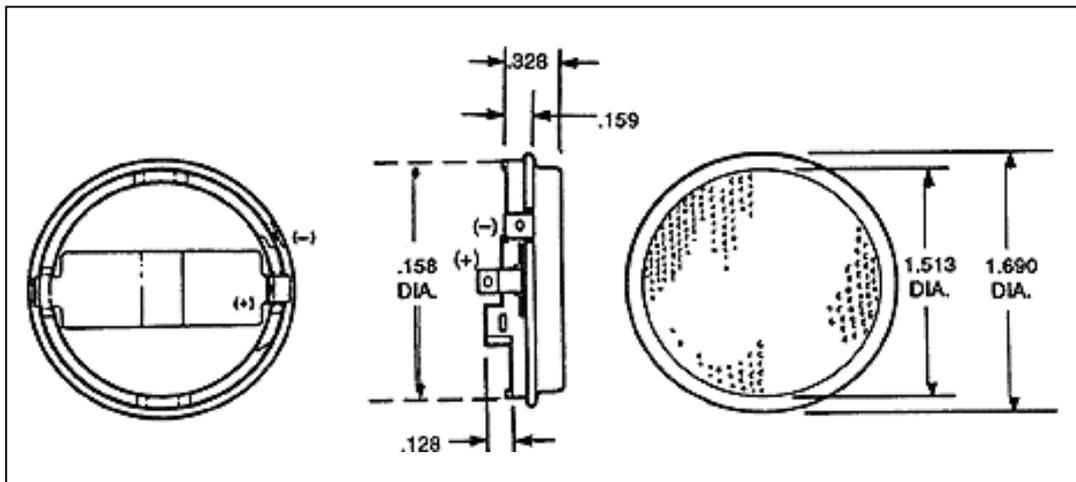


**600 Series**

**Instrument Grade Electrostatic Transducers**

**Part #616341-Minimum order 10. Increments of 10...Part #604142-Minimum order 100, increments of 100**

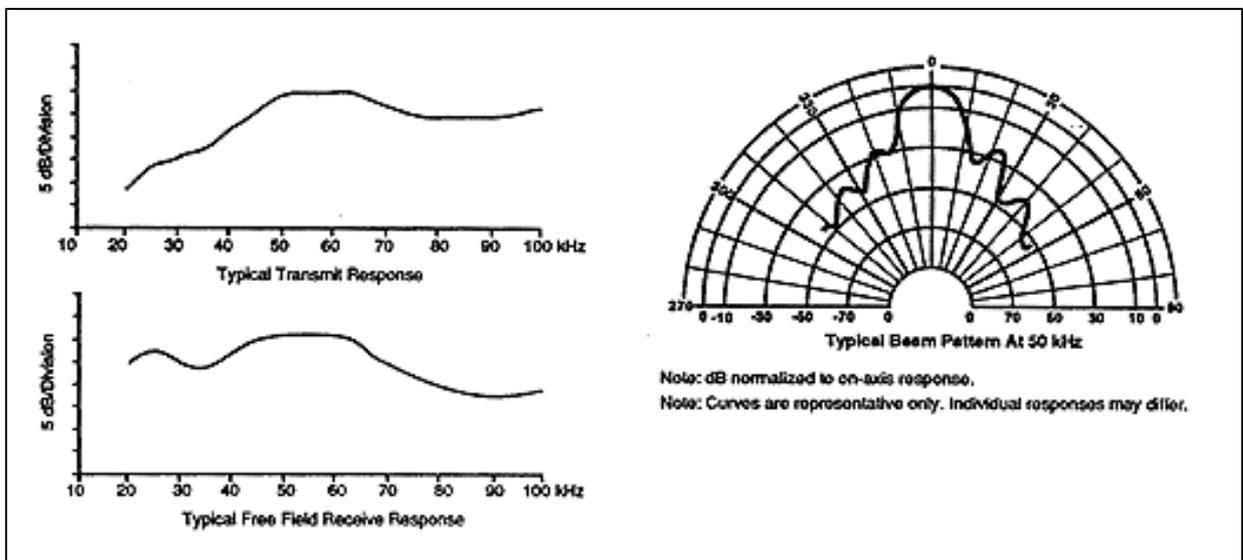
This Instrument Grade electrostatic transducer is specifically intended for operation in air at ultrasonic frequencies. The assembly comes complete with a perforated protective cover.



**Specifications**

Usable Transmitting Frequency Range	See Graph	Maximum Combined Voltage	400V
Usable Receiving Frequency Range	See Graph	Capacitance at 1 kHz (Typical)	400-500 pf
Beam Pattern	See Graph	150 vdc bias	
Minimum Transmitting Sensitivity at 50 kHz	110 dB	Operating Conditions	
300 vacpk-pk, 150 vdc bias		Temperature	-20°-160°F
(dB re 20 µPa at 1 meter)		Relative Humidity	5%-95%
Minimum Receiving Sensitivity at 50 kHz	-42dB	Standard Finish	
kHz150 vdc bias (dB re 1v/Pa)		Foil	Gold
Suggested DC Bias Voltage	150V	Housing	Flat Black
Suggested AC Driving Voltage (peak)	150V		Cold Roll Steel

**Specifications subject to change without notice**



### Technical Specifications for

## 600 Series

## Environmental Grade Electrostatic Transducers

**Part#6163412-Minimum order 10. Increments of 10...Part #607281-Minimum order 100, increments of 100**

The Environmental Grade transducer is identical in physical size, electrical characteristics and acoustical performance to the Instrument Grade transducer. The only difference is that the outer housing is made of a 304 stainless steel which makes this transducer better suited for a harsh outdoor environment.

### ENVIRONMENTAL CHARACTERISTICS - EXPOSURE

#### ENVIRONMENTAL CHARACTERISTICS – EXPOSURE

*The following tests were performed with the transducer housed in the Polaroid Test Enclosure.*

*The **Test Enclosure** protects the sides and back of the transducer from exposure to any foreign matter. The rear of the transducer is vented to atmospheric pressure. Output and sensitivity of the transducer are reduced slightly when used in this enclosure.*

After each test, transducers were cleaned and dried if necessary. Measurements were then taken at room temperature.

Variation in combined transmit/receive sensitivity at 50 kHz was no more than 4.5 dB after any one of the following tests.

Storage Temperature Range: -40°F to 250°F (-40°C to 120°C)

Salt Spray Exposure (96 hours): 5% salt spray solution at 95°F (35°C)

Shock and Vibration: 50 G peak in each direction along 3 perpendicular axes, pulse duration: 6.5 ms; 6 G's RMS20 - 2000 Hz for 6 minutes

Water immersion (24 hours): (vent hole sealed)

Freeze/Thaw Cycle (4 cycles): Spray with water, drain, expose to  $-20^{\circ}\text{F}$  ( $-30^{\circ}\text{C}$ ) for 20 minutes, allow to warm to room temperature.

Chemical Exposure: Gasoline, acetone, sulphur dioxide. Samples sprayed with/exposed to chemical then placed in  $120^{\circ}\text{F}$  ( $49^{\circ}\text{C}$ )/90% relative humidity environment for 24 hours.

Sand Bombardment (20 cycles): 50ml fine sand poured from 4 feet onto front grill

No claim for performance is made without an enclosure providing protection equal to or better than that provided by the Polaroid Test Enclosure. Similarly, no claim is made for performance in any other environments or under any other conditions than those described herein.

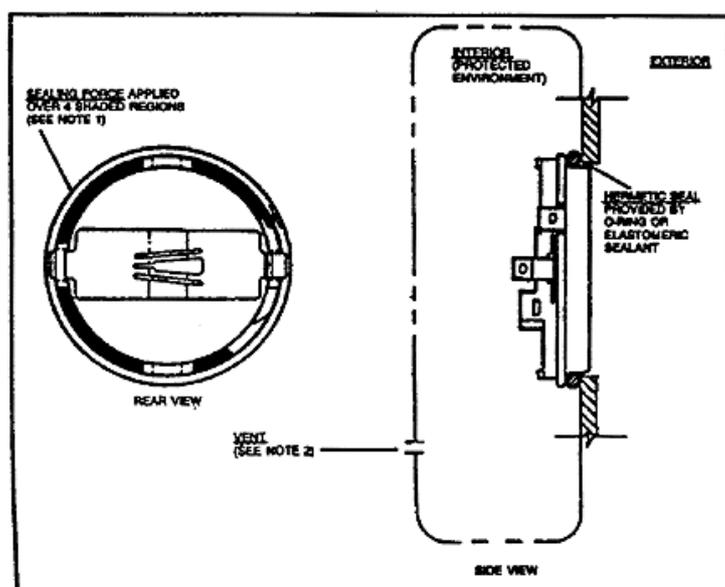
Specifications subject to change without notice.

## ENVIRONMENTAL ULTRASONIC TRANSDUCER MOUNTING SUGGESTIONS

The following guidelines should be used when designing your own housing for the Polaroid Environmental Ultrasonic Transducer.

Note 1e: A uniform force must be applied on the plastic ring shown if an O-ring is used as a seal. The use of an elastomeric sealant such as RTV silicone rubber eliminates the need for a sealclamping mechanism.

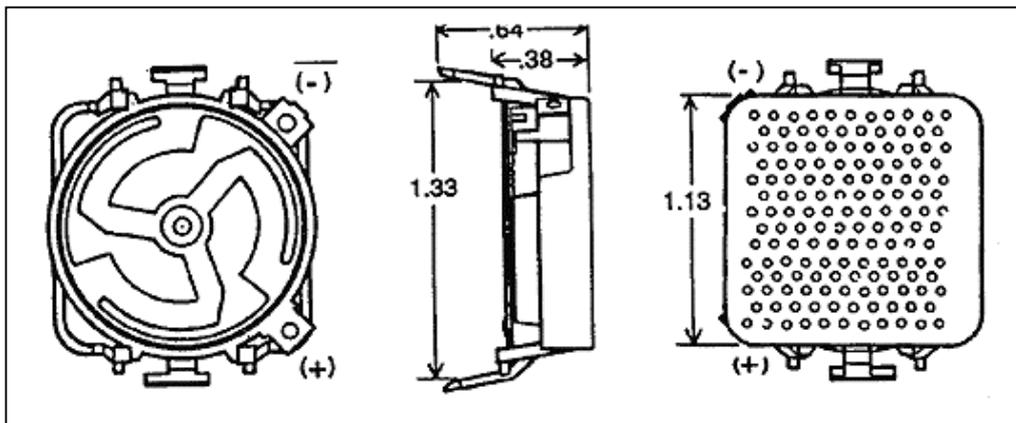
Note 2e: Provisions must be made to provide for equalization of air pressure between the front and rear of the transducer. The location and design of this vent must be such that water, dust, corrosives, or foreign matter are prevented from reaching the transducers interior surfaces.



**7000 Series**

**Electrostatic Transducers**

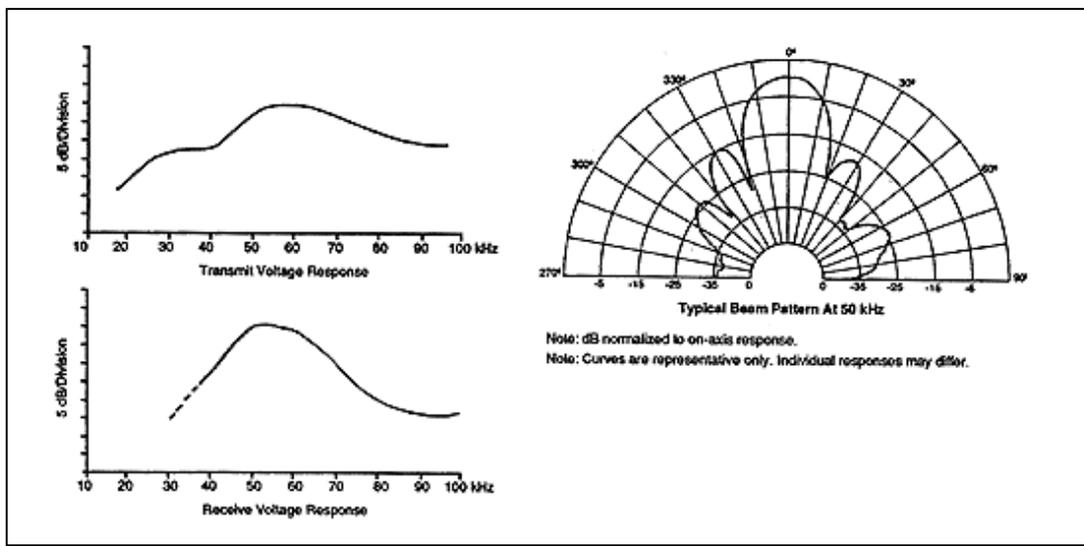
**Part#616736-Minimum order 10. Increments of 10...Part #612366-Minimum order 100, increments of 100**



**Specifications**

Usable Transmitting Frequency Range	See Graph	Maximum Combined Voltage	400V
Usable Receiving Frequency Range	See Graph	Capacitance at 1 kHz (Typical)	600-700 pf
Beam Pattern	See Graph	150 vdc bias	
Minimum Receiving Sensitivity at 50 kHz	106.9 dB	Operating Conditions	
300 vac pk-pk, 150 vdc bias		Temperature	32°-1140°F
(dB re 20μPa at 1 meter)		Relative Humidity	5%-95%
Minimum Receiving Sensitivity at 50 kHz	-43.4dB	Standard Finish	
150 vdc bias (dB re 1v/Pa)		Foil	Gold
		Housing	Black
Suggested DC Bias Voltage	200V		
Suggested AC Driving Voltage (peak)	200V		

**Specifications subject to change without notice.**



## Comparison Chart

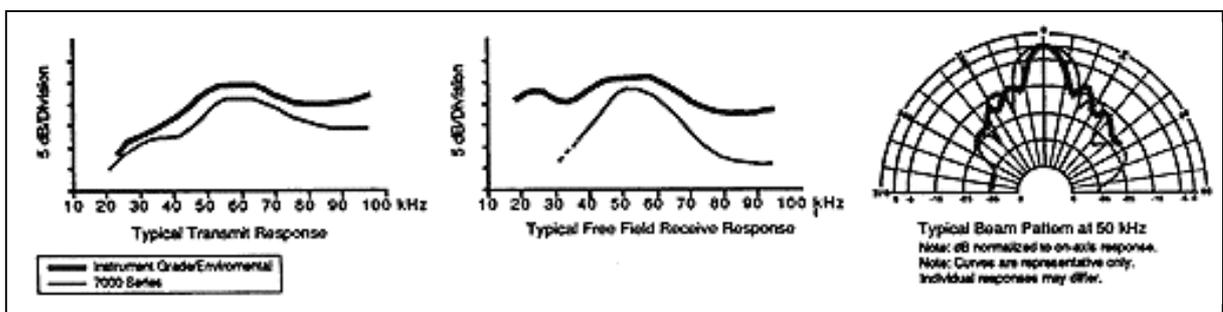
System Specifications	Instrument Grade Part #604142/616341	*Environmental Grade Part #607281/616342	7000 Series Part #612366/616736
Distance Range	0.15 to 10.7m (0.5 to 35ft.)	same	same
Resolution $\pm 1\%$ over entire range	$\pm 3\text{mm}$ to 3m ( $\pm 12$ to 10ft.)	same	same
Operating Conditions			
• Temperature	-30° to 70°C (-20° to 160°F)	same	0° -60°C (32° -140°F)
• Relative Humidity	5% to 95%	same	same
Beam Angle Typical, at 3dB down	12°	12°	17°
Transducer Drive Signal			
• Gated Sine Wave	50 kHz	same	same
• Duration	1.1 ms	same	same
• Suggested AC Drive Voltage	150v	same	200 V
• Bias Level	150 vdc	same	200 V
• Max. Combined Voltage	400v	same	same
Min. Transmitting Sensitivity at 50 kHz	110dB	same	106.9dB
• 300 vac pk-pk, 150 vdc bias			
• (dB re 20 $\mu$ Pa at 1 meter)			
Min. Receiving Sensitivity at 50 kHz	-42dB	same	-43.4dB
• 50 kHz, 150 vdc bias(dB relv/Pa)			
Capacitance at 1 kHz (typical)	380-410 pf	same	650 pf
Power Requirements Ranging Module			
• Voltage	6 vdc (4.5 – 6.8 vdc)	same	same
• Current	2.0 amps (1ms pulse)	same	same
	100 ma quiescent	same	same
Standard Finish			
• Foil	gold	same	same
• Housing	Flat black cold roll steel	304 stainless steel	Flat black plastic
Weight			
• Transducers	8.2 gm (0.29oz)	same	4.6 gm (0.150 oz)
• Modules	18.4 gm (0.94oz)	same	same
Dimensions			
• Thickness	0.46 in.	same	0.41 in.
• Diameter	1.69 in.	same	1.13 in. sq.

## Electrostatic Transducers

+ Based on flat target 1ft. sq. For irregular shape targets far range detection will be less.

\* Environmental system is able to withstand salt spray, shock and vibration, water immersion, chemical exposure and sand bombardment when housed in "The Polaroid Test Enclosure."

Specifications subject to change without notice.



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