

### TR40-16

#### 1. General Description

The T40-16 and R40-16 are matched pair ultrasonic transmitter and receiver respectively operated at 40kHz center frequency with  $\varnothing 16\text{mm}$  diameter. This transducer utilizes the piezoelectric properties of engineering ceramic that provides high sound pressure and high sensitivity.

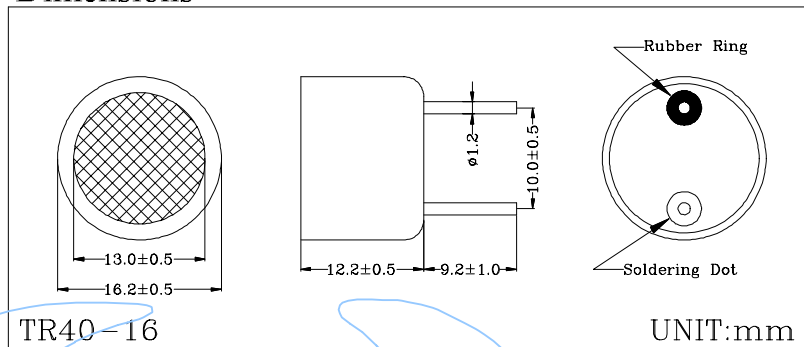
#### 2. Features

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

#### 3. Applications

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

#### Dimensions



#### 4. Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Ratings	Unit
Maximum Input Voltage	V <sub>MAX</sub>	20	V <sub>rms</sub>
Shock Impact	Si	50	G
Operating Relative Humidity *1	RHopr	10 ~ +90	%
Operating Temperature	T <sub>opr</sub>	-30 ~ +80	°C
Storage Temperature *2	T <sub>stg</sub>	-40 ~ +90	°C
Soldering Temperature *3	T <sub>sol</sub>	240	°C

\*1 - Ambient temperature Ta = 25°C.

\*2 - Within 24 hours.

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

#### 5. Electro-Sonic Characteristics

(Ta=25°C)

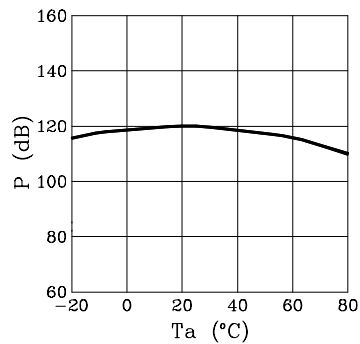
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Transmitter T40-16	Center Frequency	fc	Still Air	40.0±1.0		kHz
	Sound Pressure Level *4	P	f=40kHz	120		dB
	Attenuation of Sound Pressure Level	ΔP	T=-30°C~+80°C, RH=30%		-10	dB
	Bandwidth	Δλ	P=120dB, f=40kHz	5.0		kHz
Receiver R40-16	Center Frequency	fc	Still Air	40.0±1.0		kHz
	Sensitivity	S	f=40kHz	-59		dB/v/μbar
	-6dB Directivity	θ-6dB	f=40kHz	55		deg.
	Bandwidth	Δλ	f=40kHz	5.0		kHz
	Capacitance	Cs		2100		pF

\*4 - 0dB = 0.0002μbar (1 atm = 1.01325 bar)

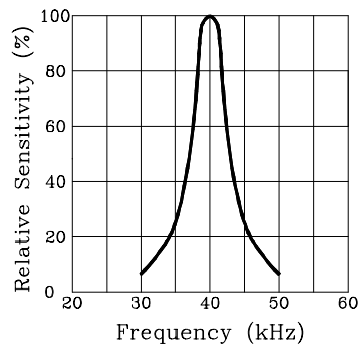
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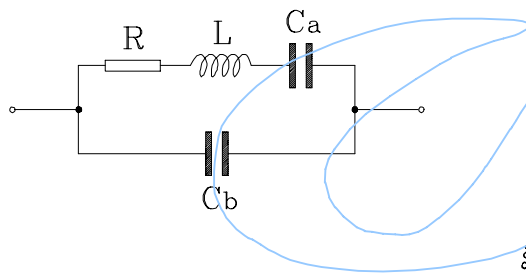
Sound Pressure Level vs  
Ambient Temperature



Relative Sensitivity vs  
Frequency



Equivalent Circuit



Directivity Diagram

