** BS/TEU01.345A **Page:** 10 of 10

[www.bestarsensor.com](http://www.bestarsensor.com)  li@bestarsensor.com

---

文件号：BS/QDTE045B

---

The data and information in this document is the proprietary of Bestar Sensor Tech Co., Ltd. and must not be used in whole or in part without its written content.