

## 1 Scope

This specification covers the high frequency air ultrasonic transducer which is used for double feed detection for scanners, copy machines, bank notes counters and others.

## 2 Part Number

300HE100 High Frequency Air Ultrasonic Transducer

## 3 Dimension

As per Figure 1

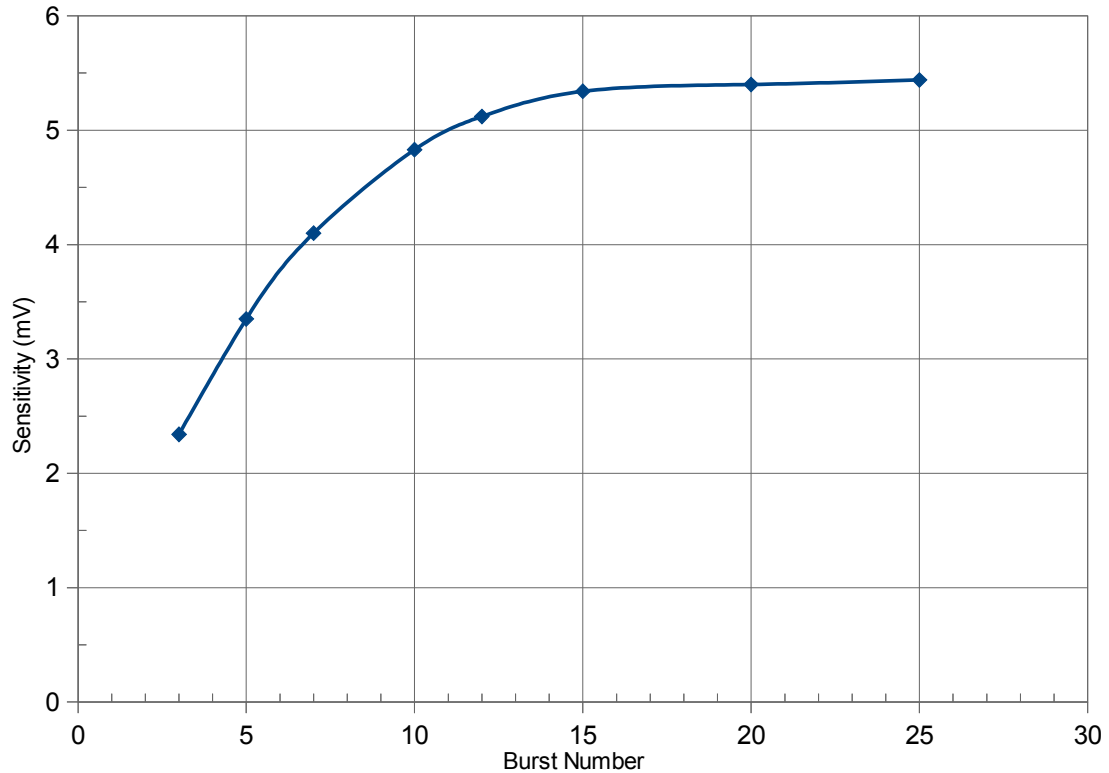
## 4 Specification

(rated at temperature  $25\pm 3^{\circ}\text{C}$ , 45 to 60% RH, unless otherwise noted)

	Items	Specification	Remarks
4-1	Operation Frequency	300KHz	
4-2	Overall Echo Sensitivity	2.0mVp-p -74dB (min)	driving frequency: 300KHz driving voltage: 10Vp-p, square wave burst number: 5 repetition rate: 10ms reflection distance: 10cm detail see attached Figure 2
4-3	Capacitance	1500pF	$\pm 20\%$ , measured at 1 KHz
4-4	Beam Angle	$12^{\circ}$ (TYP.)	-6dB (Overall Sensitivity)
4-5	Maximum Driving Voltage	50Vp-p	5 bursts; more burst number less voltage
		12Vp-p	continuous square wave
4-6	Operating Temperature	$-20^{\circ}\text{C}$ to $+60^{\circ}\text{C}$	
4-7	Storage Temperature	$-30^{\circ}\text{C}$ to $+70^{\circ}\text{C}$	
4-8	Operating Humidity	15% to 90%RH	use without condensation
4-9	Storage Humidity	10% to 90%RH	use without condensation

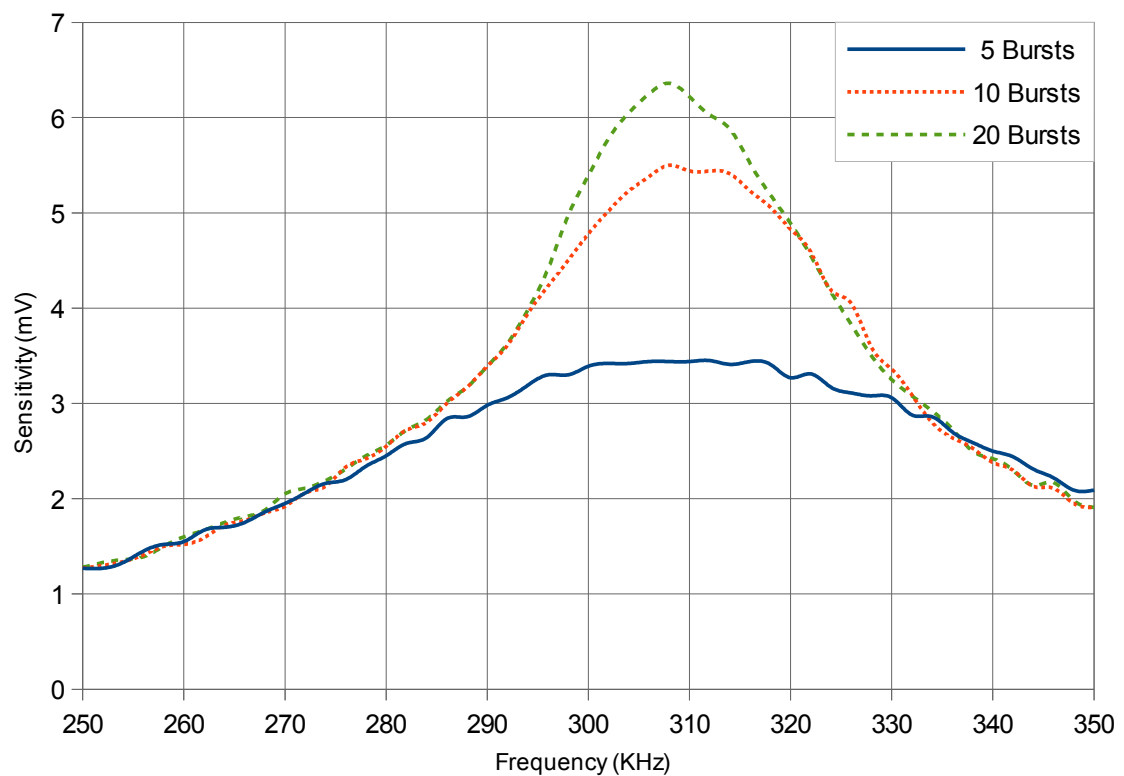
## 5 Sensitivity vs. Driving Burst Number:

Driving voltage 10Vp-p square wave, Reflection target distance: 10cm @300KHz



## 6 Bandwidth vs. Driving Burst Number:

Driving voltage 10Vp-p square wave, Reflection target distance: 10cm



## **7 Environmental Characteristics**

- 7-1** Overall echo sensitivity shall not change by more than  $\pm 3\text{dB}$  in the temperature range of  $-20^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ , at a relative humidity of  $\pm 50\%$
- 7-2** Overall echo sensitivity shall not change by more than  $\pm 3\text{dB}$  in the humidity range of 15% to 90% at the temperature of  $25^{\circ}\text{C}$
- 7-3** Overall echo sensitivity shall be within  $\pm 3\text{dB}$  of the specified values after the device is subjected to any or all of the belows
  - 7-3-1** Operation at 90% relative humidity and  $40^{\circ}\text{C}$  for 100 hours, followed by a normalization period of 24 hours at 30% and  $25^{\circ}\text{C}$
  - 7-3-2** Storage at  $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  for 24 hours followed by a normalization period of an hour at  $25^{\circ}\text{C}$
  - 7-3-3** Vibration at 10 to 55Hz, 1.5mm amplitude. 1 minute sweep. X, Y, Z, 3 each axis for 3 hours.
  - 7-3-4** Shock: After impact of 50G is applied following. X, Y, Z, 3 axis /3 cycle / each direction.
  - 7-3-5** Drop: After free drop from 1 meter height onto concrete floor, 3 times

## **8 Mechanical Characteristics**

Lead strength

To pull longitudinally 1.0 kgf min.

To push longitudinally 1.0 kgf min.

## **9 Warranty**

- 9-1** Warranty period is one year after delivery
- 9-2** Defective transducers attributable to manufacturer's responsibility shall be replaced for free, during the warranty period. However, following cases are out of the this replacement.
  - 9-2-1** Unsuitable handling or misuse by user.
  - 9-2-2** Modification or repair by user.
  - 9-2-3** Any other cases not responsible for manufacturer such as natural calamity, accident, etc.

This warranty covers only replacement. Any loss derived from failure or malfunction of the transducer, or cost to replace is excluded from this warranty.

Dimensions: unit mm

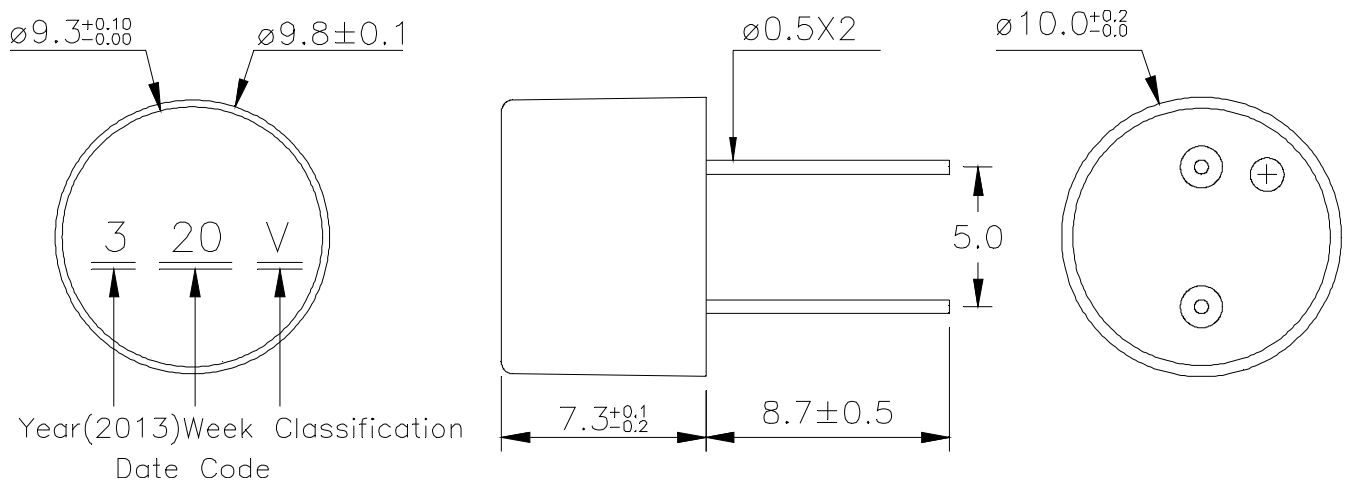


Figure 1

Test Circuit:

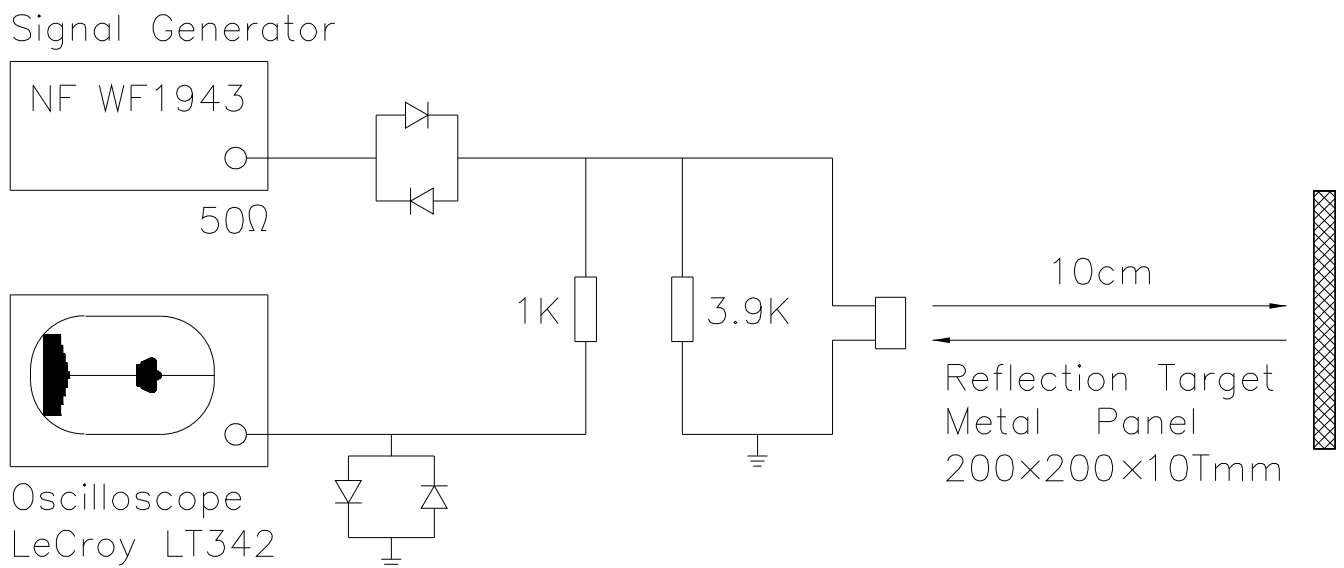


Figure 2