

1 Scope

The IP67 compliant pulse / tone burst transducer is designed for echo ranging systems requiring a shorter ringing characteristic than standard type transducers.

2 Part Number

400EP250, Pulse Transit Enclose Type Ultrasonic Transducer

3 Dimension

As per Figure 4

4 Specification

(rated at temperature $25\pm 3^{\circ}\text{C}$, 45 to 60% RH, unless otherwise noted)

| | Items | Specification | Remarks |
|------|-----------------------|--|--|
| 4-1 | Center Frequency | 40.0KHz | $\pm 1.0\text{KHz}$ |
| 4-2 | Sound Pressure Level | 110dB (min) | at resonant frequency ; 0dB re $0.0002\mu\text{bar}$ per 10Vrms at 30cm 10Vrms sine wave input detail see attached Figure 1 |
| 4-3 | Sensitivity | -72dB (min) | at resonant frequency; 0dB re 1Volt/ μbar detail see attached Figure 2 |
| 4-4 | Ringing | 10mV (max) | at 1.7ms, detail see attached Figure 3 L 2nd wind of IFT sets at 7.2mH |
| 4-5 | Bandwidth | 2.0KHz (min) | -6dB (Figure Of Merit) |
| 4-6 | Capacitance | 2200pF | $\pm 20\%$, measured at 1KHz |
| 4-7 | Total Beam Angle | 30° (TYP.) | -6dB main beam |
| 4-8 | Max. Driving Voltage | 100Vp-p | 20 bursts maximum, 30ms repetition rate |
| 4-9 | Housing Material | Aluminum | natural |
| 4-10 | Operation Temperature | -30°C to $+70^{\circ}\text{C}$ | |
| 4-11 | Storage Temperature | -40°C to $+80^{\circ}\text{C}$ | |

5 Environmental Characteristics

- 5-1 Overall echo sensitivity shall not change by more than $\pm 3\text{dB}$ in the temperature range of -30°C to 70°C , at a relative humidity of $\pm 50\%$
- 5-2 Overall echo sensitivity shall not change by more than $\pm 3\text{dB}$ in the humidity range of 10% to 90% at the temperature of 25°C
- 5-3 Overall echo sensitivity shall be within $\pm 3\text{dB}$ of the specified values after the device is subjected to any or all of the belows
 - 5-3-1 Operation at 90% relative humidity and 40°C for 100 hours, followed by a normalization period of 24 hours at 30% and 25°C
 - 5-3-2 Storage at -40°C to $+80^{\circ}\text{C}$ for 24 hours followed by a normalization period of an hour at 25°C
 - 5-3-3 Vibration at 10 to 55Hz, 1.5mm amplitude. 1 minute sweep. X, Y, Z, 3 each axis for 3 hours.
 - 5-3-4 Shock: After impact of 50G is applied following. X, Y, Z, 3 axis /3 cycle / each direction.

6 Mechanical Characteristics

Lead strength

To pull longitudinally 1.0 kgf min.

To push longitudinally 1.0 kgf min.

7 Warranty

- 7-1 Warranty period is one year after delivery
- 7-2 Defective transducers attributable to manufacturer's responsibility shall be replaced for free, during the warranty period. However, following cases are out of the this replacement.
 - 7-2-1 Unsuitable handling or misuse by user.
 - 7-2-2 Modification or repair by user.
 - 7-2-3 Any other cases not responsible for manufacturer such as natural calamity, accident, etc.

This warranty covers only replacement. Any loss derived from failure or malfunction of the transducer, or cost to replace is excluded from this warranty.

Sound Pressure Level measuring system:

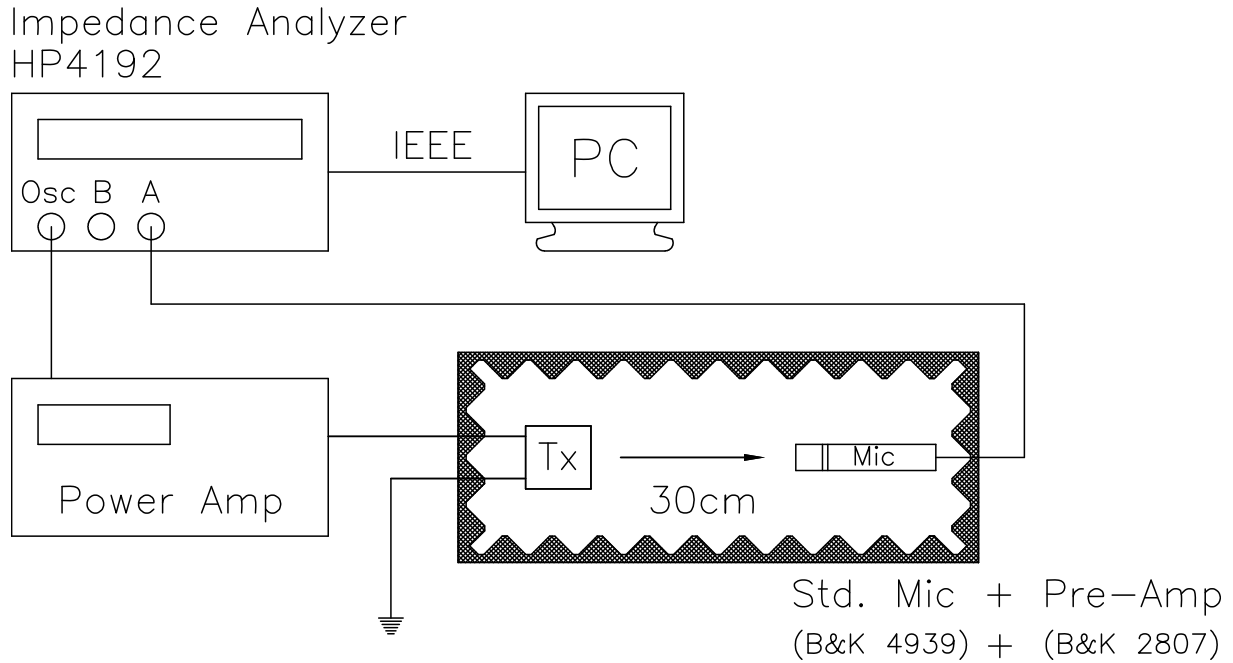


Figure 1

Sensitivity measuring system:

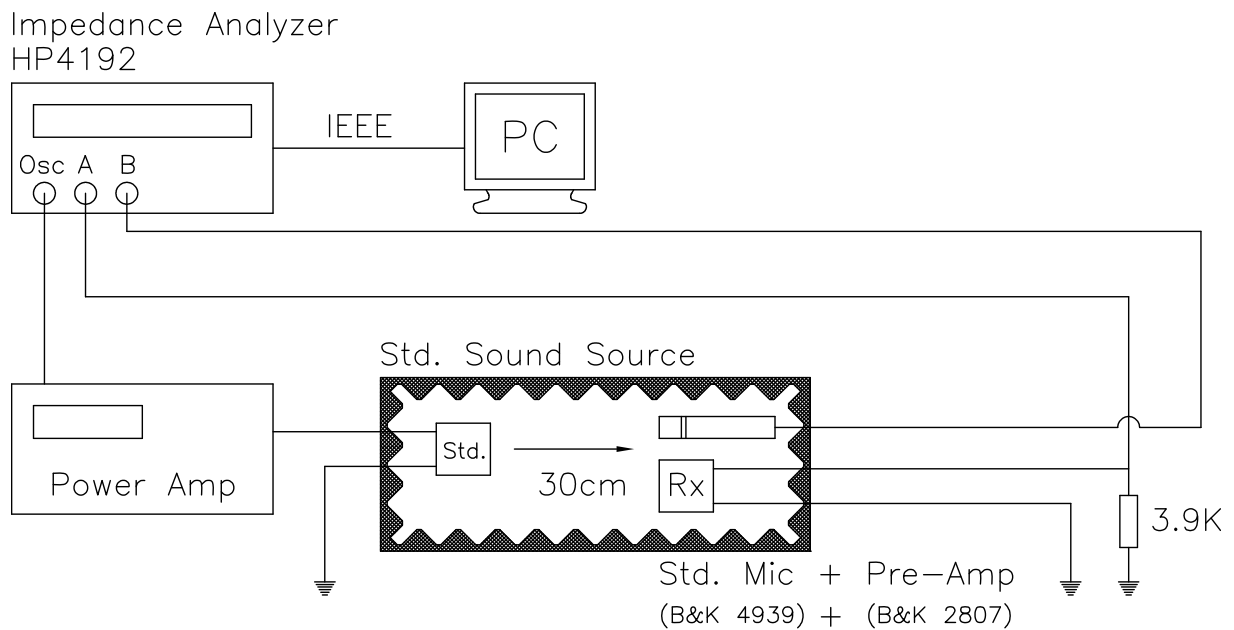


Figure 2

Echo Senitivity Test Circuit:

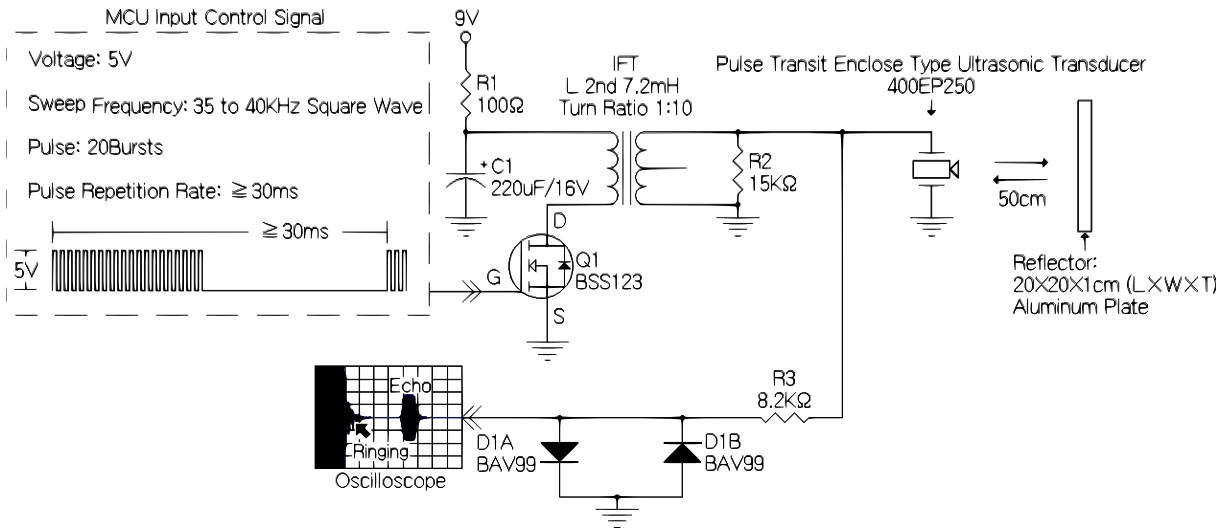


Figure 3

Dimensions: unit mm

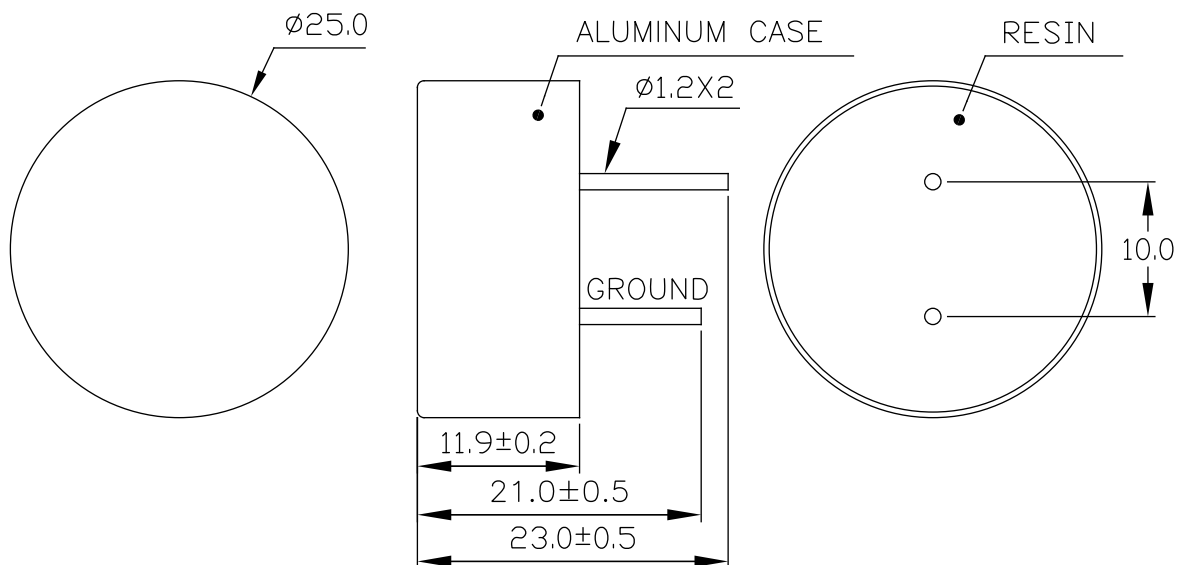


Figure 4

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