



Specification

250ST160	Transmitter
250SR160	Receiver
Center Frequency	25.0±1.0KHz
Bandwidth (-6dB)	2.0KHz
Transmitting Sound Pressure Level at 25.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	112dB min.
Receiving Sensitivity at 25.0KHz 0dB = 1 volt/μbar	-62dB min.
Capacitance at 1KHz ±20%	250ST 3000 pF 250SR 2600 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle (-6dB)	85° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

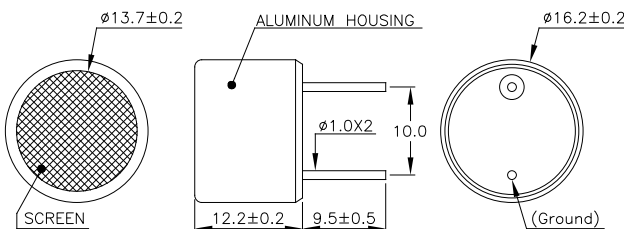
All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

1	250ST/R160	Aluminum Housing
2	250ST/R16B	Black Aluminum Housing
3	250ST/R16P	Plastic Housing

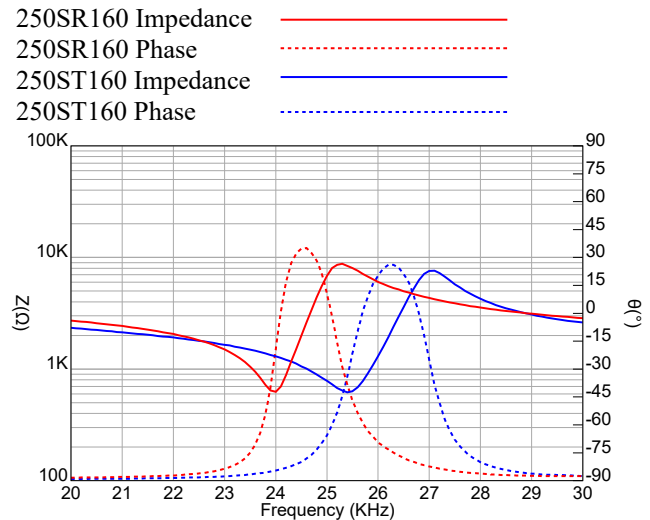
Dimensions

dimensions are in mm



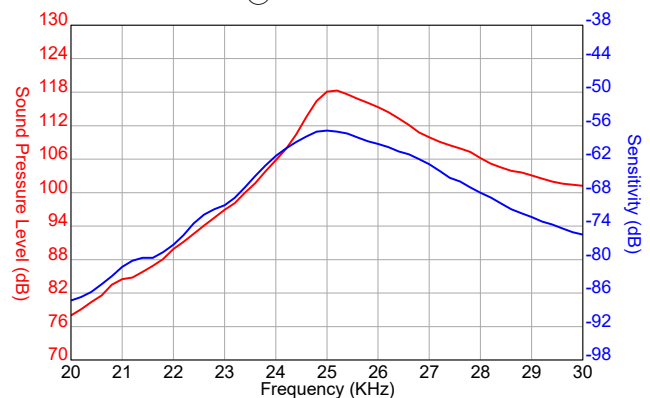
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level.



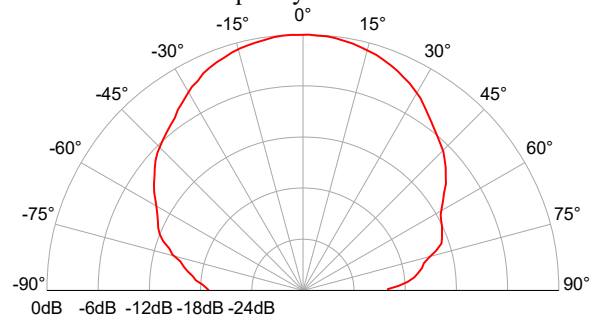
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



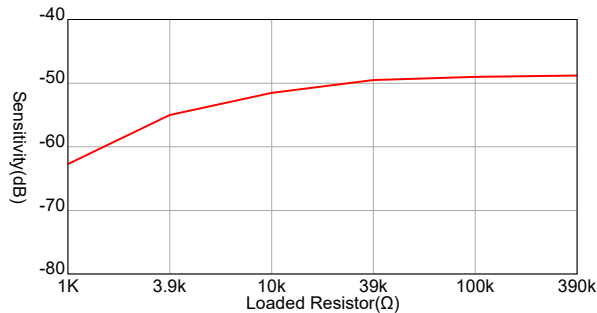
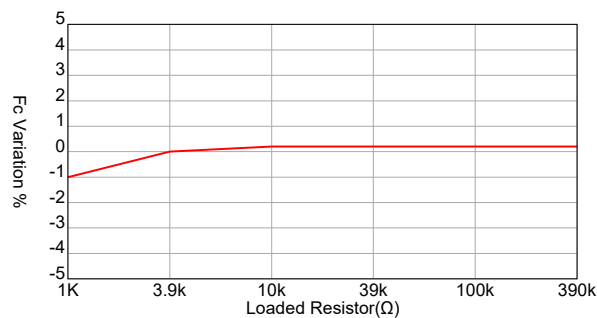
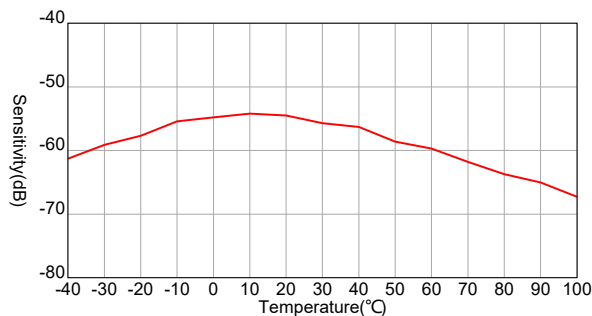
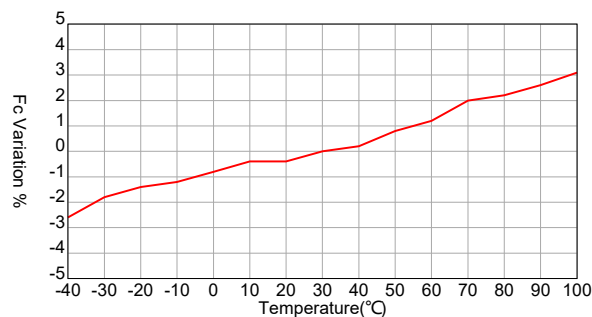
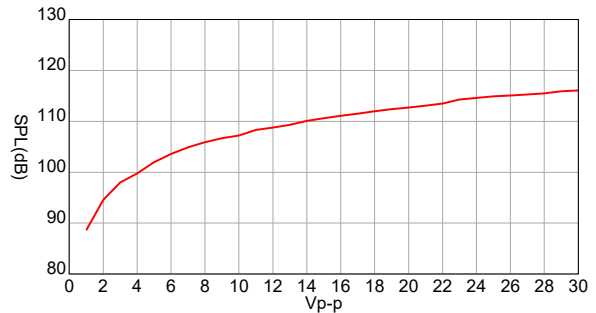
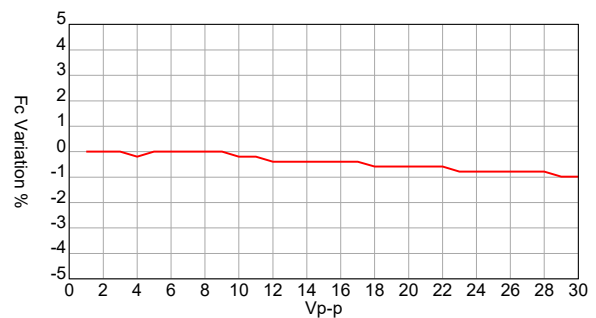
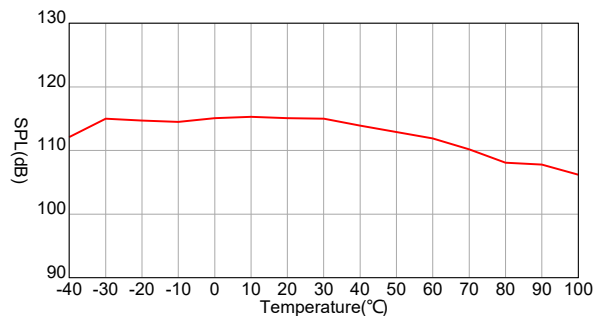
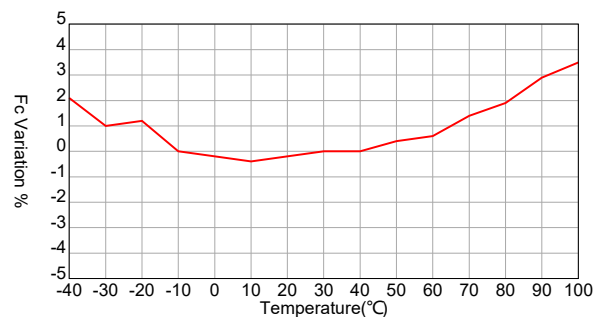
Beam Angle

Tested at 25.0KHz Frequency



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250SR160 Receiver**Sensitivity Variation vs. Loaded Resistor****Center Frequency Shift vs. Loaded Resistor****Sensitivity Variation vs. Temperature****Center Frequency Shift vs. Temperature****250ST160 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Driving Voltage****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

250ST180	Transmitter
250SR180	Receiver
Center Frequency	25.0±1.0KHz
Bandwidth (-6dB)	250ST180 1.5KHz
	250SR180 1.8KHz
Transmitting Sound Pressure Level at 25.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	112dB min.
Receiving Sensitivity at 25.0KHz 0dB = 1 volt/μbar	-62dB min.
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	95° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

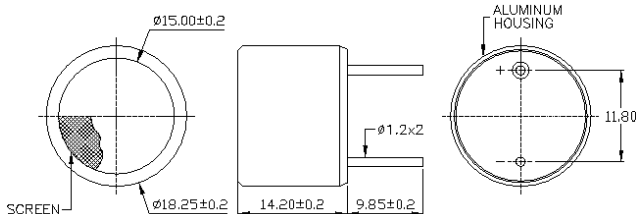
All specification taken typical at 25°C

Closer frequency tolerance can be supplied upon request.

Model available:

1	250ST/R180	Aluminum Housing
2	250ST/R18B	Black Al. Housing

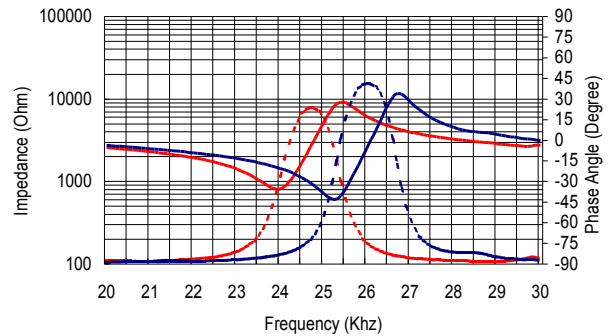
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

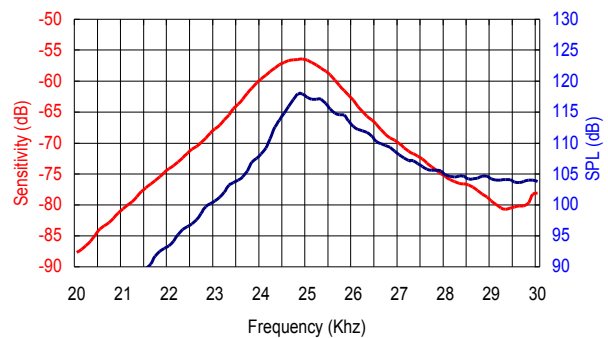
Tested under 1Vrms Oscillation Level

250SR180 Impedance
250SR180 Phase
250ST180 Impedance
250ST180 Phase



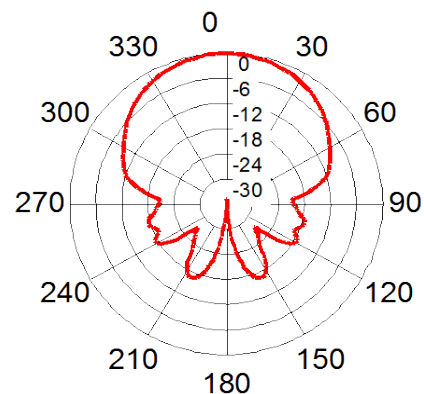
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



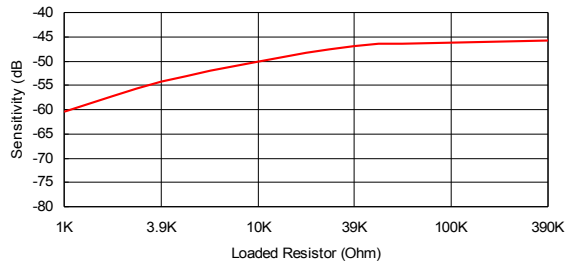
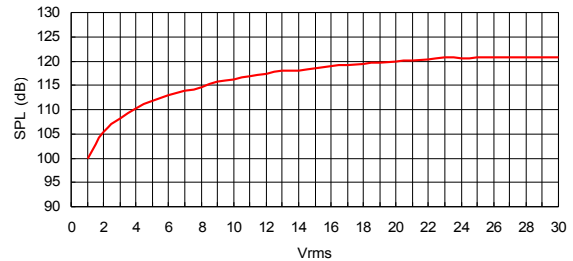
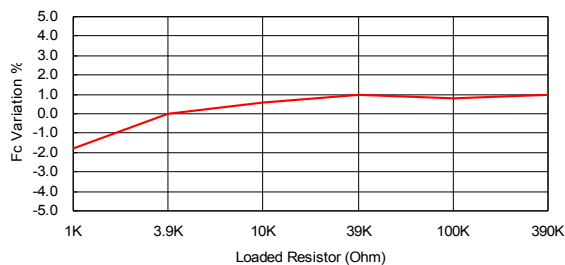
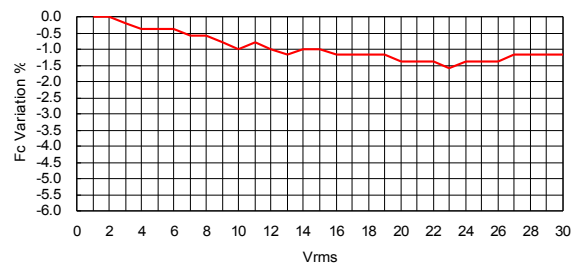
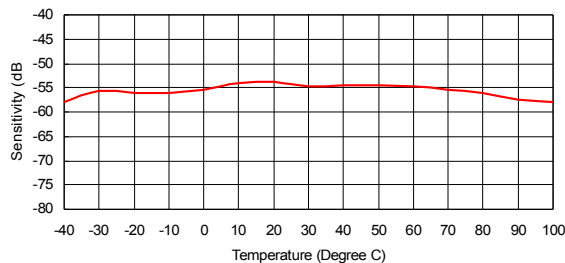
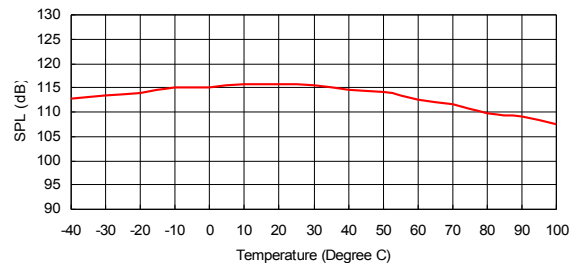
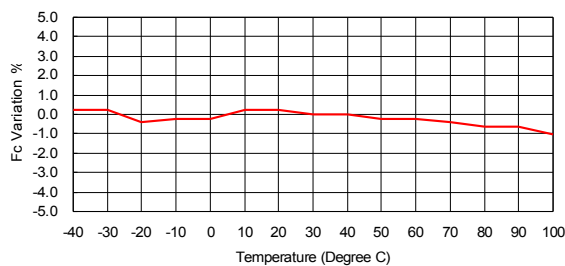
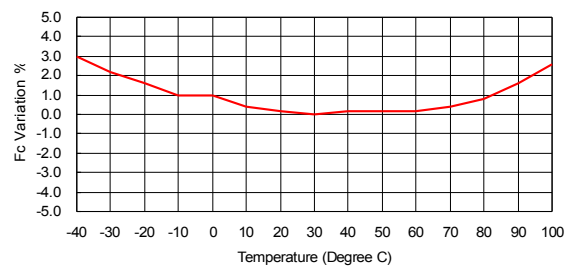
Beam Angle

Tested at 25.0KHz frequency



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250SR180 Receiver**Sensitivity Variation vs. Loaded Resistor****250ST180 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

250ST240	Transmitter
250SR240	Receiver
Center Frequency	25.0±1.0KHz
Bandwidth (-6dB)	250ST 1.5KHz 250SR 1.8KHz
Transmitting Sound Pressure Level at 25.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	115dB min.
Receiving Sensitivity at 25.0KHz 0dB = 1 volt/μbar	-60dB min.
Capacitance at 1KHz ±20%	250ST 3000 pF 250SR 2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle (-6dB)	55° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

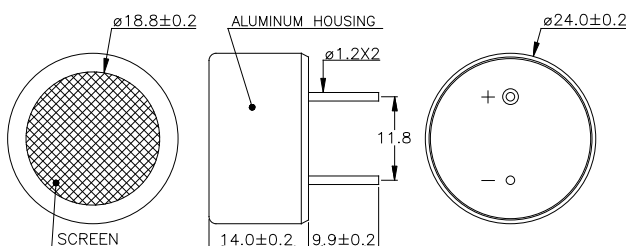
All specification taken typical at 25°C

Closer frequency tolerance can be supplied upon request.

Model available:

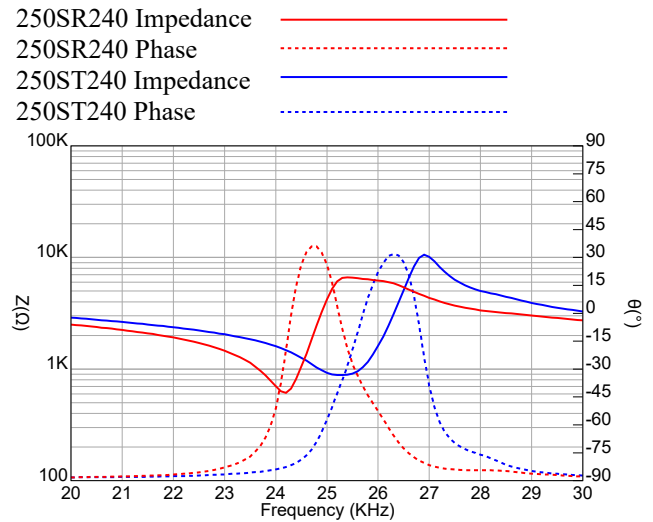
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Dimensions: dimensions are in mm



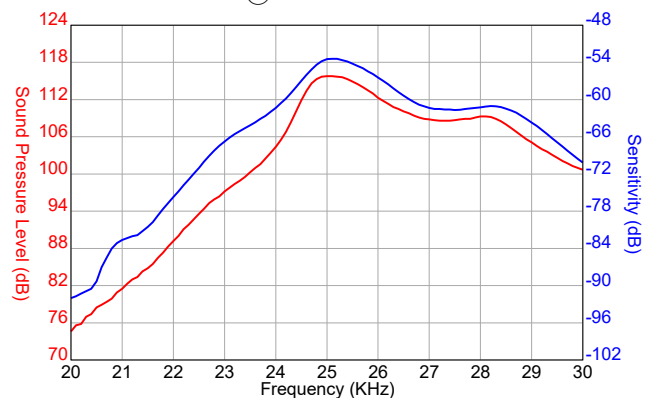
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



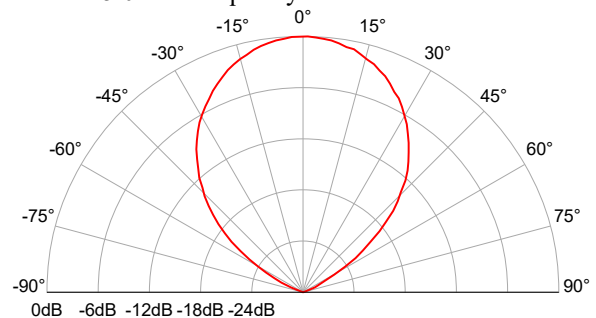
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



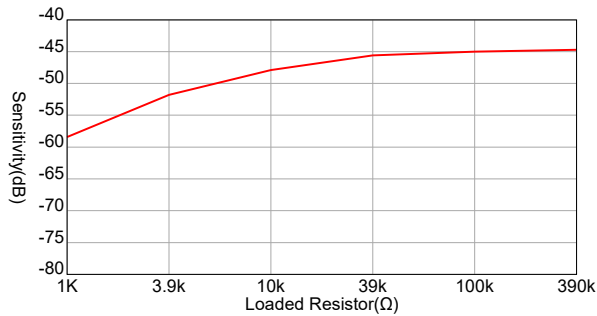
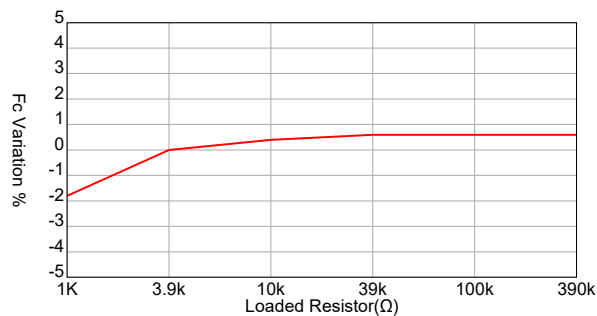
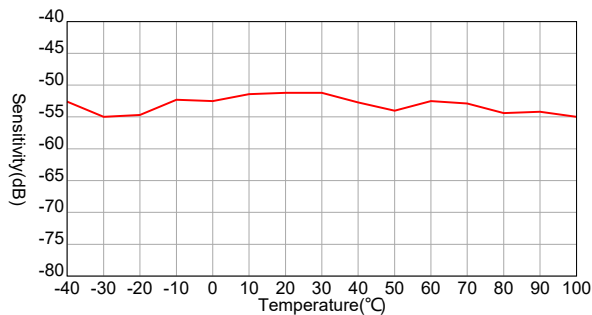
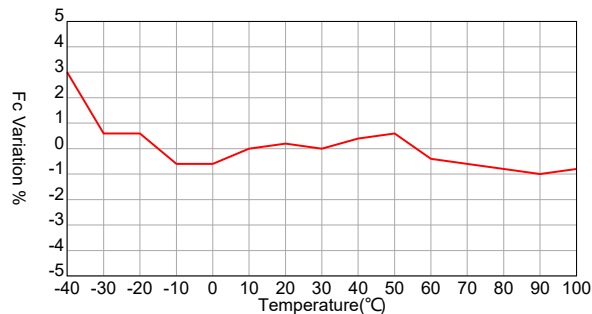
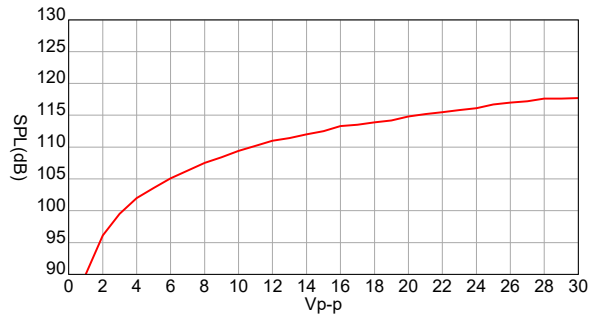
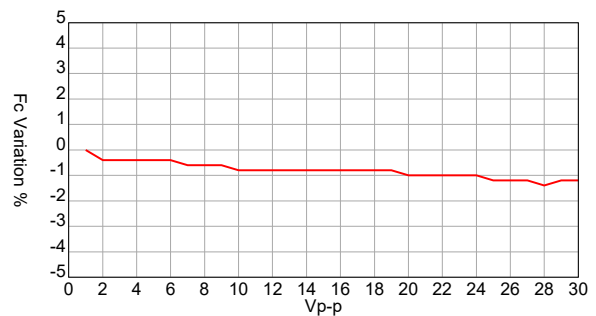
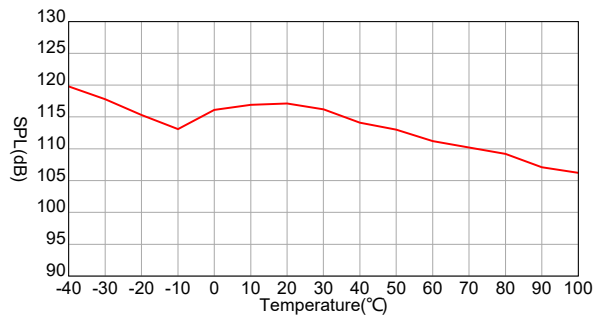
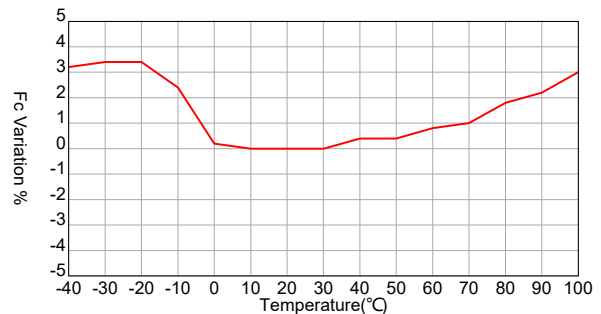
Beam Angle

Tested at 25.0KHz frequency



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250SR240 Receiver**Sensitivity Variation vs. Loaded Resistor****Center Frequency Shift vs. Loaded Resistor****Sensitivity Variation vs. Temperature****Center Frequency Shift vs. Temperature****250ST240 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Driving Voltage****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature**

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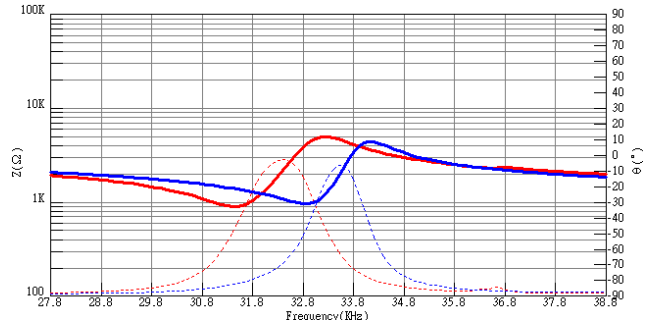
<http://www.pro-wave.com.tw> ; E-mail: sales@pro-wave.com.tw ; Tel: 886-2-22465101 ; Fax: 886-2-22465105



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

328SR160 Impedance ————
 328SR160 Phase - - - - -
 328ST160 Impedance ————
 328ST160 Phase - - - - -



Specification

328ST160	Transmitter
328SR160	Receiver
Center Frequency	32.8±1.0KHz
Bandwidth (-6dB)	328ST160 2.0KHz
	328SR160 2.5KHz
Transmitting Sound Pressure Level at 32.8KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	115dB min.
Receiving Sensitivity at 32.8KHz 0dB = 1 volt/μbar	-67dB min.
Capacitance at 1KHz ±20%	2600 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	75° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C

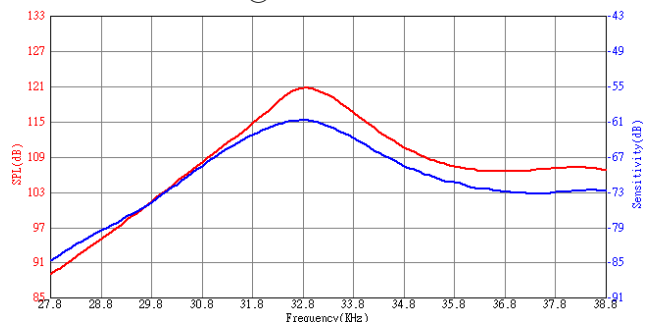
Closer frequency tolerance can be supplied upon request.

Model available:

1	328ST/R160	Aluminum Housing
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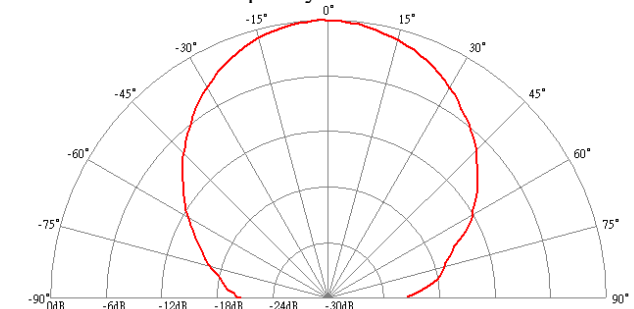
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm

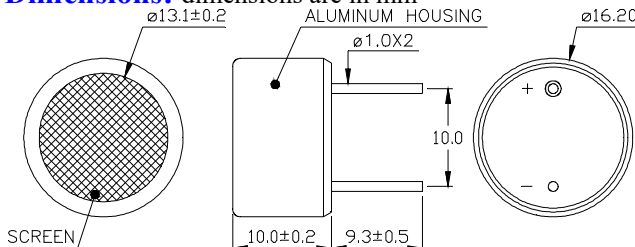


Beam Angle

Tested at 32.8KHz frequency

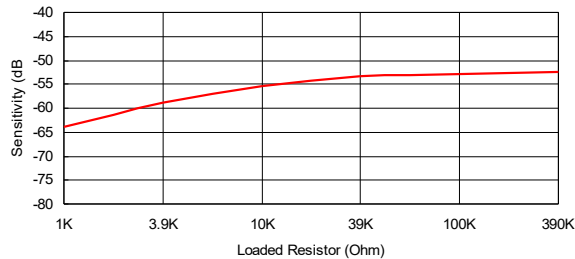
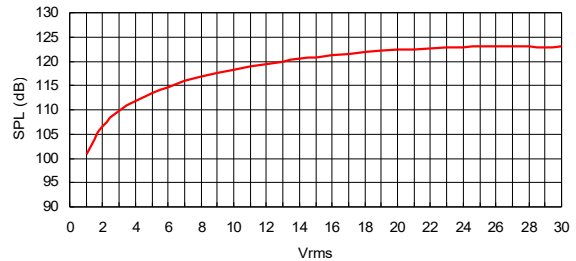
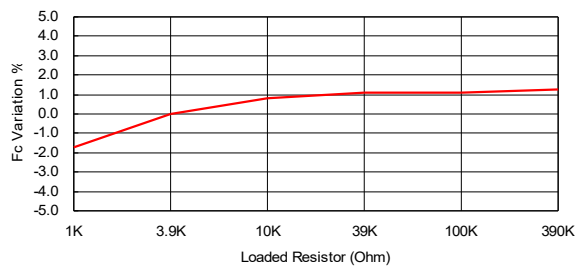
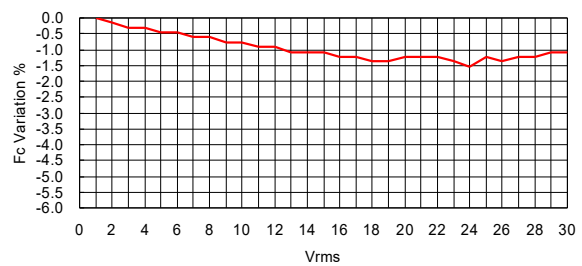
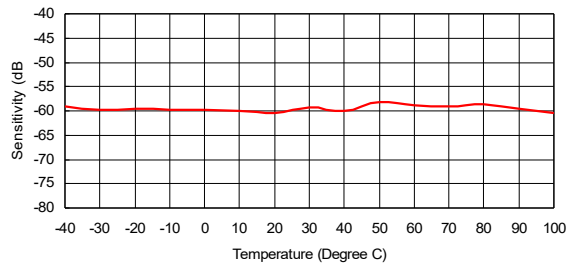
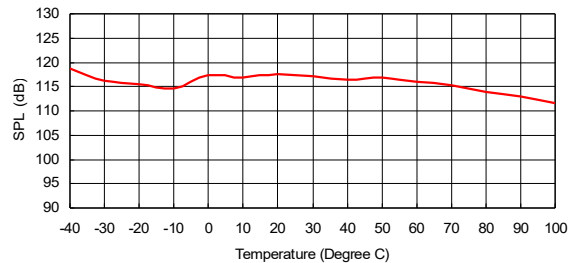
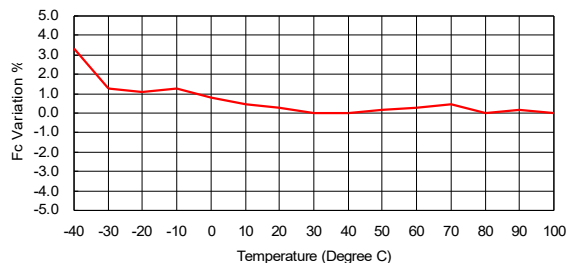
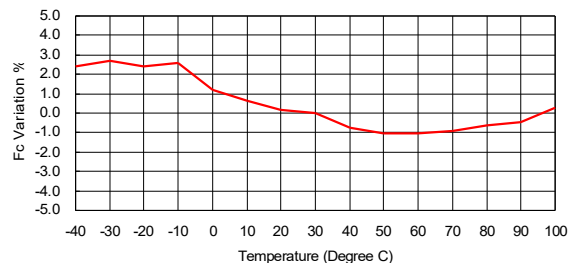


Dimensions: dimensions are in mm



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328SR160 Receiver**Sensitivity Variation vs. Loaded Resistor****328ST160 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

328ST180	Transmitter
328SR180	Receiver
Center Frequency	32.8±1.0KHz
Bandwidth (-6dB)	328ST180 2KHz
	328SR180 2KHz
Transmitting Sound Pressure Level at 32.8KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	117dB min.
Receiving Sensitivity at 32.8KHz 0dB = 1 volt/μbar	-64dB min.
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	45° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

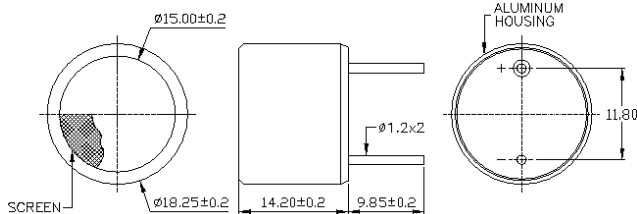
All specification taken typical at 25°C

Closer frequency tolerance can be supplied upon request.

Model available:

1	328ST/R180	Aluminum Housing
2	328ST/R18B	Black Al. Housing

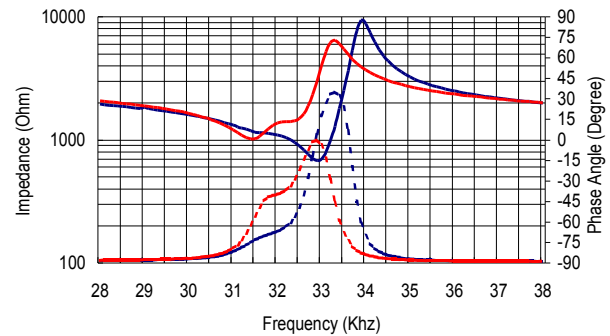
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

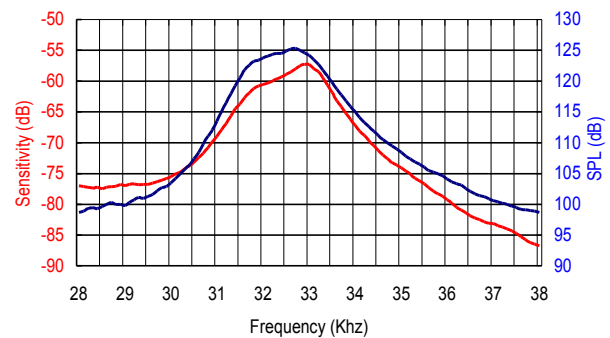
Tested under 1Vrms Oscillation Level

328SR180 Impedance
328SR180 Phase
328ST180 Impedance
328ST180 Phase



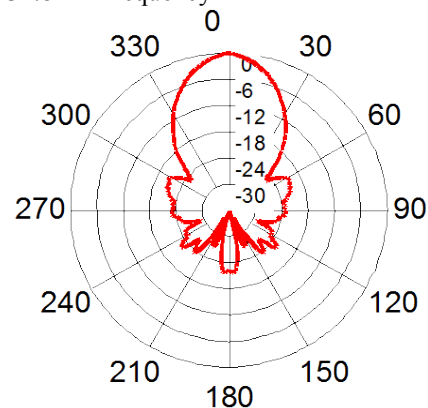
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



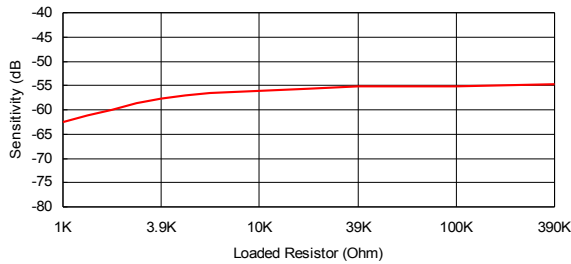
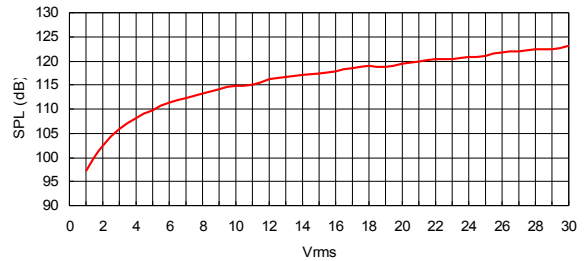
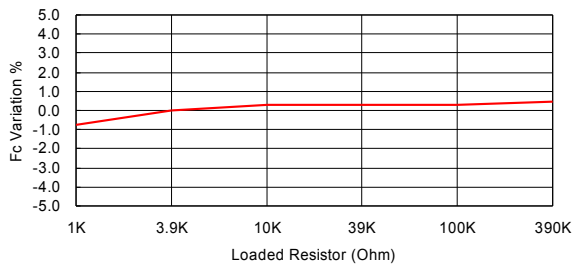
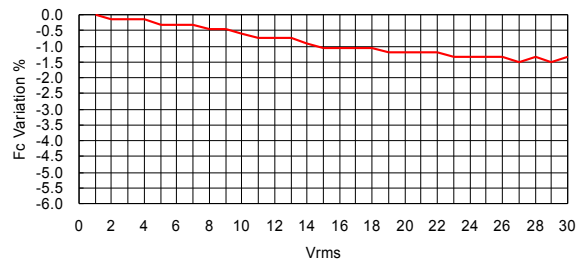
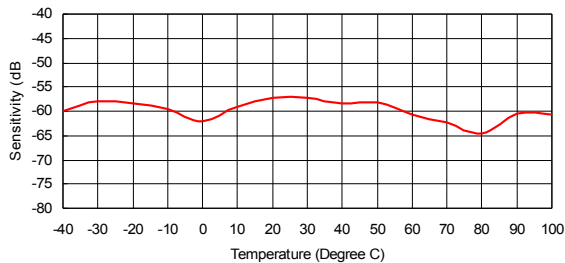
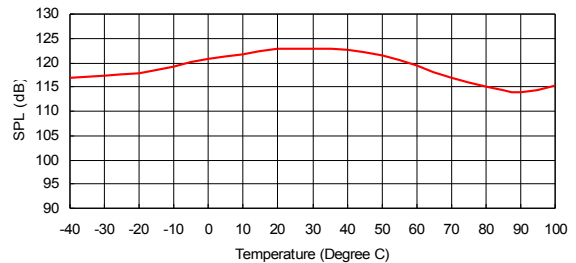
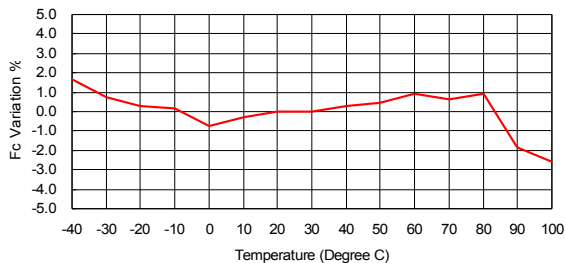
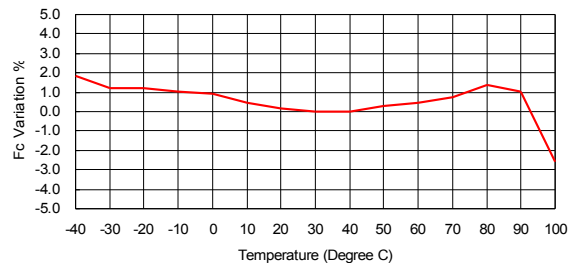
Beam Angle

Tested at 32.8KHz frequency



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328SR180 Receiver**Sensitivity Variation vs. Loaded Resistor****328ST180 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

400ST100	Transmitter
400SR100	Receiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400ST10P 2.5KHz
	400SR10P 3.0KHz
Transmitting Sound Pressure Level at 40.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	112dB min.
Receiving Sensitivity at 40.0KHz 0dB = 1 volt/μbar	-67dB min.
Capacitance at 1KHz ±20%	1900 pF
Max. Driving Voltage (cont.)	10Vrms
Total Beam Angle	-6dB 72° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

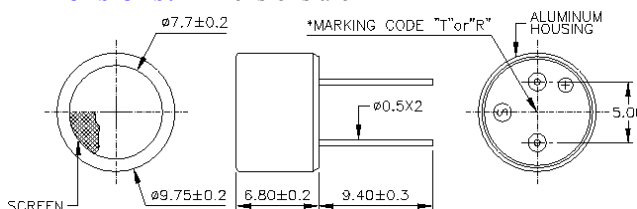
All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

1	400ST/R100	Aluminum Housing
2	400ST/R10P	Plastic Housing

Dimensions:

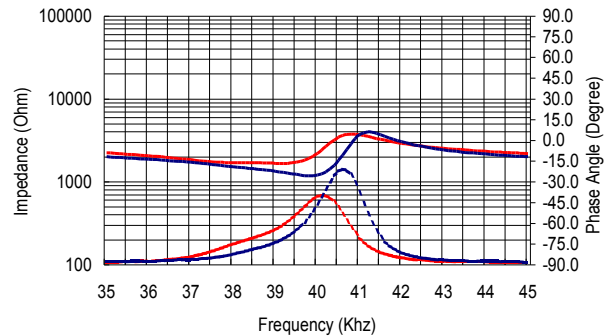
Dimensions are in mm



Impedance/Phase Angle vs. Frequency

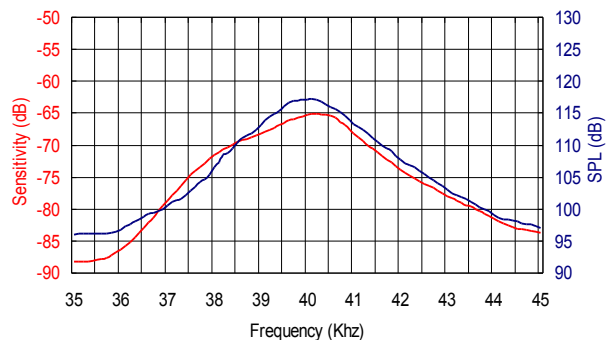
Tested under 1Vrms Oscillation Level

400SR100 Impedance
400SR100 Phase
400ST100 Impedance
400ST100 Phase



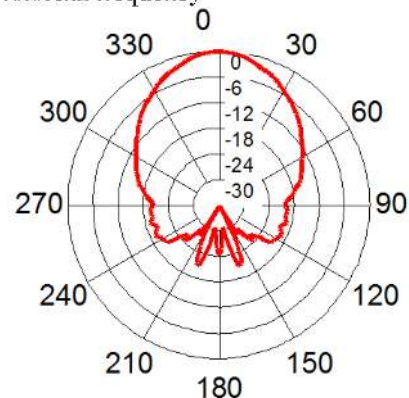
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



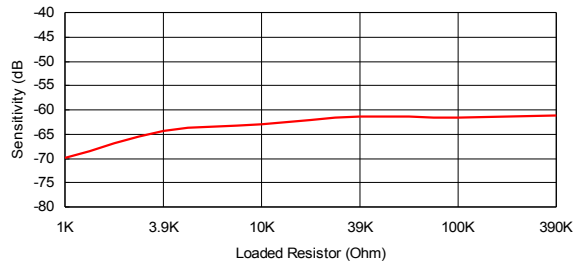
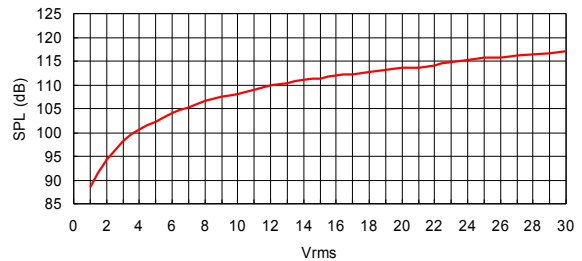
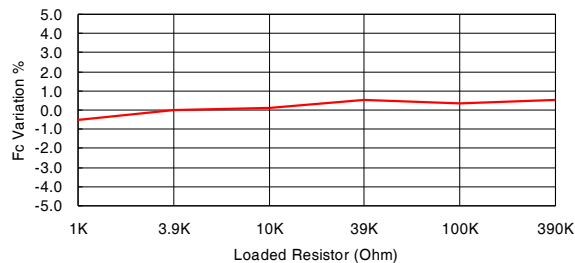
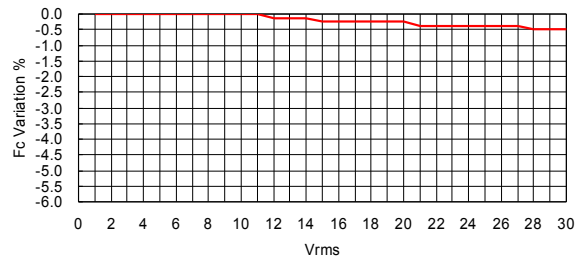
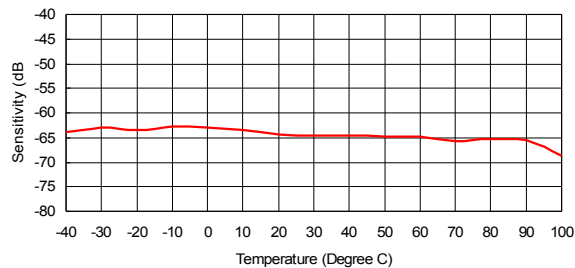
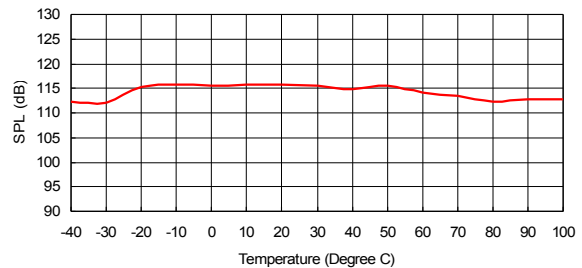
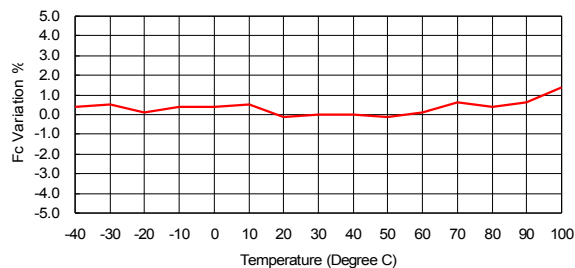
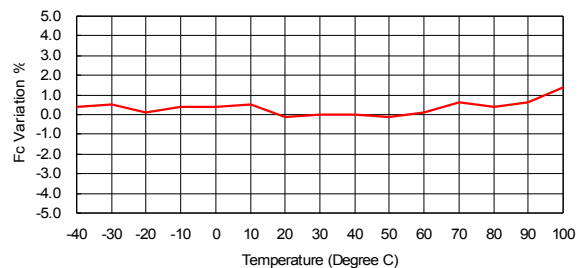
Beam Angle

Tested at 40.0KHz frequency



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400SR100 Receiver**Sensitivity Variation vs. Loaded Resistor****400ST100 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

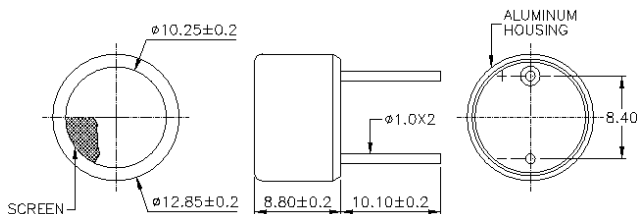
400ST120	Transmitter
400SR120	Receiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400ST120 2.0KHz
	400SR120 2.0KHz
Transmitting Sound Pressure Level at 40.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	115dB min.
Receiving Sensitivity at 40.0KHz 0dB = 1 volt/μbar	-67dB min.
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	85° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

1	400ST/R120	Aluminum Housing
2	400ST/R12B	Black Al. Housing

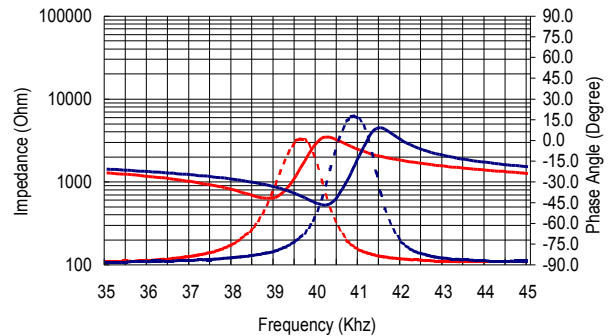
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

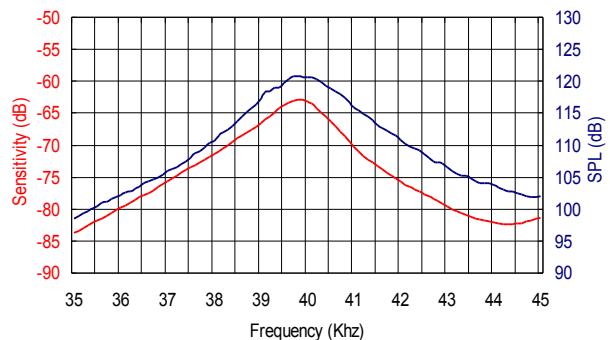
Tested under 1Vrms Oscillation Level

400SR120 Impedance
400SR120 Phase
400ST120 Impedance
400ST120 Phase



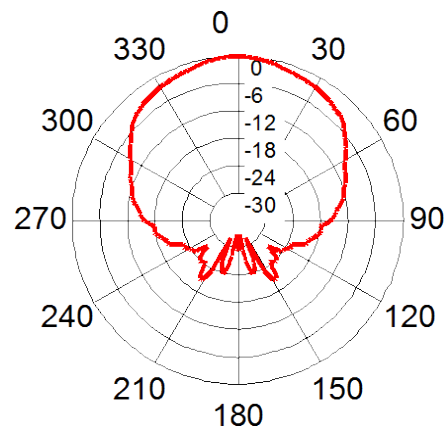
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



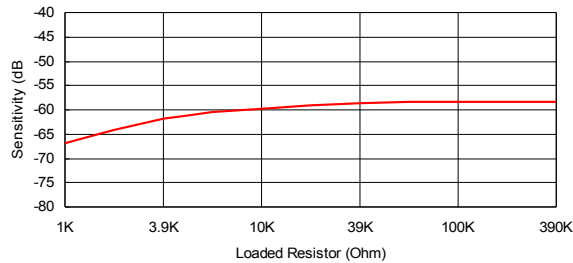
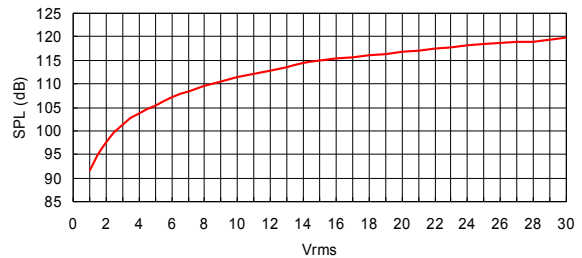
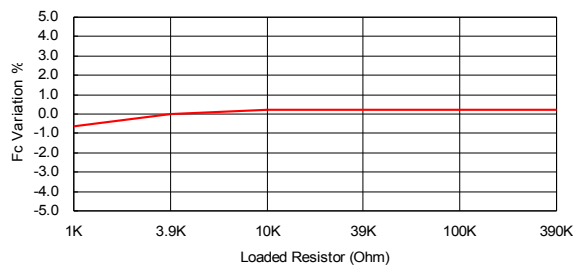
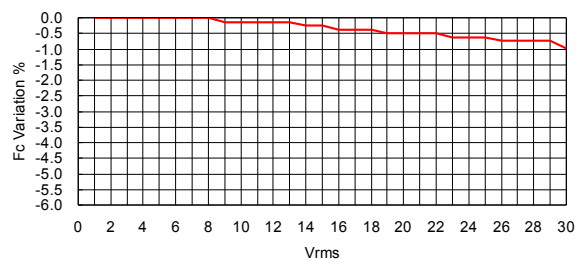
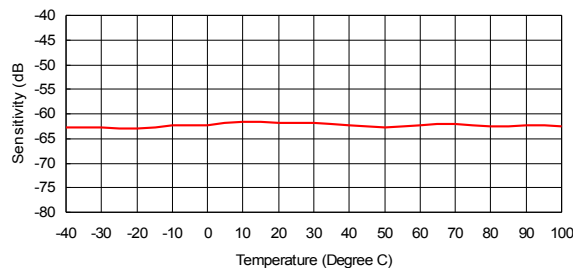
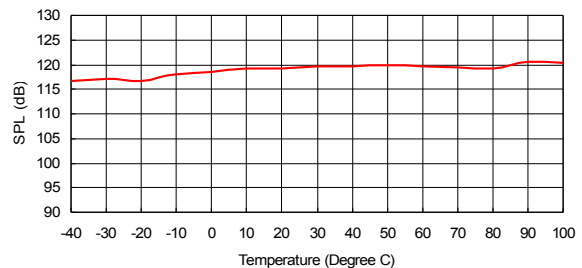
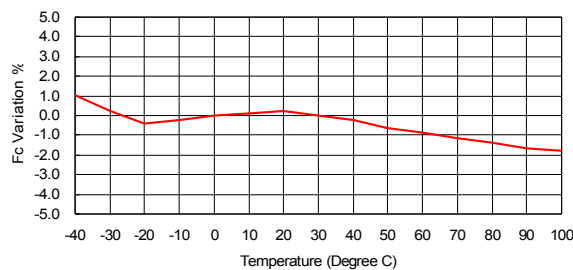
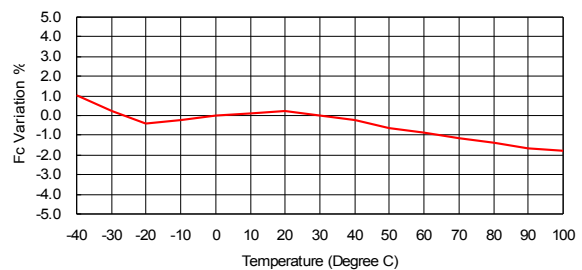
Beam Angle

Tested at 40.0KHz frequency



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400SR120 Receiver**Sensitivity Variation vs. Loaded Resistor****400ST120 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

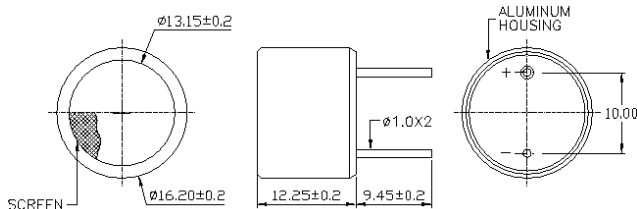
400ST160	Transmitter
400SR160	Receiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400ST160 2.0KHz
	400SR160 2.5KHz
Transmitting Sound Pressure Level at 40.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	120dB min.
Receiving Sensitivity at 40.0KHz 0dB = 1 volt/μbar	-61dB min.
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	55° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Models available:

1	400ST/R160	Aluminum Housing
2	400ST/R16B	Black Al. Housing
3	400ST/R16P	Plastic Housing

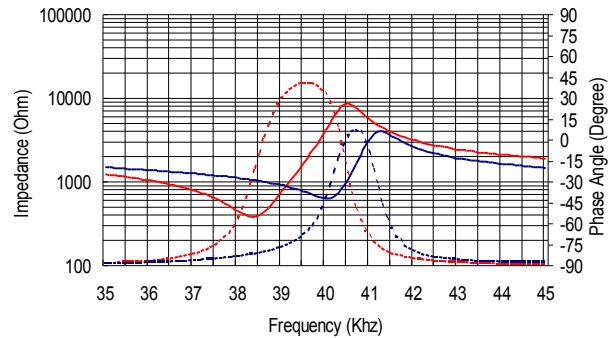
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

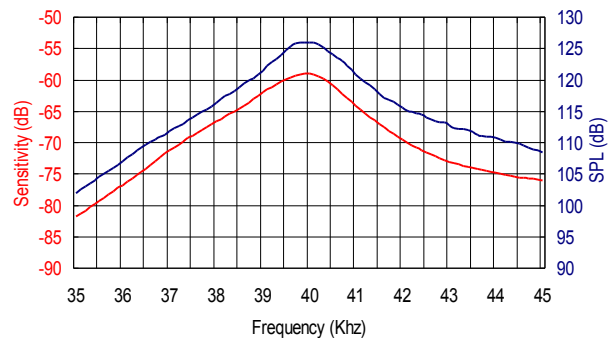
Tested under 1Vrms Oscillation Level

400SR160 Impedance
400SR160 Phase
400ST160 Impedance
400ST160 Phase



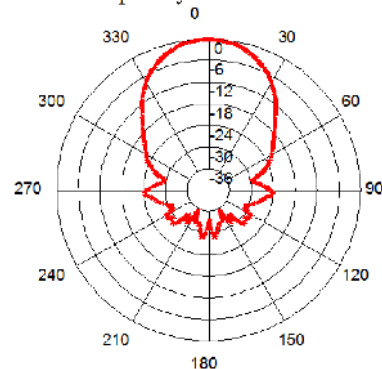
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



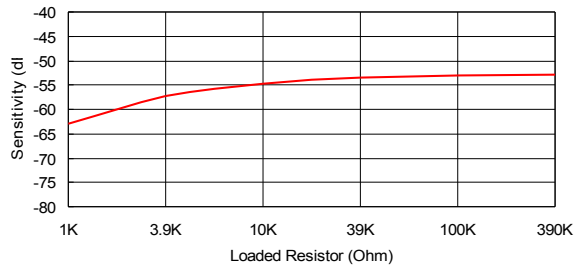
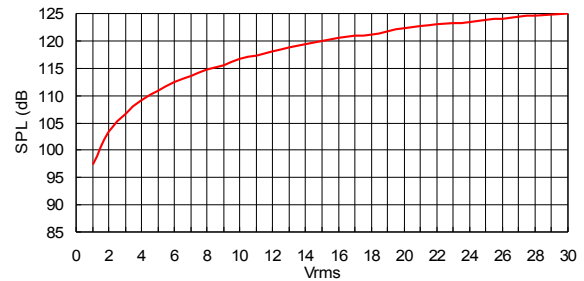
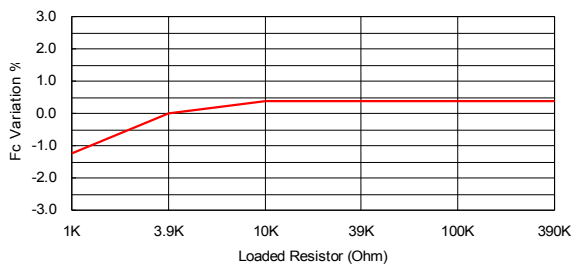
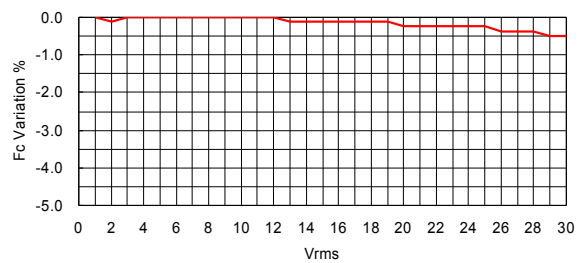
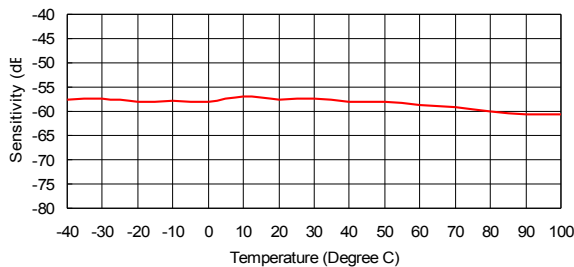
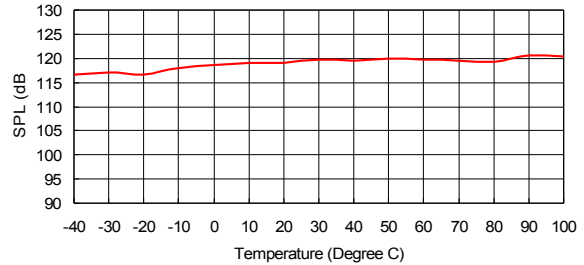
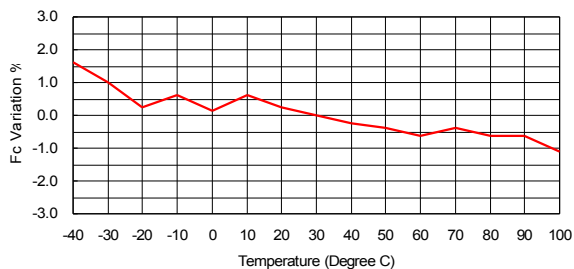
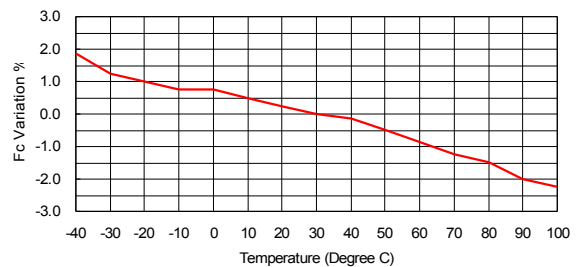
Beam Angle

Tested at 40.0KHz frequency



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400SR160 Receiver**Sensitivity Variation vs. Loaded Resistor****400ST160 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

500MB120

Center Frequency

Bandwidth (-6dB)

Transmitting Sound Pressure Level
at 50.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm

Receiving Sensitivity

at 50.0KHz 0dB = 1 volt/μbar

Sensitivity/Cross Talk Ratio

Nominal Impedance (Trans.)

Capacitance at 1KHz ±20%

Max. Driving Voltage (cont.)

Total Beam Angle -6dB

Operation Temperature

Storage Temperature

Dual

Transducer

50.0±1.0KHz

3KHz

113dB min.

-67dB min.

15 dB

800 Ohm

2400 pF

20Vrms

30° typical

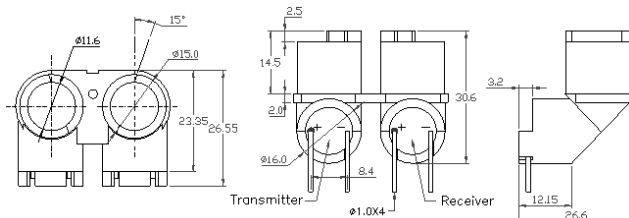
-30 to 70°C

-40 to 80°C

All specification taken typical at 25°C

Closer frequency tolerance can be supplied upon request.

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

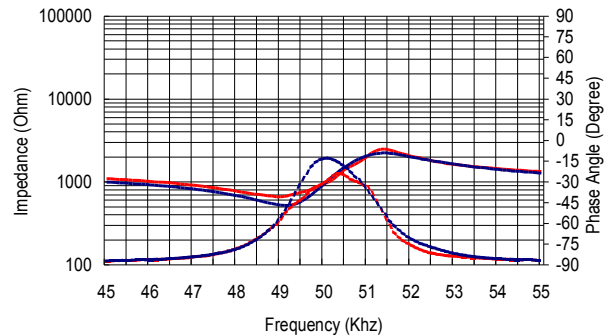
Tested under 1Vrms Oscillation Level

Receiver Impedance

Receiver Phase

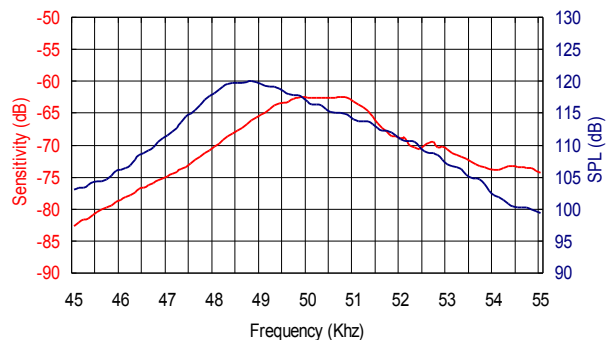
Transmitter Impedance

Transmitter Phase



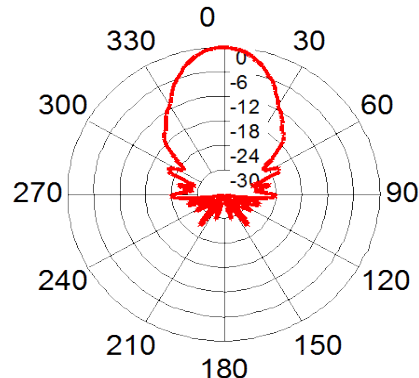
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle

Tested at 50.0KHz frequency



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Specification

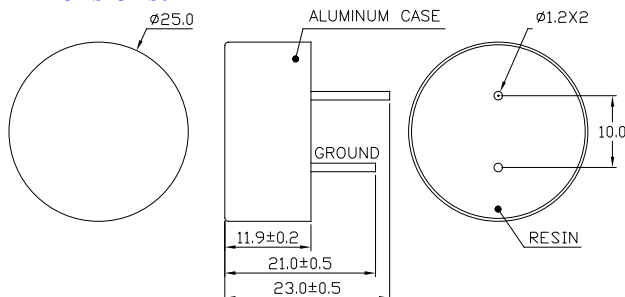
250ET250	Transmitter
250ER250	Receiver
Center Frequency	25.0±1.0KHz
Bandwidth (-6dB)	250ET250 1.0KHz
	250ER250 1.0KHz
Transmitting Sound Pressure Level at 25.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	113dB min.
Receiving Sensitivity at 25.0KHz 0dB = 1 volt/μbar	-63dB min.
Capacitance at 1KHz ±20%	2800 pF
Max. Driving Voltage (cont.)	15Vrms
Total Beam Angle -6dB	40° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

1	250ET/R250	Aluminum Housing
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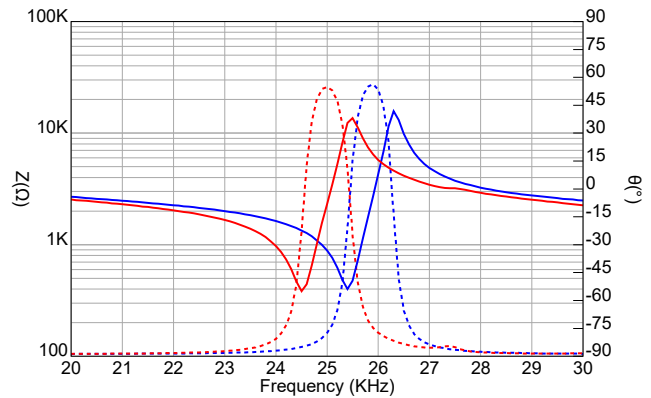
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

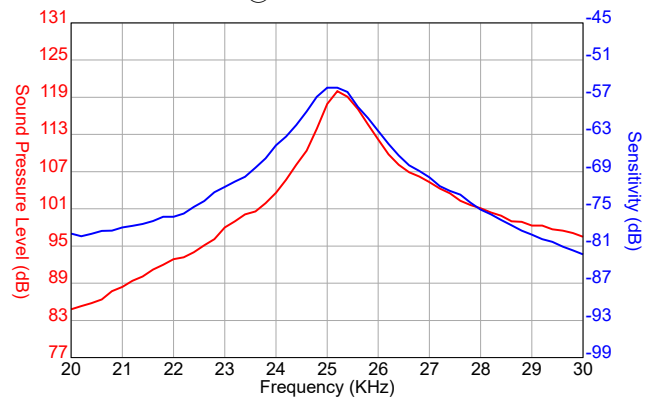
Tested under 1Vrms Oscillation Level

250ER250 Impedance
250ER250 Phase
250ET250 Impedance
250ET250 Phase



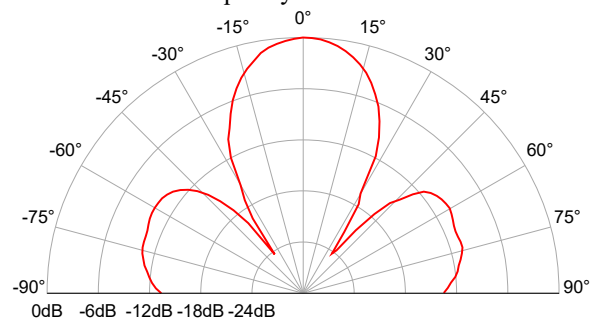
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



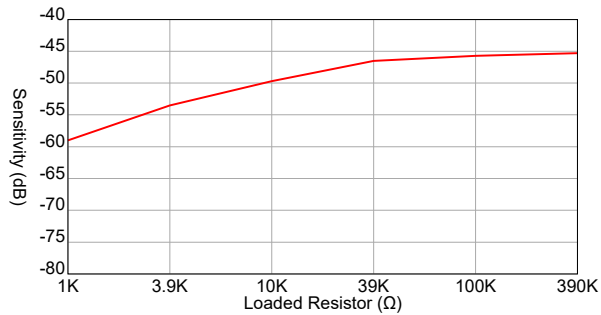
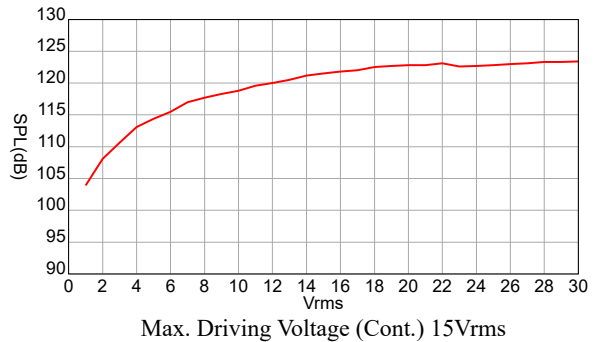
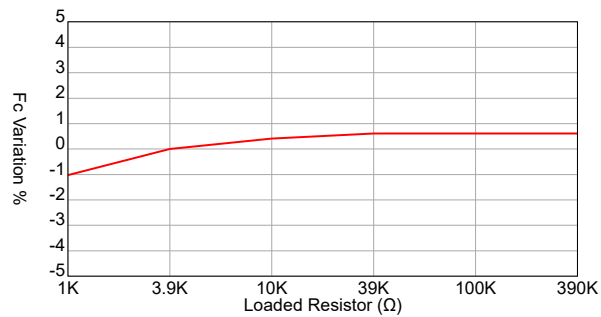
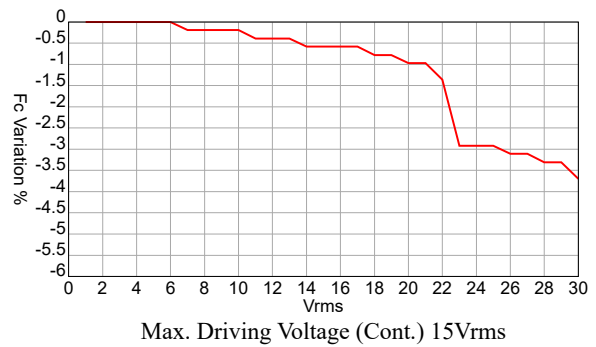
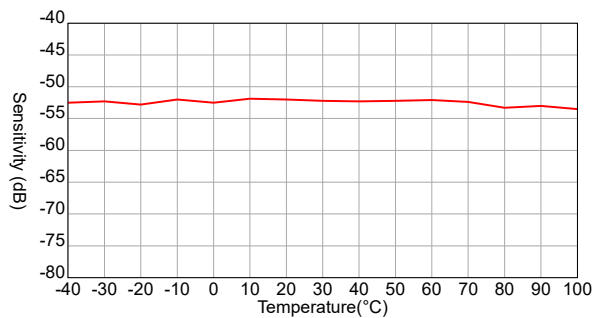
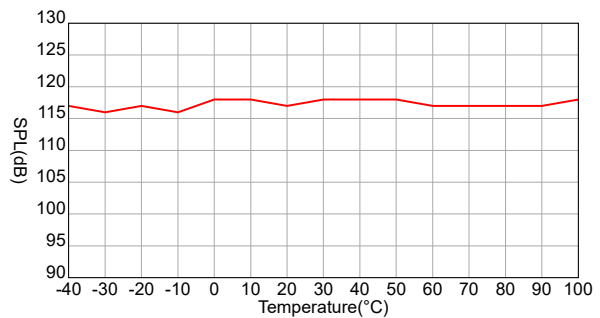
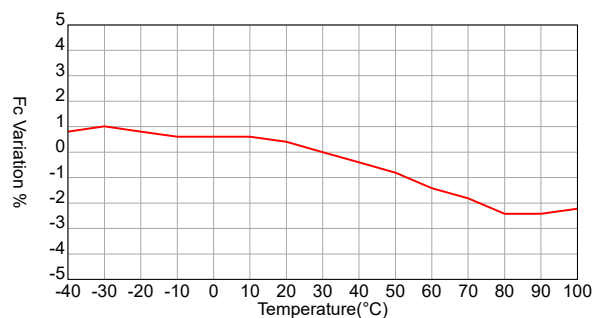
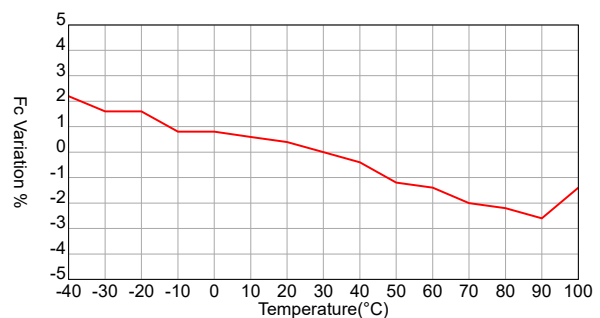
Beam Angle

Tested at 25.0KHz frequency



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250ER250 Receiver**Sensitivity Variation vs. Loaded Resistor****250ET250 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

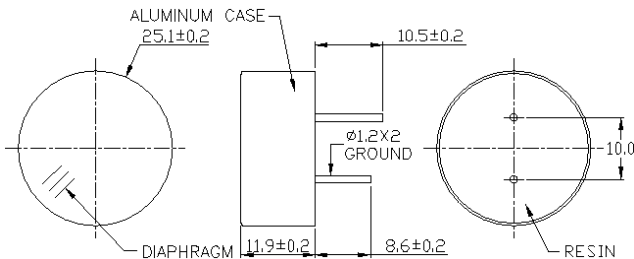
328ET250	Transmitter
328ER250	Receiver
Center Frequency	32.8±1.0KHz
Bandwidth (-6dB)	328ET250 1.0KHz
	328ER250 1.0KHz
Transmitting Sound Pressure Level	113dB min.
at 32.8KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	107dB min. SUS 316
Receiving Sensitivity	-67dB min.
at 32.8KHz 0dB = 1 volt/μbar	-70dB min. SUS 316
Capacitance at 1KHz	±20% 2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle	-6dB 33° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

1	328ET/R250	Aluminum Housing
2	328ET/R25B	Black Alum. Housing
3	328ET/R25S	SUS 316 Housing

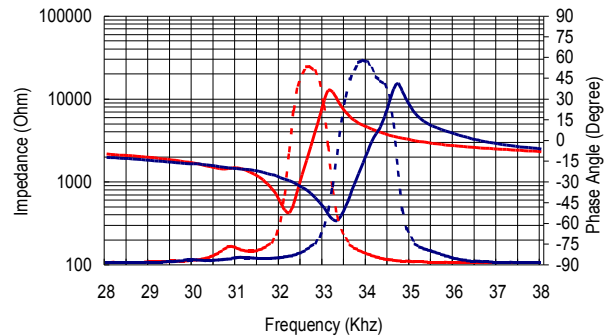
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

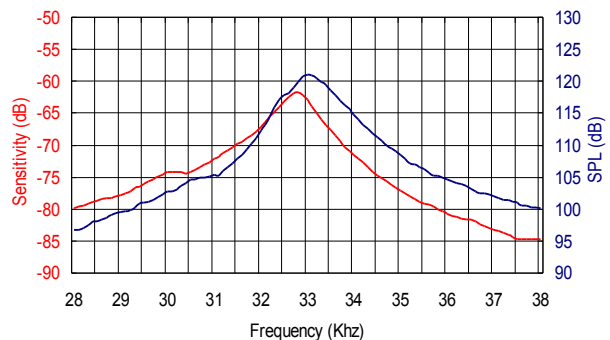
Tested under 1Vrms Oscillation Level

328ER250 Impedance (Red solid line)
328ER250 Phase (Red dashed line)
328ET250 Impedance (Blue solid line)
328ET250 Phase (Blue dashed line)



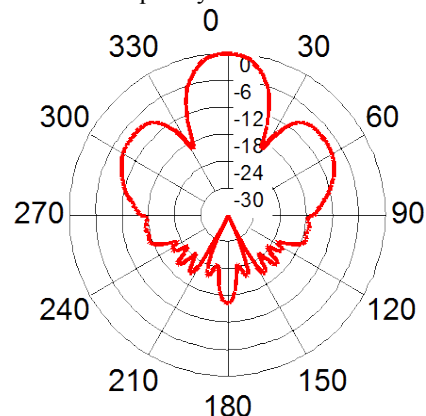
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



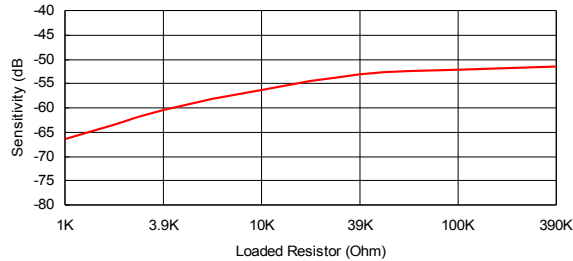
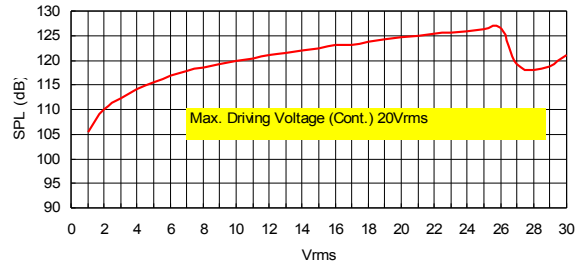
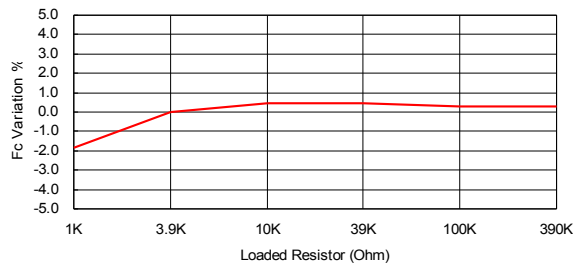
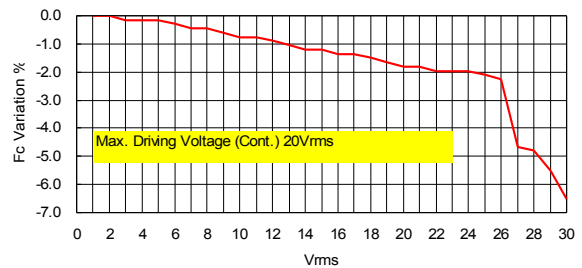
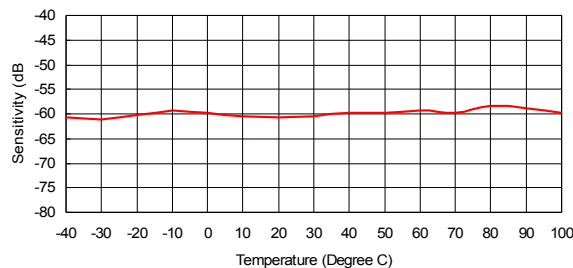
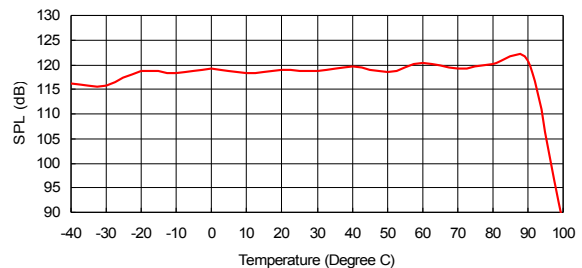
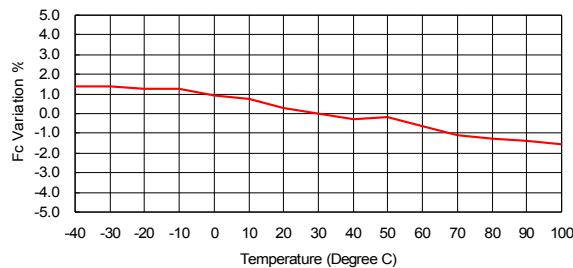
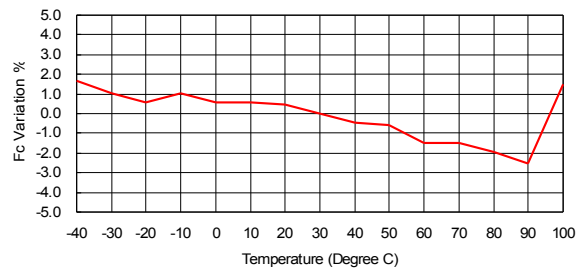
Beam Angle

Tested at 32.8KHz frequency



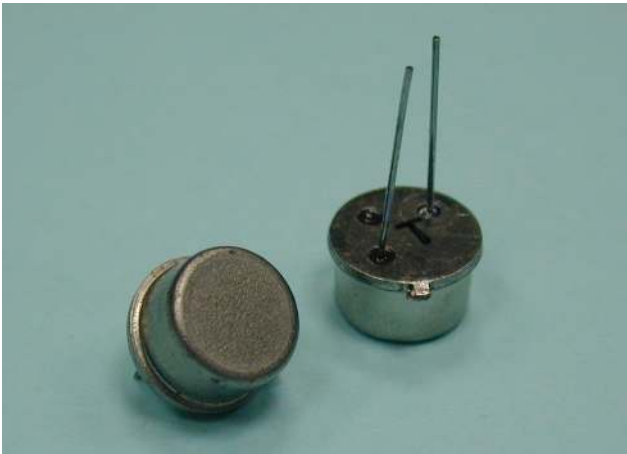
S. Square Enterprise Company Limited
Pro-Wave Electronics Corporation

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328ER250 Receiver**Sensitivity Variation vs. Loaded Resistor****328ET250 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

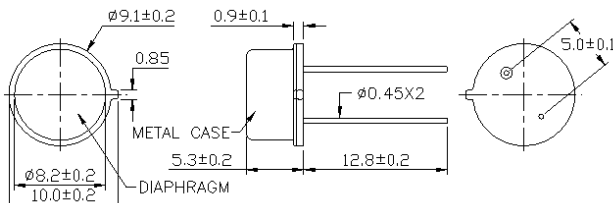
400ET080	Transmitter
400ER080	Receiver
Center Frequency	40.0±3.0KHz
Bandwidth (-6dB)	400ET080 1.5KHz 400ER080 2.0KHz
Transmitting Sound Pressure Level at 40.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	100dB min.
Receiving Sensitivity at 40.0KHz 0dB = 1 volt/μbar	-80dB min.
Capacitance at 1KHz ±20%	1700 pF
Max. Driving Voltage (cont.)	15Vrms
Total Beam Angle -6dB	125° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

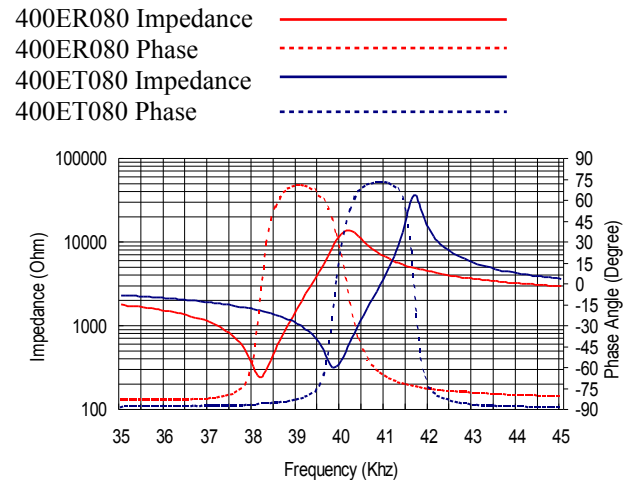
1	400ET/R080	Nickel Plated Steel Housing
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Dimensions: dimensions are in mm



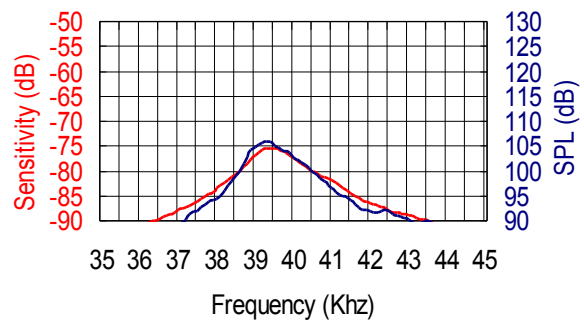
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



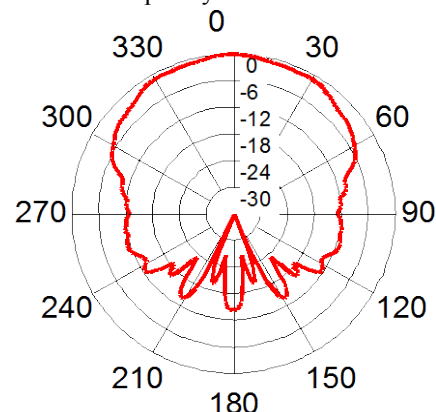
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



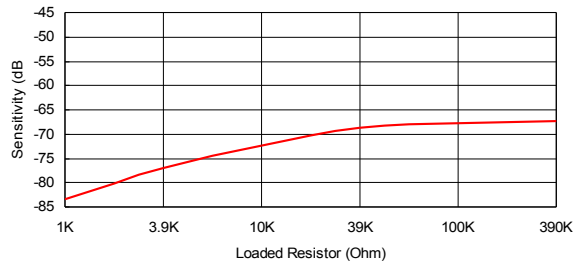
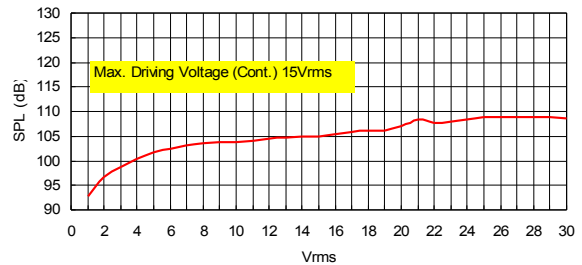
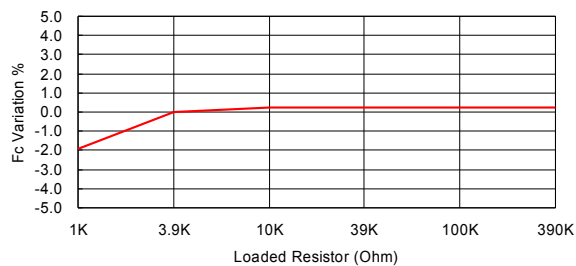
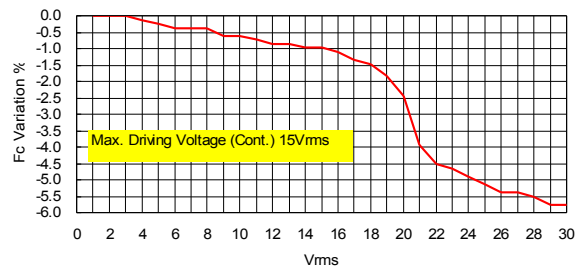
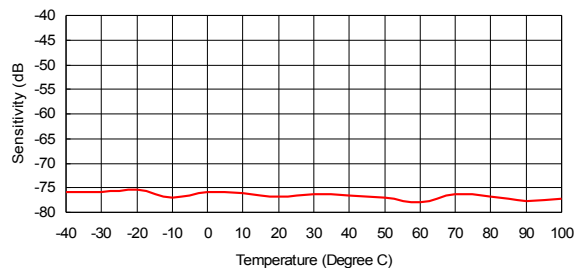
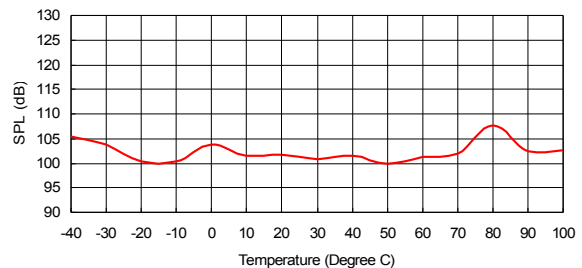
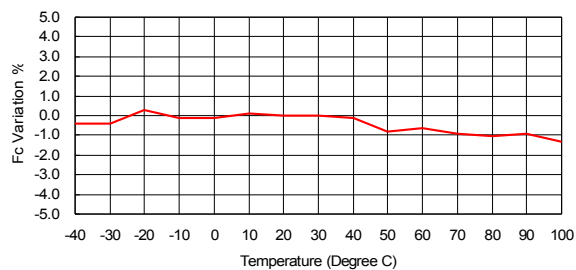
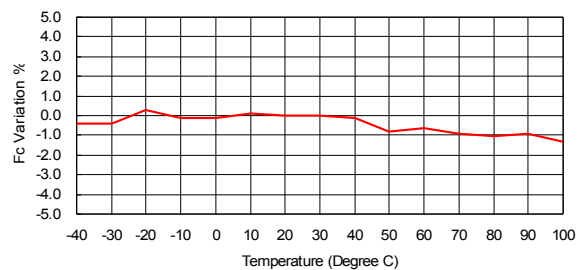
Beam Angle

Tested at 40.0KHz frequency



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400ER080 Receiver**Sensitivity Variation vs. Loaded Resistor****400ET080 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

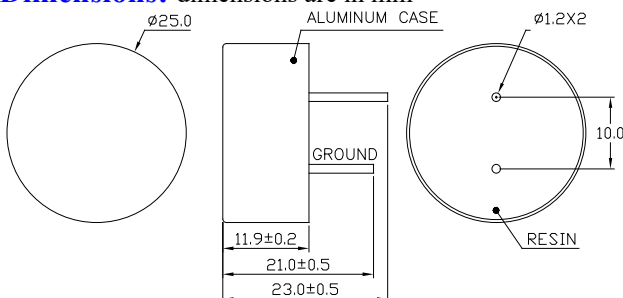
400ET250	Transmitter
400ER250	Receiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400ET250 1.0KHz
	400ER250
Transmitting Sound Pressure Level at 40.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	115dB min. 107 dB min. for SUS316
Receiving Sensitivity at 40.0KHz 0dB = 1 volt/μbar	-70dB min. -72 dB min. for SUS316
Capacitance at 1KHz	±20% 2800 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle	-6dB 30° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

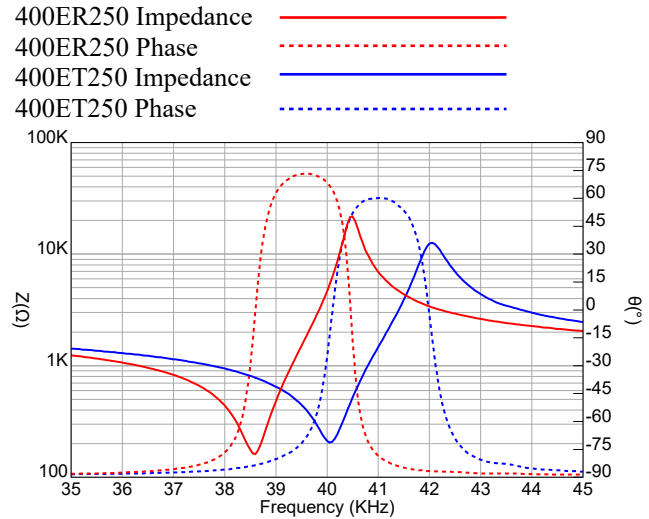
1	400ET/R250	Aluminum Housing
2	400ET/R25B	Black Alum. Housing
3	400ET/R25S	SUS316 Housing

Dimensions: dimensions are in mm



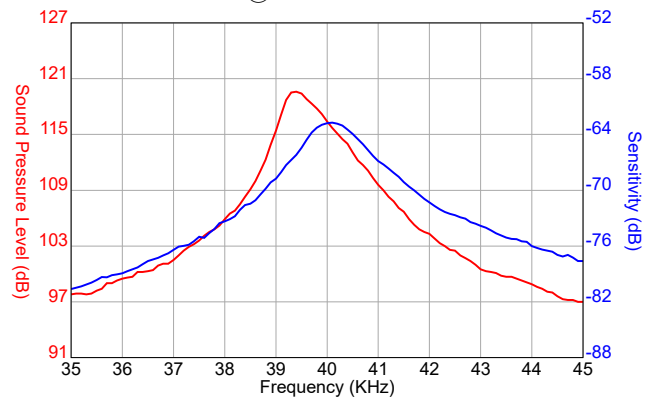
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



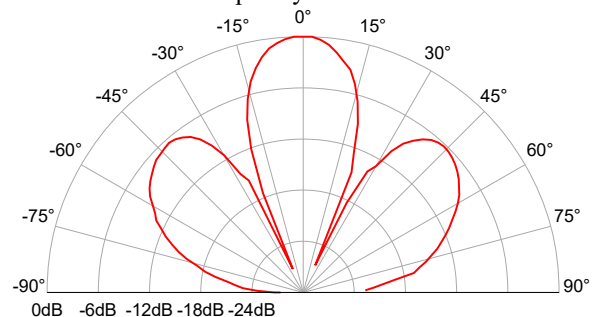
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



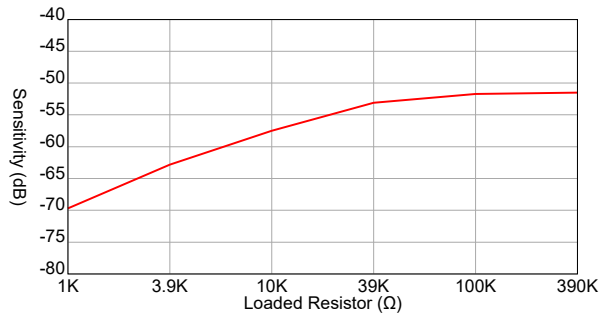
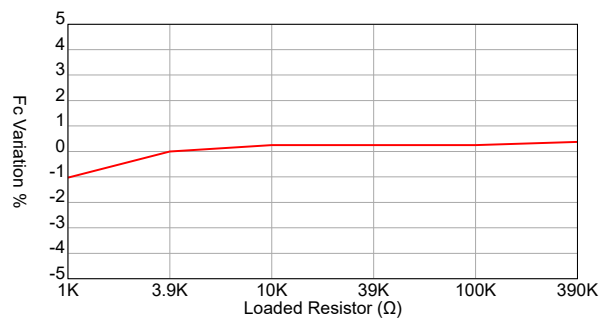
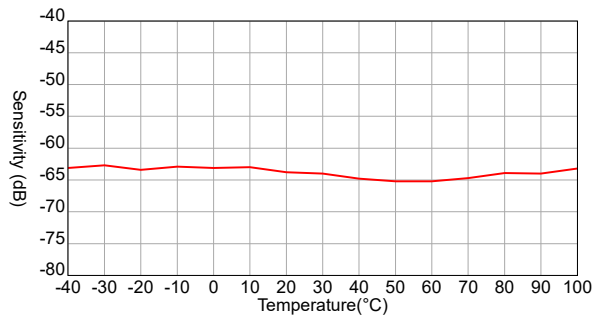
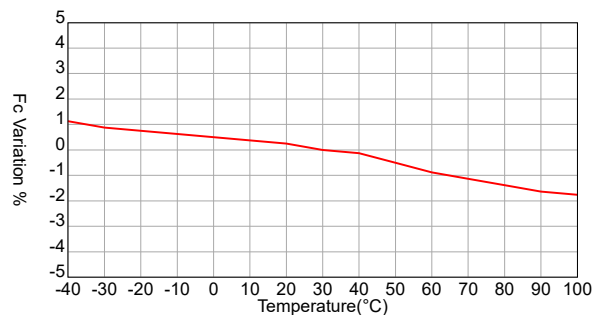
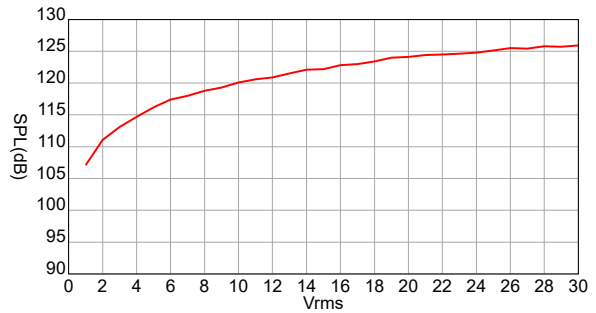
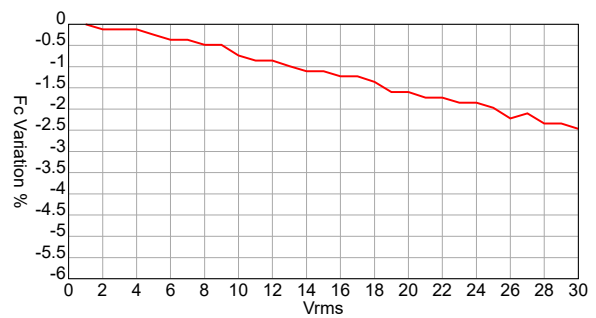
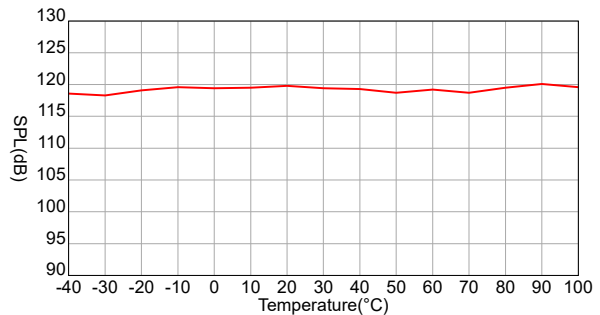
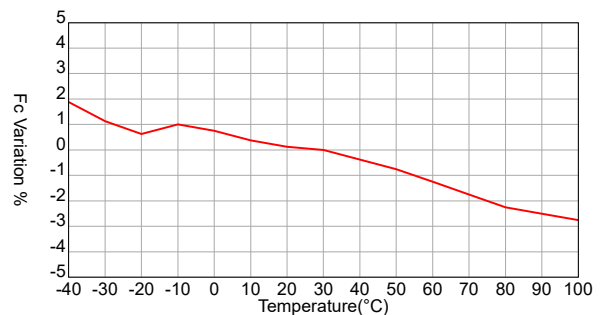
Beam Angle

Tested at 40.0KHz Frequency



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400ER250 Receiver**Sensitivity Variation vs. Loaded Resistor****Center Frequency Shift vs. Loaded Resistor****Sensitivity Variation vs. Temperature****Center Frequency Shift vs. Temperature****400ET250 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Driving Voltage****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

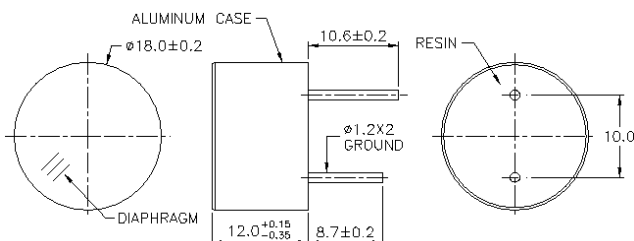
400ET180	Transmitter
400ER180	Receiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400ET180 1.5KHz
	400ER180 1.5KHz
Transmitting Sound Pressure Level at 40.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	115dB min.
Receiving Sensitivity at 40.0KHz 0dB = 1 volt/μbar	-70dB min.
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage (cont.)	15Vrms
Total Beam Angle -6dB	30° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

1	400ET/R180	Aluminum Housing
2	400ET/R18B	Black Alum. Housing

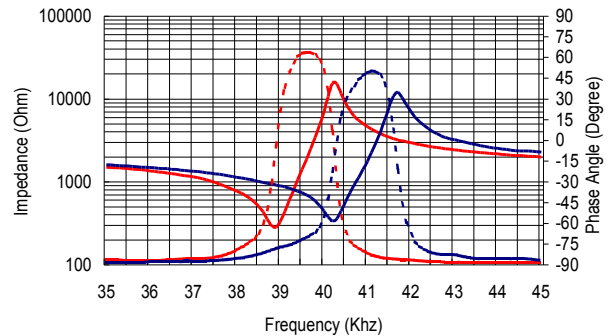
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

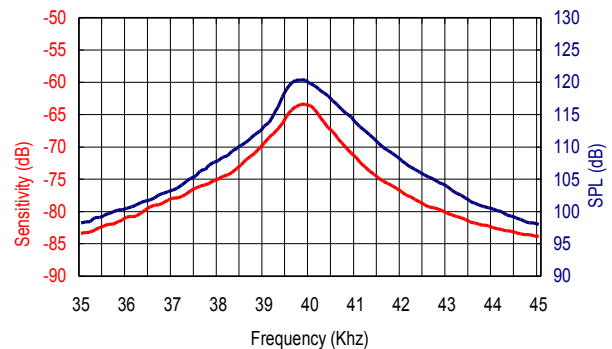
Tested under 1Vrms Oscillation Level

400ER180 Impedance
400ER180 Phase
400ET180 Impedance
400ET180 Phase



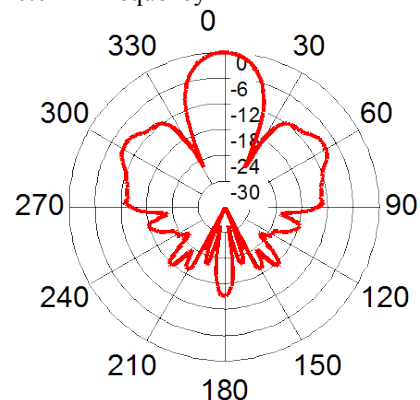
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



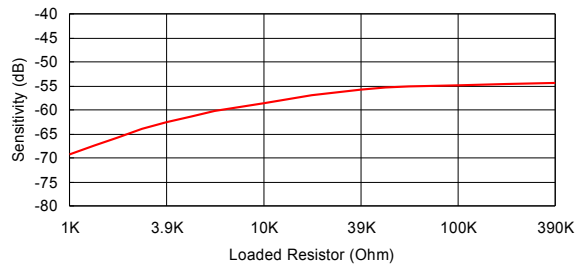
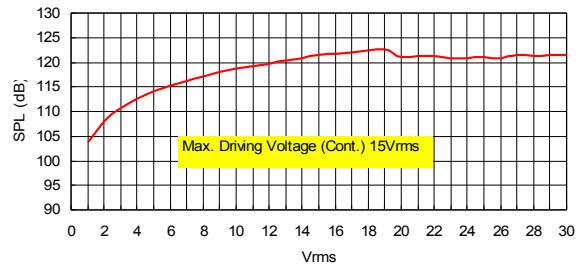
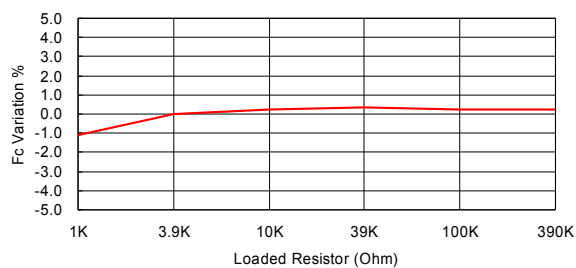
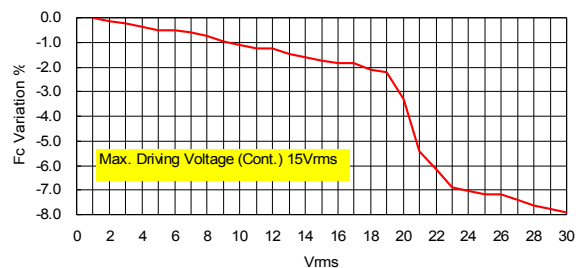
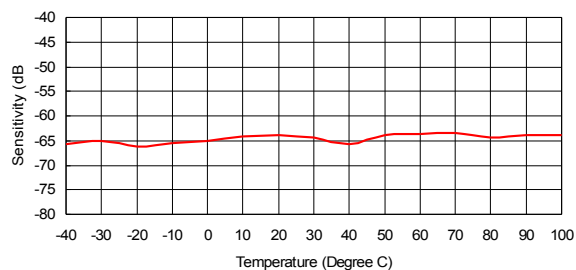
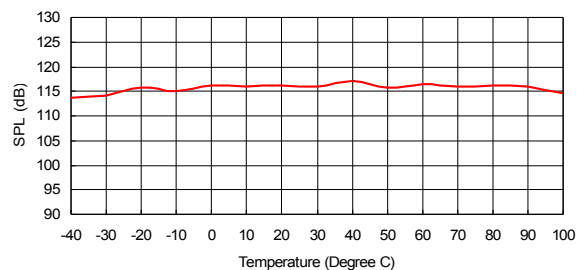
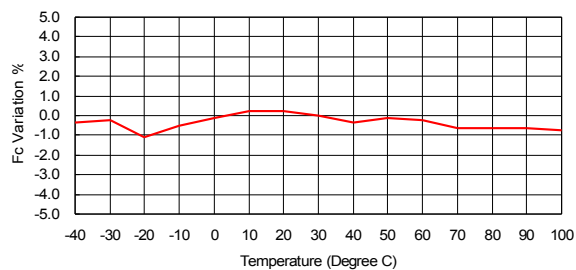
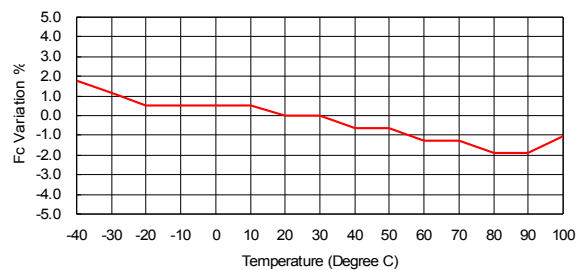
Beam Angle

Tested at 40.0KHz frequency



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400ER180 Receiver**Sensitivity Variation vs. Loaded Resistor****400ET180 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

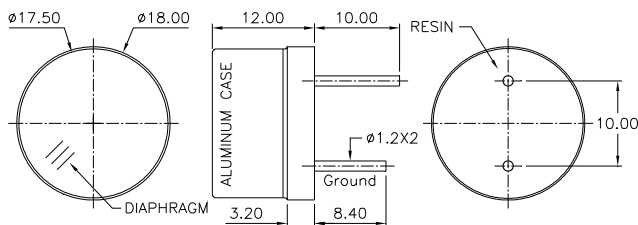
400ET18S	Transmitter
400ER18S	Receiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400ET18S 1.5KHz
	400ER18S 1.5KHz
Transmitting Sound Pressure Level	110dB min.
at 40.0KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	
Receiving Sensitivity	-70dB min.
at 40.0KHz 0dB = 1 volt/μbar	
Capacitance at 1KHz	±20% 2900 pF
Max. Driving Voltage (cont.)	15Vrms
Total Beam Angle (-6dB Main Beam)	35° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

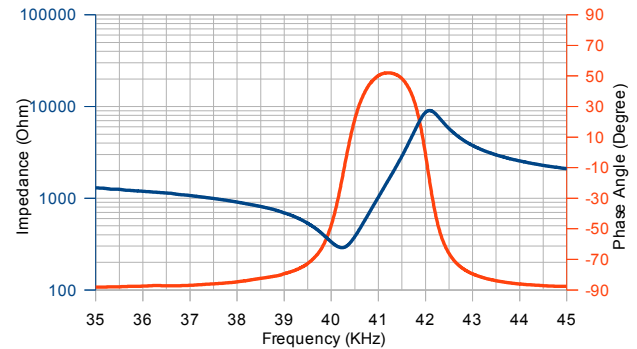
1	400ET/R18S	Aluminum Housing
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Dimensions: dimensions are in mm

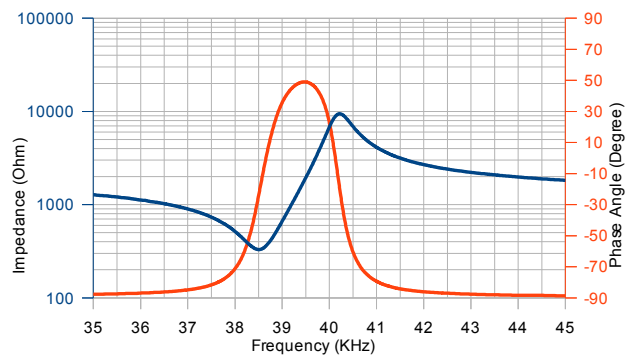


Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level
400ET18S

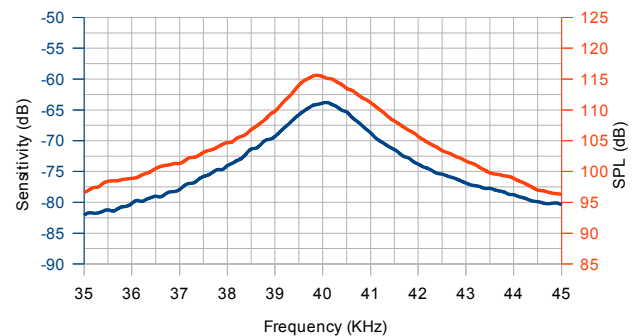


400ER18S



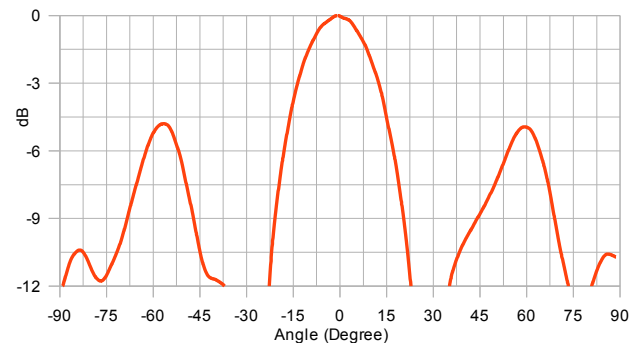
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



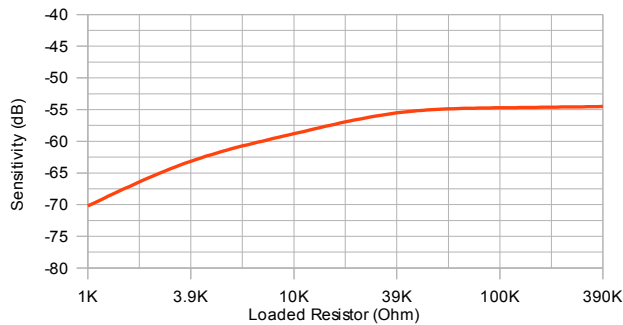
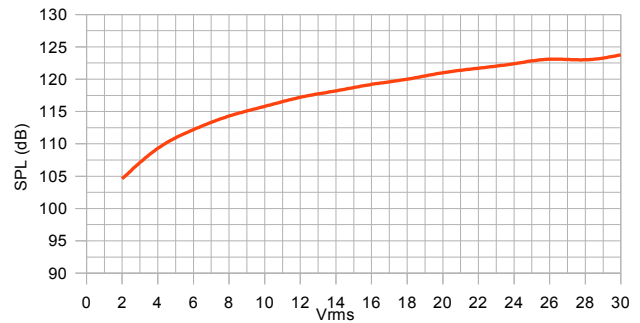
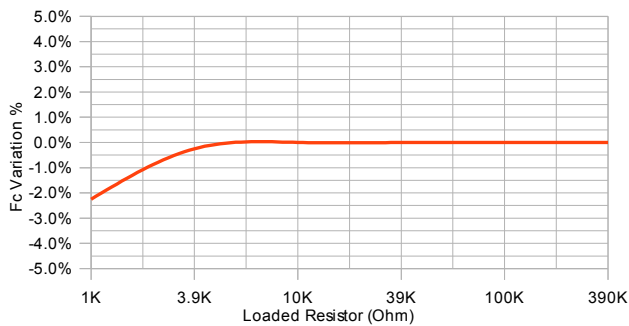
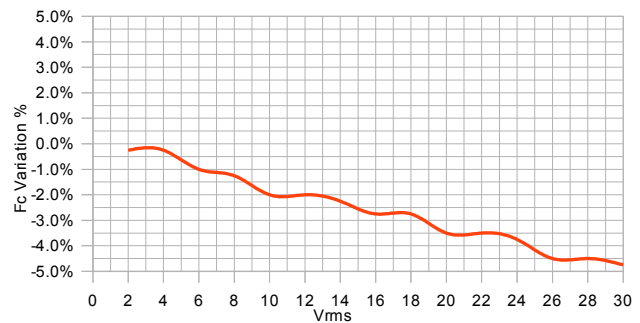
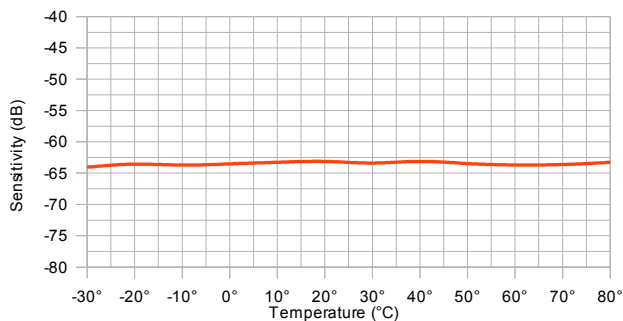
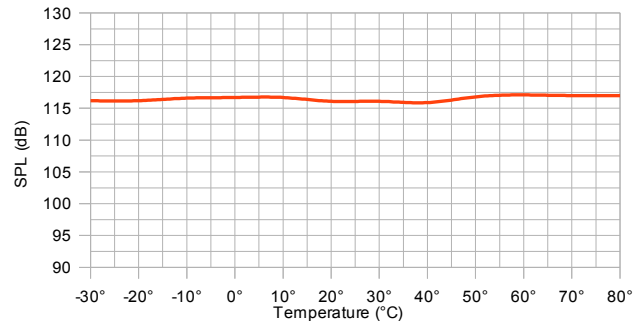
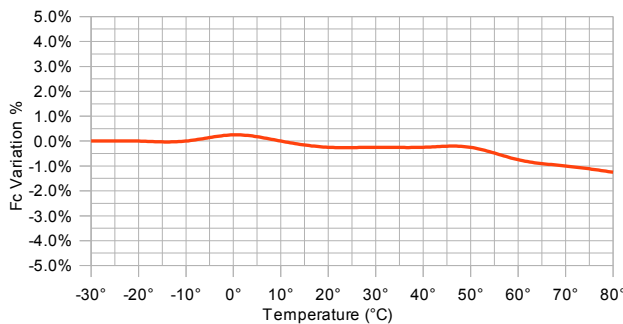
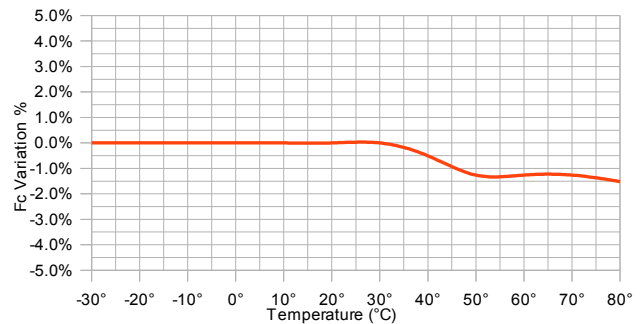
Beam Angle

Tested at 40.0KHz frequency



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400ER180 Receiver**Sensitivity Variation vs. Loaded Resistor****400ET180 Transmitter****SPL Variation vs. Driving Voltage****Center Frequency Shift vs. Loaded Resistor****Center Frequency Shift vs. Driving Voltage****Sensitivity Variation vs. Temperature****SPL Variation vs. Temperature****Center Frequency Shift vs. Temperature****Center Frequency Shift vs. Temperature**

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Specification

400PT120	Transceiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400PT120 2.0KHz
Transmitting Sound Pressure Level at resonant frequency ; 0dB re 0.0002μbar per 10Vrms at 30cm	115dB min.
Receiving Sensitivity at resonant frequency ; 0dB = 1 volt/μbar	-68dB min.
Nominal Impedance (Ω)	1000
Ring (ms)	1.2 max.
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle	400PT120 85° typical
	400PT12P 120° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

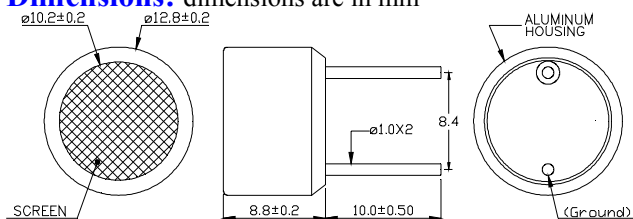
All specification taken typical at 25°C

Closer frequency tolerance, shorter ringing and wider bandwidth models can be supplied upon request.

Model available:

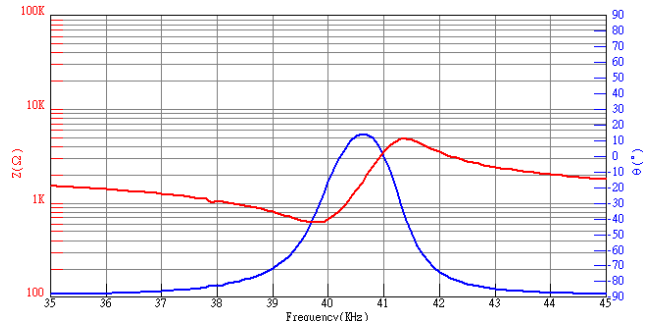
1	400PT120	Aluminum Housing
2	400PT12B	Black Al. Housing
3	400PT12P	Plastic Housing

Dimensions: dimensions are in mm



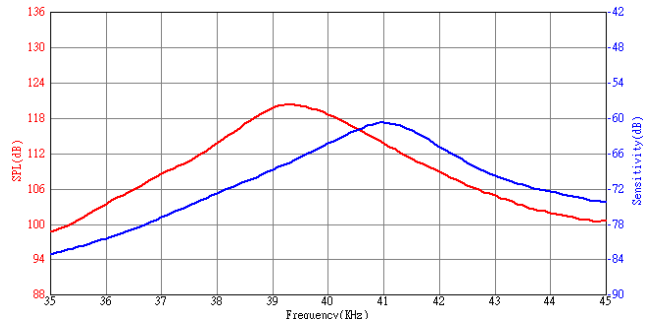
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



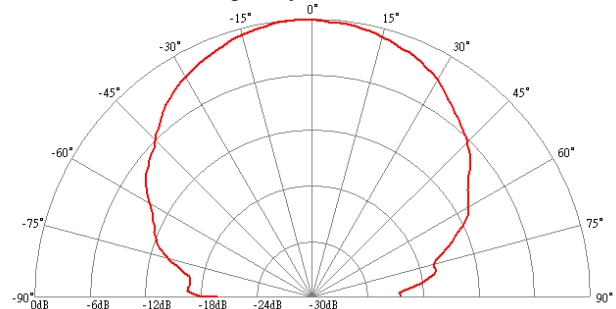
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle

Tested at 40.0KHz frequency

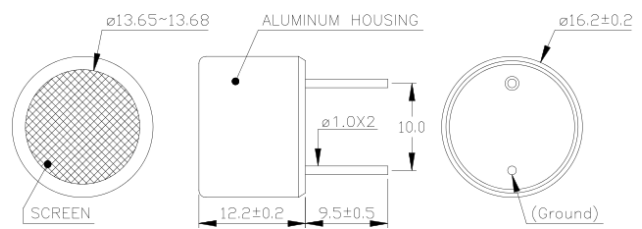


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Dimensions: dimensions are in mm



Specification

400PT160	Transceiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400PT160 2.0KHz
Transmitting Sound Pressure Level at resonant frequency; 0dB re 0.0002μbar per 10Vrms at 30cm	117dB min.
Receiving Sensitivity at resonant frequency 0dB = 1 volt/μbar	-65dB min.
Nominal Impedance (Ohm)	1000
Ring (ms) max.	1.2 – PT160 1.5 – PT16P
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle	-6dB 40° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

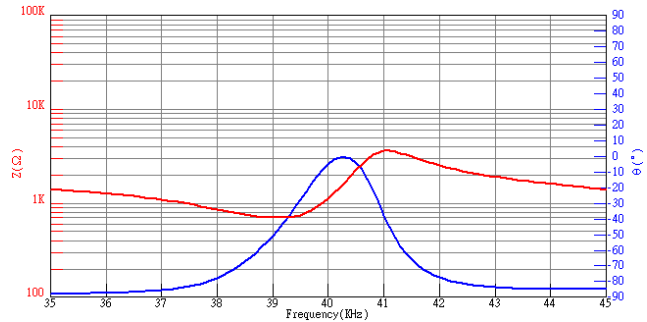
All specification taken typical at 25°C
Closer frequency tolerance, shorter ringing and wider bandwidth models can be supplied upon request.

Model available:

1	400PT160	Aluminum Housing
2	400PT16P	Plastic Housing

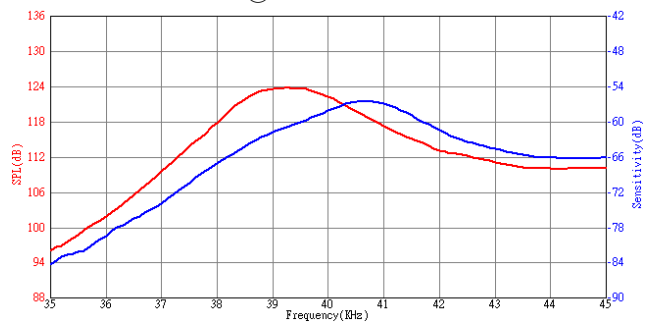
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



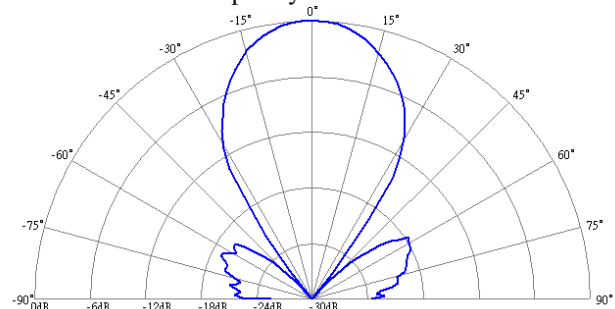
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



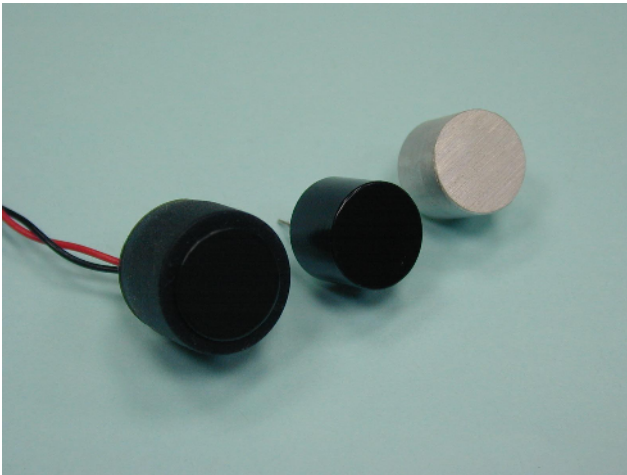
Beam Angle

Tested at 40.0KHz frequency

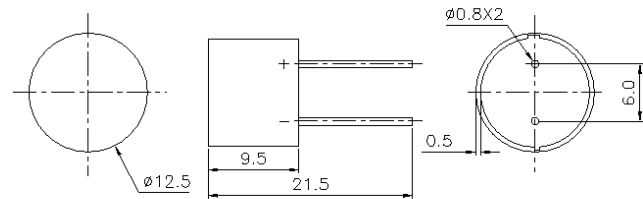


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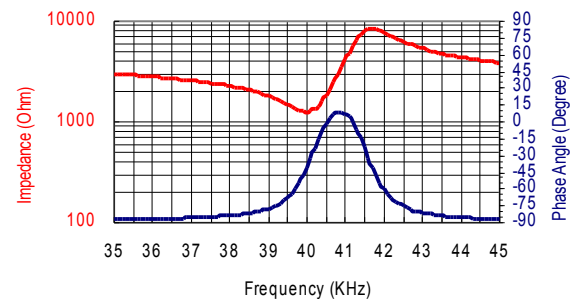


Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



Specification

400EP125	Transceiver
Center Frequency	40.0±1.0Khz
Bandwidth (-6dB)	400EP125 1.5Khz
Transmitting Sound Pressure Level (with rubber sleeve) at resonant frequency;0dB re 0.0002μbar per 10Vrms at 30cm	100dB min.
Receiving Sensitivity (with rubber sleeve) at resonant frequency 0dB = 1 volt/μbar	-78dB min.
Nominal Impedance (Ohm)	1000
Ring (ms) @25°C	1.2 max.
Capacitance at 1Khz ±20%	1600 pF
Max. Driving Voltage 20 bursts, 25ms repetition rate	100Vpp
Total Beam Angle	-6dB 108°
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

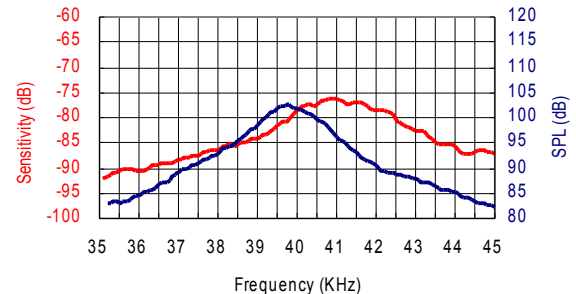
All specification taken typical at 25°C
Models of less ringing are available

Models available:

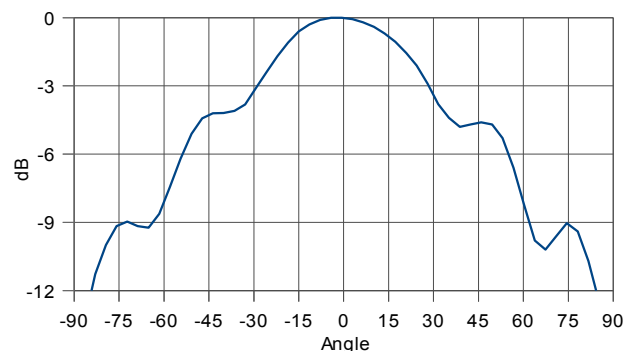
1	400EP125	Natural Aluminum Housing
2	400EP125B	Black Painted Housing
3	400EP125BR	Black Housing+Rubber Sleeve

Sensitivity/Sound Pressure Level

SPL Tested under 10Vrms@30cm



Beam Angle: Tested at 40.0Khz frequency



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Specification

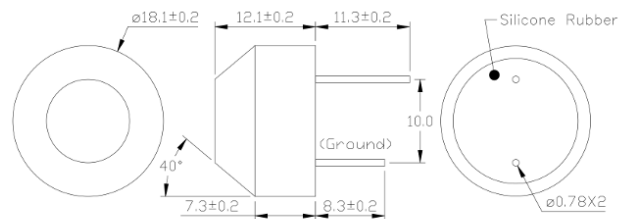
400EP18A	Transceiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	400EP18A 1.5KHz
Transmitting Sound Pressure Level	108dB min.
at resonant frequency; 0dB re 0.0002μbar per 10Vrms at 30cm	
Receiving Sensitivity	-75dB min.
at resonant frequency 0dB = 1 volt/μbar	
Nominal Impedance (Ohm)	750
Ringing (ms)	1.2 max.
Capacitance at 1KHz ±20%	2600 pF
Temperature Compensated Type	5200 pF
Max. Driving Voltage (Cont.)	20Vrms
20 bursts, 25ms repetition rate	100Vpp
Total Beam Angle	-6dB 85°
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

All specification taken typical at 25°C
 Both lead pins and lead wires output are available.
 Temperature compensated type is available upon request.

Models available:

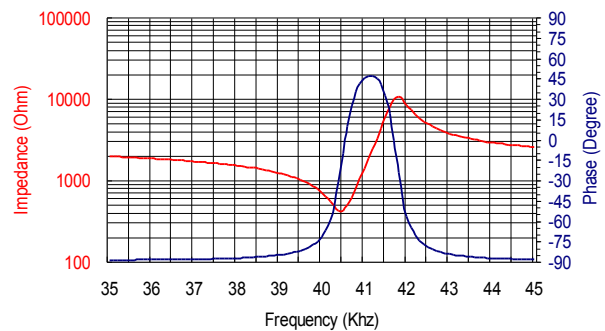
1	400EP18A	Black Al. Housing
2	400EP18A0	Natural Al. Housing
3	400EP18AC	Temp. Compensated

Dimensions: dimensions are in mm



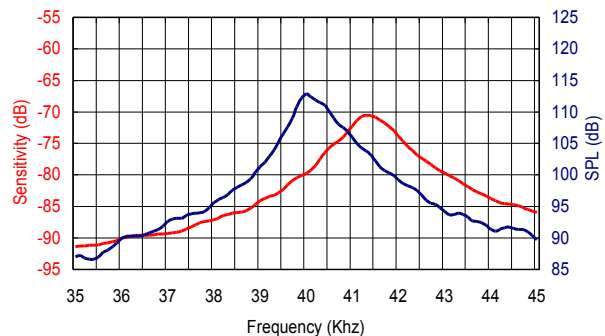
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

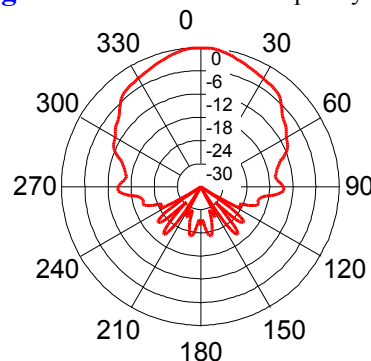


Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 40.0KHz frequency

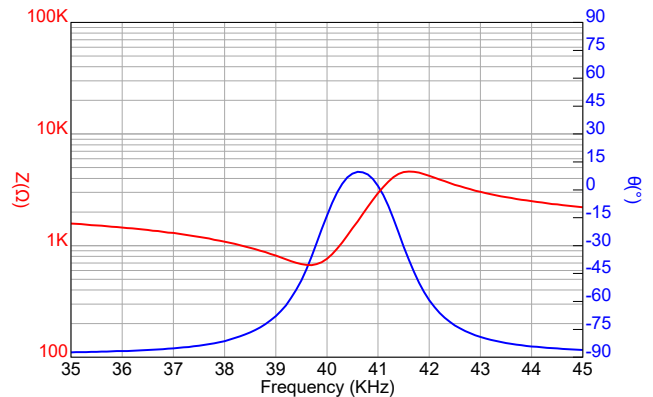


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**Impedance/Phase Angle vs. Frequency**

Tested under 1Vrms Oscillation Level

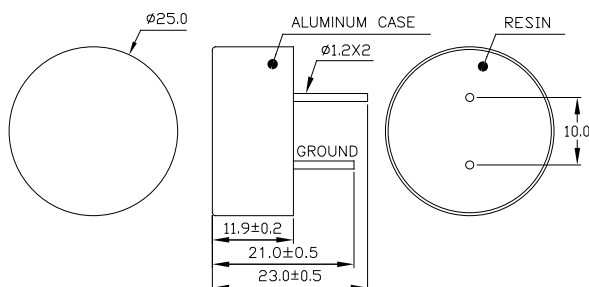
**Specification**

400EP250	Transceiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB)	2.0KHz(FOM)
Transmitting Sound Pressure Level at resonant frequency; 0dB re 0.0002μbar per 10Vrms at 30cm	110dB min.
Receiving Sensitivity at resonant frequency 0dB = 1 volt/μbar	-72dB min.
Capacitance at 1KHz ±20%	2700 pF
Max. Driving Voltage at 20 bursts, 25 ms repetition rate	100 Vp-p
Total Beam Angle(-6dB)	30° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

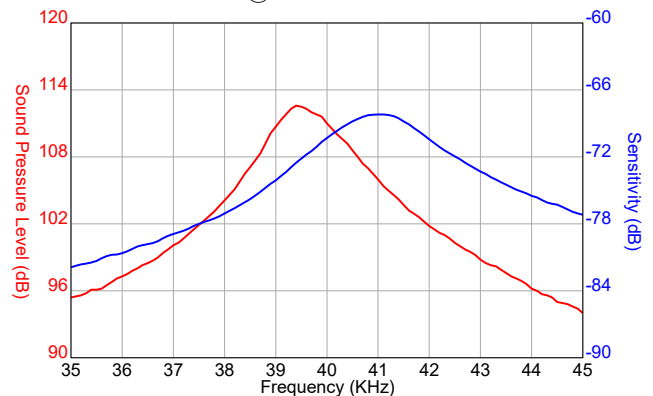
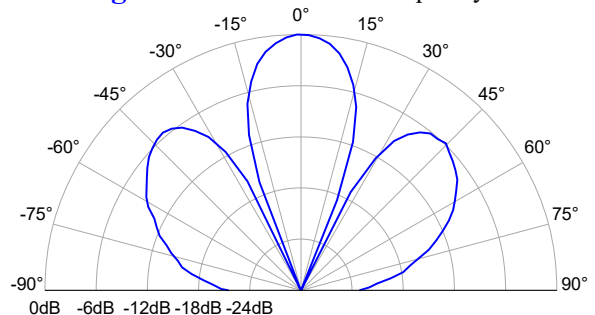
All specification taken typical at 25°C;
Closer frequency tolerance, shorter ringing, wider
bandwidth and temperature compensated models can be
supplied upon request.

Model available:

1	400EP250	Aluminum Housing
2	400EP25B	Black Al. Housing

Dimensions: dimensions are in mm**Sensitivity/Sound Pressure Level**

Tested under 10Vrms @30cm

**Beam Angle:** Tested at 40.0KHz Frequency

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Asymmetric Beam Patterns Specification

400EP14D	Transceiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB FOM)	1.0KHz
Transmitting Sound Pressure Level	103dB min.
at resonant frequency;0dB re 0.0002μbar per 10Vrms at 30cm	(Transducer alone)
Receiving Sensitivity	-78dB min.
at resonant frequency 0dB = 1 volt/μbar	(Transducer alone)
Nominal Impedance (Ohm)	1000
Ring (ms)	1.2 max.
Capacitance at 1KHz ±20%	1600 pF
Temperature Compensated Type	3200 pF
Max. Driving Voltage (cont.)	20Vrms
20 bursts, 25ms repetition rate	100Vpp
Total Beam Angle -6dB	135° typ.
	Wide
	Narrow
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

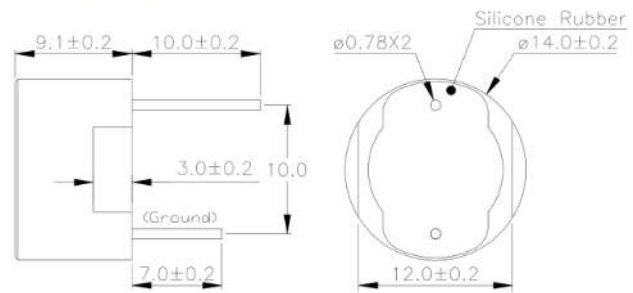
All specification taken typical at 25°C

Both lead pins and lead wires output are available

Models available:

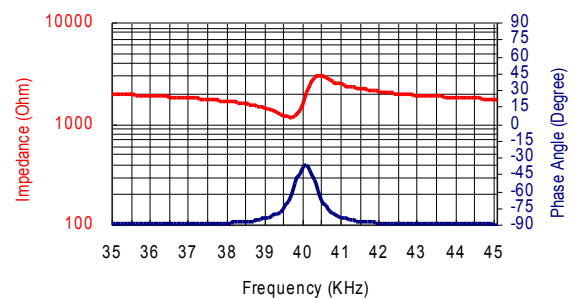
1	400EP14D	Black Painted Housing
2	400EP14DC	Temperature compensated (TC)
3	400EP14DCR	T.C. + Rubber Sleeve

Dimensions: dimensions are in mm



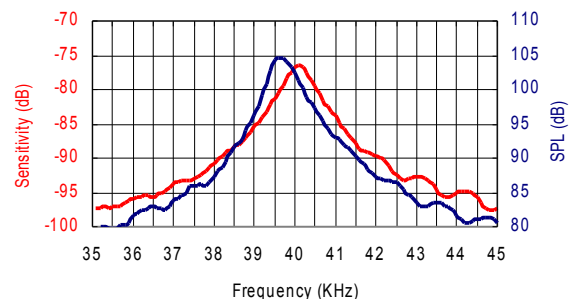
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



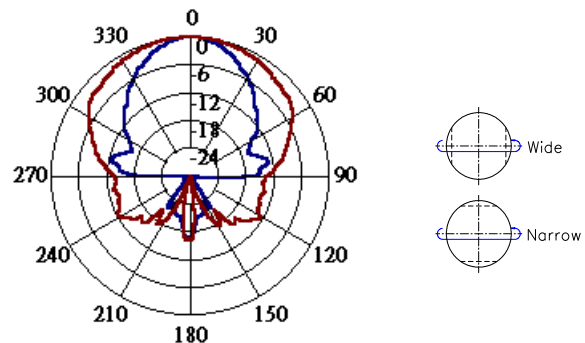
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 40.0Khz frequency

Wide Angle _____ Narrow Angle _____



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Asymmetric Beam Patterns Specification

400EP18D	Transceiver
Center Frequency	40.0±1.0KHz
Bandwidth (-6dB) F.O.M.	2.0KHz
Transmitting Sound Pressure Level at resonant frequency; 0dB re 0.0002μbar per 10Vrms at 30cm	100dB min.
Receiving Sensitivity at resonant frequency 0dB = 1 volt/μbar	-80dB min.
Nominal Impedance (Ohm)	1000
Ring	1.2ms max.
Capacitance at 1KHz ±20%	1800 pF
Temperature Compensated Type	3600 pF
Max. Driving Voltage (Cont.)	20Vrms
20 bursts, 25ms repetition rate	100Vpp
Total Beam Angle -6dB	135° typ.
	Wide* 75° typ.
	Narrow*
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

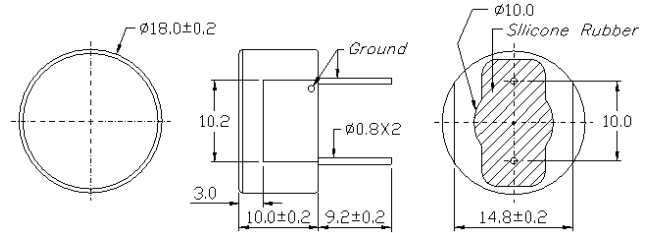
All specification taken typical at 25°C

Both lead pins and lead wires output are available

Models available:

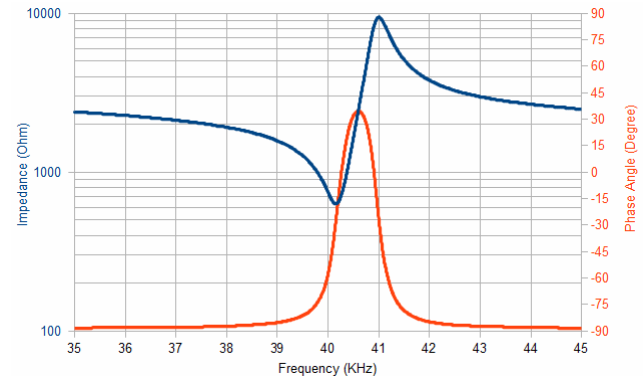
1	400EP18D	Black Al. Housing
2	400EP18DC	Temp. Compensated
3	400EP18DCR	T.C. with Rubber Sleeve

Dimensions: dimensions are in mm



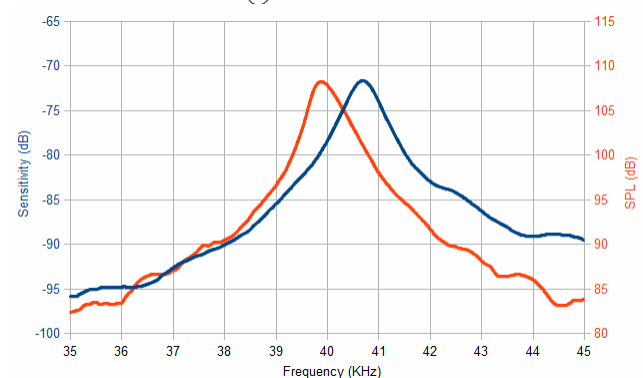
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



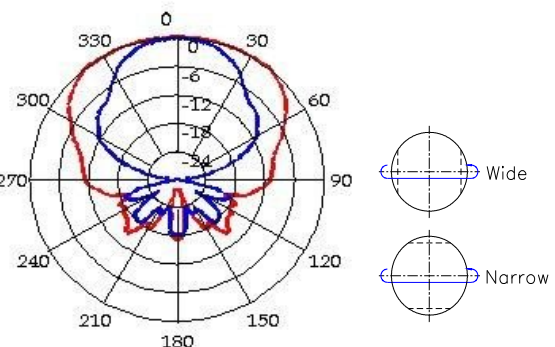
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 40.0Khz frequency

Wide Angle _____ Narrow Angle _____



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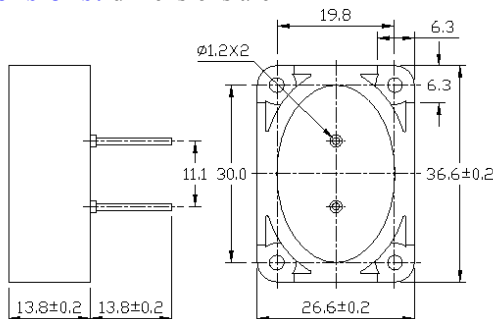


Asymmetric Beam Patterns Specification

480EP900	Transceiver
Center Frequency	48.0±1.0KHz
Bandwidth (97dB) Transmitter	15.0KHz
(-80dB) Receiver	15.0KHz
Transmitting Sound Pressure Level at 48KHz; 0dB re 0.0002μbar per 10Vrms at 30cm	100dB min.
Receiving Sensitivity at 48KHz; 0dB = 1 volt/μbar	-80dB min.
Nominal Impedance (Ohm)	1000
Ringing (ms)	1.2 max.
Capacitance at 1KHz ±20%	2400 pF
Max. Driving Voltage @20 bursts, 25 ms repetition rate	100 Vp-p
Total Beam Angle -6dB @ 48KHz	Long Axis 19° typ. Short Axis 38° typ.
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

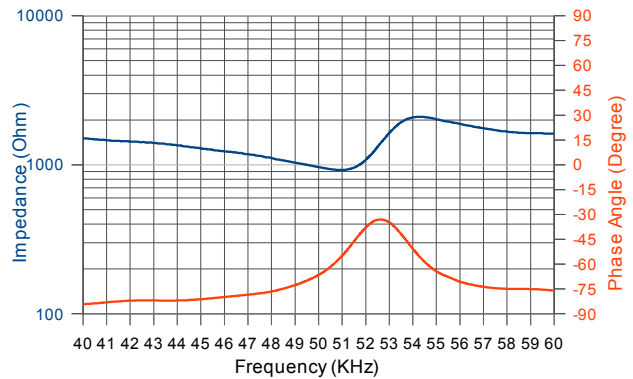
All specification taken typical at 25°C
Closer frequency tolerance, shorter ringing and wider bandwidth models can be supplied upon request.

Dimensions: dimensions are in mm



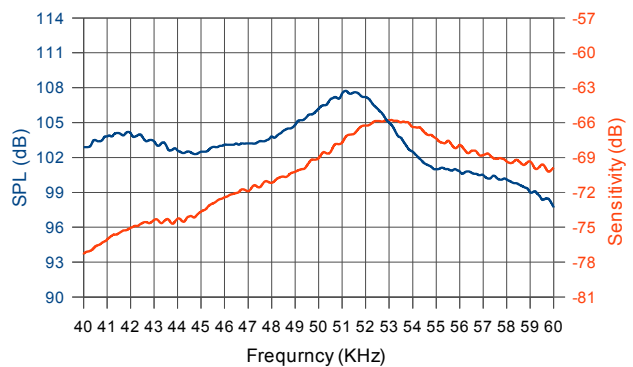
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



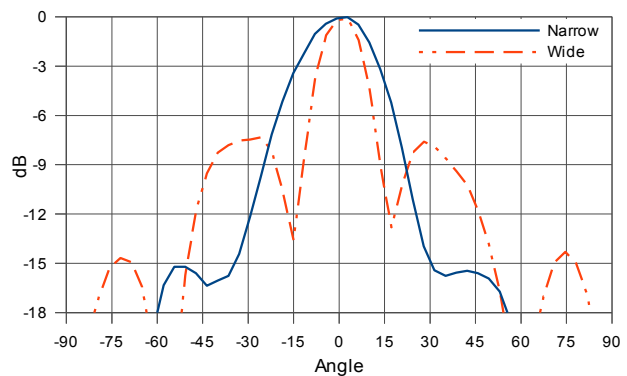
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle

Tested at 48.0KHz



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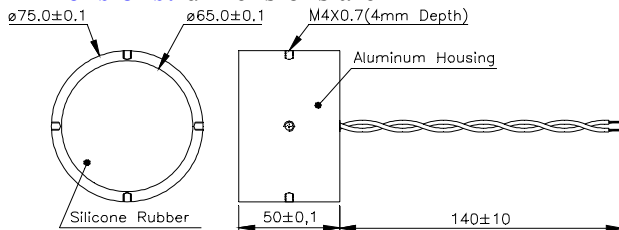


Specification

043SR750	Transceiver
Center Frequency	43.0±4.0 KHz
Bandwidth (Echo Sensitivity)	2 KHz
Echo Sensitivity	-55 dB min.
0dB re 20Vp-p, 40 bursts @ 100cm	
Nominal Impedance	700 Ω
Capacitance at 1KHz	5700 pF ±20%
Max. Driving Voltage (Pulse)	1500 Vpp
	2% duty cycle tone burst
Total Beam Angle	-3dB 7.5° typical
	-6dB 11.0° typical
Matching Window	Silicone Rubber
Operation Temperature	-20 to 70°C
Storage Temperature	-30 to 80°C

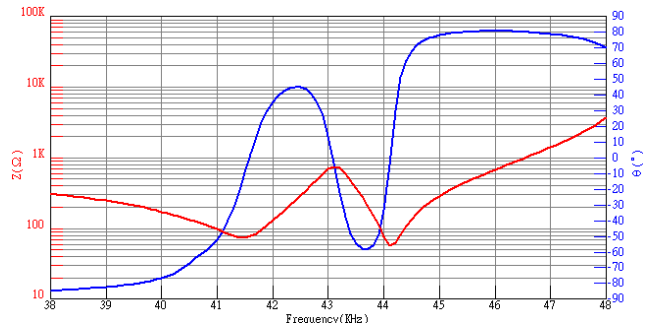
All specification taken typical at 25°C
Low ringing model can be arranged

Dimensions: dimensions are in mm



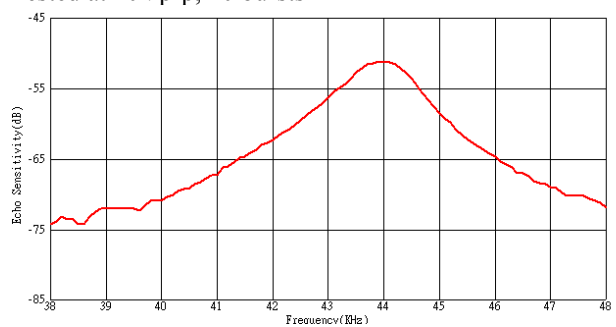
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



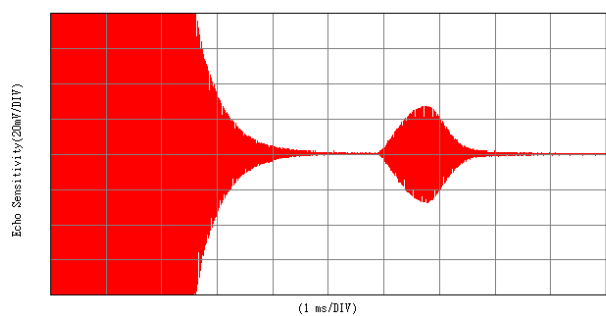
Echo Sensitivity vs. Frequency

Tested at 20Vp-p, 40 bursts

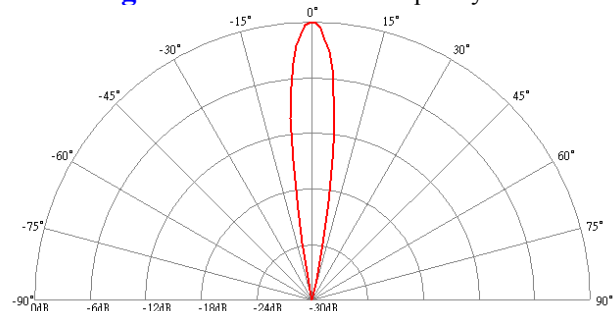


Echo Sensitivity/Ringing

Tested under 20Vp-p, 40 bursts, 100cm



Beam Angle: Tested at 43.0KHz frequency



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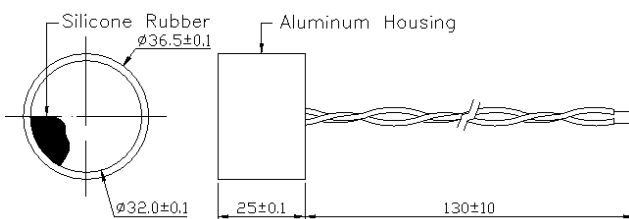


Specification

080SR365	Transceiver
Center Frequency (KHz)	80.0±5.0
Echo Sensitivity 0dB = 20Vp-p @ 50 cm	-57 dB min.
Dead Zone	35 cm
Bandwidth (Echo Sensitivity)	4.5 KHz
Nominal Impedance (Ohm)	700
Capacitance at 1KHz ±20%	2800 pF
Max. Driving Voltage (Pulse)	700Vpp 2% duty cycle
Total Beam Angle	-3dB 8.0° typical
	-6dB 11.0° typical
Matching Window	Silicone
	Rubber
Operation Temperature	-20 to 70°C
Storage Temperature	-30 to 80°C

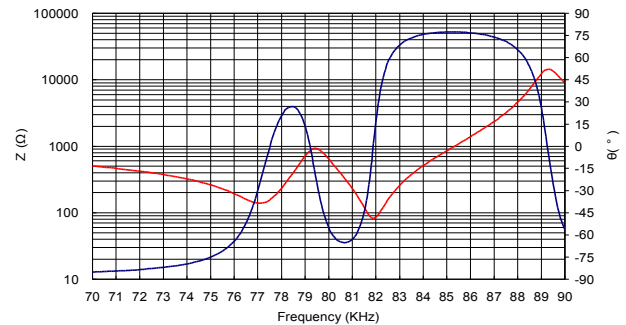
All specification taken typical at 25°C
Low ringing model can be arranged

Dimensions: dimensions are in mm



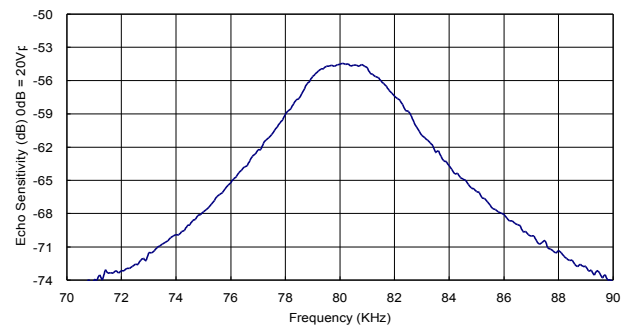
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



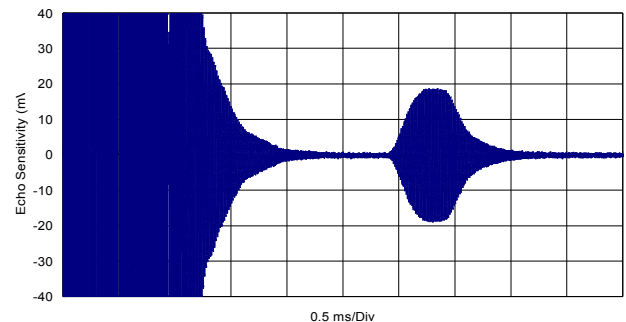
Echo Sensitivity vs. Frequency

Tested at distance of 50cm, 20Vp-p, 40 bursts

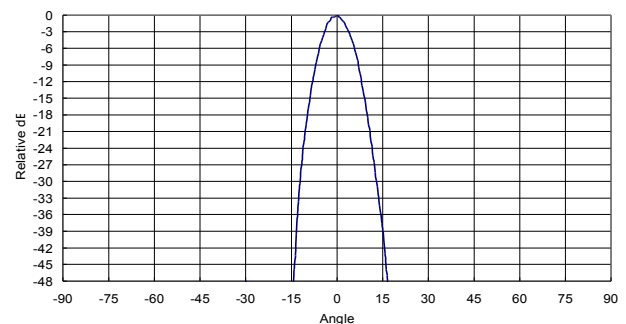


Echo Sensitivity/Ringing

Tested under 20Vp-p, 40 bursts, 50cm



Beam Angle: Tested at 80 KHz frequency



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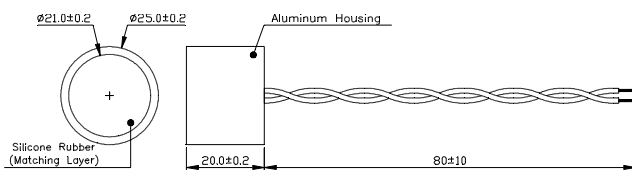


Specification

125SR250	Transceiver
Center Frequency (KHz)	125.0±10.0
Echo Sensitivity	-55 dB min.
0dB = 20Vp-p @ 25 cm (40 bursts)	
Dead Zone (10burst)	20 cm
Bandwidth (Echo Sensitivity)	8 KHz
Nominal Impedance (Ohm)	200
Capacitance at 1KHz ±20%	1250 pF
Max. Driving Voltage (Pulse)	200Vpp
2% duty cycle tone burst	
Total Beam Angle	-3dB 8.0° typical
	-6dB 11.0° typical
Matching Window	Silicone Rubber
Operation Temperature	-20 to 60° C
Storage Temperature	-30 to 70° C

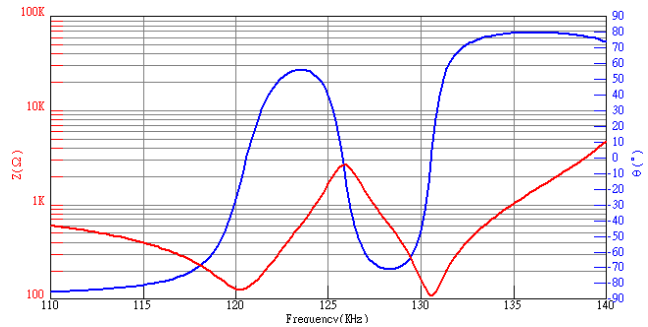
All specification taken typical at 25°C
Low ringing model can be arranged

Dimensions: dimensions are in mm



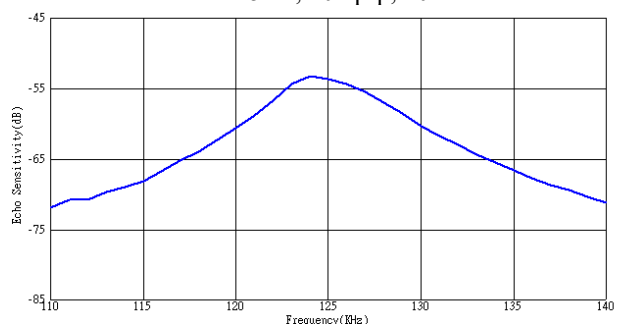
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



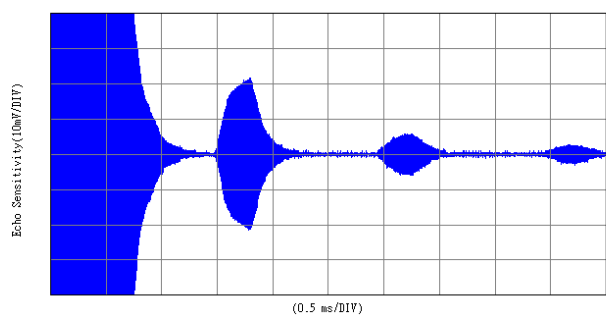
Echo Sensitivity vs. Frequency

Tested at distance of 25cm, 20Vp-p, 40 bursts

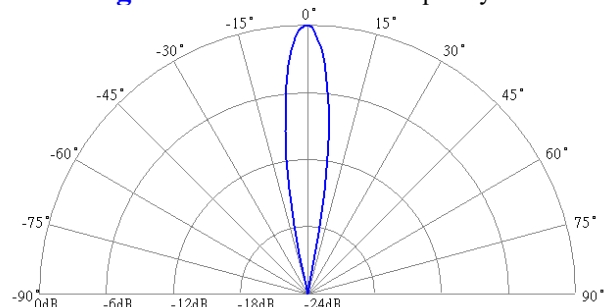


Echo Sensitivity/Ringing

Tested under 20Vp-p, 40 bursts, 25cm



Beam Angle: Tested at 125.0KHz frequency

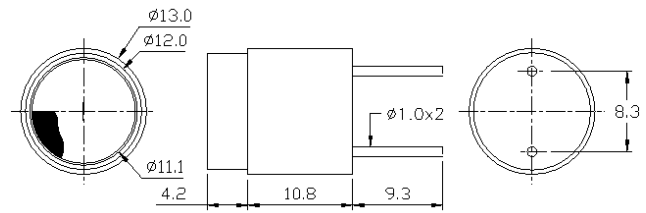


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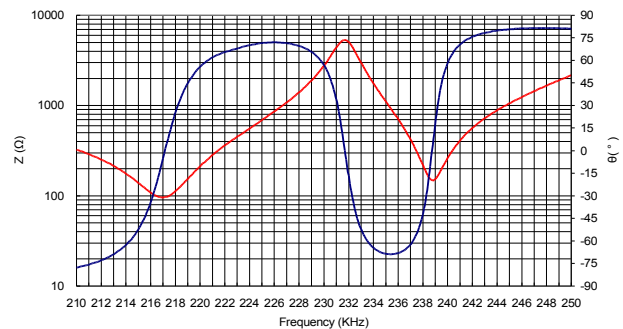


Dimensions: dimensions are in mm



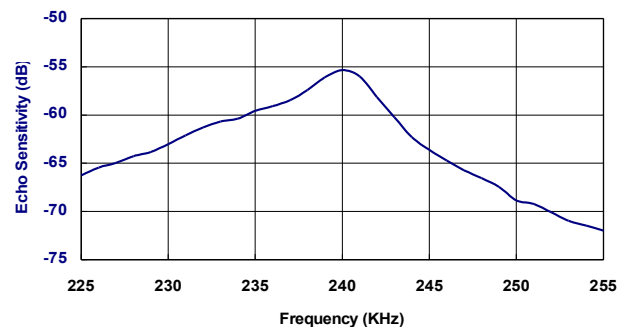
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



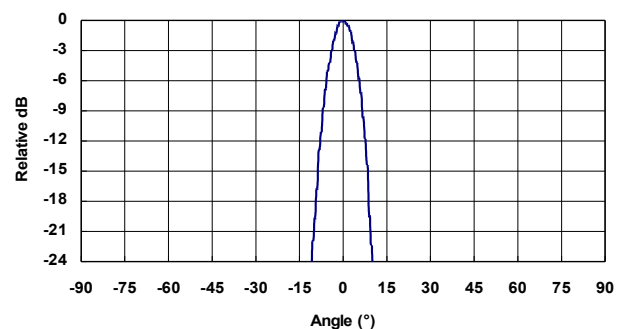
Echo Sensitivity

Tested under 20Vp-p @25cm; 0dB=20Vp-p



Beam Angle:

Tested at 235.0Khz frequency
Reflector: Aluminum Plate L75×W75×T10 (mm)



Specification

235SR130	Transceiver
Center Frequency (KHz)	235.0±10.0
Overall Echo Sensitivity 0dB = 20Vp-p @ 25 cm	-61 dB min. (40 bursts)
Bandwidth (Echo Sensitivity)	10KHz
Capacitance at 1KHz ±20%	540 pF
Max. Driving Voltage (Pulse)	80Vpp 10% duty cycle tone burst
Total Beam Angle	-3dB 7.0° typical -6dB 10.0° typical
Matching Window	Silicone Rubber
Operation Temperature	-20 to 60°C
Storage Temperature	-30 to 70°C

All specification taken typical at 25°C
Closer frequency tolerance, shorter ringing and wider bandwidth models can be supplied upon request.

Model available:

1	235SR013	Aluminum Housing
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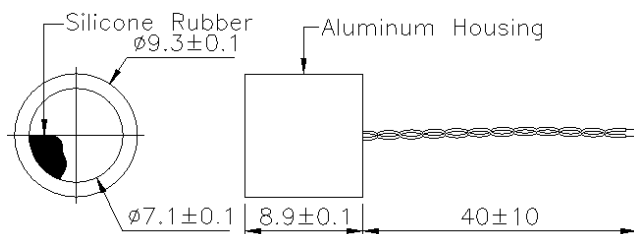


Specification

320SR093	Transceiver
Center Frequency (KHz)	320.0±10.0
Echo Sensitivity	-65 dB min.
0dB = 20Vp-p, 50 Bursts @ 10 cm	
Dead Zone	8 cm
Bandwidth (Echo Sensitivity)	10KHz
Nominal Impedance (Ohm)	1200
Capacitance at 1KHz ±20%	270 pF
Max. Driving Voltage (Pulse)	50Vpp 10% duty cycle
Total Beam Angle	-3dB 9.5° typical
	-6dB 12.5° typical
Matching Window	Silicone Rubber
Operation Temperature	0 to 70°C
Storage Temperature	-20 to 80°C

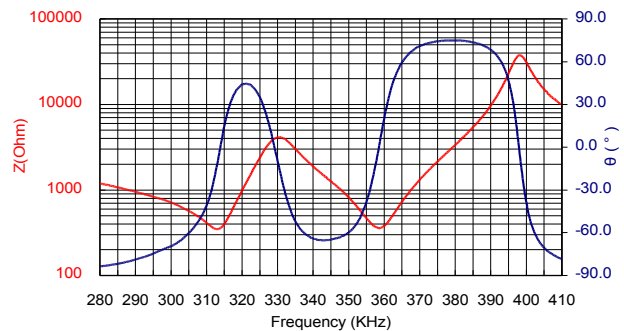
All specification taken typical at 25°C
Low ringing model can be arranged

Dimensions:



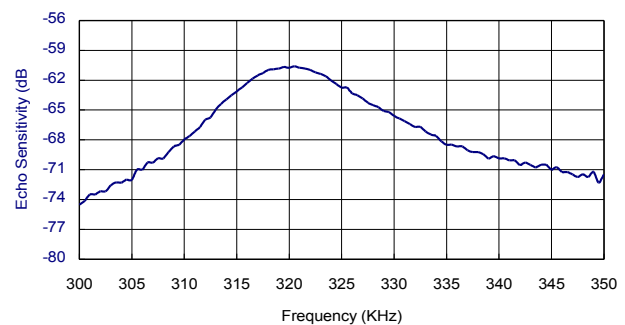
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



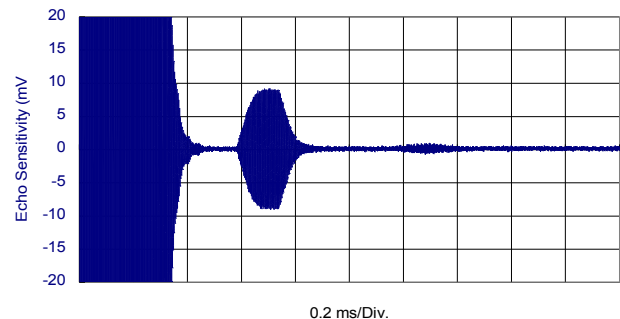
Echo Sensitivity vs. Frequency

Tested at distance of 10cm, 20Vp-p, 50 bursts



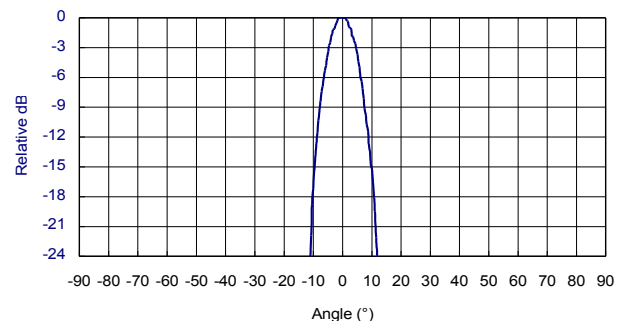
Echo Sensitivity/Ringing

Tested under 20Vp-p, 50 bursts, 10cm



Beam Angle:

Tested at 314.0 KHz frequency



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Specification

200GE180	Transceiver
Center Frequency	200.0±10KHz
Echo Sensitivity	-61dB
0dB = 20Vp-p , 30 Bursts Square wave	
Bandwidth (FOM)	10KHz
Nominal Impedance (Ohm)	600
Capacitance at 1Khz ±20%	600 pF
Max. Driving Voltage (Pulse)	50Vpp 10% duty cycle
Total Beam Angle	-6dB 10° typical
Matching Window	Resin with filler
Operation Temperature	-20 to 60°C
Storage Temperature	-30 to 70°C

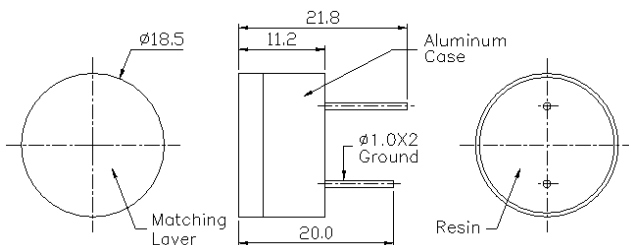
All specification taken typical at 25°C

Closer frequency tolerance, shorter ringing and wider bandwidth models can be supplied upon request.

Model available:

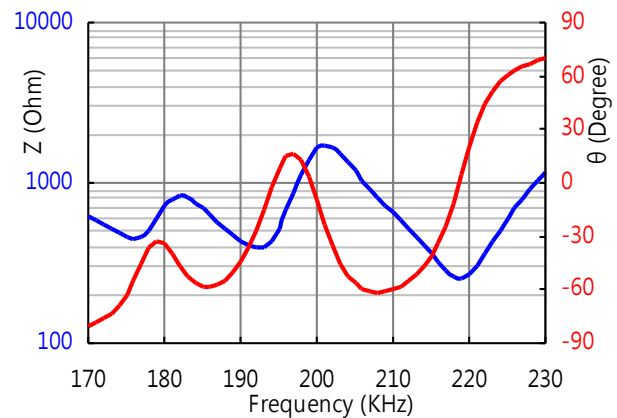
1	200GE180	Aluminum Housing
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Dimensions: dimensions are in mm



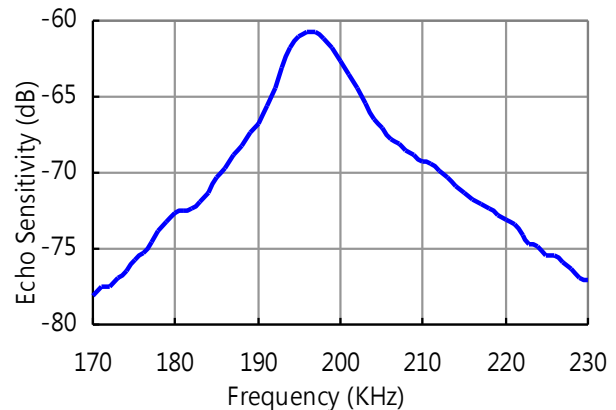
Impedance/Phase Angle vs. Frequency:

Tested under 1Vrms Oscillation Level

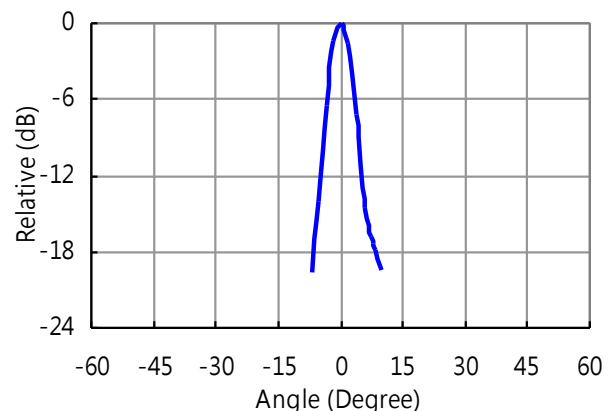


Echo Sensitivity:

Tested under 20Vp-p @25cm ; 0dB=20Vp-p



Beam Angle: Tested at 200.0Khz frequency



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Ultrasonic Transducer Assembled Units

Transducers equip with a 2.5 meters shield cable and covered by a rubber boot with a metal clip for easy installation are very suitable for most of vehicle alarms.

RCA, Amp or Molex type connector at the other cable end is available upon request.

Specification

Model Number	SQS-04	SQS-05	SQS-06
Transducer used	400ST/R100 or 10P	400ST/R120	400ST/R160 or 16P
Cable length	2.5 meters		
Connector used	RCA/Amp/Molex type or others upon request		

Dimensions

SQS-04	SQS-05	SQS-06



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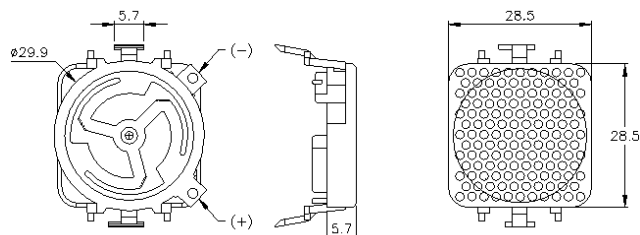


Specification

500ES290	Transceiver
Center Frequency	50.0±1.0KHz
Transmitting Sound Pressure Level at 50.0KHz; 0dB re 20μPa per 300Vac pk-pk, 200Vdc bias at 50 cm	116.0 dB min.
Receiving Sensitivity at 50.0KHz, 200Vdc bias, 0dB = 1 volt/μbar (0dB = 1 volt/Pa)	-65.0 dB (-45.0 dB)
Capacitance at 1KHz ±20%	600 - 700 pF
Suggested DC Bias Voltage	200 V
Suggested AC Driving Voltage	300V pk-pk
Maximum Combined Voltage	400V
Total Beam Angle	-6dB 13° typical
Operation Temperature	0 to 60°C
Standard Finish	
Foil (Diaphragm):	
1. 500ES290-G	Gold
2. 500ES290-A	Aluminum
Housing	ABS

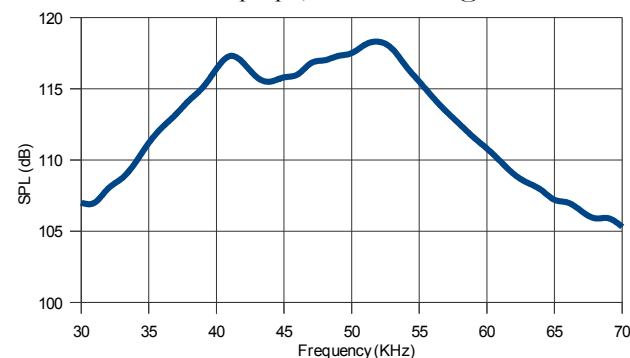
All specification taken typical at 25°C

Dimensions: dimensions are in mm

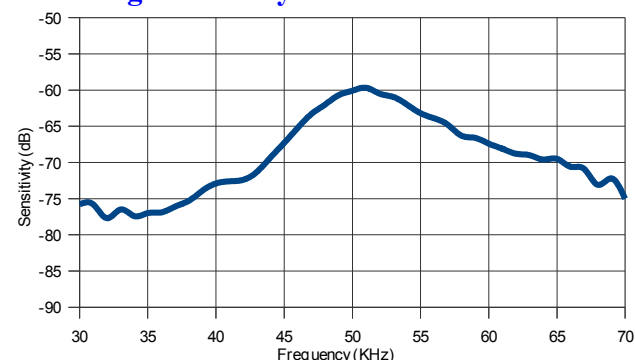


Transmitting Sound Pressure Level

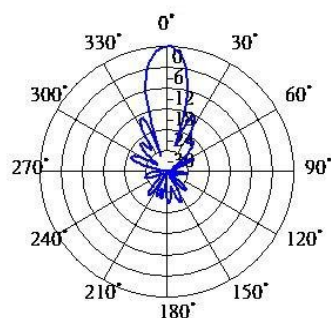
Tested under 300Vac pk-pk, 200Vdc bias @50 cm



Receiving Sensitivity: Tested under 200Vdc bias



Beam Angle: Tested at 50.0Khz frequency



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Specification

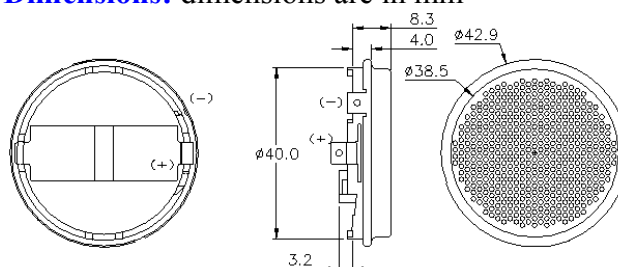
500ES430	Transceiver
Center Frequency	50.0±1.0KHz
Transmitting Sound Pressure Level at 50.0KHz; 0dB re 20μPa per 300Vac pk-pk, 200Vdc bias at 50 cm	116 dB min.
Receiving Sensitivity at 50.0KHz, 200Vdc bias, 0dB = 1 volt/Pa (0dB = 1 volt/μbar)	-43 dB min. (-63 dB) min.
Capacitance at 1KHz ±20%	400 - 500 pF
Suggested DC Bias Voltage	200 V
Suggested AC Driving Voltage	300V pk-pk
Maximum Combined Voltage	400V
Total Beam Angle	-6dB 13° typical
Operation Temperature	0 to 60°C
Standard Finish	
Foil (Diaphragm)	See below
Housing	See below

All specification taken typical at 25°C

Models available

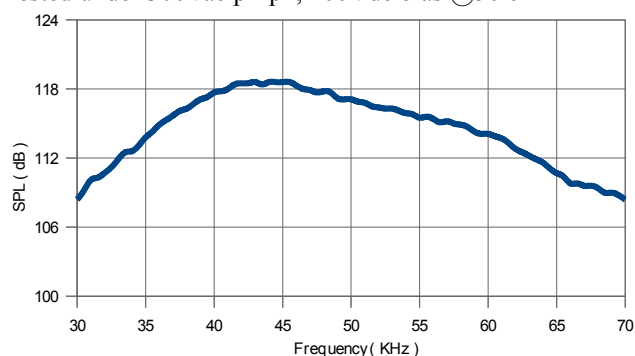
Model	Foil	Housing
500ES43AB	Aluminum	Black Painted Steel
500ES43AS	Aluminum	SUS 304
500ES43GB	Gold	Black Painted Steel
500ES43GS	Gold	SUS 304

Dimensions: dimensions are in mm

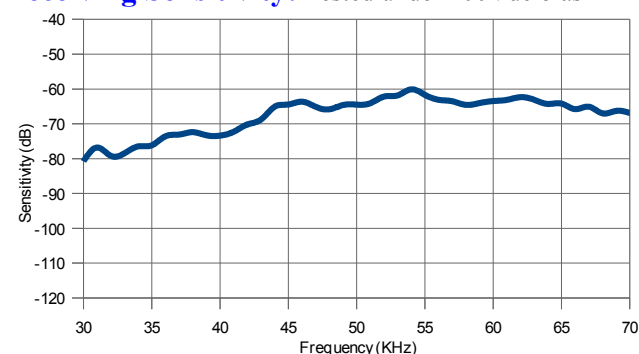


Transmitting Sound Pressure Level

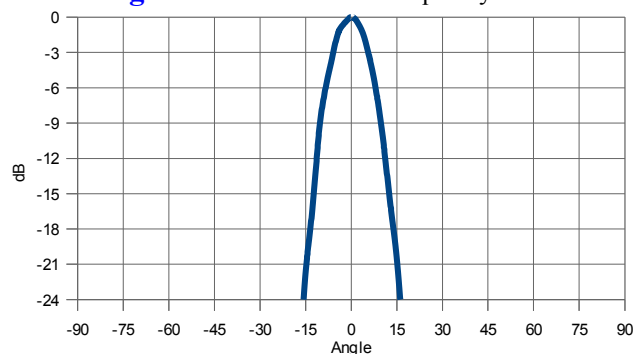
Tested under 300Vac pk-pk, 200Vdc bias @50 cm



Receiving Sensitivity: Tested under 200Vdc bias



Beam Angle: Tested at 50.0KHz frequency



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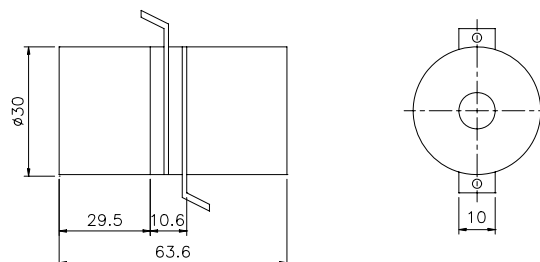
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Bolt Clamped High Power Transducers



Dimensions

Model: 30402S



Features

- High efficiency & high output
- Large amplitude
- Low heat generation
- Durability & stability
- Easy connection

Applications

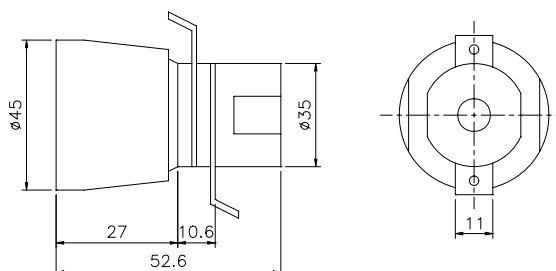
- Ultrasonic cleaners
- Ultrasonic welders
- Ultrasonic processing machines: bonding, drilling, etching, engraving and etc.

Specification

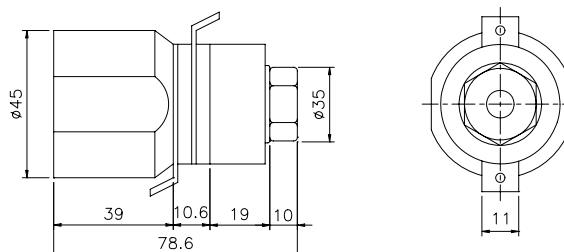
	30402S	45402H	45282H	60282H
Resonant frequency (KHz)	37.5	40.0	28.2	28
Motion Admittance (mMho)	35	15	50	40
Mechanic Q (Qm)	500	500	500	500
Capacitance (pF)	2700	4000	4000	4000
Allowable vibration rate (cm/sec.)	50	50	50	25

All specification taken typical at 25°C

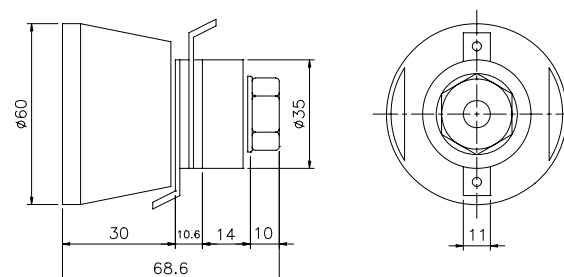
Model: 45402H



Model: 45282H



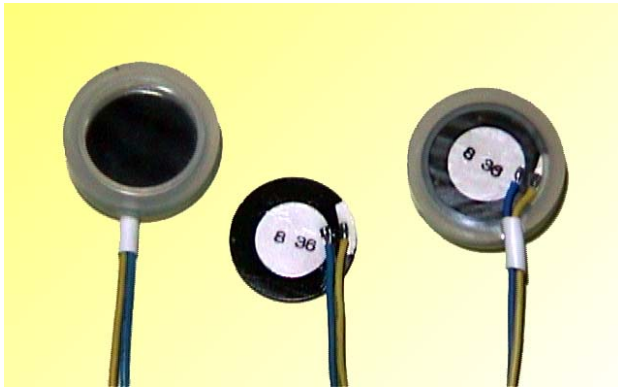
Model: 60282H



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<http://www.s2.com.tw>; <http://www.prowave.com.tw>

Ultrasonic Atomizing Transducers



The ultrasonic atomizing transducers using our factory made high Q hard type piezoelectric ceramic element is ideal for atomizing liquids. A very fine mist having a particle diameter of only a few microns can be generated. We are not only supply atomizing element but also entire assembled transducer unit with silicone rubber holder.

Features

- Piezoelectric ceramic element clad with stainless steel for erosion resistance.
- Fine and consistent particle size of less than $3\mu\text{m}$
- High atomizing efficiency >400 cc/hour
- Less power consumption
- High stability and durability

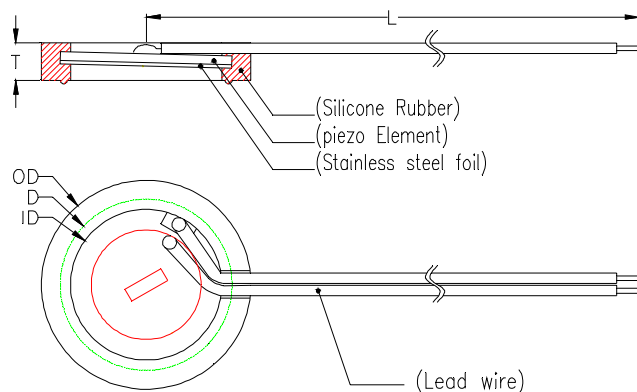
Applications

- Humidification in refrigerated food displays and storage, living environments, and air conditioning plants.
- Inhalation and disinfecting equipment
- Humidification in industrial process control for lubrication, coating and etc.

Specification:

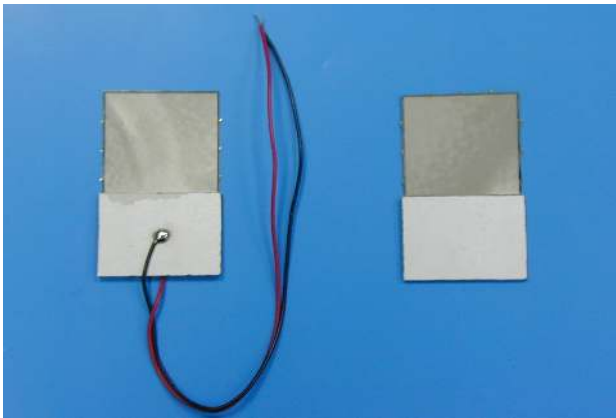
Model Number		M165D20	M165D25
Resonance Frequency (MHz)		1.65 ± 0.05	1.65 ± 0.05
Resonance Impedance (Ohm)		< 2.0	< 2.0
Capacitance at 1KHz (pF)		$2,000 \pm 20\%$	$2,000 \pm 20\%$
Dissipation Factor at 1KHz		$< 0.5\%$	$< 0.5\%$
Operation Duration (hour)		$> 5,000$	$> 5,000$
Atomizing Quantity (cc/Hour)		300	400
Input Power (maximum)		25	30
Operation Temperature		0 to 45°C	0 to 45°C
Dimensions	L	110	110
	T	5	5.5
	OD	25	30.5
	ID	20	25
	D	20	25
	ID	17.4	22

Dimensions dimensions are in mm



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The ultrasonic vibration micro nozzle consists a piezoelectric ceramic and a metal foil, on which over thousands micro nozzles formed. Using the same principle as inkjet printer, this transducer atomizes water or liquids through a matrix of micro holes of around 7-10 μm .

The micro nozzles ultrasonic atomizing transducer can use siphon to draw small amount liquids to the surface of metal foil and then to atomize, which is much efficiency than the conventional ultrasonic atomizer for which a liquid tank with high level liquid has to be always loaded on the surface of ultrasonic transducers.

Features

- Fine and consistent misted particle size
- Adjustable misted particle size
- No loaded liquids require as comparing with conventional atomizers
- High atomizing efficiency
- Less power consumption
- High stability and durability

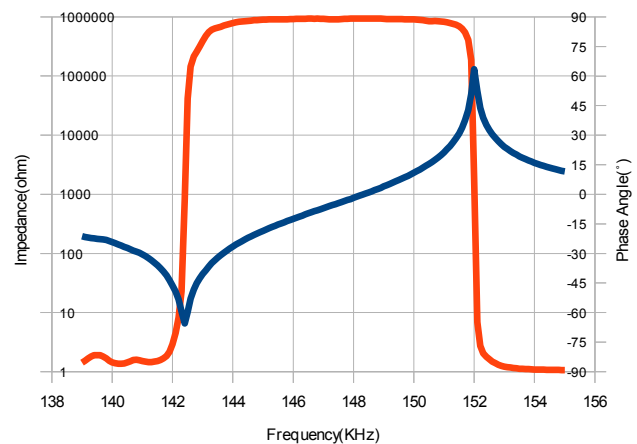
Applications

- Humidification in refrigerated food displays and storage, living environments, and air conditioning plants.
- Inhalation and disinfecting equipment
- Humidification in industrial process control for lubrication, coating and etc.
- Liquids dispensing systems

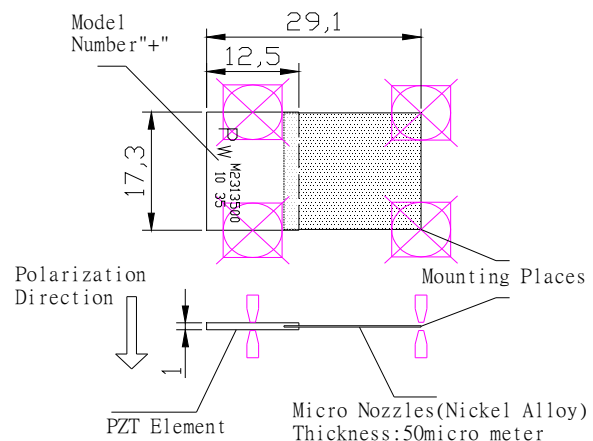
Specification:

Resonant Frequency	143 $\pm$ 5	KHz	
Impedance	10	ohm	typ
Capacitance	2300 $\pm$ 20%	pF	@1KHz , 20°C
L	29.1 $\pm$ 0.2	mm	
Dimensions	W	17.3 $\pm$ 0.1	mm
	T	1.0 $\pm$ 0.1	mm
Metal Material	50	μm	PZT Element
Nozzle size	7 $\pm$ 3	μm	Ni-Co Alloy

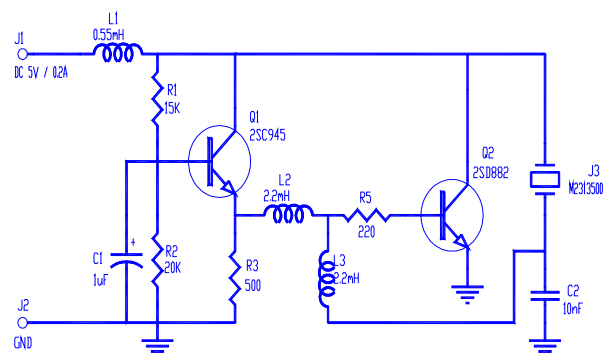
Impedance/Phase Angle:



Construction



Driving Circuit



Remark: The negative side faces to the opening, the positive side faces to the liquid source, if driving circuit uses NPN transistor.

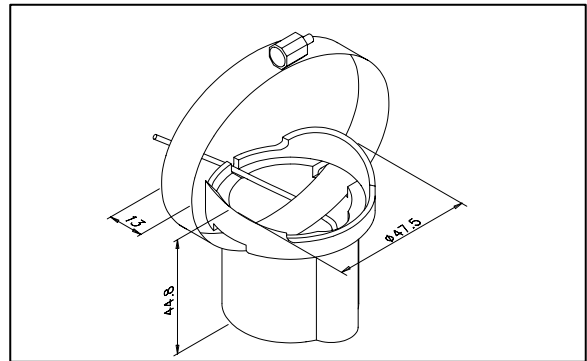


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Dimensions: dimensions are in mm



Specification

200LM450	Transceiver
Center Frequency	200±10.0Khz
Bandwidth (FOM -6dB)	25Khz
Transmitting Sound Pressure Level	160dB min. 0dB re 1μPa per 1Vrms at 100cm
Receiving Sensitivity	-180dB min. 0dB = 1 volt/μPa
Submerged Impedance (Ohm)	200
Capacitance at 1Khz	±20% 2000 pF
Input Power (Pulse Drive)	50 Watts
Total Beam Angle	-6dB 20°
Cable Length	4.5 m
Molded Connector	RCA Phono plug 90°
Housing Material	Plastic resin

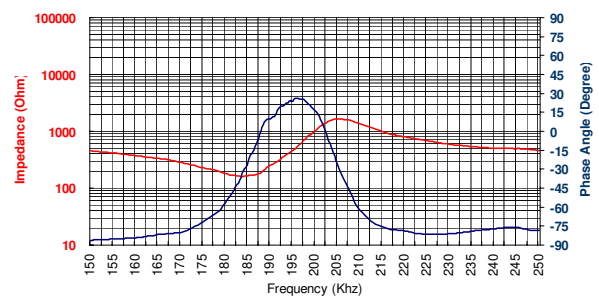
Closer frequency tolerance, shorter ringing and wider bandwidth models can be supplied upon request.

Model available:

1	200LM450	Plastic Housing
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Submerged Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



Receiving /Transmitting Sensitivity

Tested at distance of 100cm

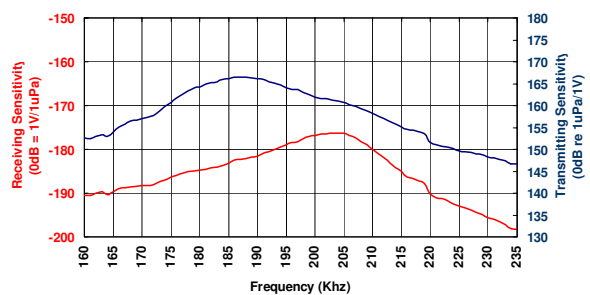


Figure of Merit

(Receiving Sensitivity + Transmitting Sensitivity)

