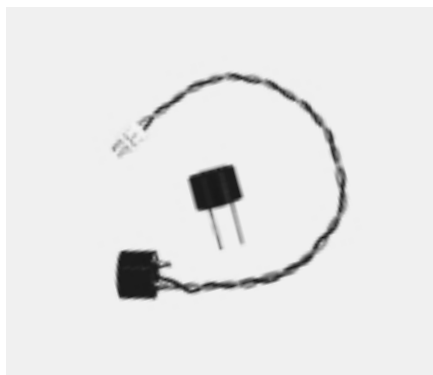


# SENSORS

## 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><br> | <b>MA40B8R/S</b><br>  | <b>MA40S5</b><br>    | <b>MA40B7</b><br>   |
|      | <b>MA407S-1</b><br>  | <b>MA40F14-1B</b><br> | <b>MA40E7R/S</b><br> | <b>MA40E8-2</b><br> |

#### 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)<br>(Rectangular wave) | 85 (40kHz)<br>Pulse width 0.4ms<br>Interval 100ms | 20 (40kHz)<br>Continuous signal | 40 (40kHz)<br>Continuous signal | 100 (40kHz)<br>Pulse width 0.4ms<br>Interval 100ms | 100Vpp<br>Pulse width 0.4ms<br>Interval 100ms | 60 (40kHz)<br>Pulse width 0.4ms<br>Interval 100ms | 160 (40kHz)<br>Pulse width 0.8ms<br>Interval 60ms | 160Vpp<br>Pulse width 0.8ms<br>Interval 60ms |
| Packaging Quantity (Pcs.)                            | 90                                                | 540                             | 150                             | 150                                                | 90                                            | 540                                               | 80                                                | 150                                          |

#### PART NUMBERING SYSTEM

|              |                                                     |              |                                                      |
|--------------|-----------------------------------------------------|--------------|------------------------------------------------------|
| <b>MA40</b>  | <b>□</b>                                            | <b>□(-□)</b> | <b>(R/S)</b>                                         |
| 40kHz FAMILY | B: 16mm dia.<br>S: SMALL 10mm dia.<br>E: WATERPROOF | MODEL        | R: RECEIVER FOR DUAL TYPE<br>S: SENDER FOR DUAL TYPE |

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.