



Description	Model No.	Part No.
Dual layer 110 $\mu\text{m}$	NDT1-220K	1005935-1

## FEATURES

- High Bandwidth, Low Q Performance
- Excellent Acoustic Match to Liquids, Polymers
- Low Electrical Impedance (30 to 100 ohms typ)
- Lightweight, Robust, Flexible Design
- Conforms to Flat or Curved Surfaces
- Low Cost, Disposable Transducers

## APPLICATIONS

- Liquid Presence/Absence (through-wall)
- Thickness Measurement (solids, elastomers)
- Liquid Depth (bottom-up)
- Speed of Sound Measurement
- Tamper Detection

## NDT1-220K

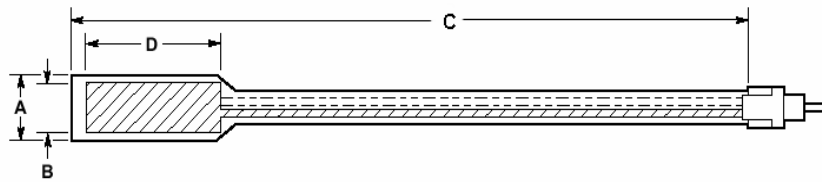
### Ultrasonic Transducer

#### SPECIFICATIONS

- **Low cost ultrasonic transducer**
- **Flexible Format**
- **3 MHz nominal center frequency**
- **Various housings available**
- **High Bandwidth; Low Q Performance**
- **Low Impedance**

The **NDT1-220K** element offers outstanding ultrasonic transducer performance in a low-cost, flexible format for general-purpose use. It has a 3 MHz nominal center frequency, with extremely low Q-factor of 1.3 (air-backed, into PMMA). Electrical impedance is well matched to conventional NDT instrumentation (pulsar/receivers). Unit-to-unit repeatability is very good. The transducer is robust, and conforms perfectly to cylindrical surfaces such as pipe or tank walls. Epoxies, transfer adhesives, or even double-coated tapes may be used as bonding agents.

## DIMENSIONS IN INCHES [IN MILLIMETERS]

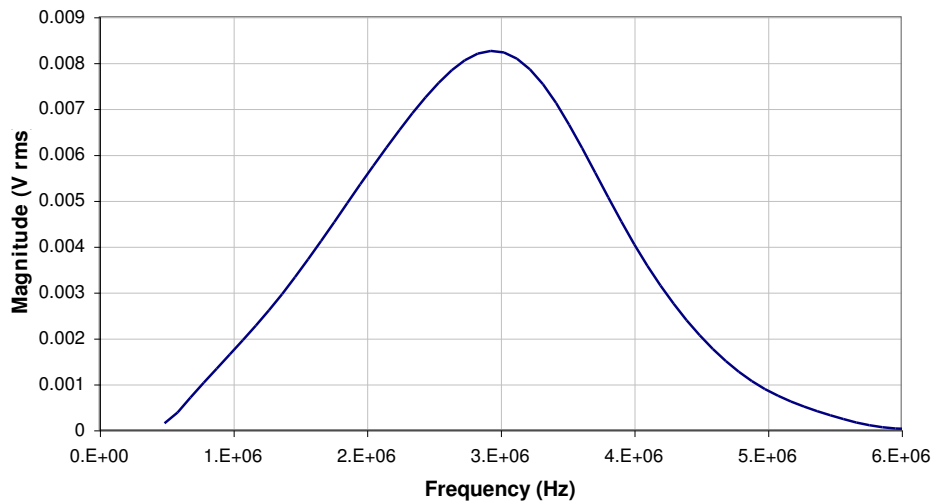


A (film)	B (electrode)	C (film)	D (electrode)
.650 [17]	.485 [12]	5.51 [140]	1.18 [30]

Connector provides two 0.025" square pins on 0.1" spacing and will mate with a wide range of FFC (flexible flat cable) receptacles.

## PERFORMANCE SPECIFICATIONS

**NDT1-220K Frequency Response**



## TYPICAL PROPERTIES/SPECIFICATIONS

**Typical Properties (at 25 °C)**

Parameter	NDT1-220K	Units
Capacitance	670	pF @ 1 kHz
Center Frequency	3	MHz (in PPMA)
Lower -6 dB Freq	1.7	MHz
Upper -6 dB Freq	4.0	MHz
Q-Factor	1.3	(none)
Impedance at f(c)	100	$\Omega$
Thickness (over length "C")	0.30	mm

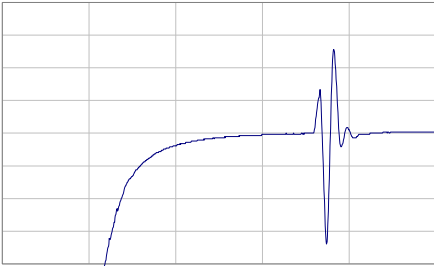
### Environmental Specifications

Storage Temperature  
Operating Temperature

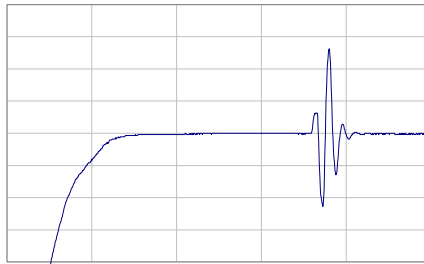
-40 to +80 °C  
-20 to +60 °C

### EXAMPLES OF TYPICAL RECEIVER WAVEFORMS

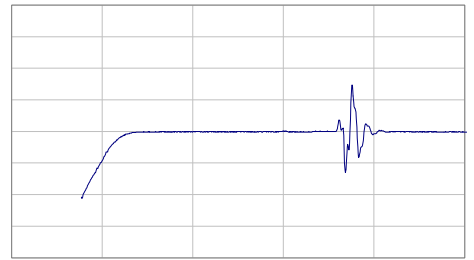
damping = 0



damping = 5



damping = 10



Y-axis: 0.2 V/div

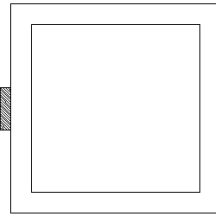
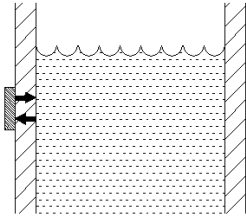
Y-axis: 0.1 V/div

Y-axis: 10 mV/div

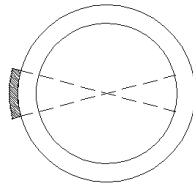
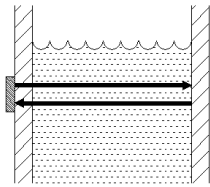
X-axis 1  $\mu$ s/div, overall system gain: +10 dB  
(note: transmit pulse amplitude varies according to damping setting).

Traces above taken using NDT1-220K element bonded with epoxy resin to nominal 9.5 mm thickness PMMA block.

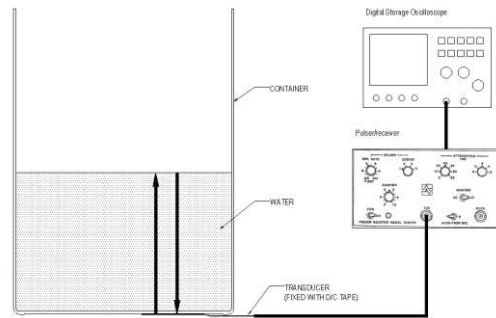
## EXAMPLES OF APPLICATIONS



Liquid presence/absence in tank – through-wall



Liquid presence/absence in pipe or cylindrical vessel  
(high S/N ratio)



Liquid depth in tank  
( $< 3$  mm min depth, with polymer tank)