Air Ultrasonic Ceramic Transducers 250ST/R160

Specification

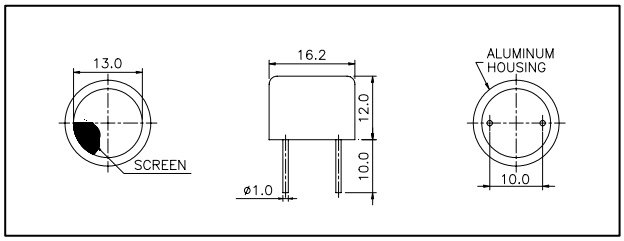
250ST160		Transmitter
250SR160		Receiver
Center Frequency		25.0±1.0Khz
Bandwidth (-6dB)	250ST180	2.0Khz
	250SR180	2.0Khz
Transmitting Sound Pressure Level at 25.0Khz; 0dB re 0.0002µbar per 10Vrms at 30cm		112dB min.
Receiving Sensitivity at 25.0Khz 0dB = 1 volt/µbar		-62dB min.
Capacitance at 1Khz	±20%	2400 pF
Max. Driving Voltage (cont.)		20Vrms
Total Beam Angle	-6dB	85° typical
Operation Temperature		-30 to 80°C
Storage Temperature		-40 to 85°C

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

Model available:

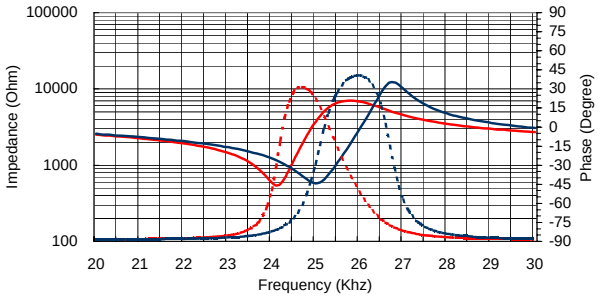
1	250ST/R160	Aluminum Housing
2	250ST/R16B	Black Al. Housing
3	250ST/R16P	Plastic Housing

Dimensions: dimensions are in mm



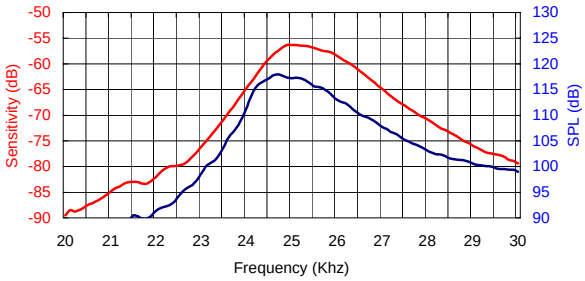
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level
250SR160 Impedance
250SR160 Phase
250ST160 Impedance
250ST160 Phase



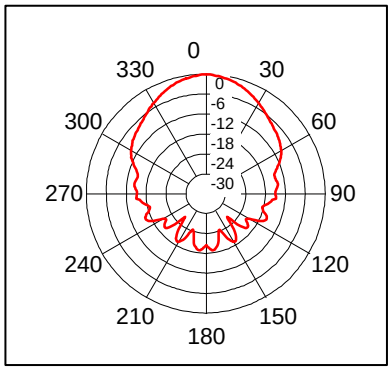
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



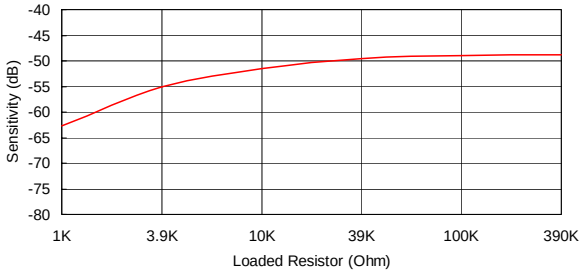
Beam Angle

Tested at 25.0Khz frequency

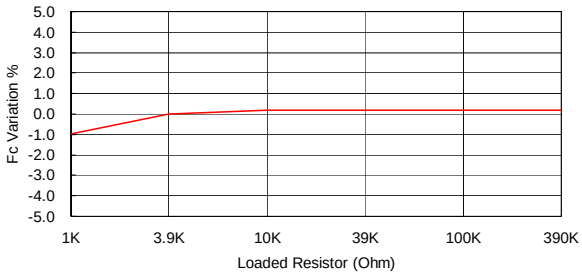


250SR160 Receiver

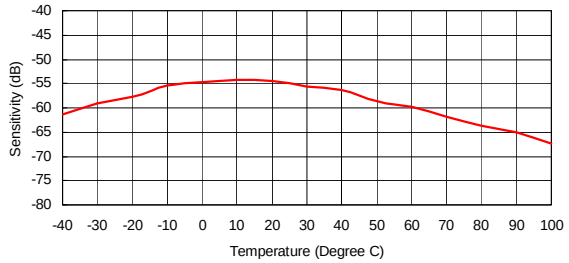
Sensitivity Variation vs. Loaded Resistor



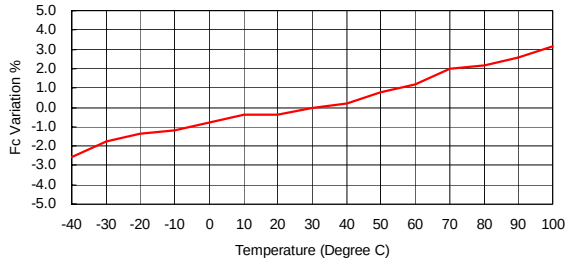
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

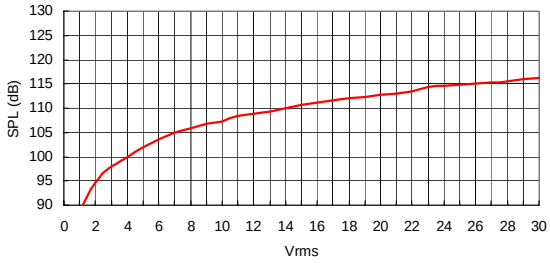


Center Frequency Shift vs. Temperature

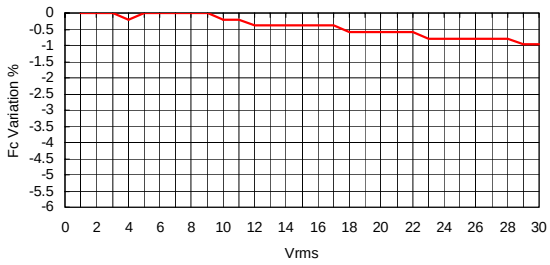


250ST160 Transmitter

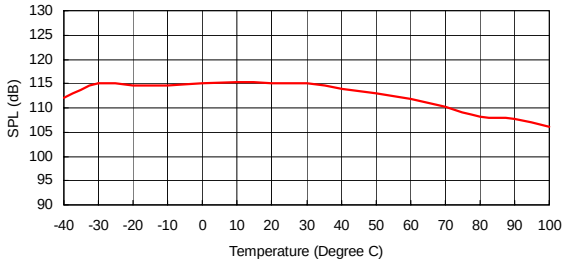
SPL Variation vs. Driving Voltage



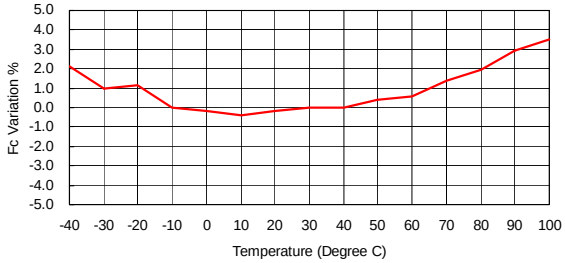
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

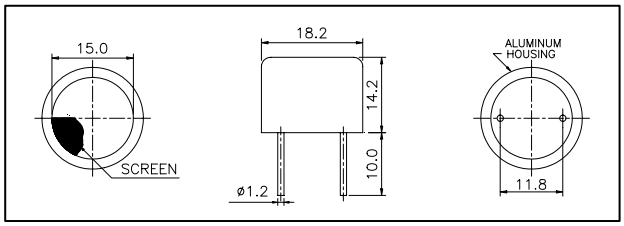


Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 250ST/R180

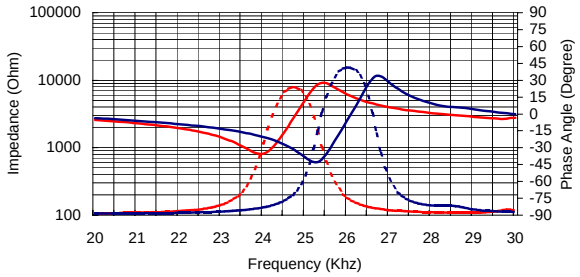
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

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



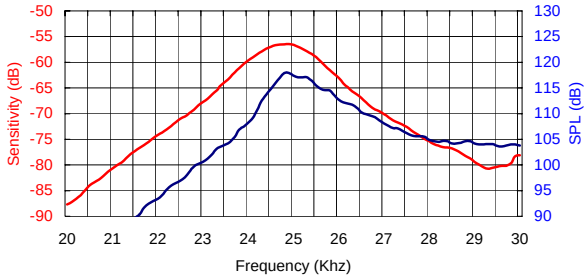
Specification

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 80°C
Storage Temperature		-40 to 85°C

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

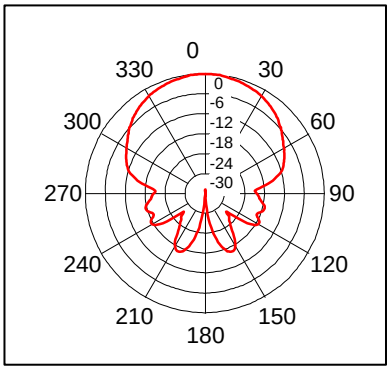
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle

Tested at 25.0Khz frequency

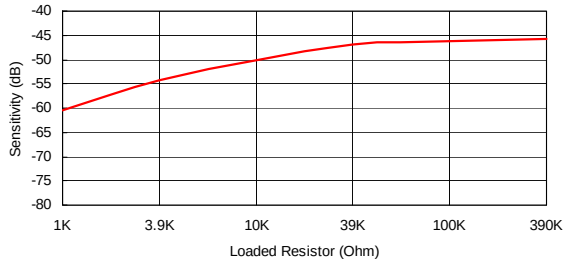


Model available:

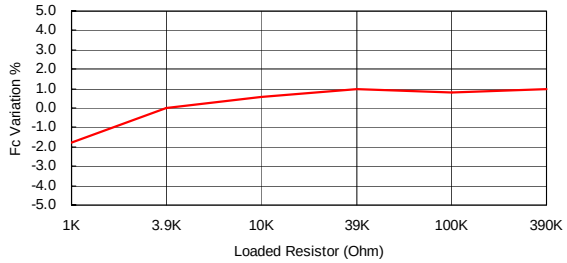
1	250ST/R180	Aluminum Housing
2	250ST/R18B	Black Al. Housing

250SR180 Receiver

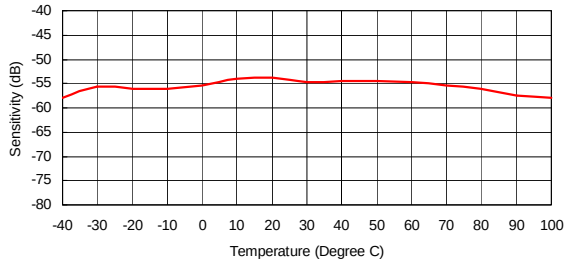
Sensitivity Variation vs. Loaded Resistor



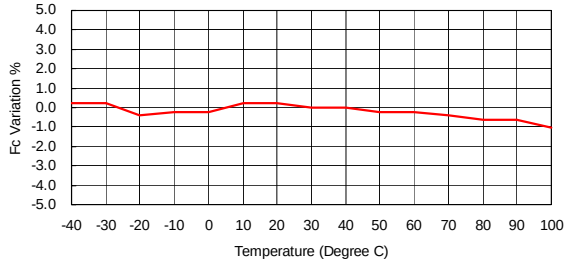
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

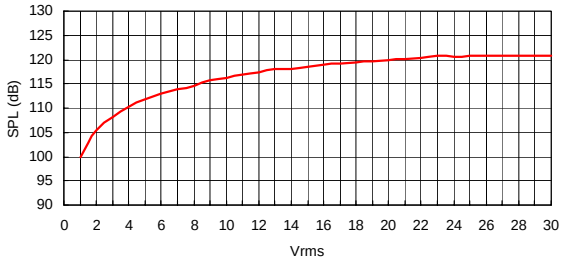


Center Frequency Shift vs. Temperature

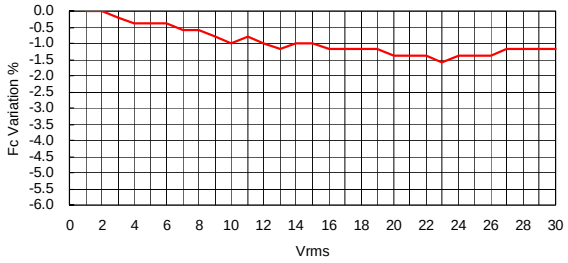


250ST180 Transmitter

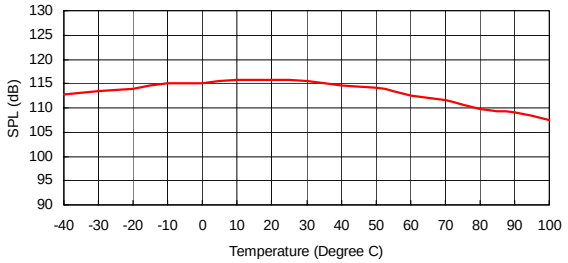
SPL Variation vs. Driving Voltage



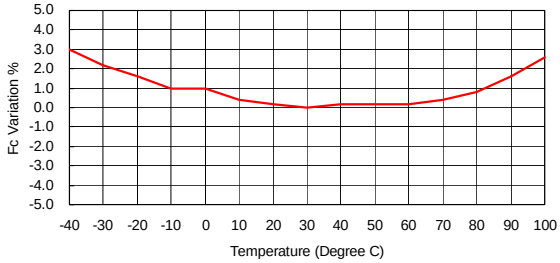
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

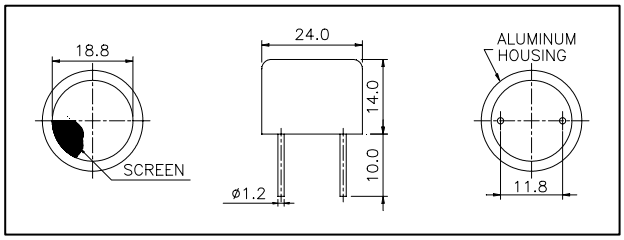


Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 250ST/R240

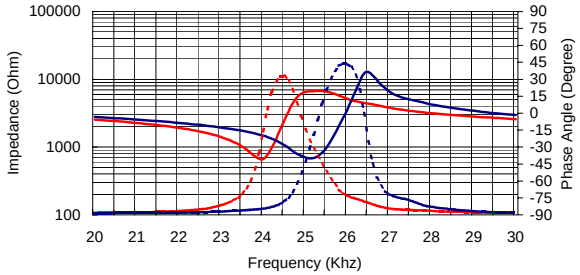
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

250SR240 Impedance
250SR240 Phase
250ST240 Impedance
250ST240 Phase

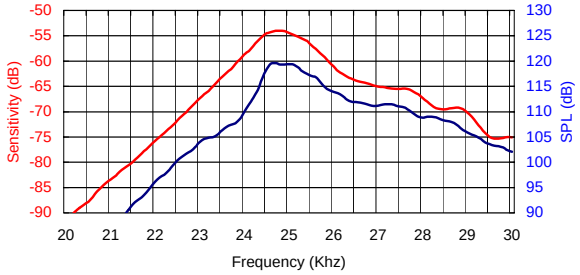


Specification

250ST240		Transmitter
250SR240		Receiver
Center Frequency		25.0±1.0Khz
Bandwidth (-6dB)	250ST240	1.5Khz
	250SR240	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%	2400 pF
Max. Driving Voltage (cont.)		20Vrms
Total Beam Angle	-6dB	45° typical
Operation Temperature		-30 to 80°C
Storage Temperature		-40 to 85°C

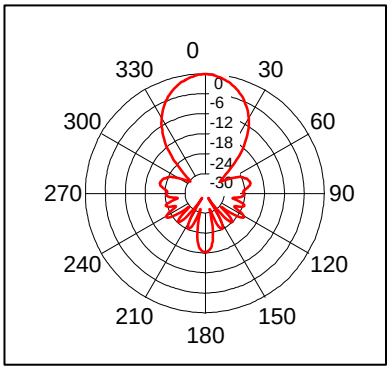
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



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

Beam Angle: Tested at 25.0Khz frequency

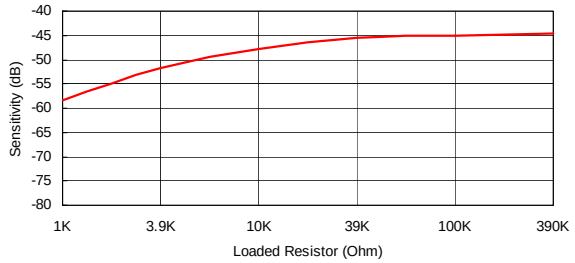


Model available:

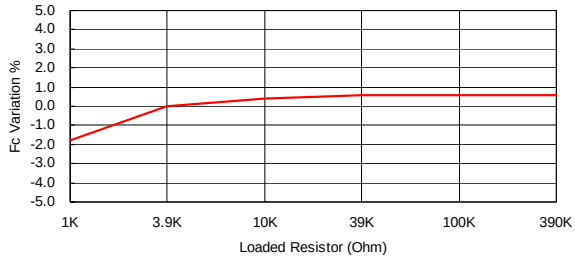
1	250ST/R240	Aluminum Housing

250SR240 Receiver

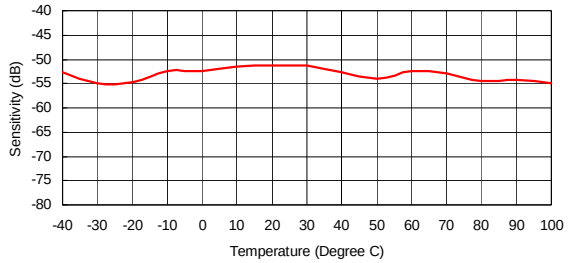
Sensitivity Variation vs. Loaded Resistor



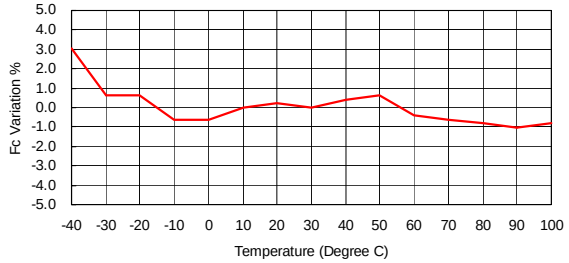
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

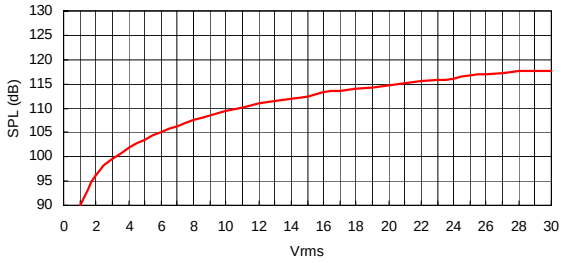


Center Frequency Shift vs. Temperature

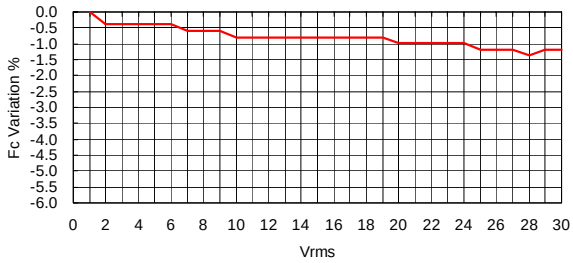


250ST240 Transmitter

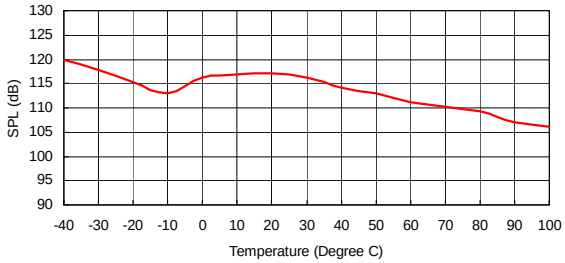
SPL Variation vs. Driving Voltage



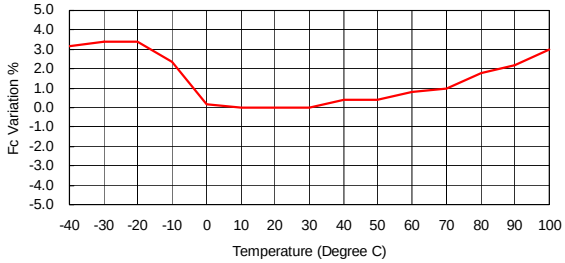
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

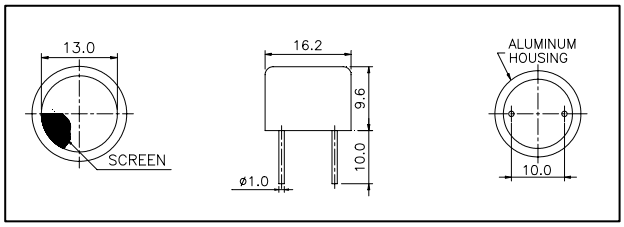


Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 328ST/R160

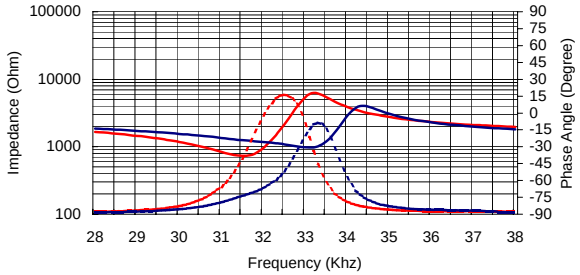
Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

328SR160 Impedance
328SR160 Phase
328ST160 Impedance
328ST160 Phase



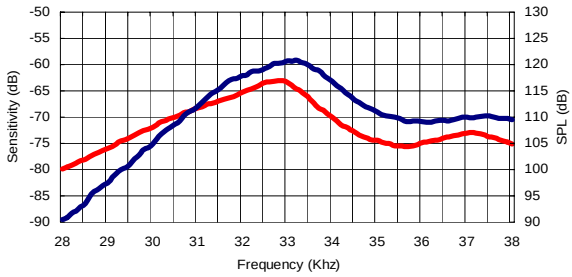
Specification

328ST160		Transmitter
328SR160		Receiver
Center Frequency		32.8±1.0Khz
Bandwidth (-6dB)	328ST160	2.5Khz
	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%	2400 pF
Max. Driving Voltage (cont.)		20Vrms
Total Beam Angle	-6dB	100° typical
Operation Temperature		-30 to 80°C
Storage Temperature		-40 to 85°C

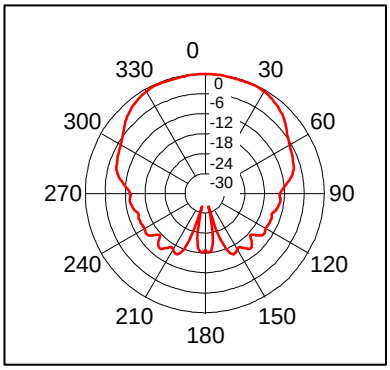
All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 32.8Khz frequency



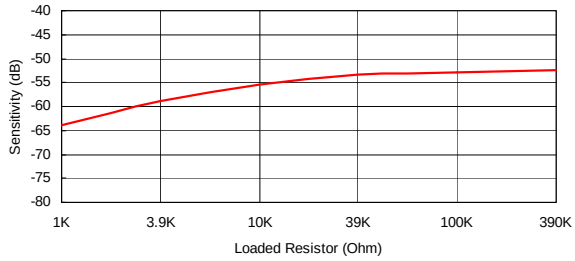
Model available:

1	328ST/R160	Aluminum Housing

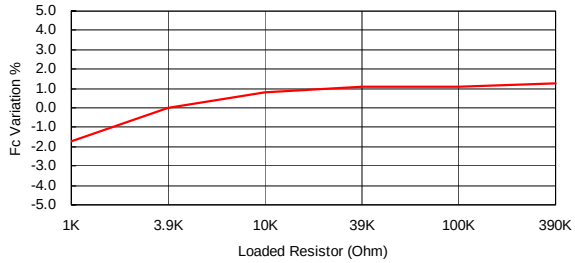
Air Ultrasonic Ceramic Transducers 328ST/R160

328SR160 Receiver

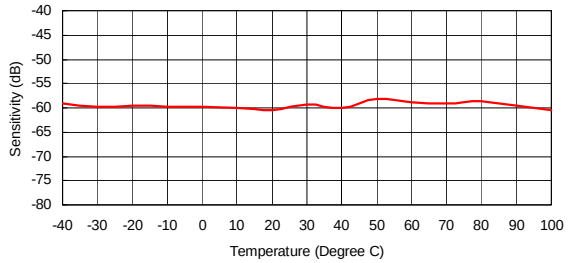
Sensitivity Variation vs. Loaded Resistor



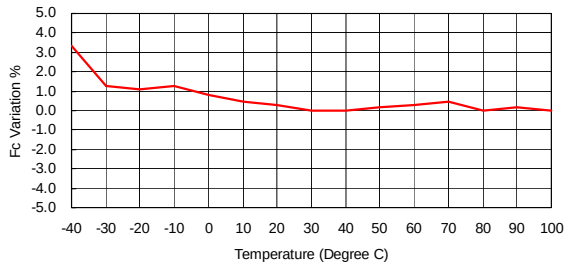
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

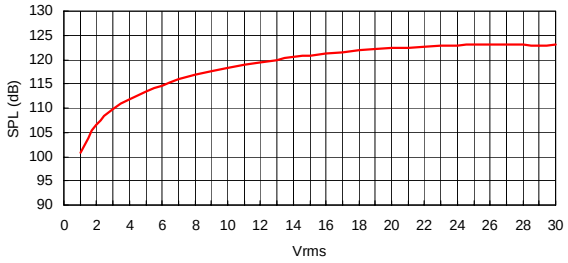


Center Frequency Shift vs. Temperature

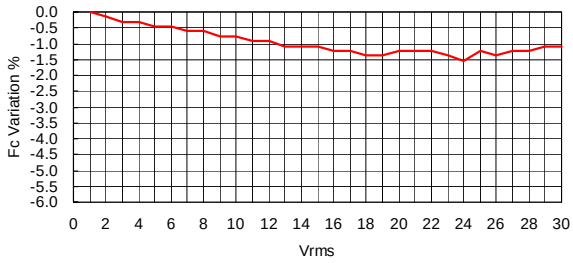


328ST160 Transmitter

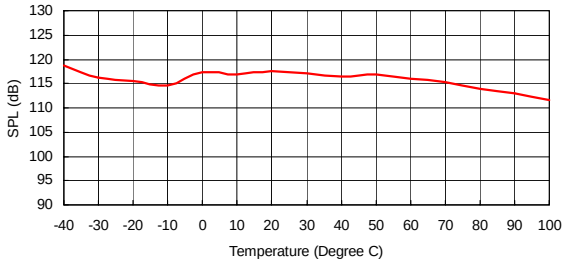
SPL Variation vs. Driving Voltage



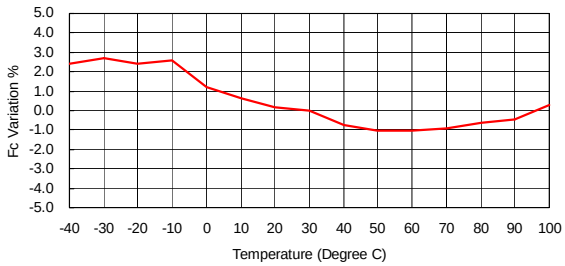
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

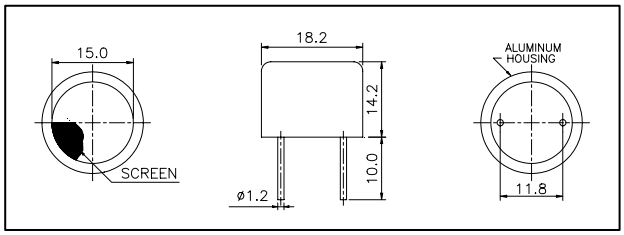


Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 328ST/R180

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

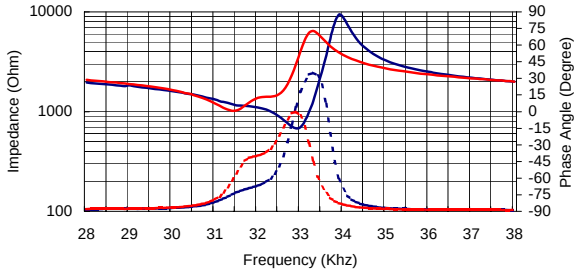
Tested under 1Vrms Oscillation Level

328SR180 Impedance

328SR180 Phase

328ST180 Impedance

328ST180 Phase

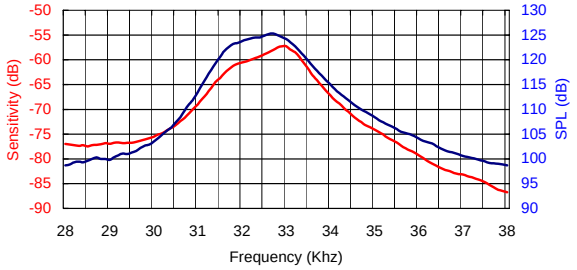


Specification

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 80°C
Storage Temperature		-40 to 85°C

Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm

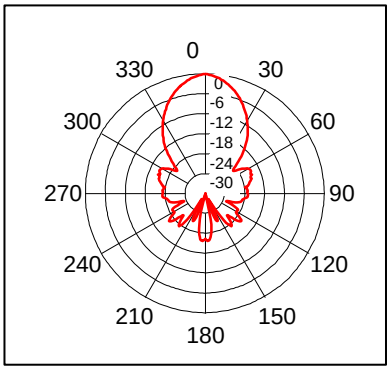


All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

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

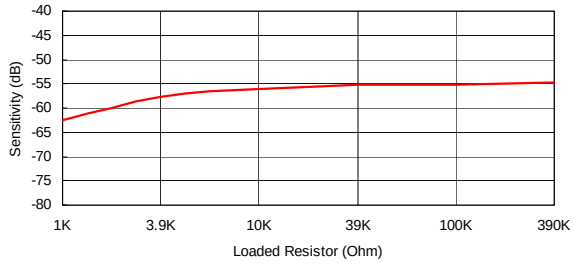
Beam Angle: Tested at 32.8Khz frequency



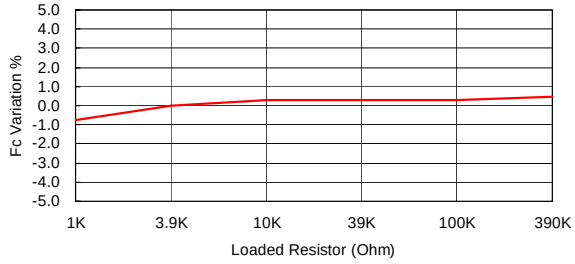
Air Ultrasonic Ceramic Transducers 328ST/R180

328SR180 Receiver

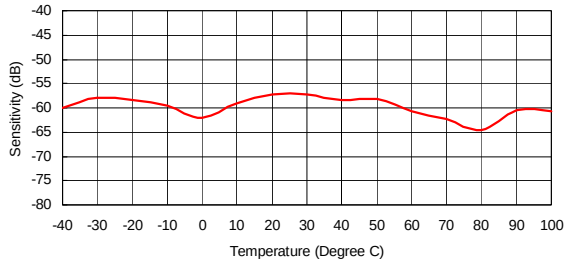
Sensitivity Variation vs. Loaded Resistor



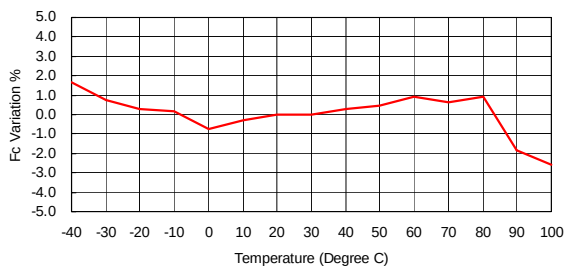
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

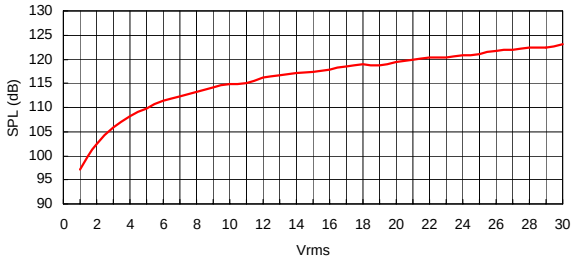


Center Frequency Shift vs. Temperature

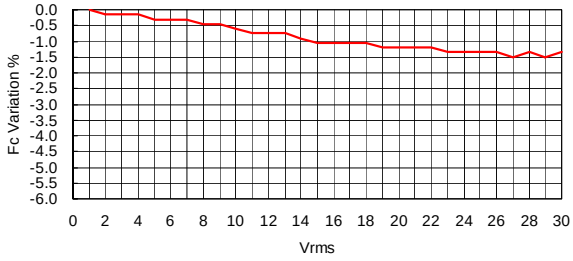


328ST180 Transmitter

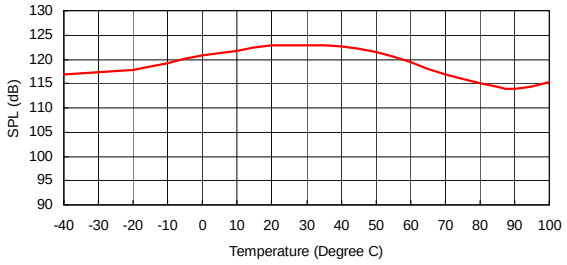
SPL Variation vs. Driving Voltage



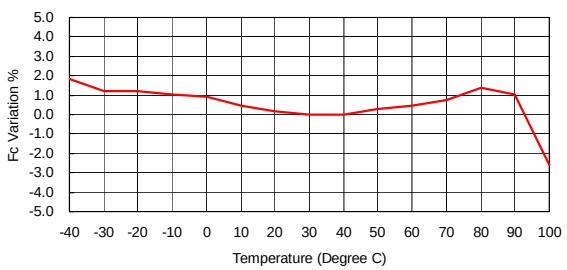
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

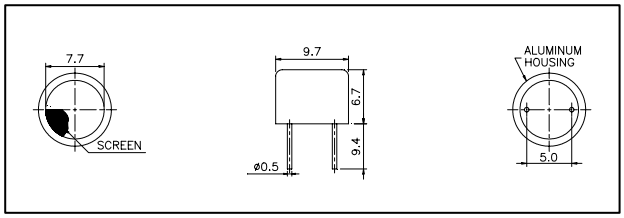


Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 400ST/R100

Dimensions: Dimensions are in mm



Impedance/Phase Angle vs. Frequency

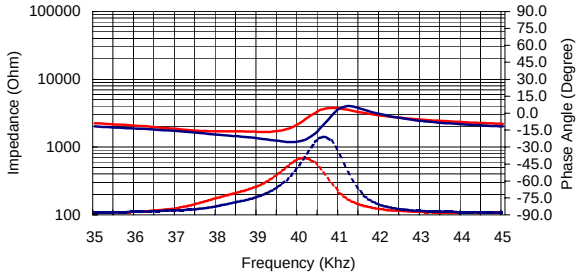
Tested under 1Vrms Oscillation Level

400SR100 Impedance

400SR100 Phase

400ST100 Impedance

400ST100 Phase

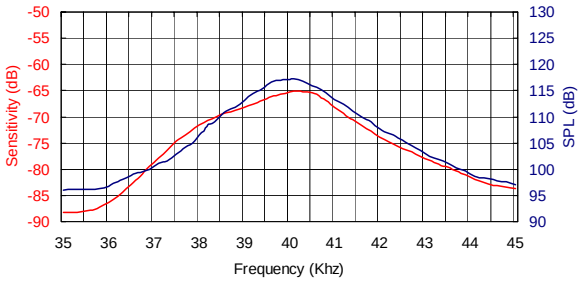


Specification

400ST100		Transmitter
400SR100		Receiver
Center Frequency		40.0±1.0Khz
Bandwidth (-6dB)	400ST100	2.5Khz
	400SR100	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		-70dB min.
Capacitance at 1Khz	±20%	1900 pF
Max. Driving Voltage (cont.)		10Vrms
Total Beam Angle	-6dB	72° typical
Operation Temperature		-30 to 80°C
Storage Temperature		-40 to 85°C

Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm

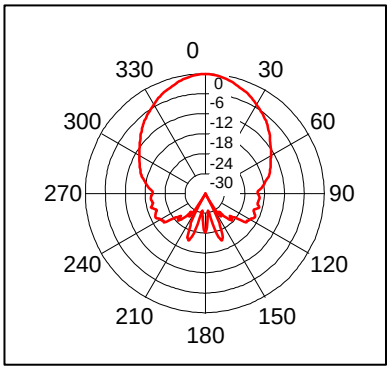


All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Beam Angle: Tested at 40.0Khz frequency

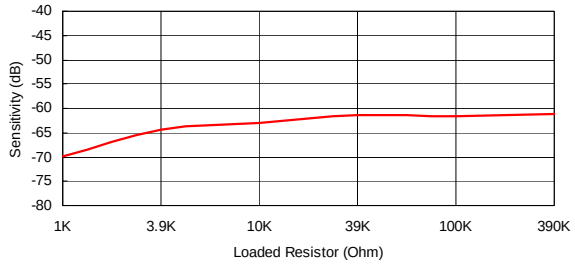
Model available:

1	400ST/R100	Aluminum Housing
2	400ST/R10B	Black Al. Housing
3	400ST/R10P	Plastic Housing

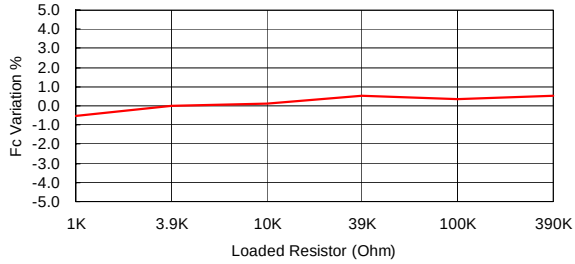


400SR100 Receiver

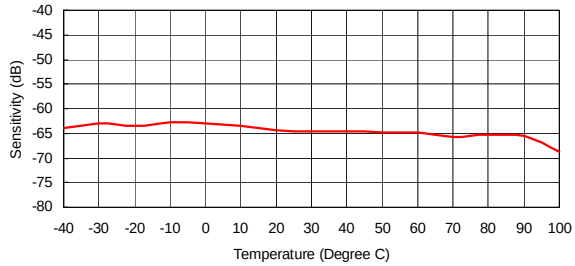
Sensitivity Variation vs. Loaded Resistor



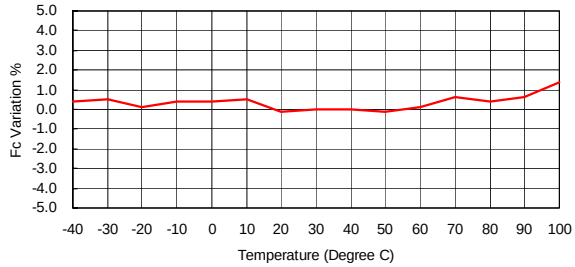
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

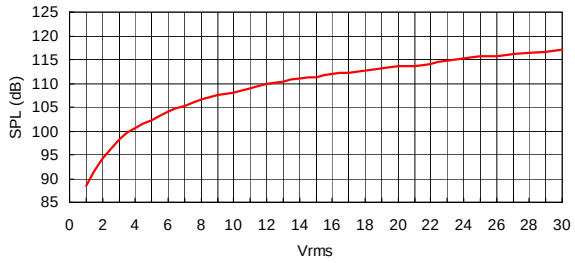


Center Frequency Shift vs. Temperature

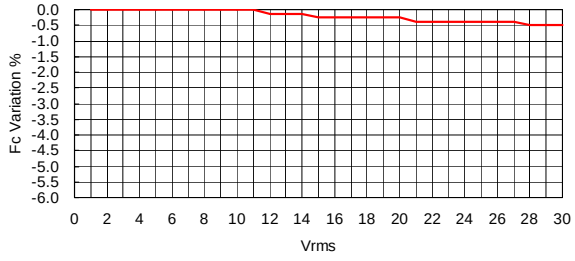


400ST100 Transmitter

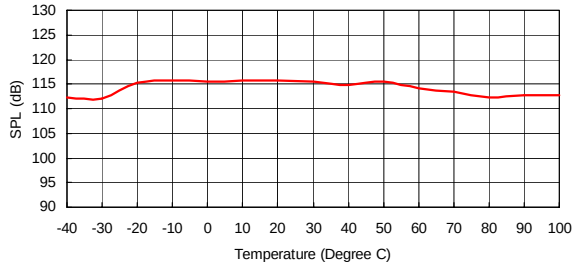
SPL Variation vs. Driving Voltage



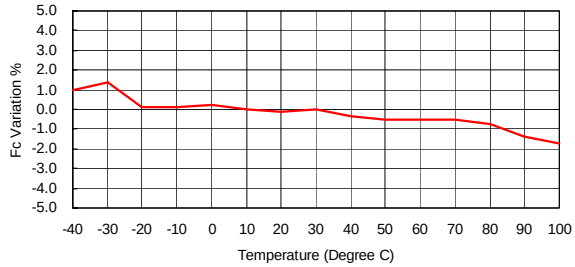
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature



Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 400ST/R120

Specification

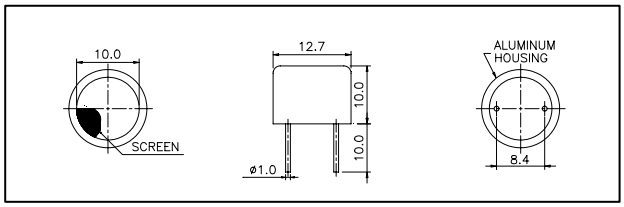
400ST120		Transmitter
400SR120		Receiver
Center Frequency		40.0±1.0Khz
Bandwidth (-6dB)	400ST120	2.0Khz
	400SR120	2.0Khz
Transmitting Sound Pressure Level at 40.0Khz; 0dB re 0.0002µbar per 10Vrms at 30cm		115dB min.
Receiving Sensitivity at 40.0Khz 0dB = 1 volt/µbar		-67dB min.
Capacitance at 1Khz	±20%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

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

Model available:

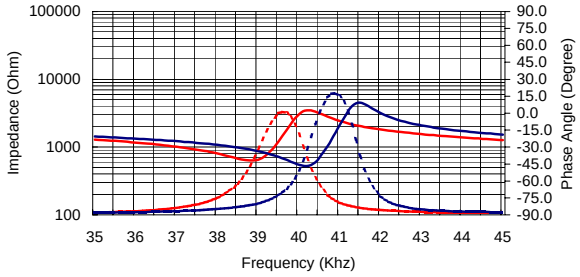
1	400ST/R120	Aluminum Housing
2	400ST/R12B	Black Al. Housing

Dimensions: dimensions are in mm



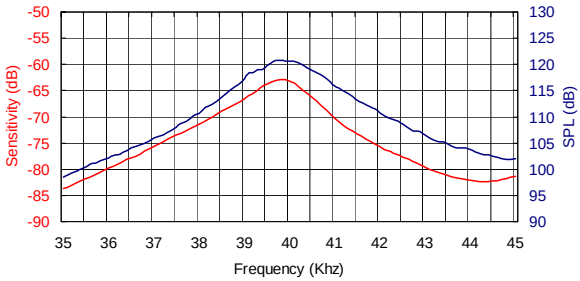
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level
400SR120 Impedance
400SR120 Phase
400ST120 Impedance
400ST120 Phase

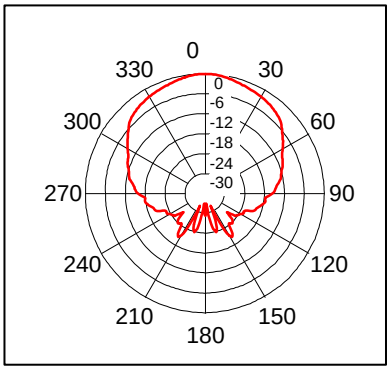


Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



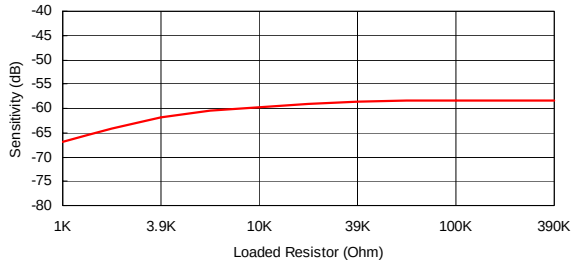
Beam Angle: Tested at 40.0Khz frequency



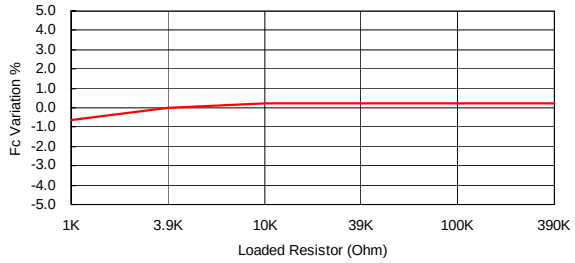
Air Ultrasonic Ceramic Transducers 400ST/R120

400SR120 Receiver

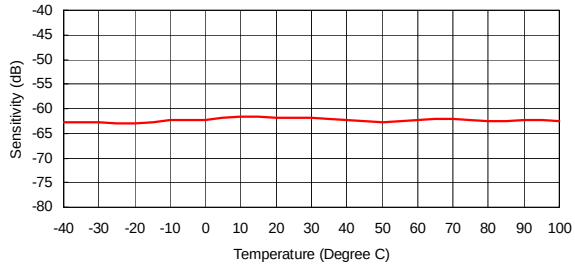
Sensitivity Variation vs. Loaded Resistor



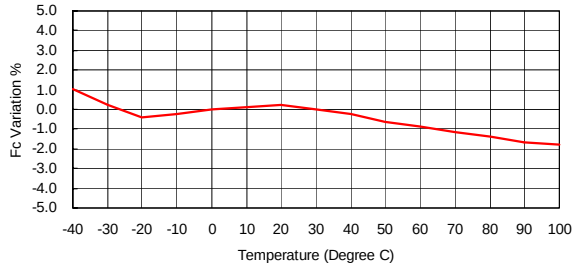
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

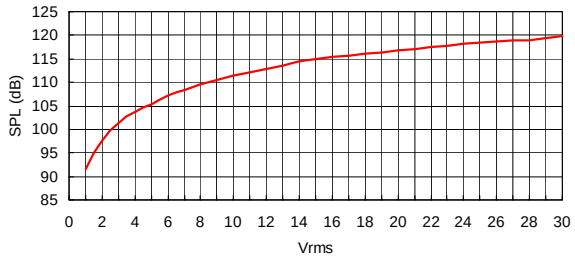


Center Frequency Shift vs. Temperature

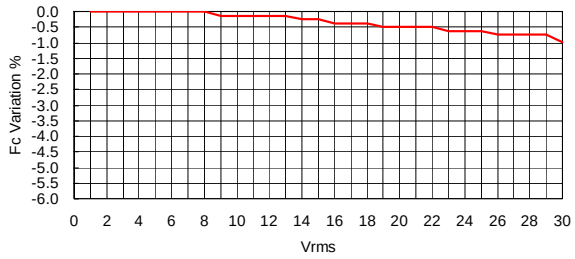


400ST120 Transmitter

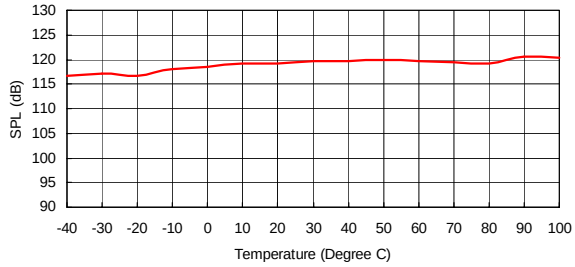
SPL Variation vs. Driving Voltage



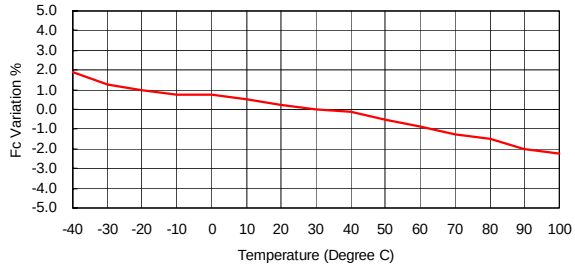
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

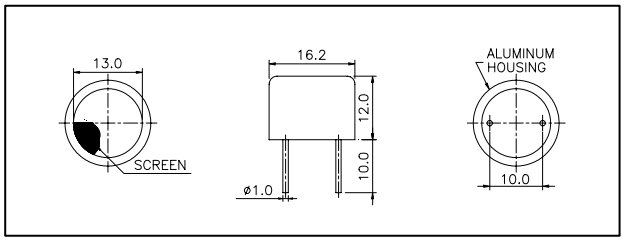


Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 400ST/R160

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

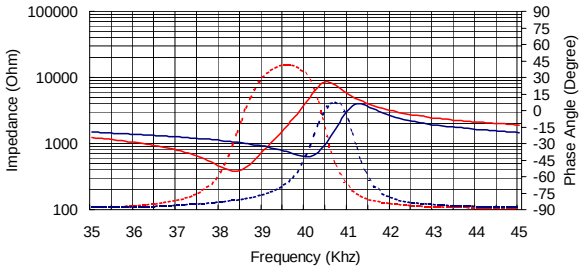
Tested under 1Vrms Oscillation Level

400SR160 Impedance

400SR160 Phase

400ST160 Impedance

400ST160 Phase



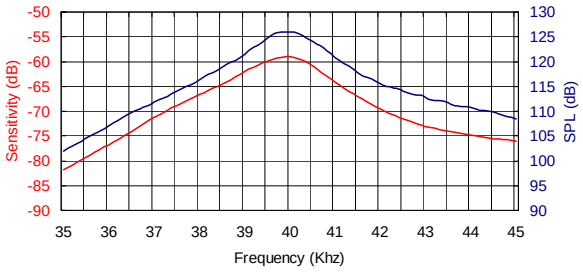
Specification

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		-65dB min.
Capacitance at 1Khz	±20%	2400 pF
Max. Driving Voltage (cont.)		20Vrms
Total Beam Angle	-6dB	55° typical
Operation Temperature		-30 to 80°C
Storage Temperature		-40 to 85°C

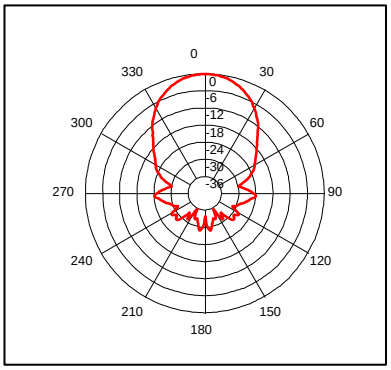
All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 40.0Khz frequency

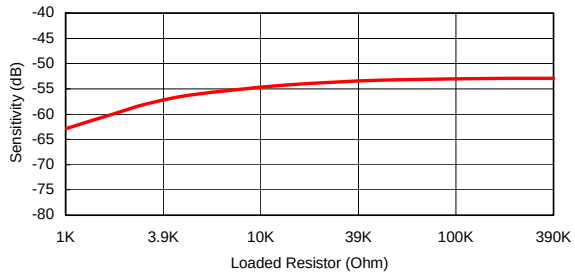


Models available:

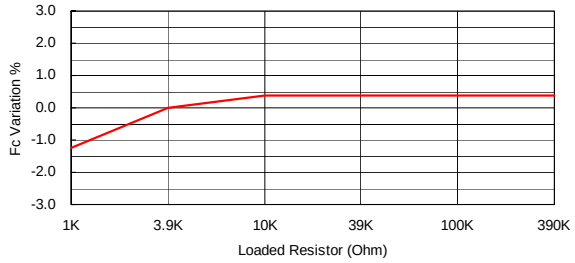
1	400ST/R160	Aluminum Housing
2	400ST/R16B	Black Al. Housing
3	400ST/R16P	Plastic Housing

400SR160 Receiver

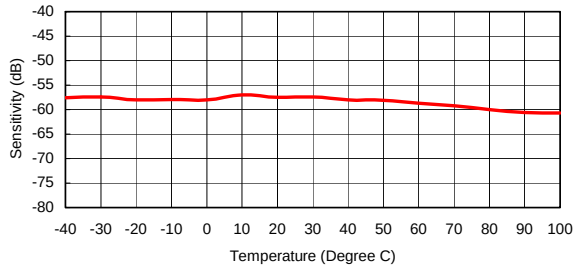
Sensitivity Variation vs. Loaded Resistor



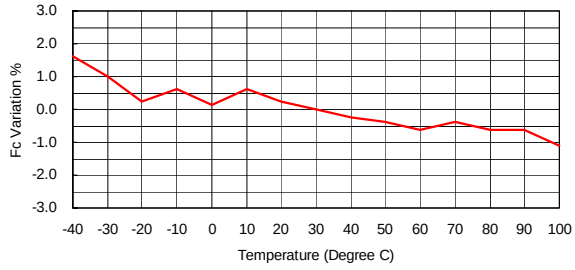
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

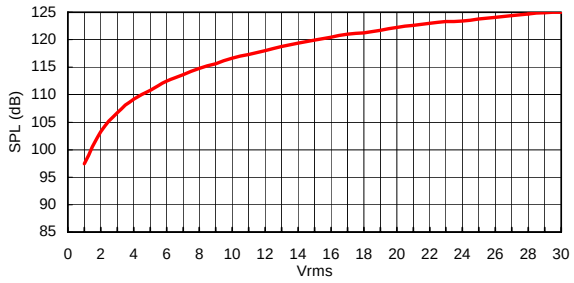


Center Frequency Shift vs. Temperature

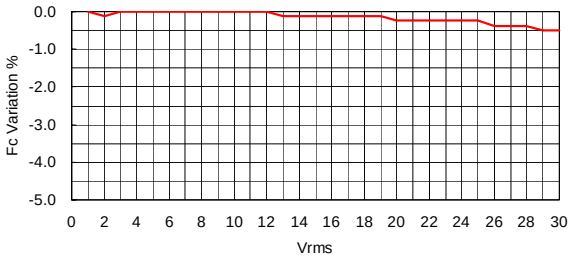


400ST160 Transmitter

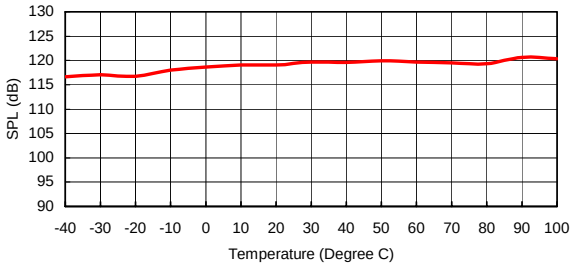
SPL Variation vs. Driving Voltage



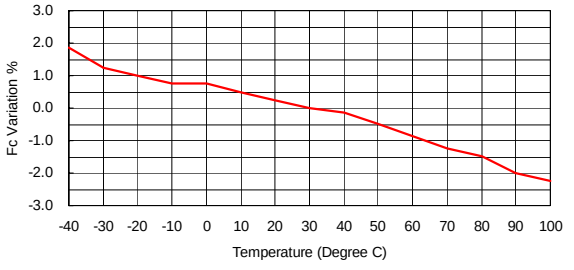
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

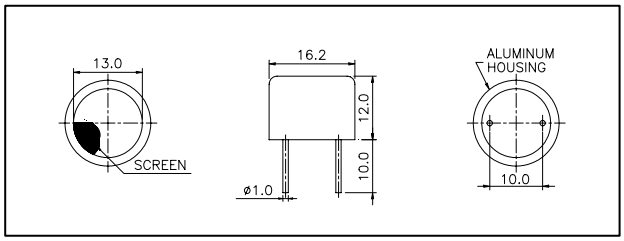


Center Frequency Shift vs. Temperature

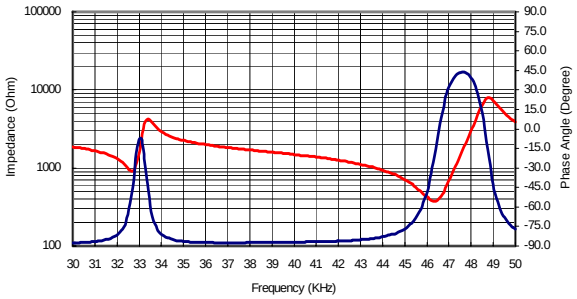


Air Ultrasonic Ceramic Transducers 400WB160

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency



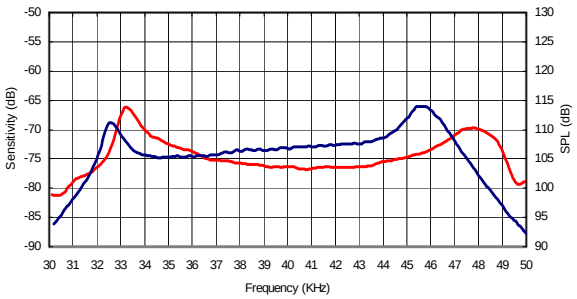
Specification

400WB160		Transceiver
Center Frequency		40.0±1.0Khz
Bandwidth (-6dB)	Transmitter	10Khz
(-6dB)	Receiver	10Khz
Transmitting Sound Pressure Level at 40.0Khz; 0dB re 0.0002µbar per 10Vrms at 30cm		105dB min.
Receiving Sensitivity at 40.0Khz 0dB = 1 volt/µbar		-78dB min.
Nominal Impedance (Trans.)		800 Ohm
Capacitance at 1Khz	±20%	2500 pF
Max. Driving Voltage (cont.)		20Vrms
Total Beam Angle	-6dB	50° typical
Operation Temperature		-30 to 80°C
Storage Temperature		-40 to 85°C

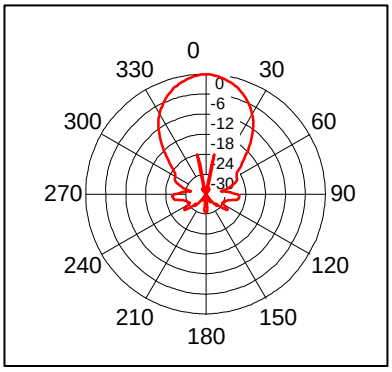
All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 40.0Khz frequency

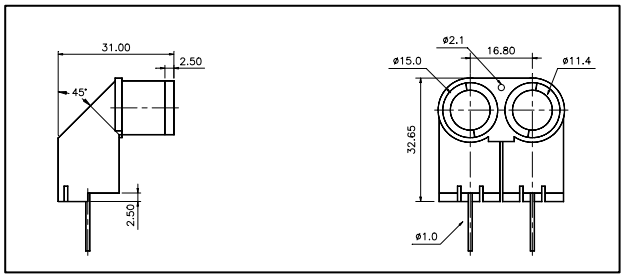


Model available

400WB160	Aluminum Housing

Air Ultrasonic Ceramic Transducers 500MB120

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

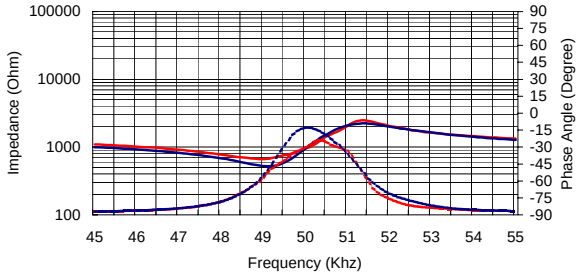
Tested under 1Vrms Oscillation Level

Receiver Impedance

Receiver Phase

Transmitter Impedance

Transmitter Phase



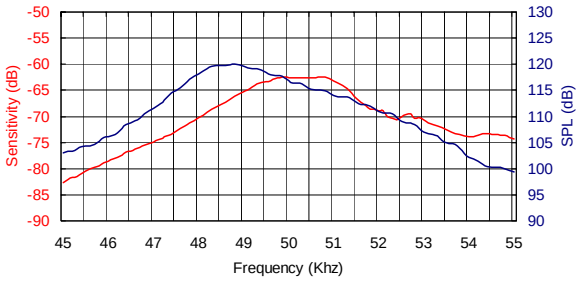
Specification

500MB120	Dual Transducer
Center Frequency	50.0±1.0Khz
Bandwidth (-6dB)	3Khz
Transmitting Sound Pressure Level at 50.0Khz; 0dB re 0.0002µbar per 10Vrms at 30cm	113dB min.
Receiving Sensitivity at 50.0Khz 0dB = 1 volt/µbar	-67dB min.
Sensitivity/Cross Talk Ratio	15 dB
Nominal Impedance (Trans.)	800 Ohm
Capacitance at 1Khz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	30° typical
Operation Temperature	-30 to 70°C
Storage Temperature	-40 to 80°C

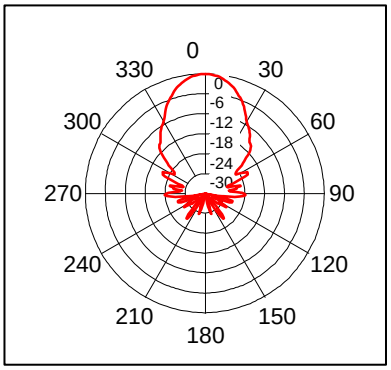
All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Sensitivity/Sound Pressure Level

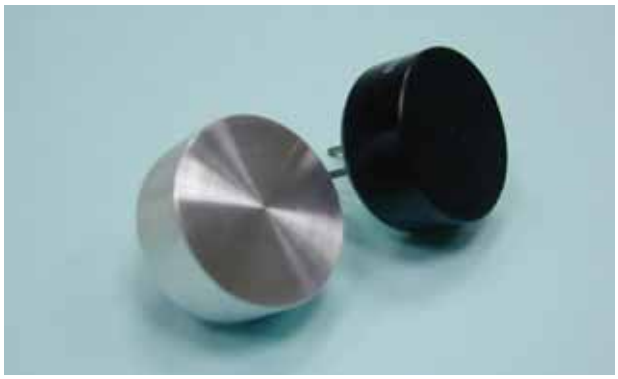
Tested under 10Vrms @30cm



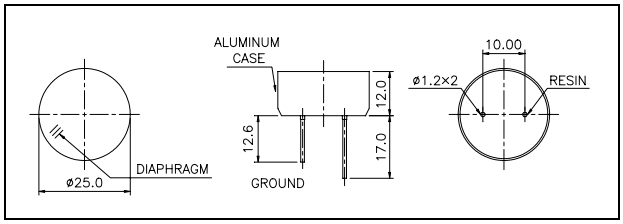
Beam Angle: Tested at 50.0Khz frequency



Air Ultrasonic Ceramic Transducers 328ET/R250



Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

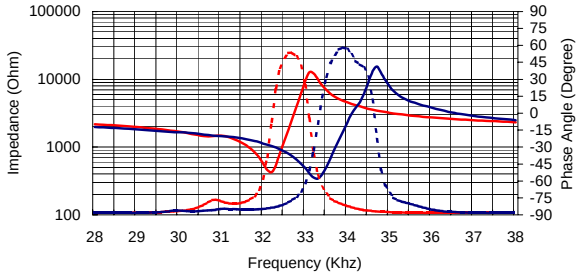
Tested under 1Vrms Oscillation Level

328ER250 Impedance

328ER250 Phase

328ET250 Impedance

328ET250 Phase

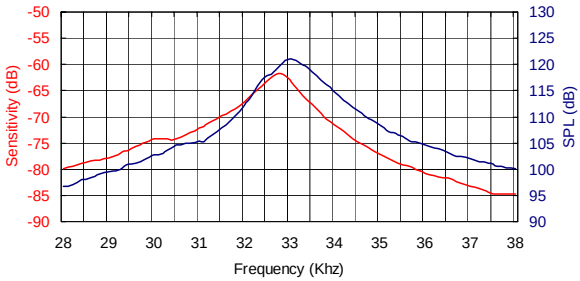


Specification

328ET250		Transmitter
328ER250		Receiver
Center Frequency		32.8±1.0Khz
Bandwidth (-6dB)	328ET250	1.0Khz
	328ER250	1.0Khz
Transmitting Sound Pressure Level at 32.8Khz; 0dB re 0.0002µbar per 10Vrms at 30cm		113dB min. (107dB min. SUS 316)
Receiving Sensitivity at 32.8Khz 0dB = 1 volt/µbar		-67dB min. (-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 80°C
Storage Temperature		-40 to 85°C

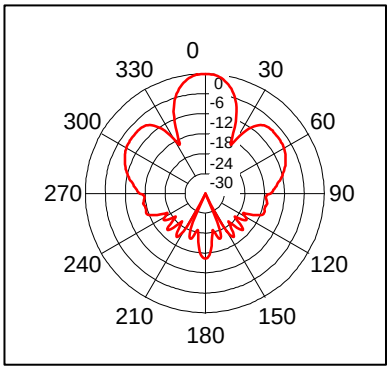
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



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

Beam Angle: Tested at 32.8Khz frequency

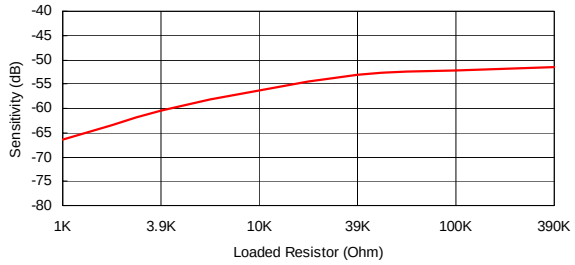


Model available:

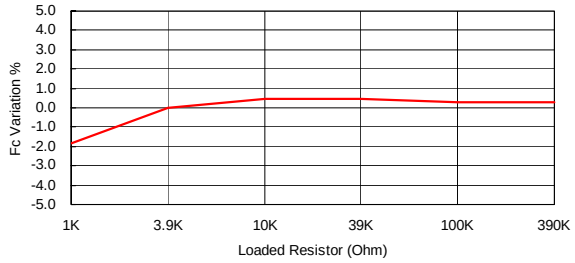
1	328ET/R250	Aluminum Housing
2	328ET/R25B	Black Alum. Housing
3	328ET/R25S	SUS 316 Housing

328ER250 Receiver

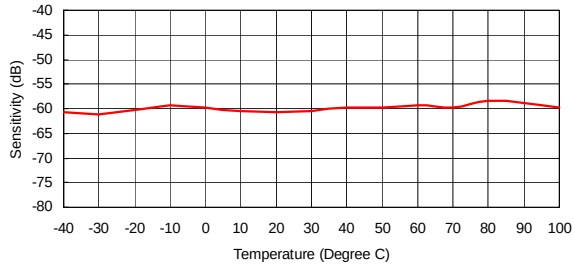
Sensitivity Variation vs. Loaded Resistor



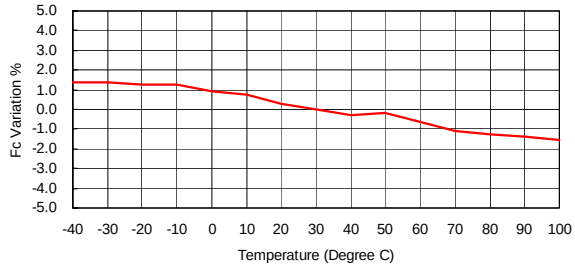
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

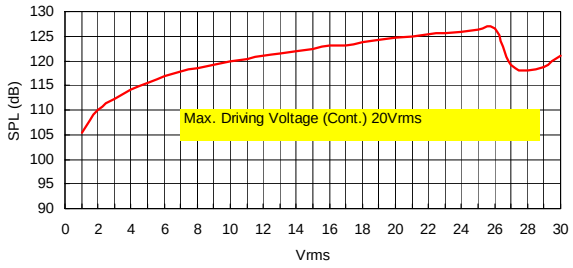


Center Frequency Shift vs. Temperature

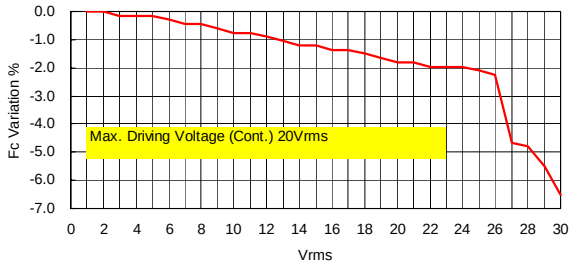


328ET250 Transmitter

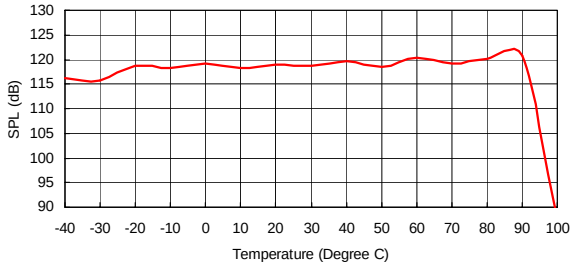
SPL Variation vs. Driving Voltage



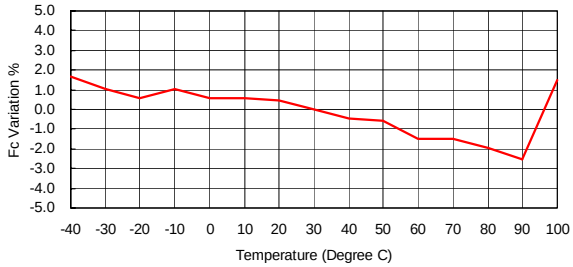
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

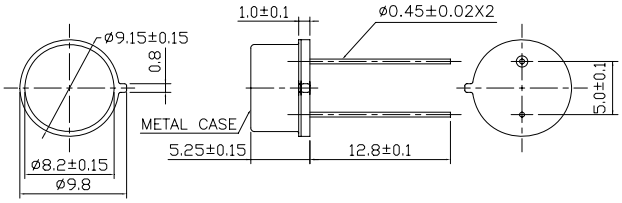


Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 400ET/R080

Dimensions: dimensions are in mm



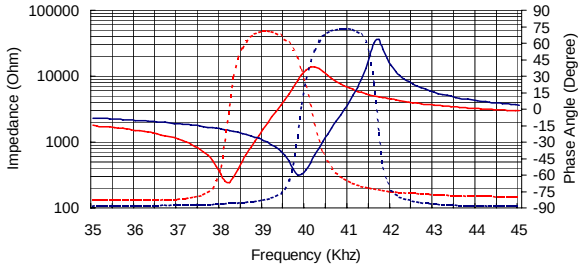
Specification

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 80°C
Storage Temperature		-40 to 85°C

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

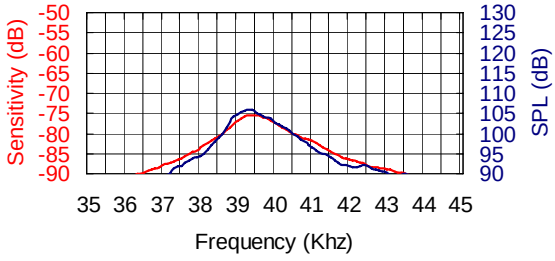
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level
400ER080 Impedance
400ER080 Phase
400ET080 Impedance
400ET080 Phase

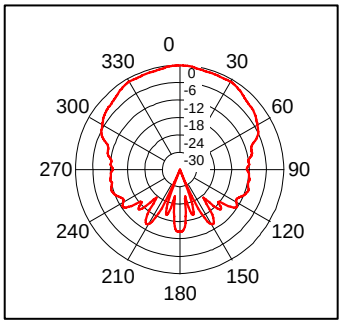


Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 40.0Khz frequency



Model available:

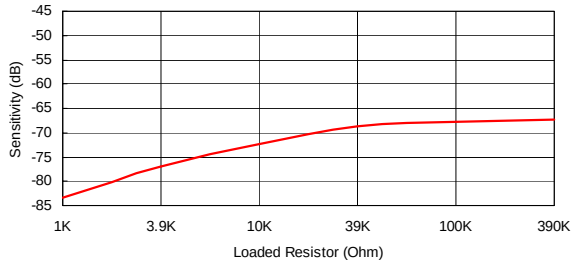
1	400ET/R080	Plated Metal Housing

Air Ultrasonic Ceramic Transducers 400ET/R080

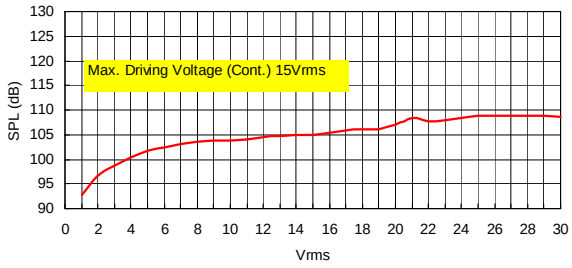
400ER080 Receiver

400ET080 Transmitter

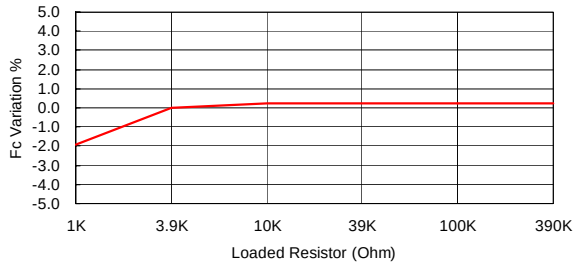
Sensitivity Variation vs. Loaded Resistor



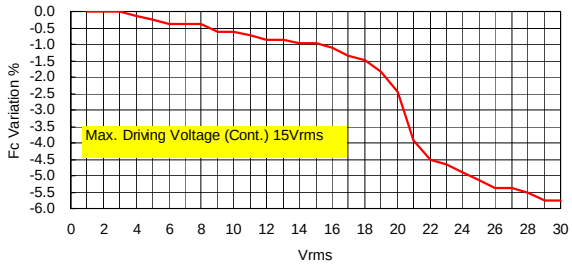
SPL Variation vs. Driving Voltage



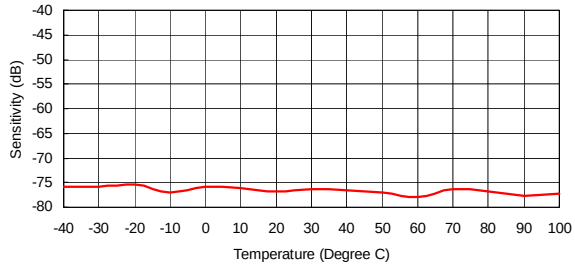
Center Frequency Shift vs. Loaded Resistor



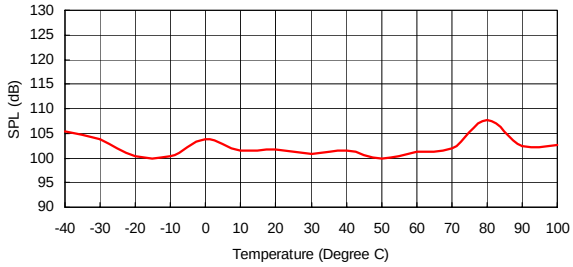
Center Frequency Shift vs. Driving Voltage



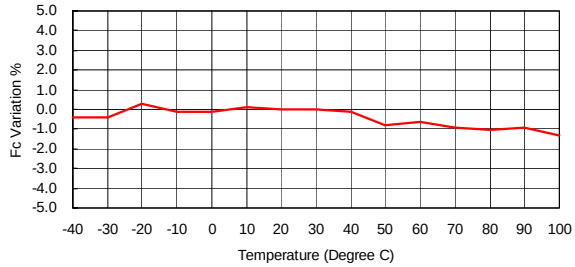
Sensitivity Variation vs. Temperature



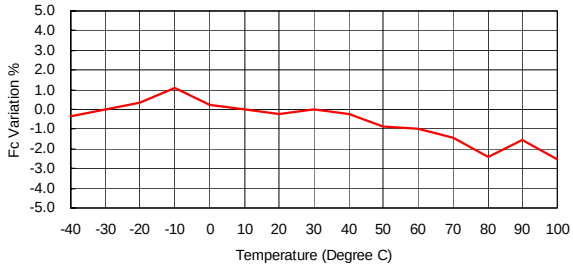
SPL Variation vs. Temperature



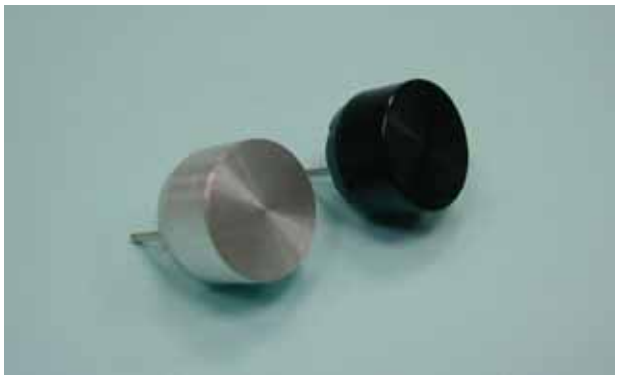
Center Frequency Shift vs. Temperature



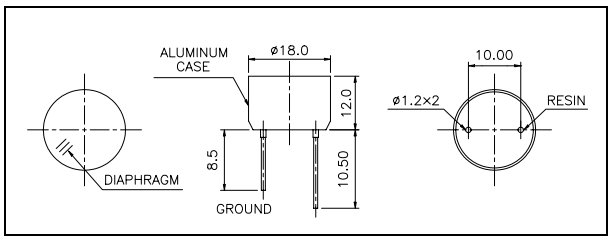
Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 400ET/R180



Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

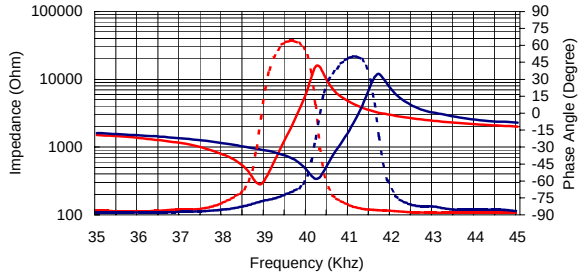
Tested under 1Vrms Oscillation Level

400ER180 Impedance

400ER180 Phase

400ET180 Impedance

400ET180 Phase

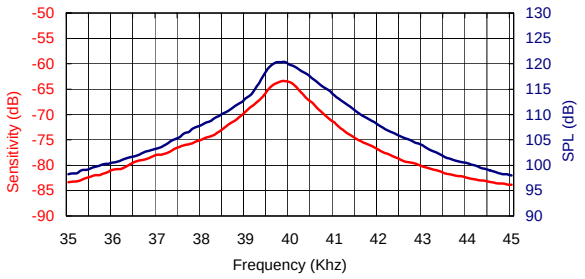


Specification

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 80°C
Storage Temperature		-40 to 85°C

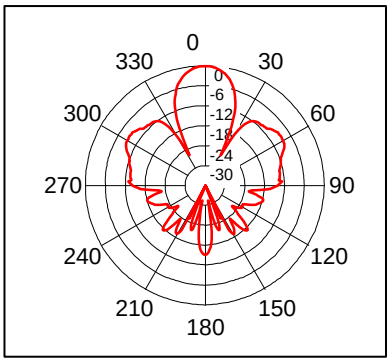
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



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

Beam Angle: Tested at 40.0Khz frequency



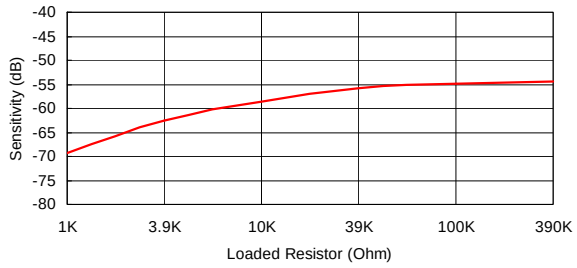
Model available:

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

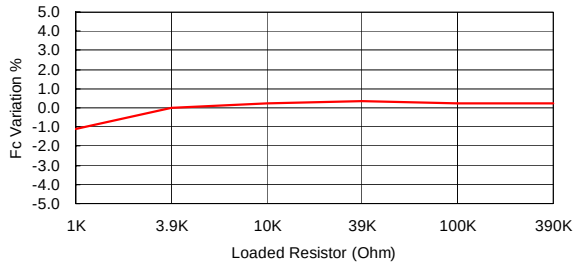
Air Ultrasonic Ceramic Transducers 400ET/R180

400ER180 Receiver

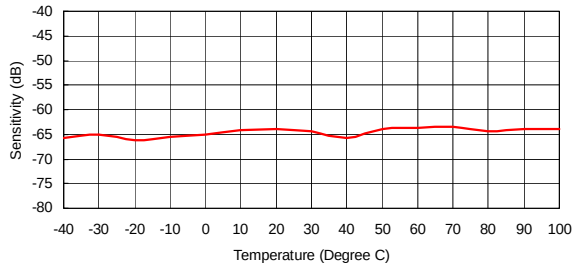
Sensitivity Variation vs. Loaded Resistor



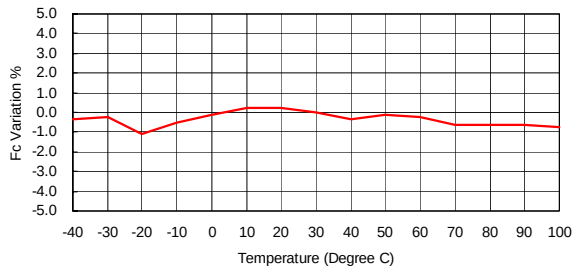
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

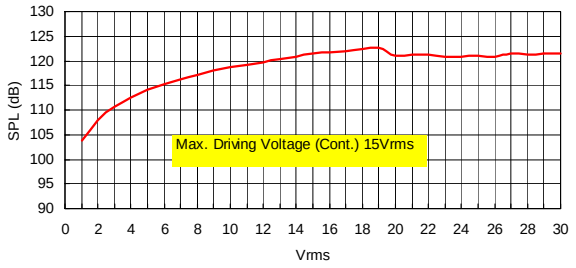


Center Frequency Shift vs. Temperature

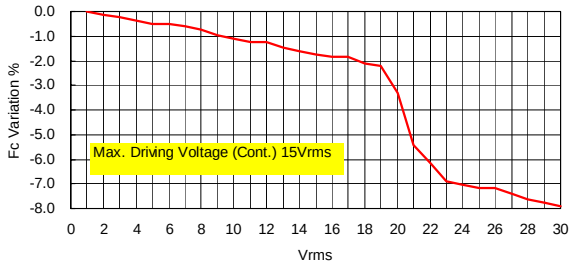


400ET180 Transmitter

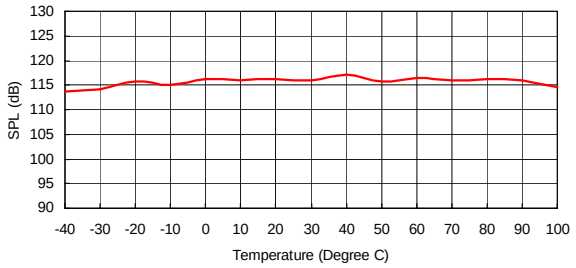
SPL Variation vs. Driving Voltage



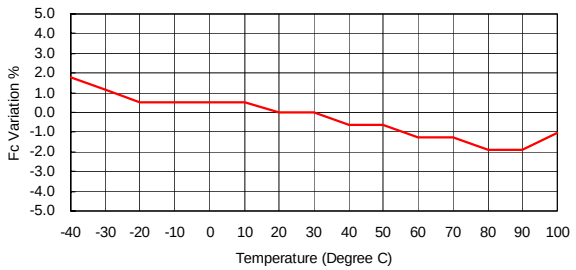
Center Frequency Shift vs. Driving Voltage



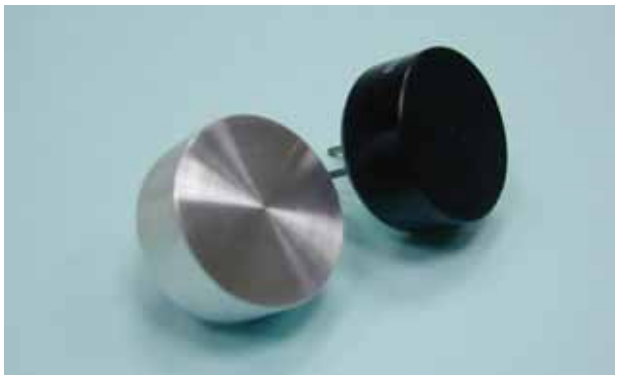
SPL Variation vs. Temperature



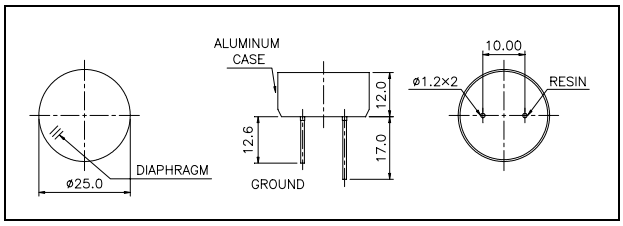
Center Frequency Shift vs. Temperature



Air Ultrasonic Ceramic Transducers 400ET/R250



Dimensions: dimensions are in mm



Specification

400ET250		Transmitter
400ER250		Receiver
Center Frequency		40.0±1.0Khz
Bandwidth (-6dB)	400ET250	1.0Khz
	400ER250	1.0Khz
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%	2400 pF
Max. Driving Voltage (cont.)		20Vrms
Total Beam Angle	-6dB	30° typical
Operation Temperature		-30 to 80°C
Storage Temperature		-40 to 85°C

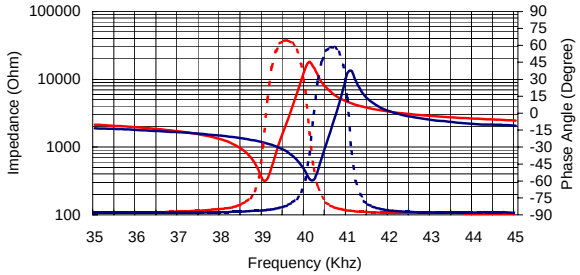
All specification taken typical at 25°C
Closer frequency tolerance can be supplied upon request.

Model available:

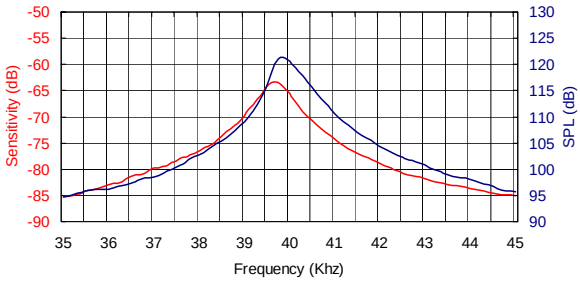
1	400ET/R250	Aluminum Housing
2	400ET/R25B	Black Alum. Housing
3	400ET/R25S	SUS 316 Housing

Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level
400ER250 Impedance
400ER250 Phase
400ET250 Impedance
400ET250 Phase

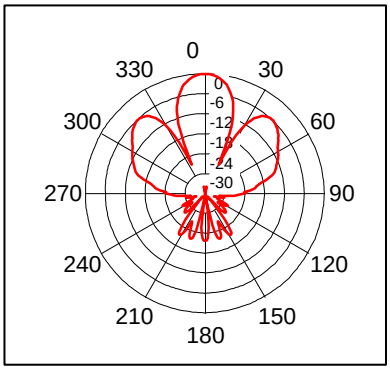


Sensitivity/Sound Pressure Level



Tested under 10Vrms @30cm

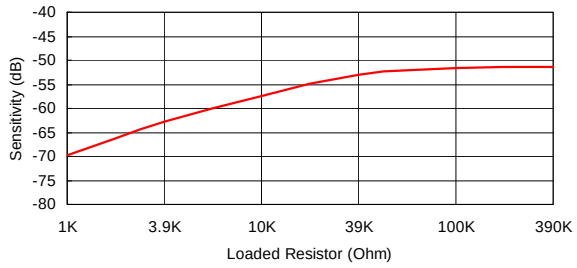
Beam Angle: Tested at 40.0Khz frequency



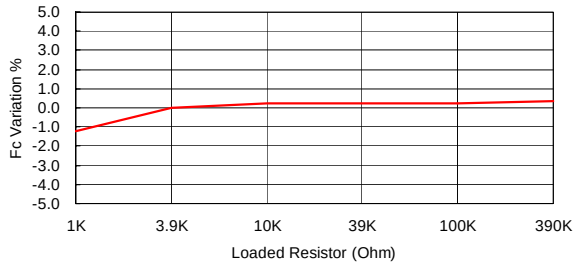
Air Ultrasonic Ceramic Transducers 400ET/R250

400ER250 Receiver

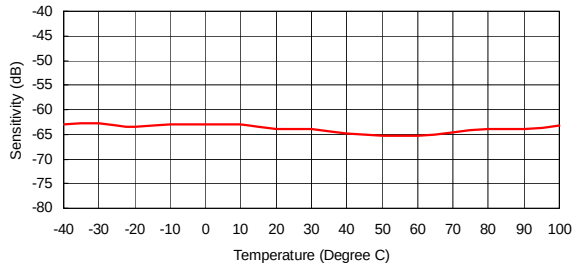
Sensitivity Variation vs. Loaded Resistor



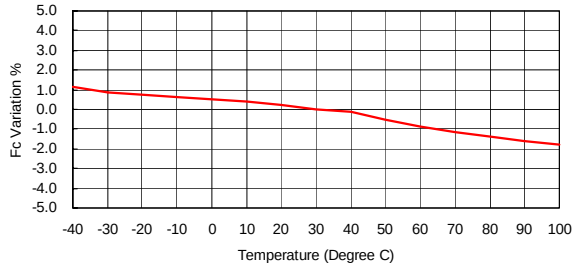
Center Frequency Shift vs. Loaded Resistor



Sensitivity Variation vs. Temperature

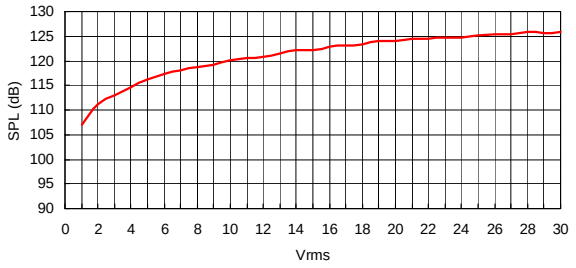


Center Frequency Shift vs. Temperature

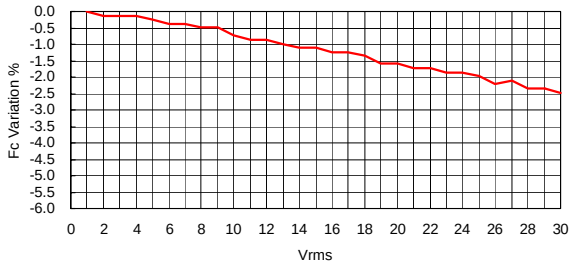


400ET250 Transmitter

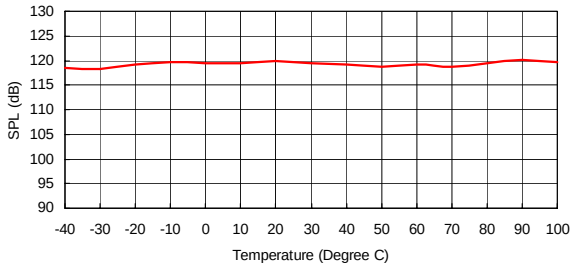
SPL Variation vs. Driving Voltage



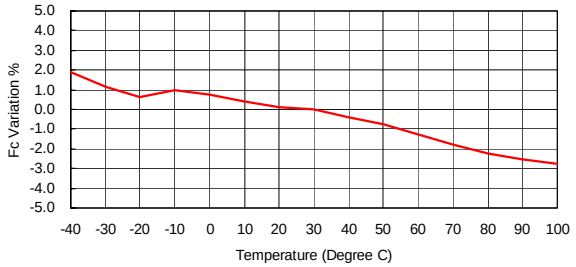
Center Frequency Shift vs. Driving Voltage



SPL Variation vs. Temperature

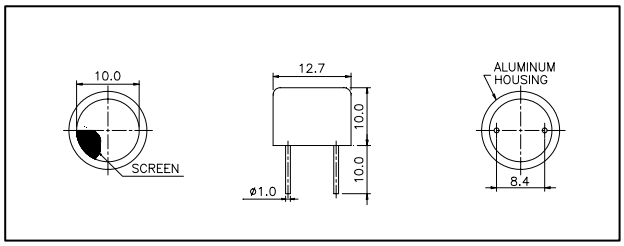


Center Frequency Shift vs. Temperature



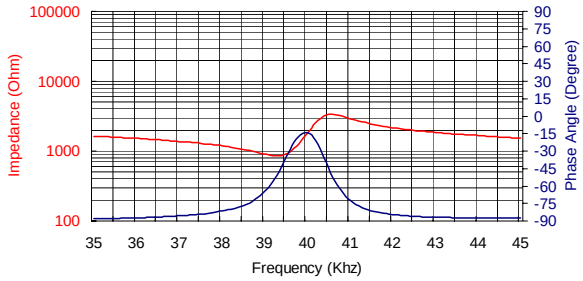
Air Ultrasonic Ceramic Transducers 400PT120

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

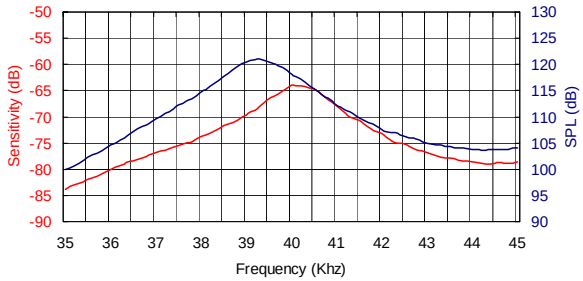


Specification

400PT120	Transceiver
Center Frequency	40.0±1.0Khz
Bandwidth (-6dB) 400PT120	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	-68dB min.
Nominal Impedance (Ohm)	1000
Ringing (ms)	1.2 max.
Capacitance at 1Khz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	85° typical
Operation Temperature	-30 to 80°C
Storage Temperature	-40 to 85°C

Sensitivity/Sound Pressure Level

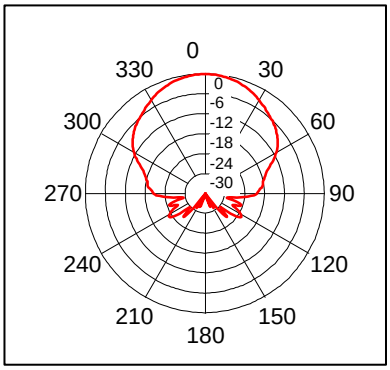
Tested under 10Vrms @30cm



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

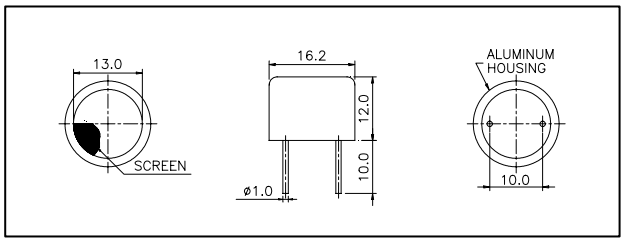
1	400PT120	Aluminum Housing
2	400PT12B	Black Al. Housing
3	400PT12P	Plastic Housing

Beam Angle: Tested at 40.0Khz frequency



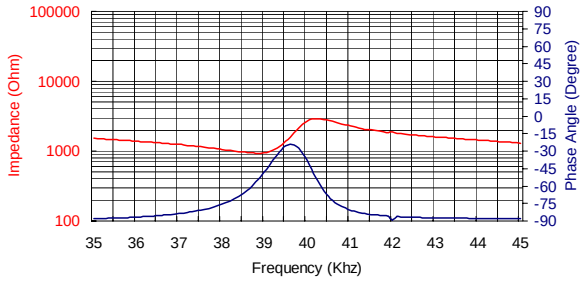
Air Ultrasonic Ceramic Transducers 400PT160

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

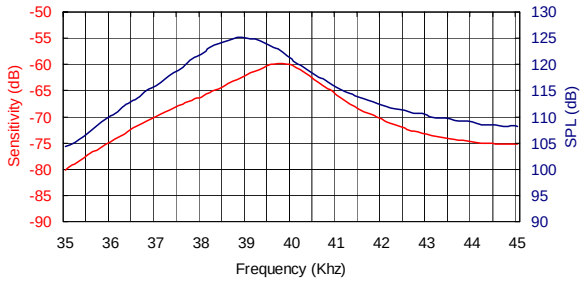


Specification

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
Ringing (ms) max.	1.2 – PT160 1.5 – PT16P
Capacitance at 1Khz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	55° typical
Operation Temperature	-30 to 80°C
Storage Temperature	-40 to 85°C

Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm

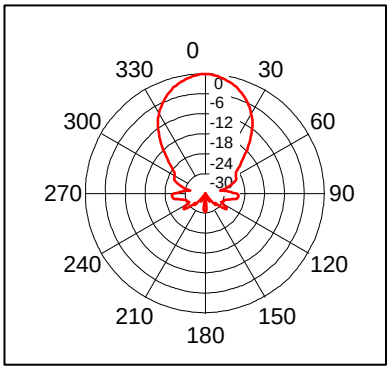


All specification taken typical at 25°C
Closer frequency tolerance, shorter ringing and wider bandwidth models can be supplied upon request.

Model available:

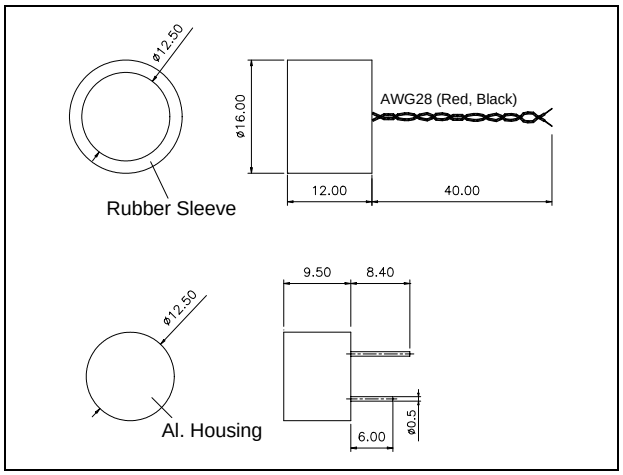
1	400PT160	Aluminum Housing
2	400PT16P	Plastic Housing

Beam Angle: Tested at 40.0Khz frequency



Air Ultrasonic Ceramic Transducers 400EP125

Dimensions: dimensions are in mm



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	98dB min.
Receiving Sensitivity (with rubber sleeve) at resonant frequency 0dB = 1 volt/µbar	-80dB min.
Nominal Impedance (Ohm)	1000
Ringing (ms) @25°C	1.2 max.
Capacitance at 1Khz ±20%	1400 pF
Max. Driving Voltage (Cont.)	20Vrms
20 bursts, 25ms repetition rate	100Vpp
Total Beam Angle -6dB	125°
Operation Temperature	-30 to 80°C
Storage Temperature	-40 to 85°C

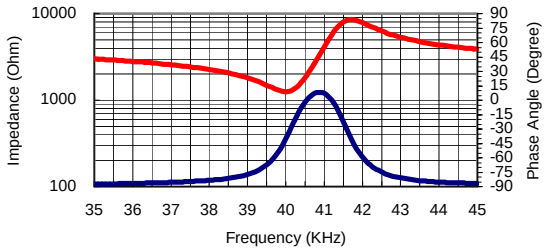
All specification taken typical at 25°C
Models of less ringing are available

Models available:

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

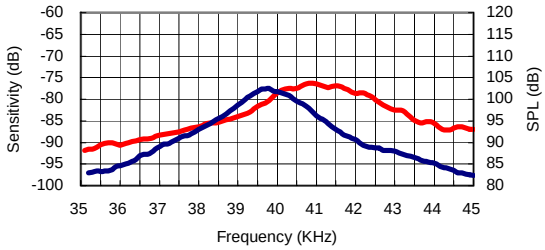
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

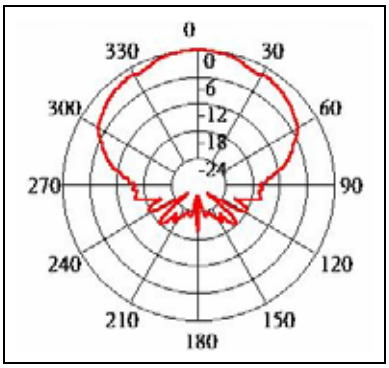


Sensitivity/Sound Pressure Level

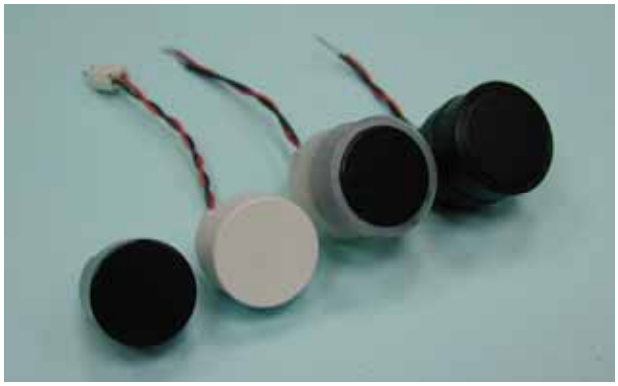
SPL Tested under 10Vrms@30cm



Beam Angle: Tested at 40.0Khz frequency



Air Ultrasonic Ceramic Transducers 400EP14D



Asymmetric Beam Patterns

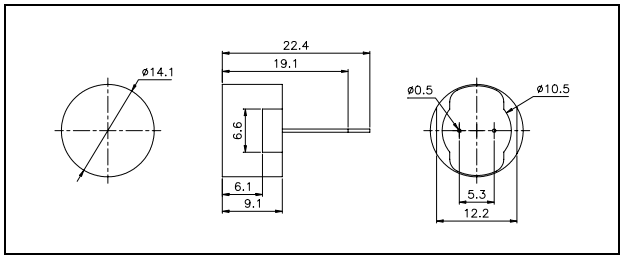
Specification

400EP14D	Transceiver
Center Frequency	40.0±1.0Khz
Bandwidth (-6dB)	2.0Khz
Transmitting Sound Pressure Level at resonant frequency; 0dB re 0.0002µbar per 10Vrms at 30cm	103dB min. (Transducer alone)
Receiving Sensitivity at resonant frequency 0dB = 1 volt/µbar	-78dB min. (Transducer alone)
Nominal Impedance (Ohm)	1000
Ringing (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 Wide	125° typ.
-6dB Narrow	65° typ.
Operation Temperature	-40 to 80°C
Storage Temperature	-40 to 85°C

All specification taken typical at 25°C
Both lead pins and lead wires output are available
Models available:

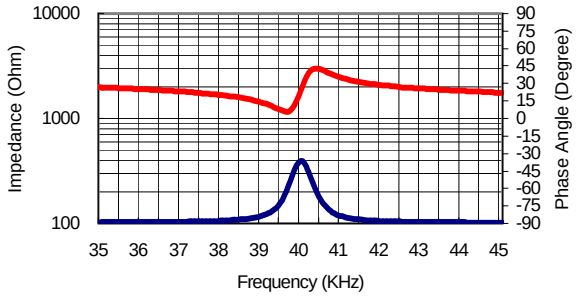
1	400EP14D	Black Painted Housing
2	400EP14DC	Temperature compensated (TC)
3	400EP14DCR	T.C. + Rubber Sleeve

Dimensions: dimensions are in mm



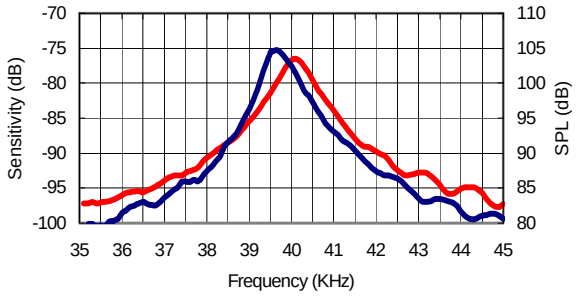
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



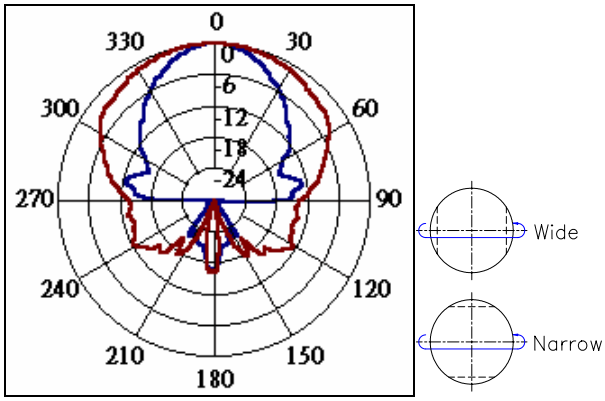
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



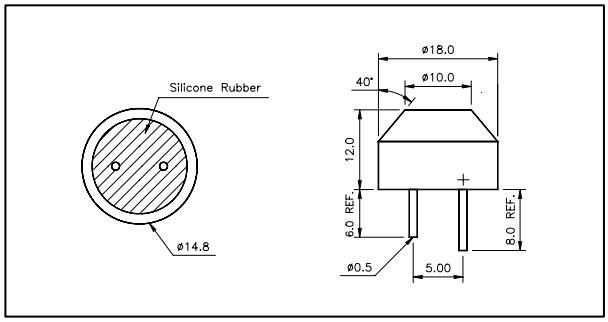
Beam Angle: Tested at 40.0Khz frequency

Wide Angle _____ Narrow Angle _____



Air Ultrasonic Ceramic Transducers 400EP18A

Dimensions: dimensions are in mm



Specification

400EP18A	Transceiver
Center Frequency	40.0±1.0Khz
Bandwidth (-6dB) 400EP18A	2.0Khz
Transmitting Sound Pressure Level at resonant frequency; 0dB re 0.0002µbar per 10Vrms at 30cm	108dB min.
Receiving Sensitivity at resonant frequency 0dB = 1 volt/µbar	-75dB min.
Nominal Impedance (Ohm)	750
Ringing (ms)	1.2 max.
Capacitance at 1Khz ±20%	2000 pF
Temperature Compensated Type	4000 pF
Max. Driving Voltage (Cont.)	20Vrms
20 bursts, 25ms repetition rate	100Vpp
Total Beam Angle -6dB	85°
Operation Temperature	-30 to 80°C
Storage Temperature	-40 to 85°C

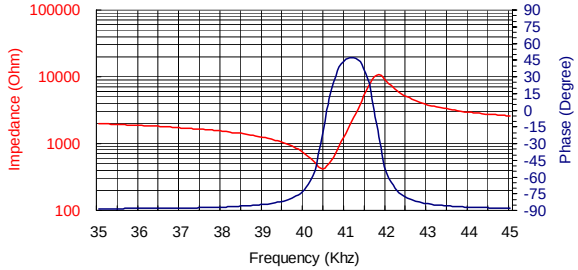
All specification taken typical at 25°C
Both lead pins and lead wires output are available. Temperature compensated type is available upon request.

Models available:

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

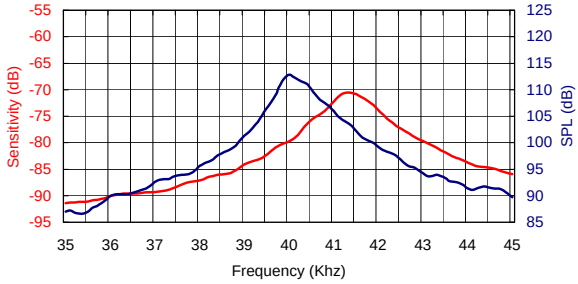
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

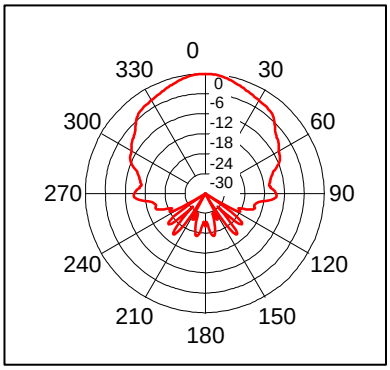


Sensitivity/Sound Pressure Level

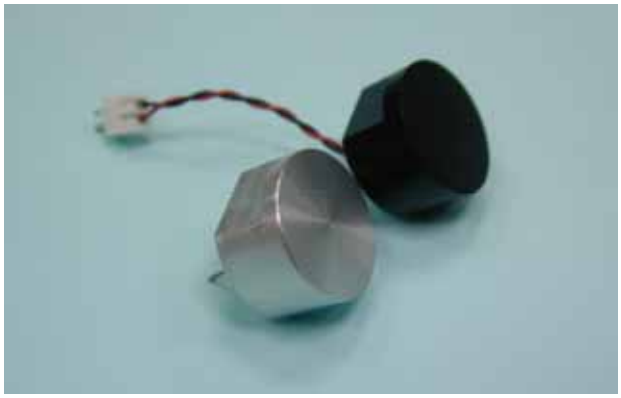
Tested under 10Vrms @30cm



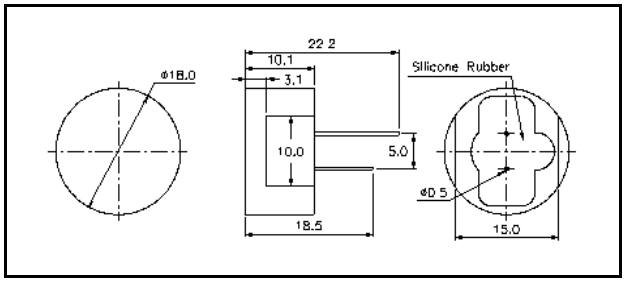
Beam Angle: Tested at 40.0Khz frequency



Air Ultrasonic Ceramic Transducers 400EP18D

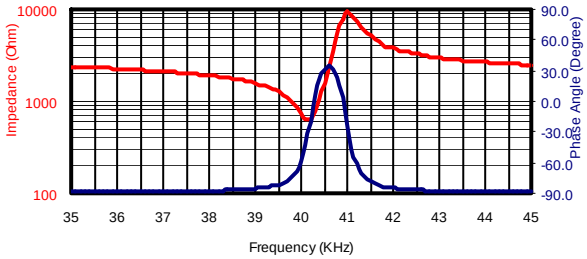


Dimensions: dimensions are in mm



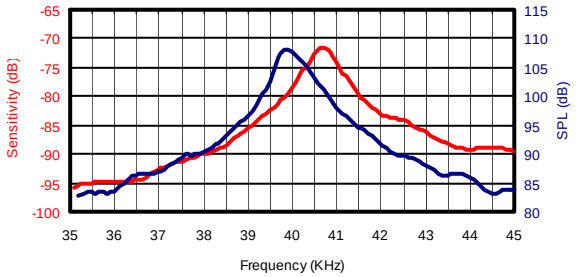
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



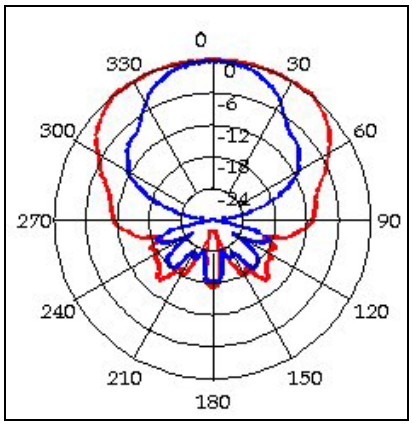
Asymmetric Beam Patterns

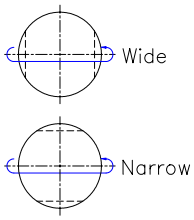
Specification

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
Ringing	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 Wide*	135° typ.
-6dB Narrow*	75° typ.
Operation Temperature	-30 to 80°C
Storage Temperature	-40 to 85°C

Beam Angle: Tested at 40.0Khz frequency

Wide Angle _____ Narrow Angle _____



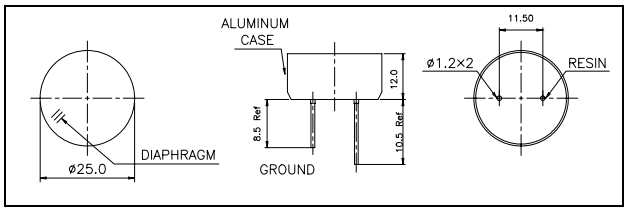


All specification taken typical at 25°C
Both lead pins and lead wires output are available
Models available:

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

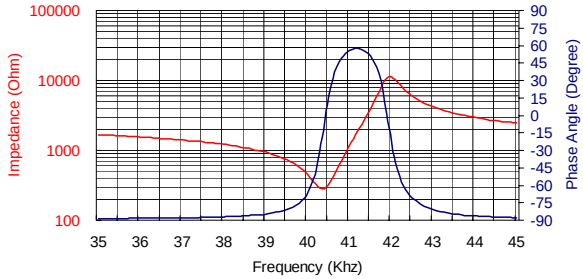
Air Ultrasonic Ceramic Transducers 400EP250

Dimensions: dimensions are in mm



Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



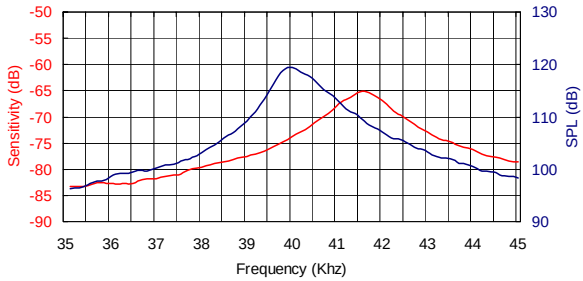
Specification

400EP250	Transceiver
Center Frequency	40.0±1.0Khz
Bandwidth (-6dB) 400EP250	2.0Khz(FOM)
Transmitting Sound Pressure Level at resonant frequency; 0dB re 0.0002µbar per 10Vrms at 30cm	113dB min.
Receiving Sensitivity at resonant frequency 0dB = 1 volt/µbar	-72dB min.
Nominal Impedance (Ohm)	300
Ringing (ms)	1.2 max.
Capacitance at 1Khz ±20%	2400 pF
Temperature Compensated Type	4800 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	30° typical
Operation Temperature	-30 to 80°C
Storage Temperature	-40 to 85°C

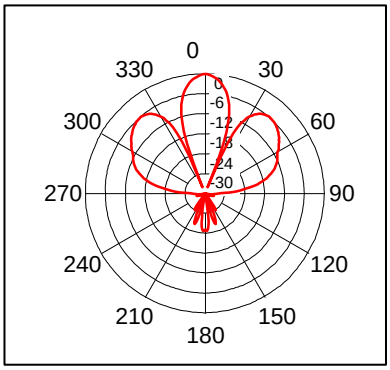
All specification taken typical at 25°C
Closer frequency tolerance, shorter ringing, wider bandwidth and temperature compensated models can be supplied upon request.

Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: Tested at 40.0Khz frequency



Model available:

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

Air Ultrasonic Ceramic Transducers 480EP900

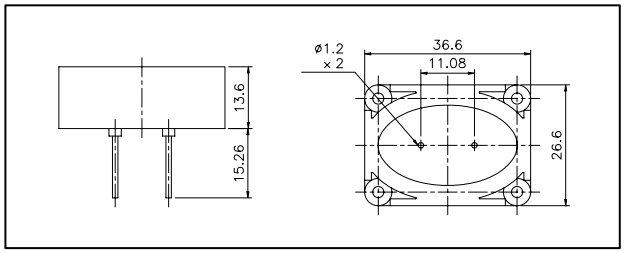
Asymmetric Beam Patterns

Specification

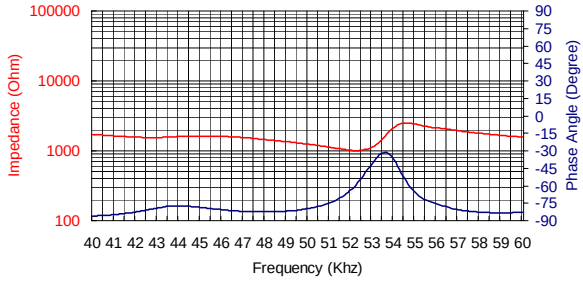
480EP900	Transceiver
Center Frequency	48.0±2.0Khz
Bandwidth (100dB) Transmitter	15.0Khz
(-80dB) Receiver	15.0Khz
Transmitting Sound Pressure Level at 48Khz; 0dB re 0.0002µbar per 10Vrms at 30cm	100dB min.
Receiving Sensitivity at 48.0Khz; 0dB = 1 volt/µbar	-80dB min.
Nominal Impedance (Ohm)	1000
Ringing (ms)	1.2 max.
Capacitance at 1Khz ±20%	2400 pF
Max. Driving Voltage (cont.)	20Vrms
Total Beam Angle -6dB	Typical
Long Axis (X) 43/48/53Khz	22/24/28°
Short Axis (Y)	31/51/33°
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



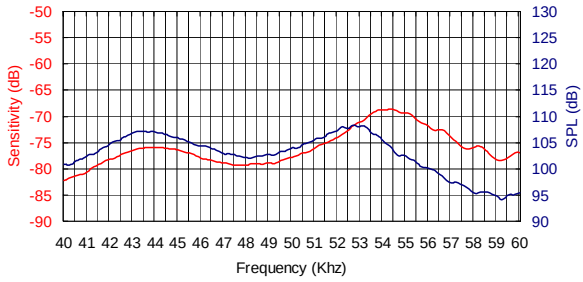
Impedance/Phase Angle vs. Frequency



Tested under 1Vrms Oscillation Level

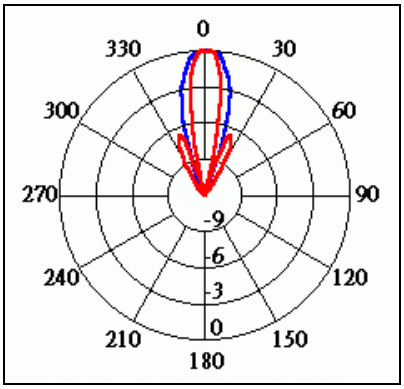
Sensitivity/Sound Pressure Level

Tested under 10Vrms @30cm



Beam Angle: @48KHz

Short Axis
Long Axis

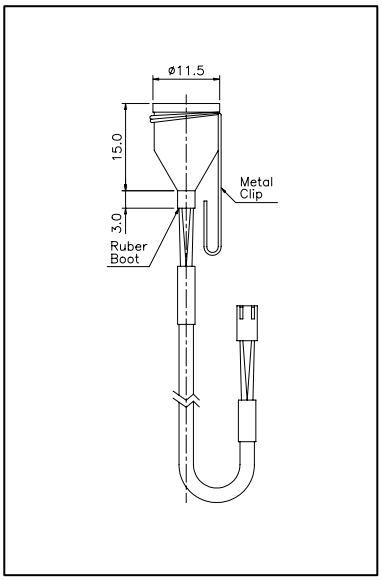


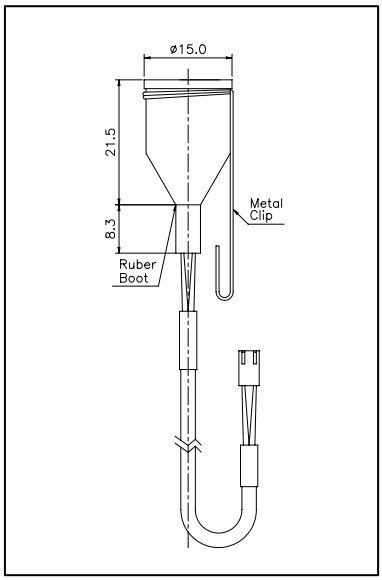
Ultrasonic Transducer Assembled Units

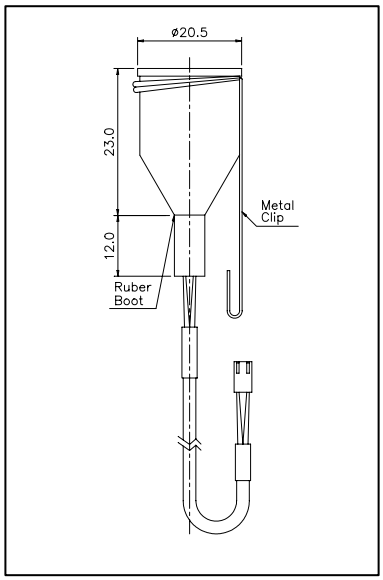
Transducers equip with a 2.5 meters shield cable and covered by a rubber boot with a metal clip for easy installation are very suitable for most of vehicle alarms.
RCA, Amp or Molex type connector at the other cable end is available upon request.

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		



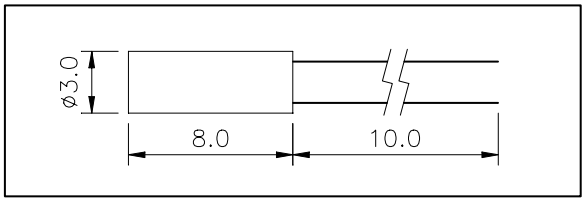




Dimensions

SQS-04

SQS-05 SQS-06



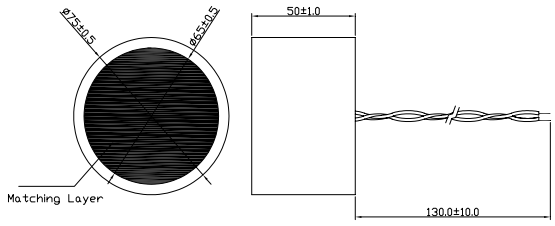
Miniature Tuning Fork Quartz Crystals

Specification

Model Number	Nominal Frequency Hz	Tolerance at 25°C PPM	Temperature Stability –10°C to +70°C PPM	Load Capacitance pF	Series Resistance Ohm	Shunt Capacitance pF	Drive Level mW
S40000	40,000	± 60	± 45	12.5	35,000	2.3	0.001
S32768	32,768	± 20	± 30	12.5	35,000	2.3	0.001

Air Ultrasonic Ceramic Transducers 043SR750

Dimensions: dimensions are in mm



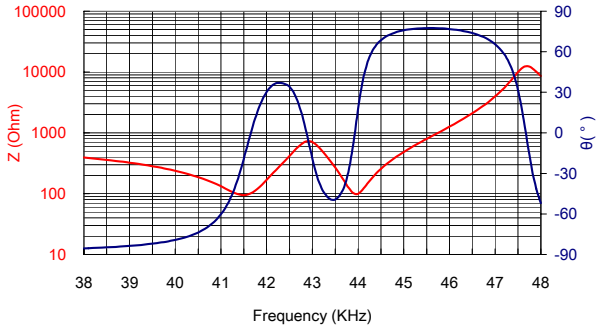
Specification

043SR750	Transceiver
Center Frequency (KHz)	43.00±5.0
Echo Sensitivity 0dB = 20Vp-p @ 90 cm	-57 dB min.
Dead Zone	70 cm
Bandwidth (Echo Sensitivity)	4 KHz
Nominal Impedance (Ohm)	700
Capacitance at 1Khz ±20%	5700 pF
Max. Driving Voltage (Pulse)	100Vpp 10% duty cycle
Total Beam Angle -3dB	8.5° typical
-6dB	12.0° 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

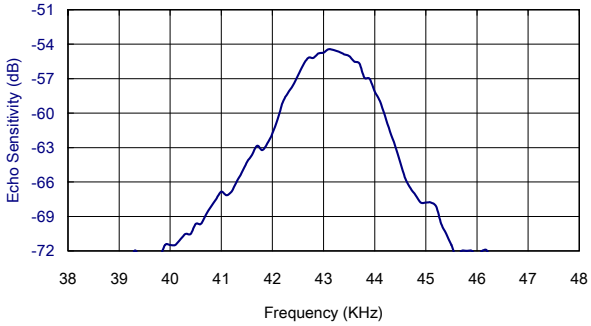
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



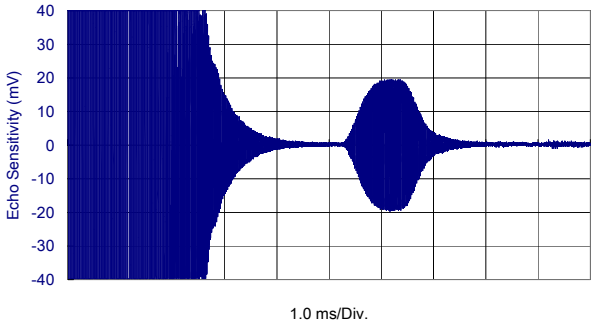
Echo Sensitivity vs. Frequency

Tested at distance of 90cm, 20Vp-p, 50 bursts

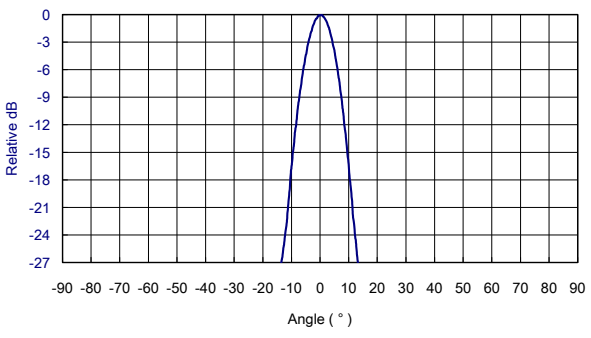


Echo Sensitivity/Ringing

Tested under 20Vp-p, 50 bursts, 90cm

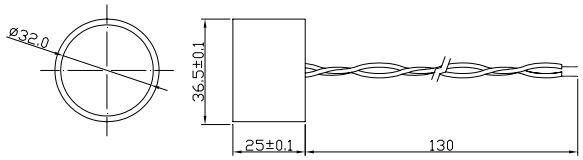


Beam Angle: Tested at 43.5Khz frequency



Air Ultrasonic Ceramic Transducers 080SR365

Dimensions: dimensions are in mm



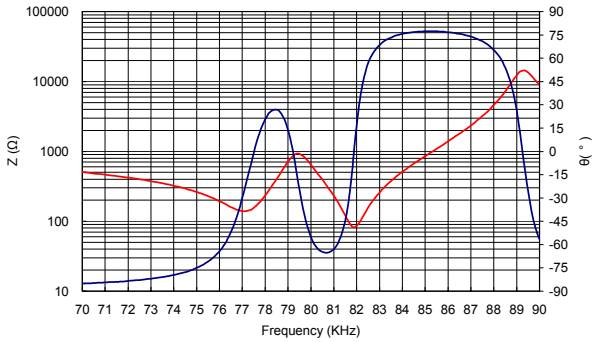
Specification

080SR365		Transceiver
Center Frequency (KHz)		80.00±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

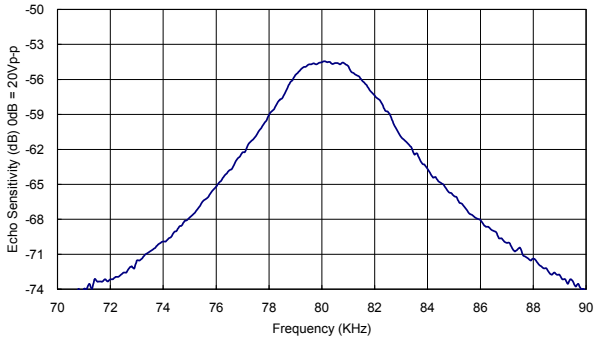
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



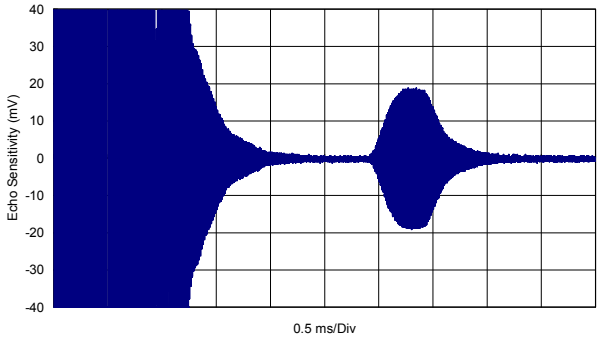
Echo Sensitivity vs. Frequency

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

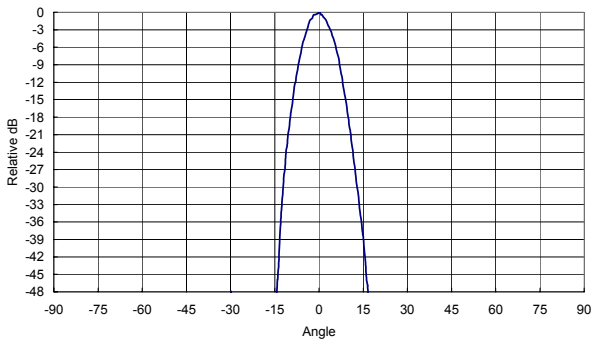


Echo Sensitivity/Ringing

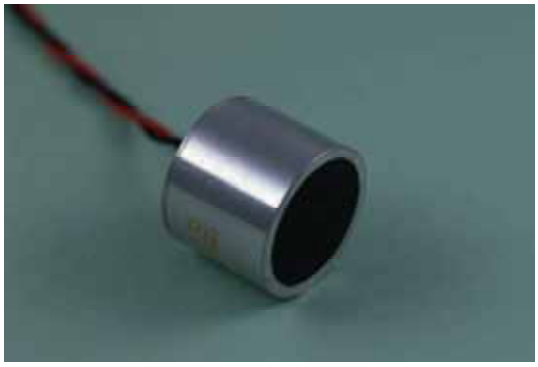
Tested under 20Vp-p, 40 bursts, 50cm



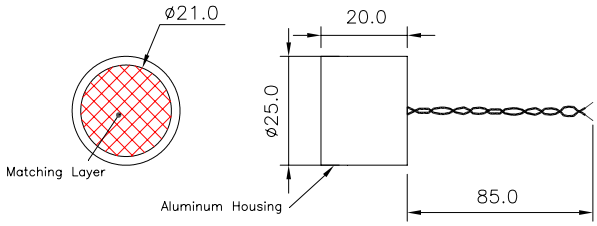
Beam Angle: Tested at 80 Khz frequency



Air Ultrasonic Ceramic Transducers 125SR250



Dimensions: dimensions are in mm



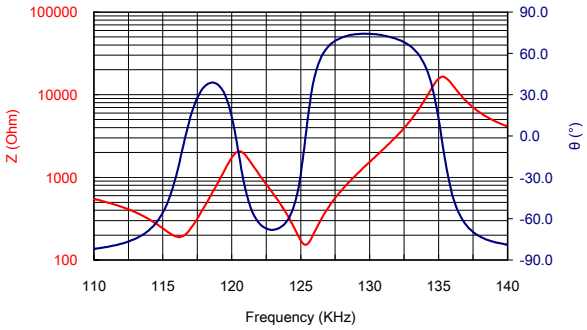
Specification

125SR250	Transceiver
Center Frequency (KHz)	125.0±10.0
Echo Sensitivity 0dB = 20Vp-p @ 25 cm	-58 dB min.
Dead Zone	20 cm
Bandwidth (Echo Sensitivity)	10KHz
Nominal Impedance (Ohm)	1200
Capacitance at 1Khz ±20%	1250 pF
Max. Driving Voltage (Pulse)	100Vpp 10% duty cycle
Total Beam Angle -3dB	10.0° typical
-6dB	14.5° 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

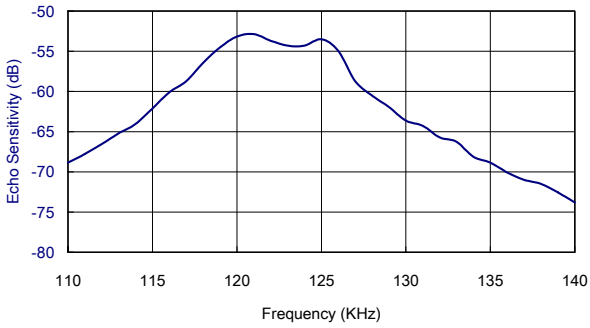
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



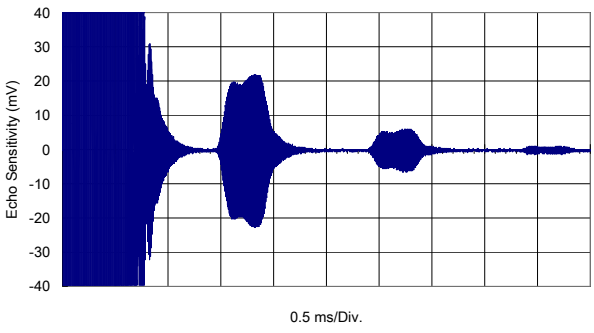
Echo Sensitivity vs. Frequency

Tested at distance of 25cm, 20Vp-p, 50 bursts

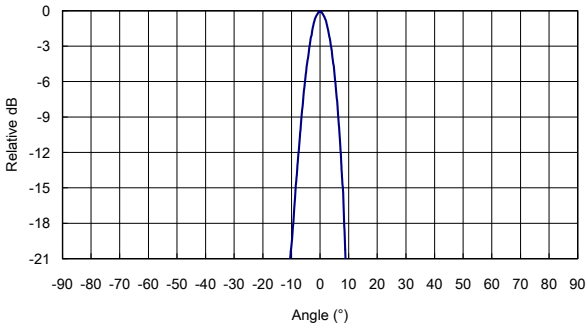


Echo Sensitivity/Ringing

Tested under 20Vp-p, 50 bursts, 25cm

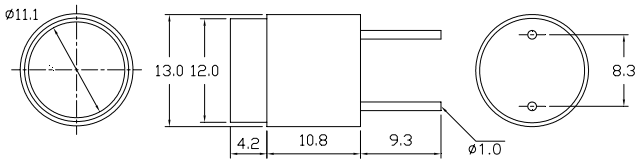


Beam Angle: Tested at 125.0Khz frequency



Air Ultrasonic Ceramic Transducers 235AC130

Dimensions: dimensions are in mm



Specification

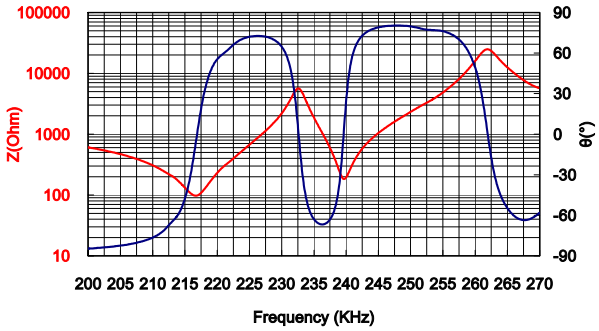
320SR130		Transceiver
Center Frequency (KHz)		320.0±10.0
Echo Sensitivity 0dB = 20Vp-p @ 25 cm		-61 dB min.
Dead Zone		15 cm
Bandwidth (Echo Sensitivity)		10KHz
Nominal Impedance (Ohm)		1200
Capacitance at 1Khz	±20%	1120 pF
Max. Driving Voltage (Pulse)		50Vpp 10% duty cycle
Total Beam Angle	-3dB	7.5° typical
	-6dB	10.5° typical
Matching Window		Silicone Rubber
Operation Temperature		0 to 70°C
Storage Temperature		-20 to 80°C

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

1	235AC013	Aluminum Housing

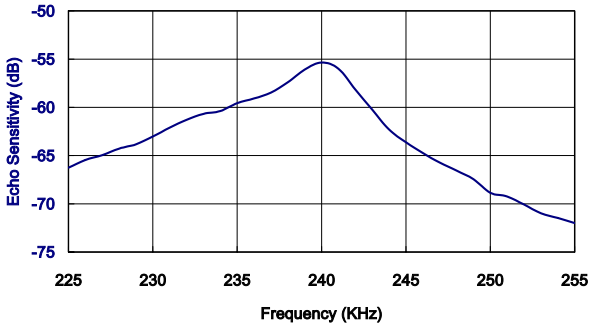
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

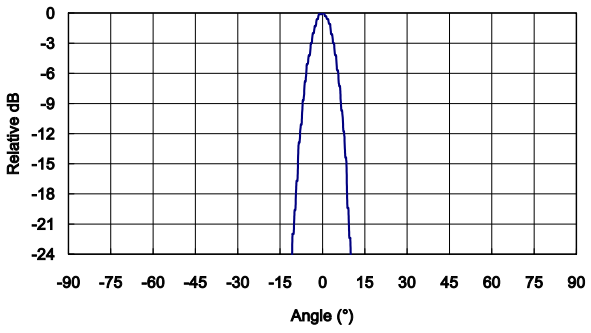


Echo Sensitivity

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

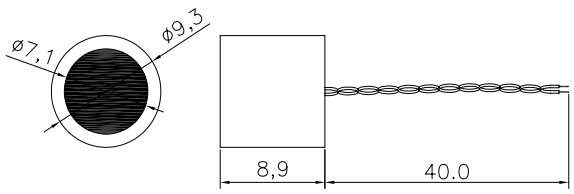


Beam Angle: Tested at 235.0Khz frequency



Air Ultrasonic Ceramic Transducers 320SR093

Dimensions: dimensions are in mm



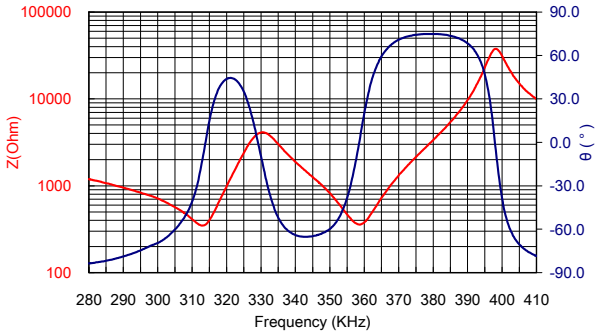
Specification

320SR093	Transceiver
Center Frequency (KHz)	320.0±10.0
Echo Sensitivity 0dB = 20Vp-p, 50 Bursts @ 10 cm	-65 dB min.
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

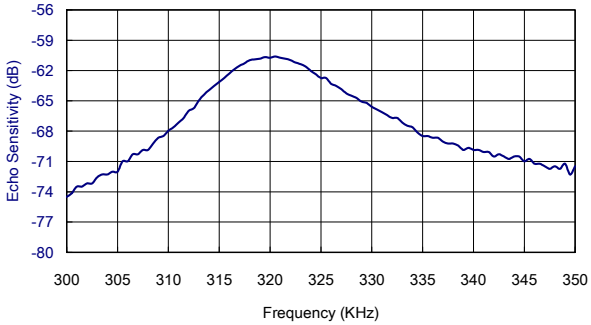
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



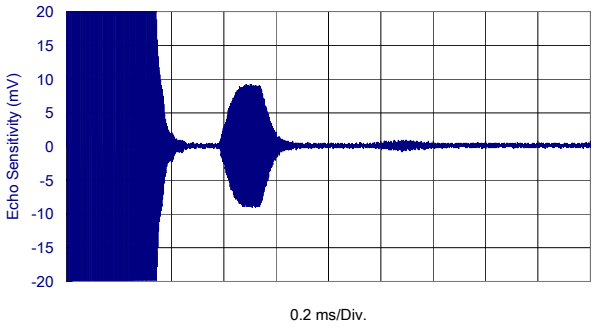
Echo Sensitivity vs. Frequency

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

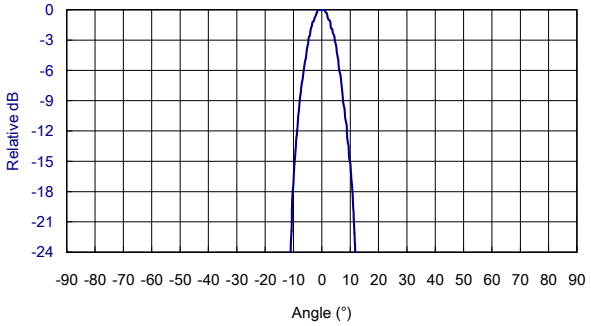


Echo Sensitivity/Ringing

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

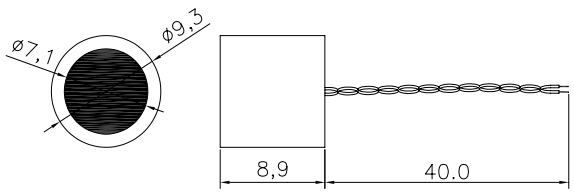


Beam Angle: Tested at 314.0 Khz frequency



Air Ultrasonic Ceramic Transducers 320SR093

Dimensions: dimensions are in mm



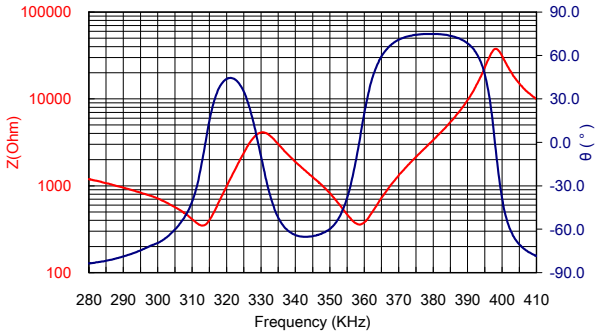
Specification

320SR093	Transceiver
Center Frequency (KHz)	320.0±10.0
Echo Sensitivity 0dB = 20Vp-p, 50 Bursts @ 10 cm	-65 dB min.
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

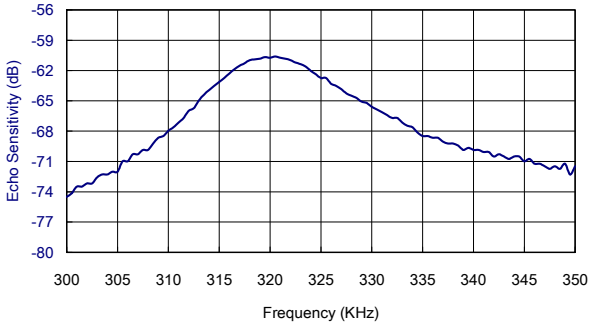
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



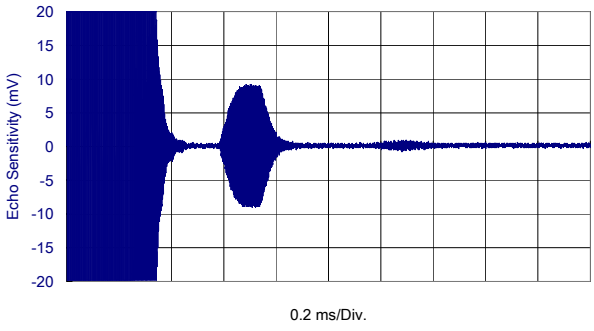
Echo Sensitivity vs. Frequency

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

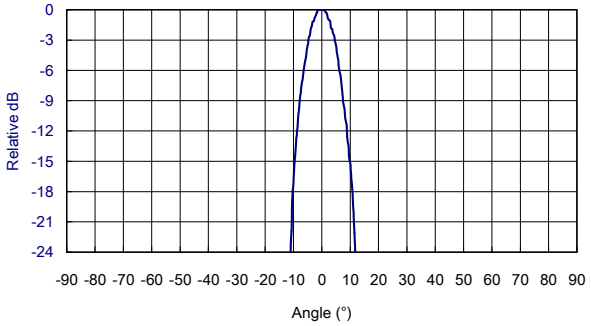


Echo Sensitivity/Ringing

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

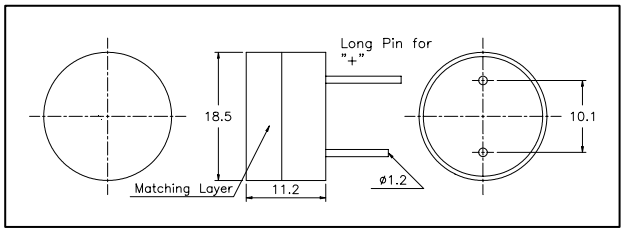


Beam Angle: Tested at 314.0 Khz frequency



Air Ultrasonic Ceramic Transducers 200GE180

Dimensions: dimensions are in mm



Specification

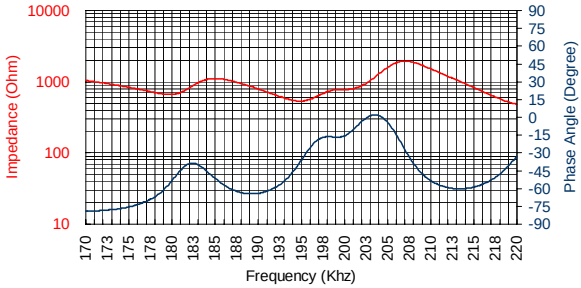
200GE180	Transceiver
Center Frequency	200.0±10Khz
Transmitting Sensitivity 0dB re 1μbar/1Vrms @ 30cm	20 dB
Receiving Sensitivity 0dB = 1Vrms/μbar	-75 dB
Figure of Merit (TS + RS)	-52 dB
Bandwidth (FOM)	10KHz
Nominal Impedance (Ohm)	700
Capacitance at 1Khz ±20%	580 pF
Max. Driving Voltage (Pulse)	50Vpp 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

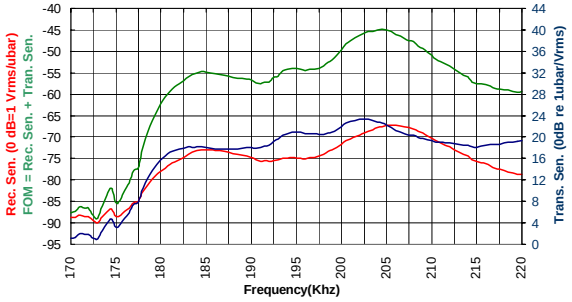
Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level

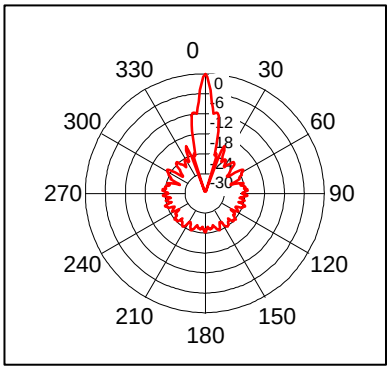


Receiving/Transmitting Sensitivity & Figure of Merit (RS + TS)

Tested at distance of 30cm

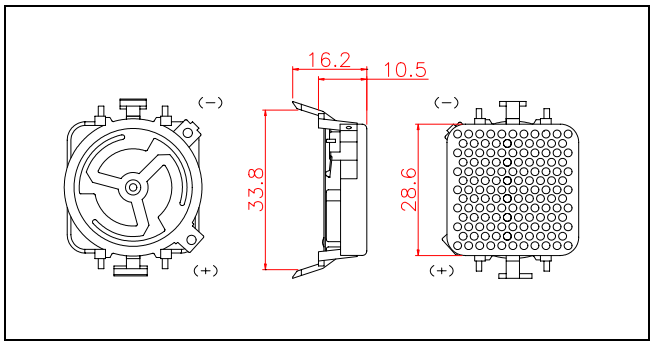


Beam Angle: Tested at 200.0Khz frequency



Electrostatic Ultrasonic Transducers 500ES290

Dimensions: dimensions are in mm



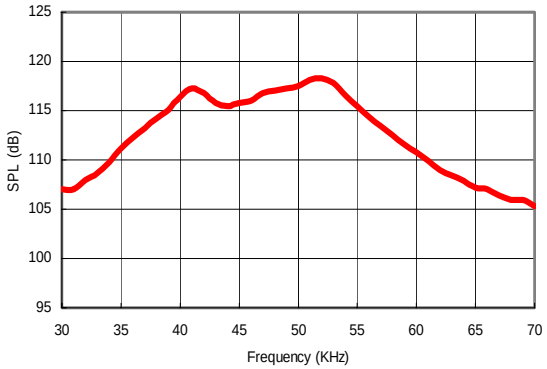
Specification

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 (1 volt/Pa)	-63.0 dB (-43.0 dB)
Capacitance at 1Khz	600 - 700 ρF
Suggested DC Bias Voltage	200 V
Suggested AC Driving Voltage	300V pk-pk
Maximum Combined Voltage	400V
Total Beam Angle -3dB	17° typical
Operation Temperature	0 to 60°C
Standard Finish Foil (Diaphragm): 1. 500ES290-G 2. 500ES290-A Housing	Gold Aluminum ABS

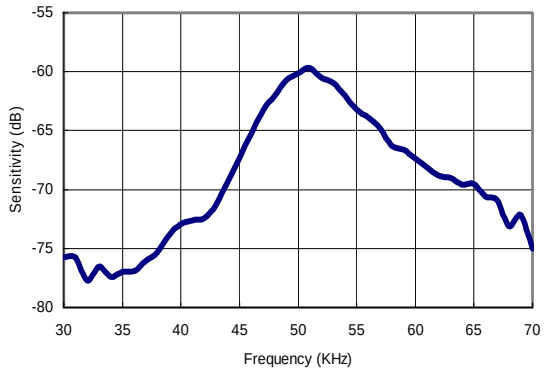
All specification taken typical at 25°C

Transmitting Sound Pressure Level

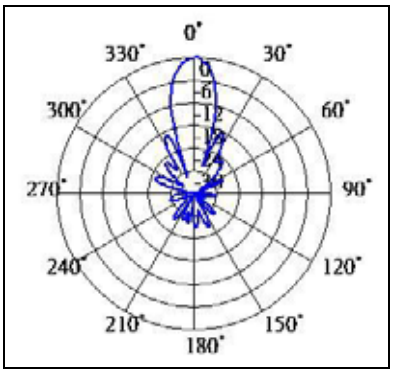
Tested under 300Vac pk-pk, 200Vdc bias @50 cm



Receiving Sensitivity: Tested under 200Vdc bias

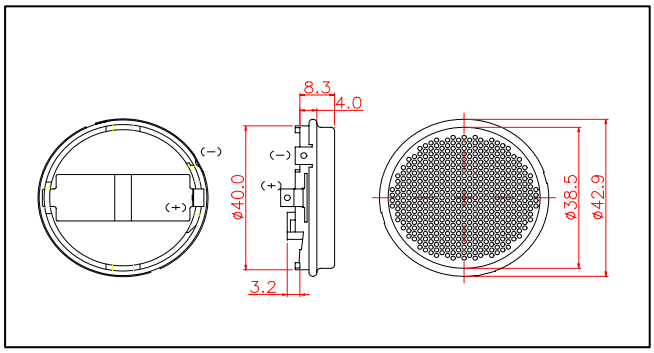


Beam Angle: Tested at 50.0Khz frequency



Electrostatic Ultrasonic Transducers 500ES430

Dimensions: dimensions are in mm



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	119 dB min.
Receiving Sensitivity at 50.0Khz, 200Vdc bias, 0dB = 1 volt/Pa (1 volt/μbar)	-42 dB min. (-62dB) min.
Capacitance at 1Khz ± 20%	400 - 500 ρF
Suggested DC Bias Voltage	200 V
Suggested AC Driving Voltage	300V pk-pk
Maximum Combined Voltage	400V
Total Beam Angle -3dB	12° typical
Operation Temperature	-30 to 70°C
Standard Finish	
Foil (Diaphragm)	See below
Housing	See below

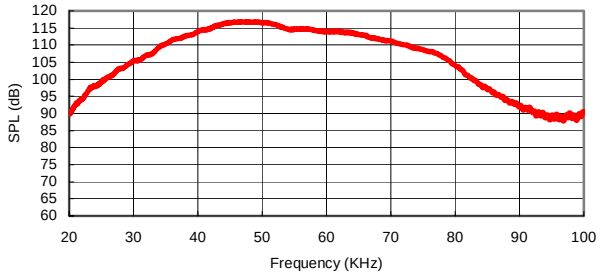
All specification taken typical at 25°C

Models available:

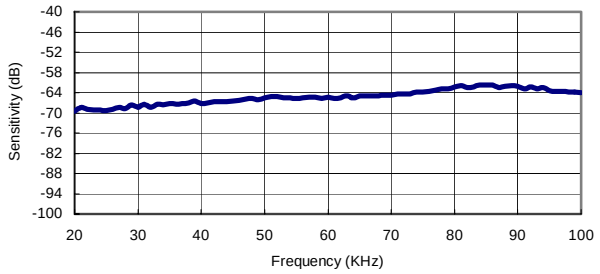
Model	Foil	Housing
500ES43AB	Aluminum	Black Painted Steel
500ES43AS	Aluminum	SUS 304
500ES43GB	Gold	Black Painted Steel
500ES43GS	Gold	SUS 304

Transmitting Sound Pressure Level

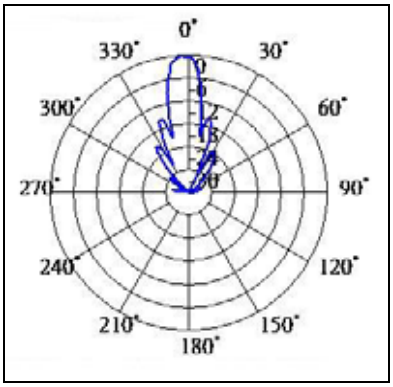
Tested under 300Vac pk-pk, 150Vdc bias @100 cm



Receiving Sensitivity: Tested under 200Vdc bias



Beam Angle: Tested at 50.0Khz frequency



Bolt Clamped High Power Transducers

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.

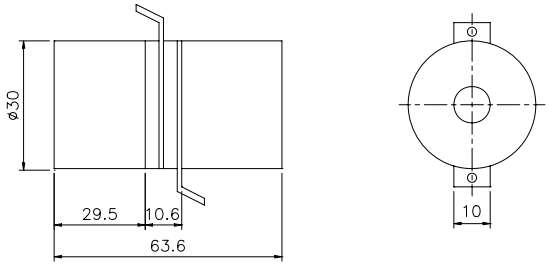
Specification

	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

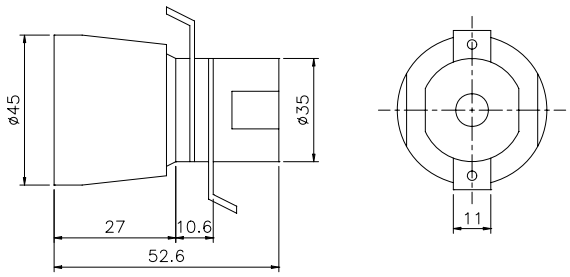
All specification taken typical at 25°C

Dimensions

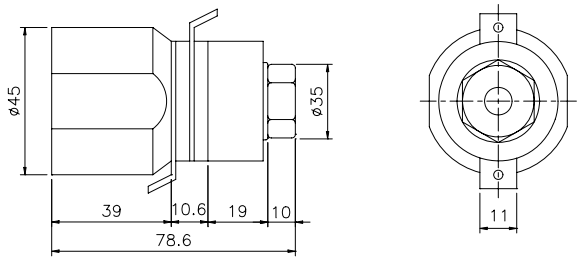
Model: 30402S



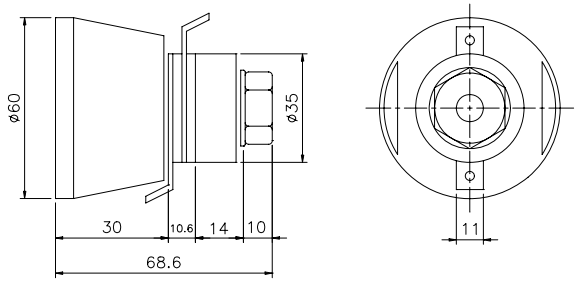
Model: 45402H



Model: 45282H



Model: 60282H



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P.O. Box 1-70 Chung Ho, Taiwan, ROC;E-mail: sales@pro-wave.com.tw;Tel: 886-2-22465101(5 lines), 22459774;Fax: 886-2-22465105
http://www.s2.com.tw ; http://www.prowave.com.tw

Underwater Ultrasonic Transducers 200LM450

Specification

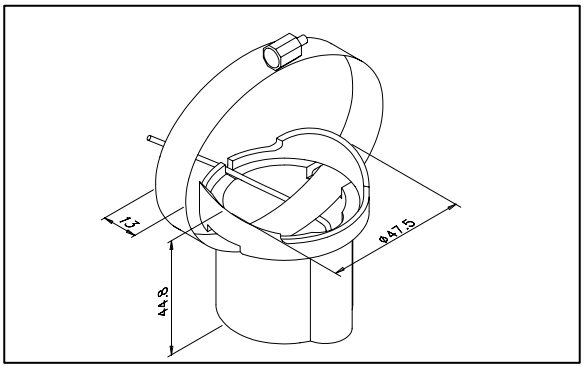
200LM450	Transceiver
Center Frequency	200±10.0Khz
Bandwidth (FOM -6dB)	25Khz
Transmitting Sound Pressure Level 0dB re 1µPa per 1Vrms at 100cm	160dB min.
Receiving Sensitivity 0dB = 1 volt/µPa	-180dB min.
Submerged Impedance (Ohm)	200
Capacitance at 1Khz ±20%	2000 pF
Input Power (Pulse Drive)	50 Watts
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:

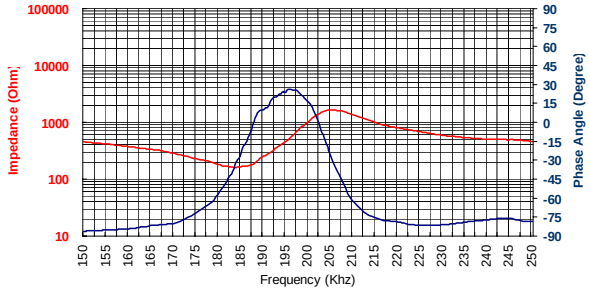
1	200LM450	Plastic Housing

Dimensions: dimensions are in mm



Submerged Impedance/Phase Angle vs. Frequency

Tested under 1Vrms Oscillation Level



Receiving /Transmitting Sensitivity

Tested at distance of 100cm

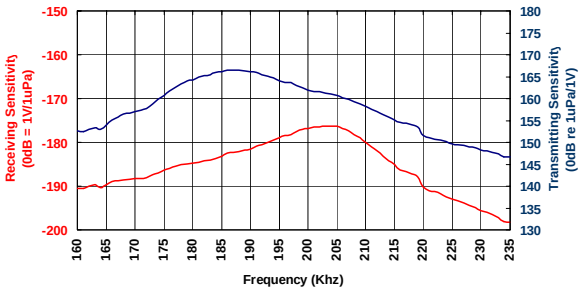
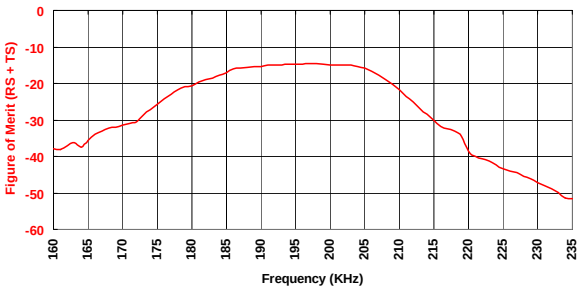
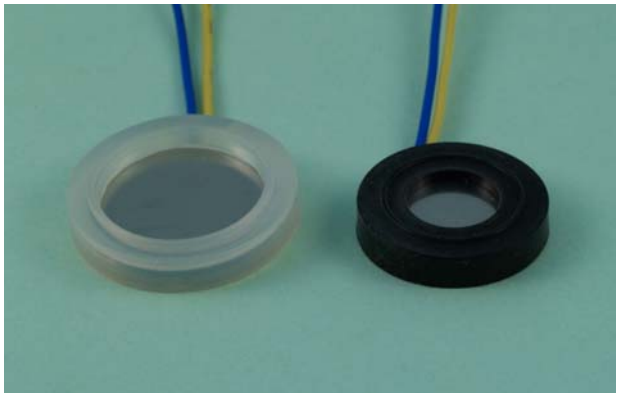


Figure of Merit

(Receiving Sensitivity + Transmitting Sensitivity)



Ultrasonic Atomizing Transducers



Pro-Wave has dedicated in ultrasonic field over 19 years since 1980 and earned a worldwide reputation for his specialty, flexibility and sincerity in the past decades.
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.

Specification

M165D25	25mm Dia.
Resonance Frequency	1.65±0.05Mhz
Resonance Impedance	2.0Ω max.
Capacitance at 1Khz ±20%	2,000 pF
Dissipation Factor at 1Khz	0.5% max.
Operation Duration (hour)	>6,000
Atomizing Quantity	400 cc/hr
Water Level	45 mm
Input Power (maximum)	30 Watt
Operation Temperature	0 to 45°C
Storage Temperature	-20 to 65°C

All specification is typical at 25°C.
Other frequency and diameter element can be supplied upon request.

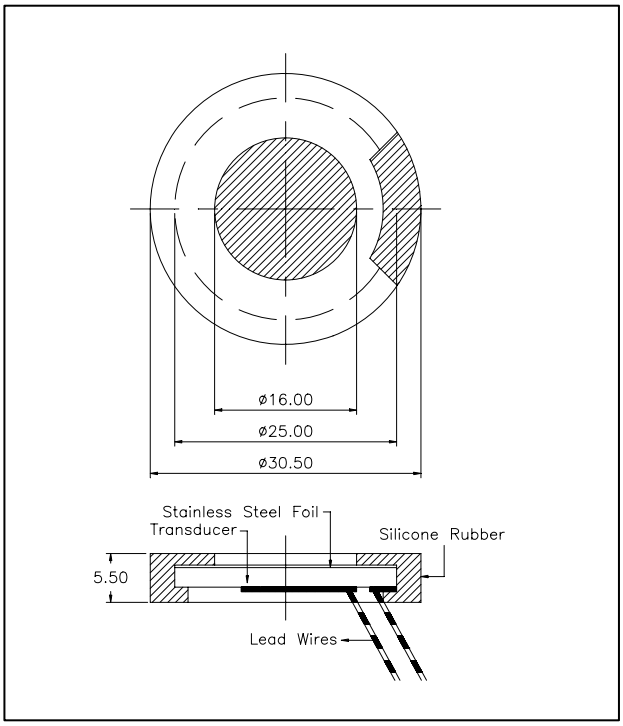
Features

- Piezoelectric ceramic element clad with stainless steel for erosion resistance.
- Fine and consistent particle size of less than 3μm
- 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.

Dimensions



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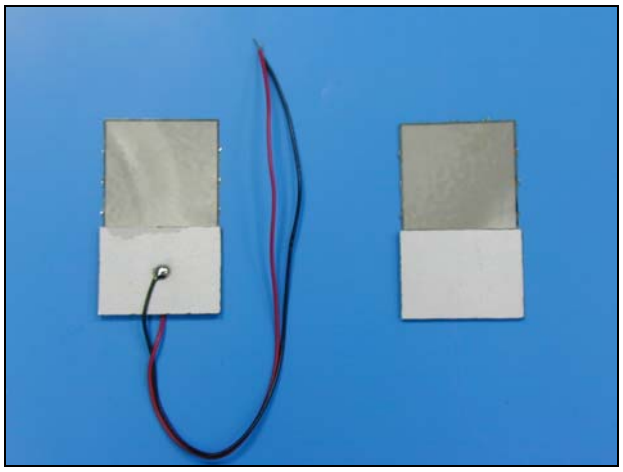
Ultrasonic Vibration Micro Nozzle



S. Square has dedicated in ultrasonic field over 21 years since 1980 and earned a worldwide reputation for his specialty, flexibility and sincerity in the past decades.

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

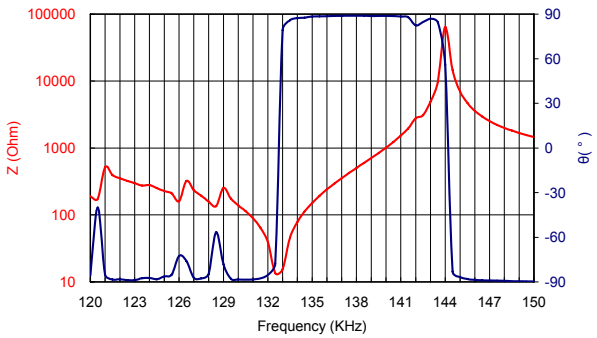
Applications

- 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:

Model Number	M2313500
Resonant Frequency	135.0±5KHz
Impedance	10 Ohm typ.
Capacitance	2450±20% pF
Dimensions	L: 29.20 mm
	W: 17.35 mm
	T: 1.0 mm (PZT Element)
	t: 50 μm (Metal)
Metal Material	Ni-Co Alloy
Nozzle size	7 – 10 μm

Impedance/Phase Angle:



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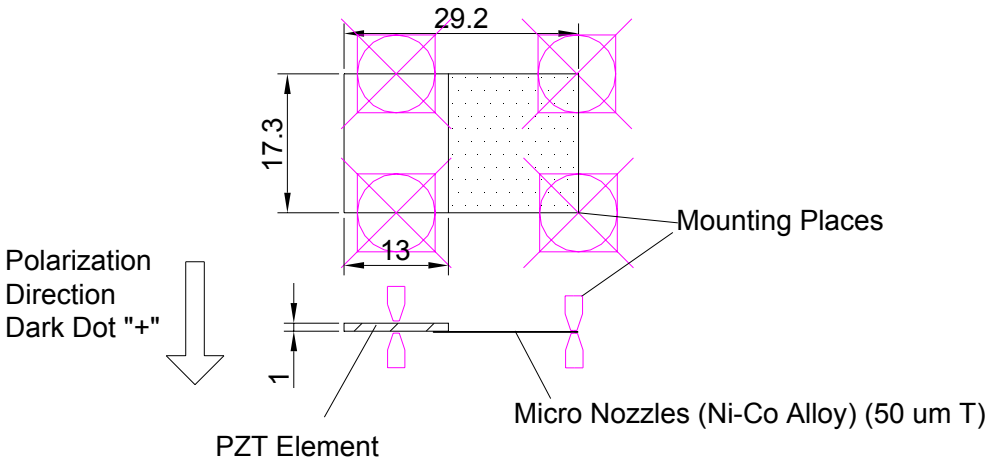
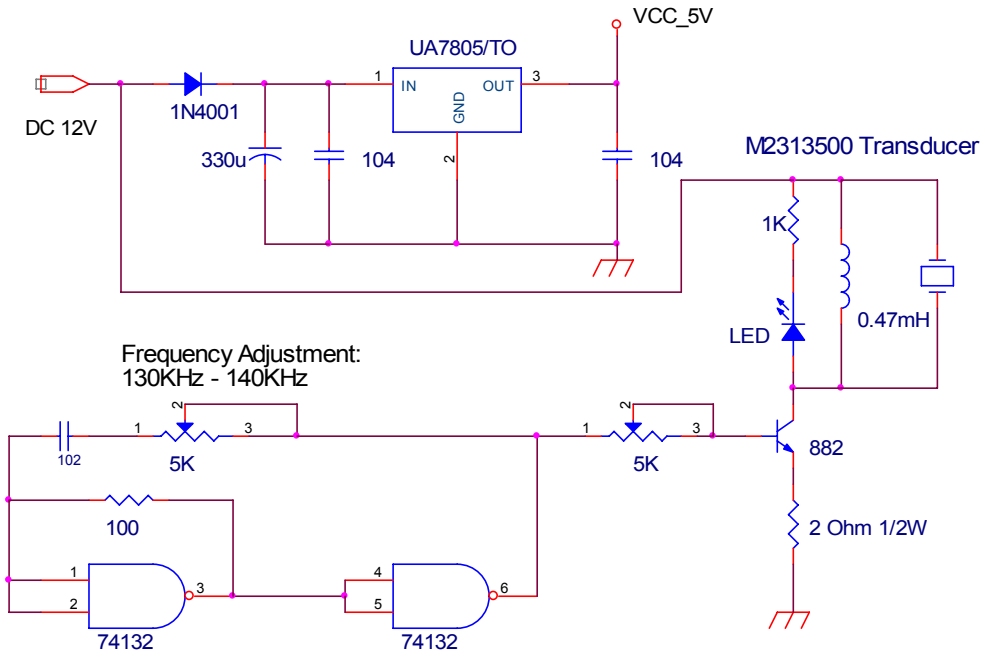
Micro Nozzles Ultrasonic Atomizing Transducers

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.