

### CSTR40-12P

#### 1. General Description

The CST40-12P and CSR40-12P are matched pair ultrasonic transmitter and receiver respectively operated at 40kHz center frequency with  $\varnothing 12.6\text{mm}$  diameter in plastic case. This transducer utilizes the piezoelectric properties of engineering ceramic that provides high sound pressure and high sensitivity.

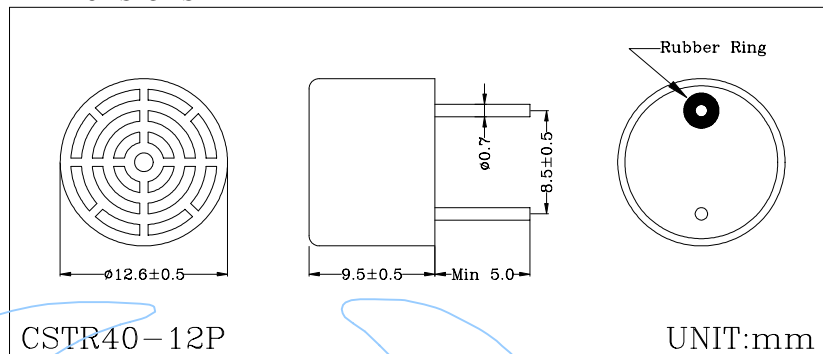
#### 2. Features

- High sound pressure
- High sensitivity
- Air medium
- Plastic housing

#### 3. Applications

- ▣ Auto switching
- ▣ Car obstacle avoidance
- ▣ Range finder
- ▣ Fluid level control
- ▣ Burglar alarm

#### Dimensions



#### 4. Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Ratings	Unit
Maximum Input Voltage	$V_{MAX}$	12	Vrms
Shock Impact	Si	5	G
Operating Relative Humidity *1	RHopr	10 ~ 90	%
Operating Temperature	$T_{opr}$	-30 ~ +80	$^\circ\text{C}$
Storage Temperature *2	$T_{stg}$	-40 ~ +90	$^\circ\text{C}$
Soldering Temperature *3	$T_{sol}$	240	$^\circ\text{C}$

\*1 - Ambient temperature  $T_a = 25^\circ\text{C}$ .

\*2 - Within 24 hours.

\*3 - At the position of 2mm from the bottom face within 5 second.

#### 5. Electro-Sonic Characteristics

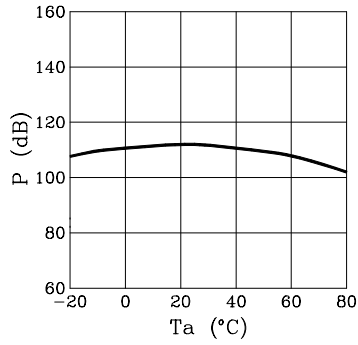
( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Transmitter CST40-12P	Center Frequency	Still Air	40.0 $\pm$ 1.0			kHz
	Sound Pressure Level *4	$f=40\text{kHz}$ , $V_i=10\text{Vrms}$	112			dB
	Attenuation of Sound Pressure Level	$T=-30^\circ\text{C}\sim+80^\circ\text{C}$ , $\text{RH}=30\%$			-10	dB
	Bandwidth	$P=100\text{dB}$ , $f=40\text{kHz}$	5.0			kHz
Receiver CSR40-12P	Center Frequency	Still Air	40.0 $\pm$ 1.0			kHz
	Sensitivity	$f=40\text{kHz}$	-67			dB/V/ $\mu\text{bar}$
	-6dB Directivity	$f=40\text{kHz}$		80		deg.
	Bandwidth	$f=40\text{kHz}$	5.0			kHz
	Capacitance			2700		pF

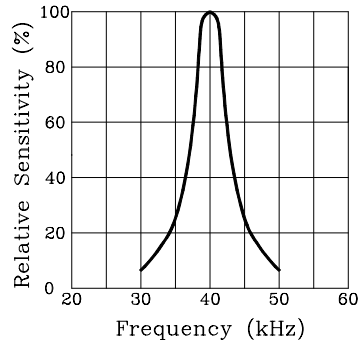
\*4 - 0dB = 0.0002 $\mu\text{bar}$  (1 atm = 1.01325 bar)

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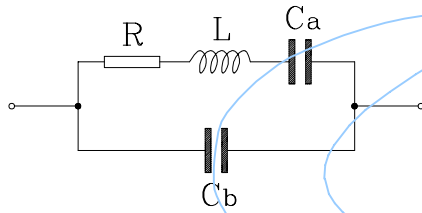
Sound Pressure Level vs Ambient Temperature



Relative Sensitivity vs Frequency



Equivalent Circuit



Directivity Diagram

