



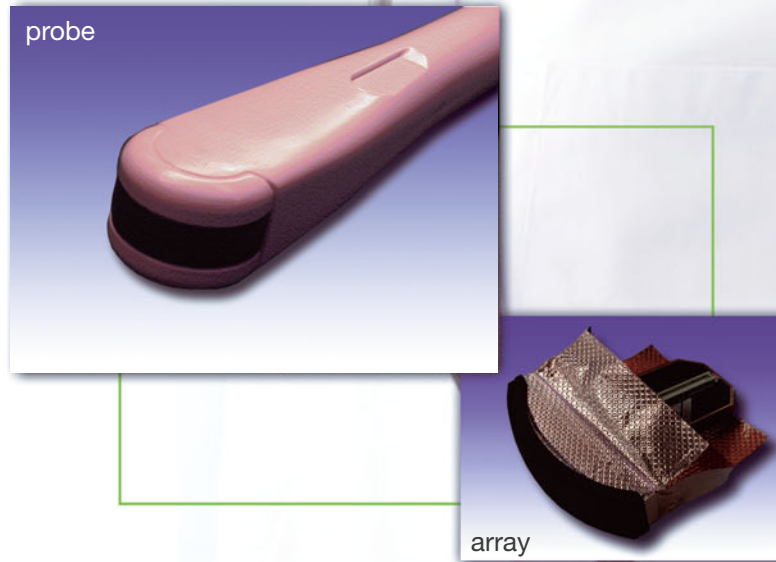
# Ultrasonic Transducer

Since the company was established in 1948, NDK has manufactured and sold synthetic quartz crystal and various products using the crystal such as crystal units, crystal oscillators, crystal filters, SAW filters, optical parts and other applied products. Utilizing the product technology, NDK supplies ultrasonic transducers for nondestructive inspections and for medical use to domestic and overseas for over 25 years. In particular, according to the spread of ultrasonic medical devices as safe diagnostic devices, transducers for medical use have been widely used for Ob/gyn, internal medicine, cardiovascular internal medicine, surgery and ophthalmology. Dealing with these various applications, NDK has designed customer-oriented ultrasonic transducers and has stably delivered highly reliable, safe and secure products.



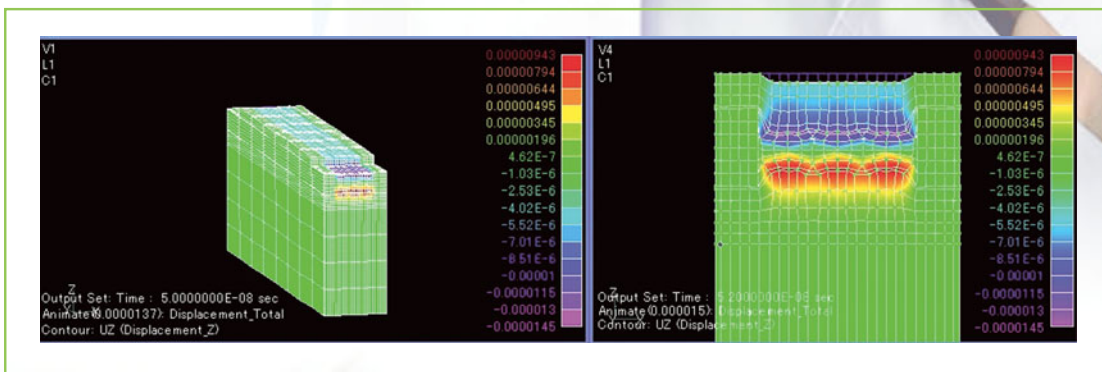
## About NDK product

- Transducers may be designed to unique customer specification, such as center frequency, pitch, element length and fractional bandwidth. You can select arrays or probes

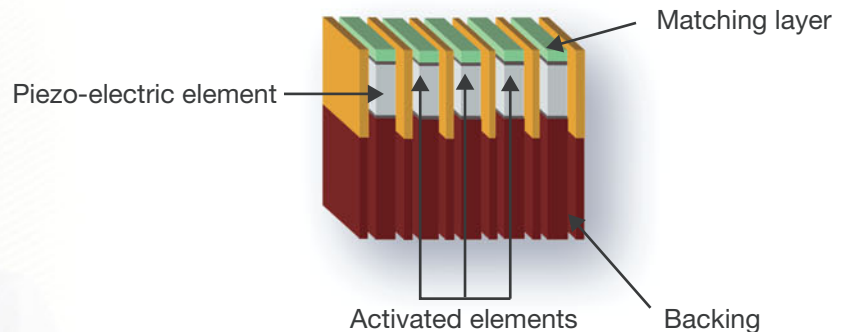


- Computer aided design

Vibration analysis by Finite Element Method (FEM)



Structure of simulated model

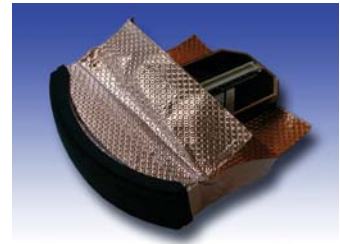


- Aiming to design arrays and / or probes taking account of safety and durability for medical use.
- Besides our continuous efforts to improve characteristic and reliability of current transducer, we are devoting its technical capacity to the development of new transducer, such as MATRIX ARRAY (2D array) and transducer for treatment.

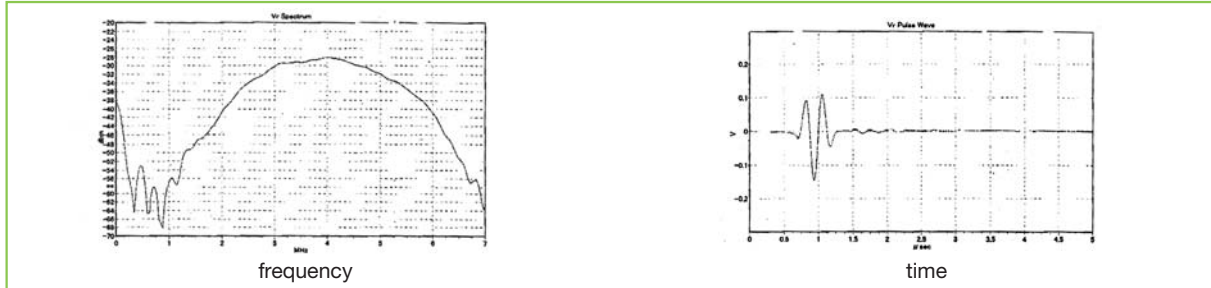


## Production line-up

- For abdominal  
3.5MHz Curved array  
5MHz linear array



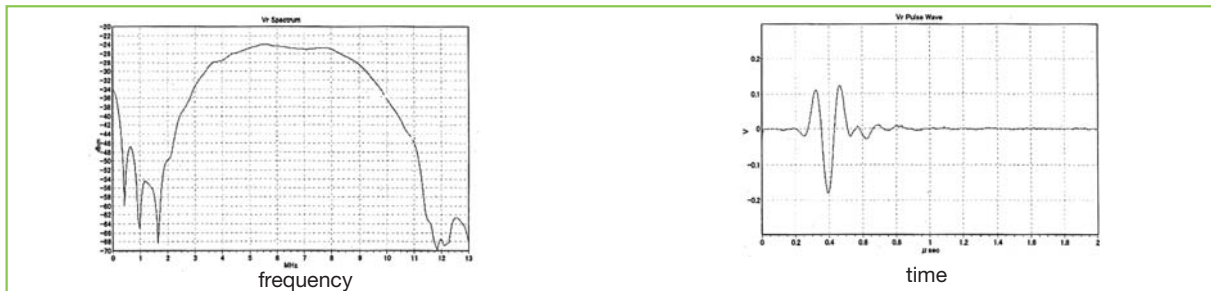
3.5MHz Curved array



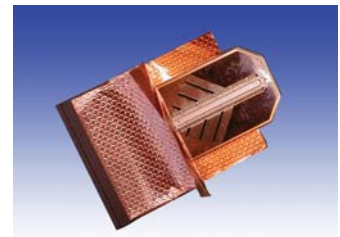
- For rectal and vaginal  
6.5MHz Curved array



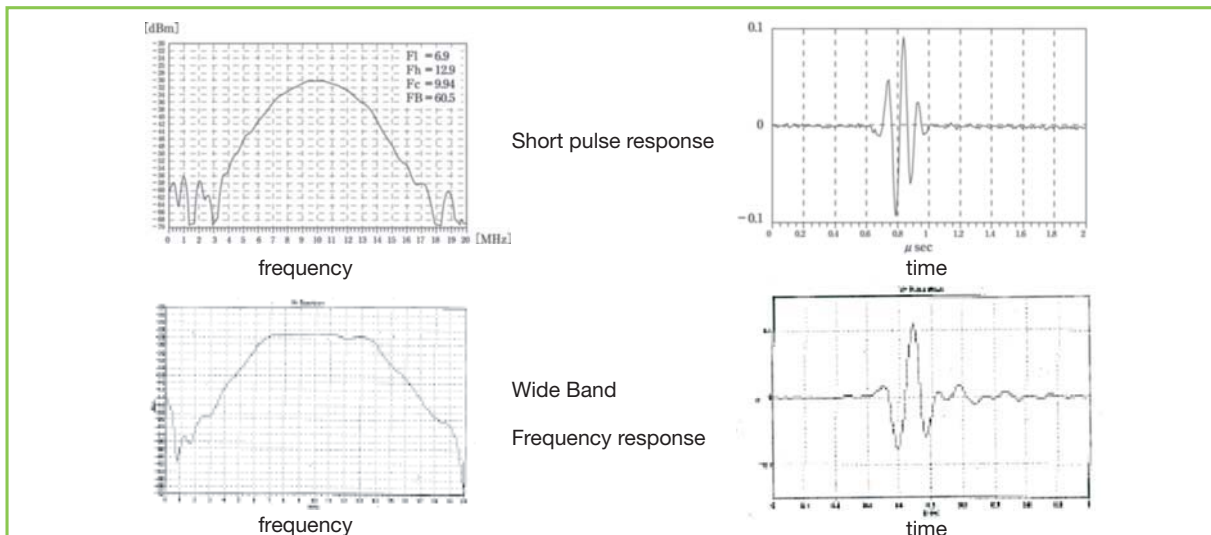
6.5MHz Curved array



- For vascular, small parts  
7.5MHz linear array  
10 MHz linear array  
12 MHz linear array



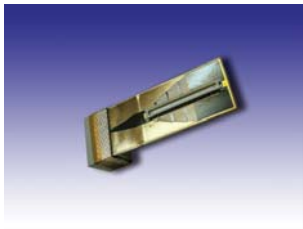
10MHz linear array



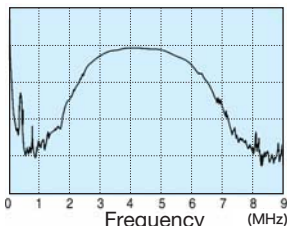

3MHz Phased array

- For Cardiology  
2.5MHz Phased array  
3MHz Phased array  
5MHz Phased array

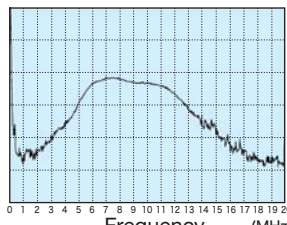

Center frequency	2.7MHz
Fractional Bandwidth(-6dB)	80%



- For 3D Imaging  
Mechanical Scanning  
3D probe for Abdominal

- For 3D Imaging  
Mechanical Scanning  
3D probe for Breast

- Production range for medical use  
NDK manufactures various probes and / or arrays according to customer requirement.

	Linear Array	Curved Linear Array	Phased Array	Single	Special			
					Biopsy	Biplane	Vaginal	Rectal
Center Frequency	2.5MHz   (25MHz)	3.5MHz   7.5MHz	2.5MHz   7.5MHz	2MHz   22MHz	3.5MH	5MHz   7.5MHz	5MHz   7.5MHz	5MHz   7.5MHz
Number of Element	64ch   256ch	64ch   192ch	32ch   128ch	***	64ch   128ch	64ch   128ch	64ch   192ch	64ch   192ch
Radius of Curvature	***	5R   80R	***	***	***	8R   10R	10R   15R	***

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Sayama plant  
ISO9001,ISO14001 registration



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