

TR-89B Series Types: 23 and 40

The TR-89B Series Transducers are rugged electroacoustic devices designed for the efficient generation of ultrasonic energy in air. They are ideally suited for a wide variety of low power, general purpose applications such as ultrasonic intrusion alarms, proximity detection devices, remote control devices, and energy management systems.

The Transducers consist of a one piece housing with an integral diaphragm. This provides a moisture-proof unit, suitable for both indoor and outdoor use when mounted so that the rear terminals are protected from exposure to the direct outdoor environment. The units operate at resonance on the first harmonic overtone. This affords greater efficiency (higher transmitting and receiving response) than an equivalent size device operating at its fundamental.

The TR-89B Transducers can be manufactured under special order to resonate at any specified frequency between 23kHz and 40kHz. Massa stocks two standard versions. The TR-89B Type 23 provides peak untuned receiving response at 23kHz +/-2kHz, and the TR-89B Type 40 provides peak untuned receiving response at 40kHz +/-2kHz. The beam patterns of the transducers change at different frequencies, and greater detection range is obtained with lower frequency transducers due to the attenuation characteristics of sound in air. Thus, the TR-89B Family offers the user a choice of transducers that have characteristics that will meet most requirements. Special frequencies, matched transmitting and receiving pairs, and other custom features are available on special order (consult factory). There are several million TR-89B Transducers in use in many different applications throughout the world.

Massa Products Corporation is a leading designer and manufacturer of a wide variety of electroacoustic transducers and systems for use in air and under water. Massa has over 65 years of specialized experience in this field.

For more information visit our web site at www.massa.com.

MASSA PRODUCTS CORPORATION

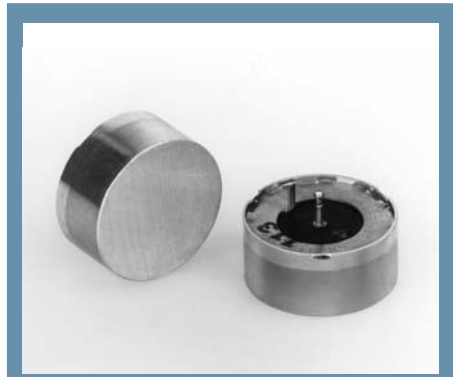
280 Lincoln St., Hingham, MA 02043 U.S.A.

Tel: 781-749-4800 Fax: 781-740-2045

Toll Free in USA: 800-962-7543

e-mail: sales@massa.com

www.massa.com



FEATURES

- Low Cost
- Long Sensing Range
- Rugged Packaging
- Moisture-Proof
- High Sensitivity

APPLICATIONS

- Proximity Detection
- Solid Level Measurement
- Liquid Level Control
- Animal Deterent
- Intrusion Alarms
- Remote Controls
- Energy Managing Systems

SPECIFICATIONS

| | Type 23 | Type 40 |
|---|---------------------------|---------|
| Frequency at Maximum Impedance (+/- 2 kHz) | 23 kHz | 40 kHz |
| Bandwidth Transmitting* | | |
| Tuned | 5 kHz | 10 kHz |
| Untuned | 3 kHz | 5 kHz |
| Transmitting Sensitivity* dB vs 1 μ bar per volt at 1 foot (untuned) | +25 | +22 |
| Receiving Sensitivity* dB vs 1 volt per μ bar (untuned) | -41 | -50 |
| Rated Power | 200mW | 200mW |
| Maximum Input | 35 Vp-p (Square Wave) | |
| Rated Power | 45 Vp-p (Sine Wave Input) | |
| Total Beam Angle* (-3 dB Points) | 35° | 20° |
| Operating Temperature | -40° to 85°C | |
| Weight | 0.2 oz | |

* See Performance Characteristics

All Specifications typical at 20°C and subject to change without notice.

OPTIONS:

1. Closer Frequency Tolerances
2. Different Operating Frequencies
3. Matched Transmitting and Receiving Pairs
4. Watertight Unit with Integral Cable

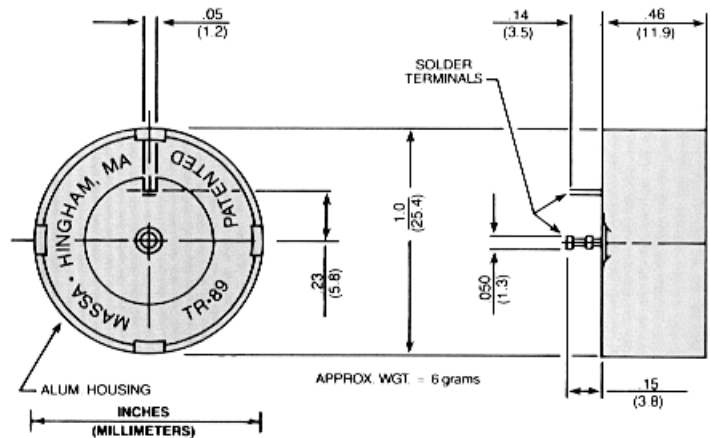
Custom configurations available for OEM quantities.

MASSA PRODUCTS CORPORATION

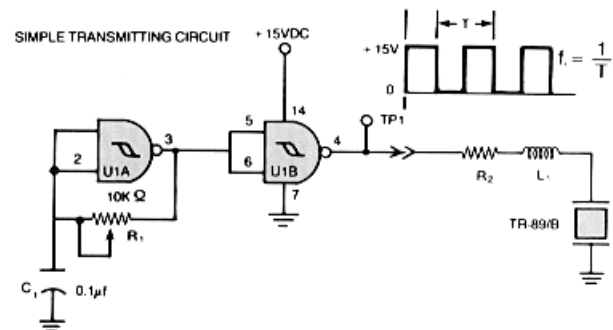
280 Lincoln St., Hingham, MA 02043 U.S.A.
 Tel: 781-749-4800 Fax: 781-740-2045
 Toll Free in USA: 800-962-7543
 e-mail: sales@massa.com
 www.massa.com

TR-89B Series

Outline Dimensions



Applications Circuit



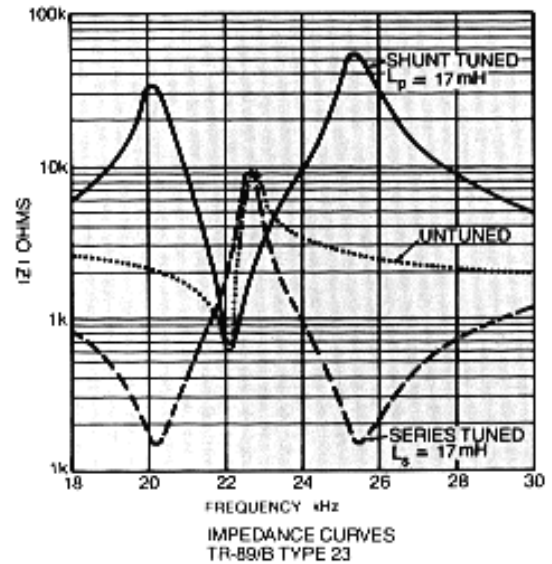
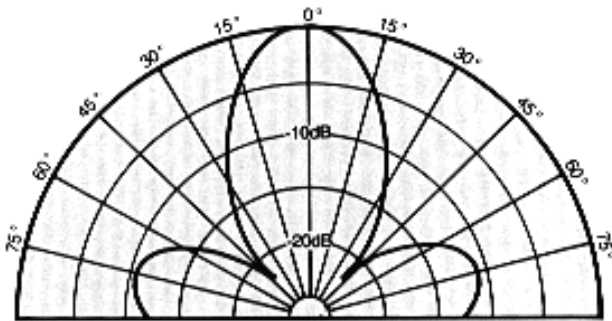
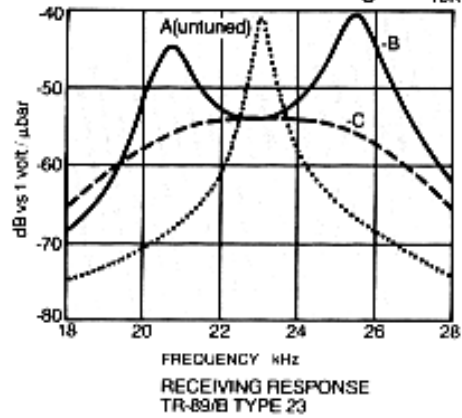
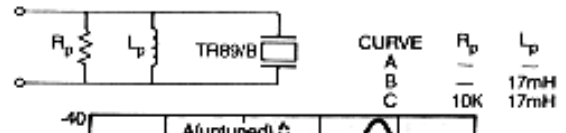
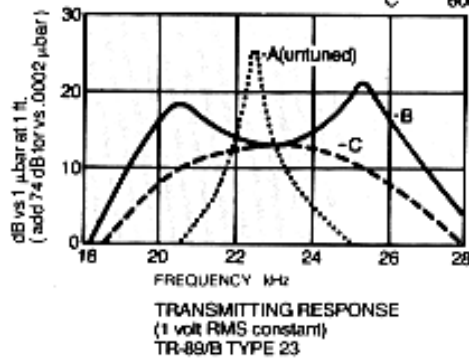
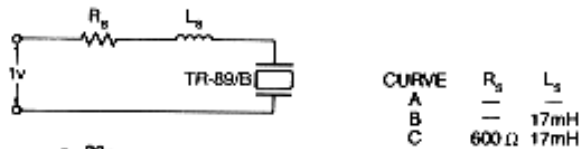
| Transmitting Frequency | Transducer | R ₂ | L ₁ |
|------------------------|-------------------|----------------|----------------|
| 23 kHz ± 2 kHz | TR-89B Type 23 | 620 Ω | 17 mH |
| 40 kHz ± 2 kHz | TR-89B Type 40 | 620 Ω | 6.5 mH |

NOTES:

1. U1 is a National Semiconductor CD 4093B Quad 2 input NAND Schmitt Trigger or equivalent.
2. R1 must be a 10 turn wire wound precision potentiometer.
3. Adjust R1 for correct frequency (f_t) at TP1.

TR-89B, Type 23

Nominal Performance Characteristics



TR-89B, Type 40

Nominal Performance Characteristics

