

# NDT1-220K Ultrasonic Transducer

- Low cost ultrasonic transducer
- Flexible Format
- 3 MHz nominal center frequency
- 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. 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.

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

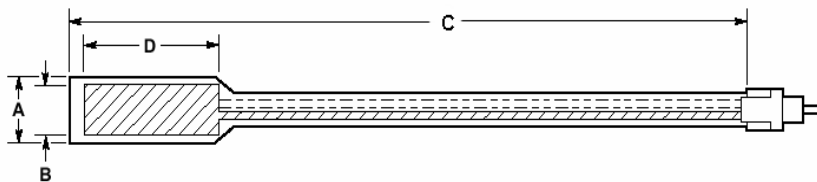
## APPLICATIONS

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

## 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

## Dimensions in Inches [in millimeters]



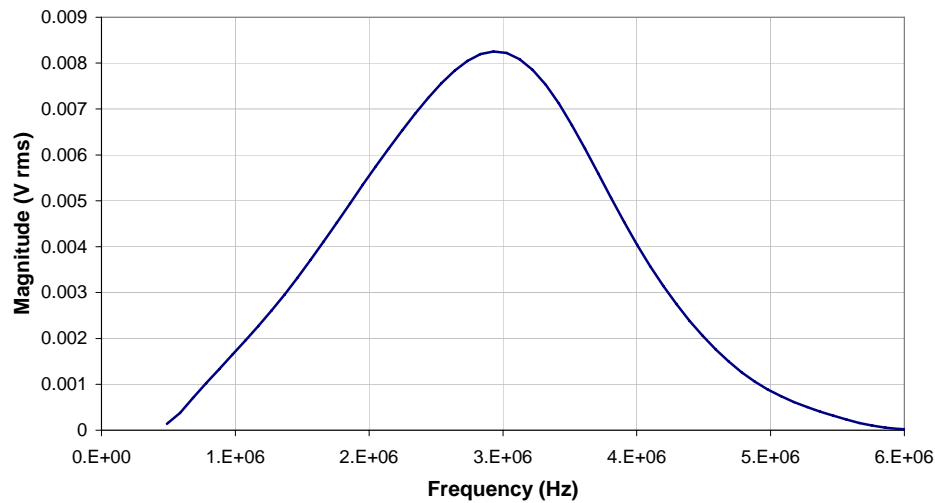
A (film)	B (electrode)	C (film)	D (electrode)
.650 [17]	.485 [12]	5.51 [140]	1.18 [30]

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

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## 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	ohms
Thickness (over length "C")	0.30	mm

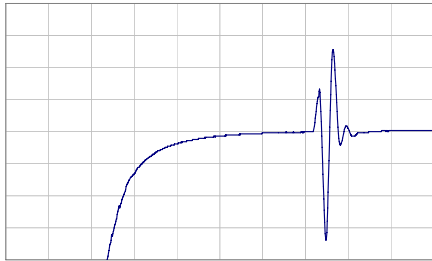
### Environmental Specifications

Storage Temperature	-40 to +80 deg C
Operating Temperature	-20 to +60 deg C

# NDT1-220K Ultrasonic Transducer

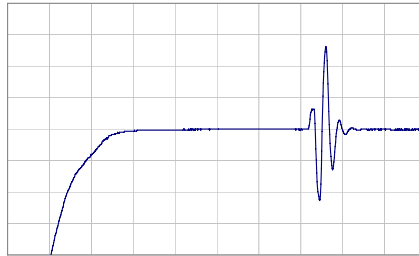
## examples of typical receiver waveforms

damping = 0



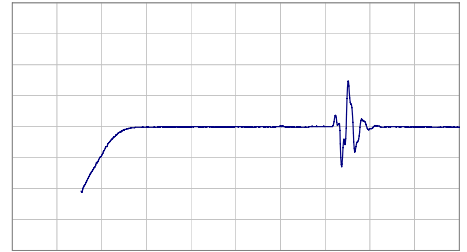
Y-axis: 0.2 V/div

damping = 5



Y-axis: 0.1 V/div

damping = 10



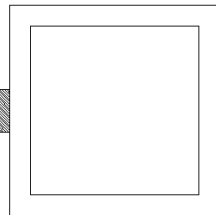
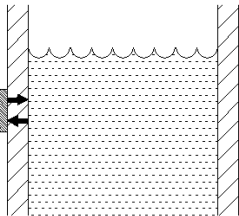
Y-axis: 10 mV/div

X-axis 1  $\mu$ s/div, overall system gain: +10 dB

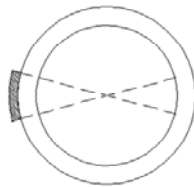
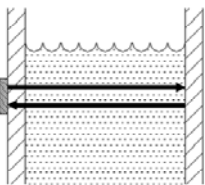
(note: transmit pulse amplitude varies according to damping setting).

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

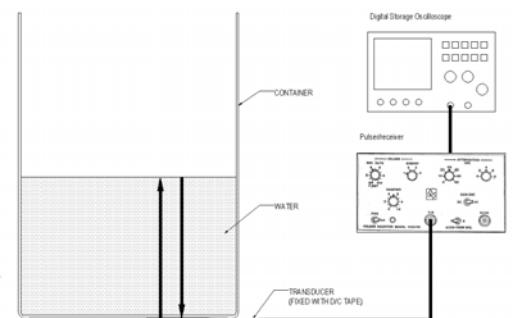
## examples of applications



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)