

# SENSORS

## ULTRASONIC SENSORS

### MA40 SERIES



#### MA40 SERIES OPEN TYPE FEATURES

- Small size: 10 and 16
- Combined types
- High SPL types
- Low voltage/current types

#### APPLICATIONS

- Burglar alarms
- Object detection devices
- Distance measurement devices

#### MA40E SERIES WATERPROOF TYPE FEATURES 40kHz Sensors

- Waterproof
- Many types leaded/not
- Short ringing time
- Directive models

#### APPLICATIONS

- Rear backing sonar
- Corner sonar

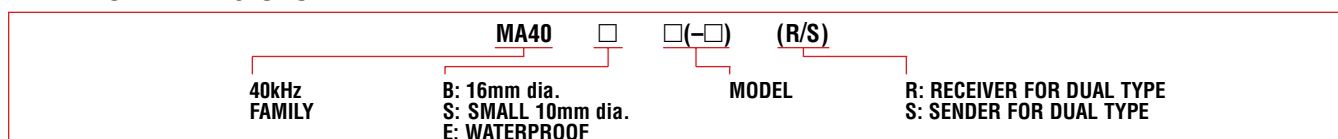
#### DIMENSIONS: mm

OPEN	<b>MA40S4R/S</b>	<b>MA40B8R/S</b>	<b>MA40S5</b>	<b>MA40B7</b>
WATERPROOF	<b>MA407S-1</b>	<b>MA40F14-1B</b>	<b>MA40E7R/S</b>	<b>MA40E8-2</b>

#### SPECIFICATIONS

Part Number	MA40E7R/S	MA40S4R/S	MA40B8R/S	MA40B7	MA40E7S-1	MA40S5	MA40E8-2	MA40MF14-1B
Construction	Waterproof type	Open structure type			Waterproof type	Open structure type	Waterproof type	
Using Method	Receiver and Transmitter (Dual use) type			Combined use type				
Nominal Frequency (kHz)	40							
Overall Sensitivity (dB)	—	—	—	-45 <sup>+4</sup> <sub>-5</sub>	—	-50 ± 4	—	—
Sensitivity (dB)	-74 min.	-63 ± 3	-63 ± 3	—	-72 min.	—	-85 min.	-87 min.
Sound Pressure (dB)	106 min.	120 ± 3	120 ± 3	—	106 min.	—	106 min.	103 min.
Directivity (deg)	100	80	50	44	75	70	75	110 x 50
Capacitance (pF)	2200 ± 20%	2550 ± 20%	2000 ± 20%	2000 ± 20%	2200 ± 20%	2550 ± 20%	2800 ± 20%	4000 ± 20%
Operating Temp. Range(°C)	-30 ~ +85	-40 ~ +85	-30 ~ +85			-40 ~ +85	-30 ~ +85	
Detectable Range (m)	0.2 ~ 3	0.2 ~ 4	0.2 ~ 6	0.2 ~ 4	0.2 ~ 3	0.2 ~ 2.5	0.2 ~ 1.5	0.2 ~ 1.5
Resolution (mm)	9							
Dimension (mm)	18φ x 12h	9.9φ x 7.1h	16φ x 12h	16φ x 12h	9.9φ x 7.1h		14φ x 8h	
Weight (g)	4.5	0.7	2.0	2.0	4.5	0.7	2.4	2.4
Allowable Input Voltage (Vp-p) (Rectangular wave)	85 (40kHz) Pulse width 0.4ms Interval 100ms	20 (40kHz) Continuous signal	40 (40kHz) Continuous signal	100 (40kHz) Pulse width 0.4ms Interval 100ms	100Vpp Pulse width 0.4ms Interval 100ms	60 (40kHz) Pulse width 0.4ms Interval 100ms	160 (40kHz) Pulse width 0.8ms Interval 60ms	160Vpp Pulse width 0.8ms Interval 60ms
Packaging Quantity (Pcs.)	90	540	150	150	90	540	80	150

#### PART NUMBERING SYSTEM



For more detailed information regarding this product line in North America, consult us. To receive additional information on Murata Products call 1-800-831-9172.

# Piezoelectric Ceramics (PIEZOTITE®) Sensors



## Ultrasonic Sensors

### Open Structure Type

#### ■ Features

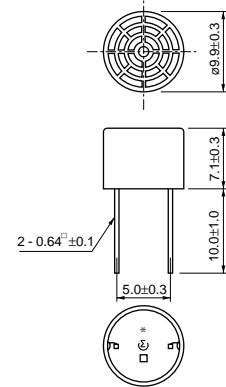
1. Compact and light weight.
2. High sensitivity and sound pressure.
3. High reliability.

#### ■ Applications

Burglar alarms, Range finders, Automatic doors, Remote control.



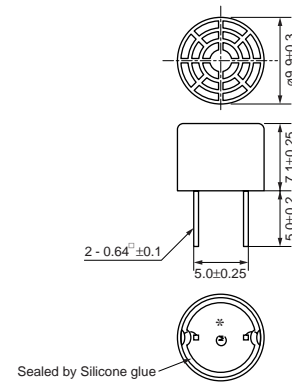
MA40S4R/S



\* : EIAJ Code  
□ : R or S (in mm)



MA40S5



\* : EIAJ Code (in mm)

Part Number	Structure	Using Method	Nominal Freq. (kHz)	Overall Sensitivity (mVp-p)	Sensitivity (dB)	S.P.L. (dB)	Directivity (°)	Cap. (pF)	Operating Temp. Range (°C)	Detectable Range (m)	Max. Input Voltage (Vp-p)
<b>MA40S4R</b>	Open struct.	Receiver	40	-	-63 typ.	-	80 (typ.)	2550	-40 to 85	0.2 to 4	-
<b>MA40S4S</b>	Open struct.	Transmitter	40	-	-	120 typ.	80 (typ.)	2550	-40 to 85	0.2 to 4	20 40kHz square waves, Continuous signal
<b>MA40S5</b>	Open struct.	Dual Use	40	20 +20/-10	-	-	60 (typ.)	2550	-40 to 85	0.3 to 2	20 40kHz square waves, 16pulses per 100ms

Distance: 30cm, Sensitivity: 0dB=10V/Pa, Sound pressure level: 0dB=20μPa. Refer P19.

The sensor can be used in the operating temperature range.

Please refer to individual specifications for the temperature drift of Sensitivity/Sound pressure levels or environmental characteristics in that temperature range.

Directivity and detectable range are typical values. They can be changed by application circuit and fixing method of the sensor.