



# EM SERIES

STANDARD



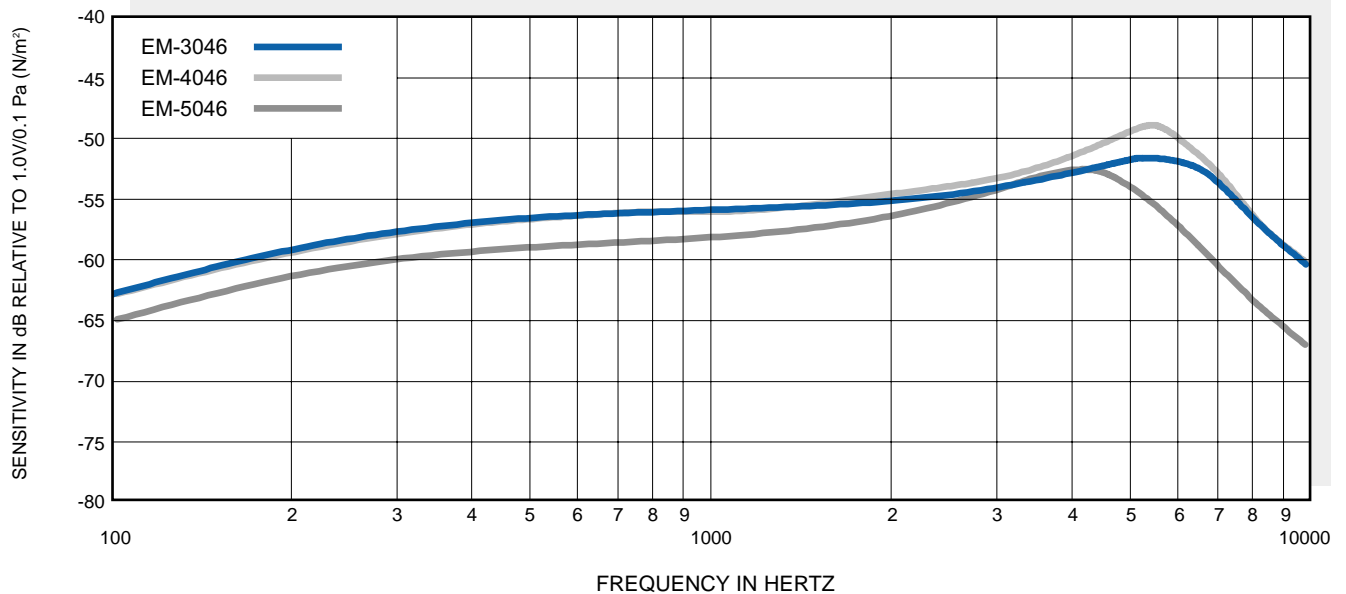
Actual Size

## Features

- Electret condenser microphone
- Rugged construction to withstand severe environmental conditions
- Most popular Knowles microphone
- High resistance to mechanical shock
- Low vibration sensitivity
- Various responses available
- Ideal for ITC and CIC applications
- Available with RFI suppression



## Standard Response



Open circuit sensitivity with 1.3VDC supply

Knowles

data sheet

**Power Requirements**

Supply Voltage ( $V_s$ )  
 range: 0.9 to 10.0V<sub>DC</sub>  
 typical: 1.3V<sub>DC</sub>

Quiescent Current Drain (@  $V_s = 1.3V_{DC}$ )  
 21 $\mu$ A typical, 30 $\mu$ A for 5000 series  
 50 $\mu$ A maximum, 80 $\mu$ A for 5000 series

**Performance**

Response/Sensitivity  
 see curves, pages 1, 4-6

Power Supply Feedthrough Attenuation  
 typical: 11dB, output-referred

Sensitivity Range @ primary test frequency  
 Ski Slope and Step responses:  $\pm 4$ dB  
 all other responses:  $\pm 3$ dB

Load Voltage ( $V_L$ )  
 range: 0.2 to 0.9V<sub>DC</sub>  
 typical: 0.4V<sub>DC</sub>

Low Supply Voltage Sensitivity Loss  
 ( $V_s$  reduced from 1.3 to 0.9V<sub>DC</sub>)  
 typical: 0.4dB  
 maximum: 3.0dB

Output Noise Level  
 (A-weighted)  
 typical: -103dBV\*  
 maximum: -97.0dBV (Ski Slope models)

Humidity Coefficient of Sensitivity  
 typical: 0.03dB per %RH  
 (in the absence of condensation)

Input-Referred Noise Level\*  
 (A-weighted, 1kHz ref.)  
 typical: 28dB SPL  
 maximum: 31dB SPL

Output Impedance @ 1kHz  
 range: 2.8 to 6.8k $\Omega$   
 nominal: 4.4k $\Omega$   
*5000 Series*  
 range: 2.0 to 4.0k $\Omega$   
 nominal: 2.8k $\Omega$

Input-Referred Vibration Sensitivity\*  
 (1g acceleration, 1kHz ref.)  
 maximum: 66dB SPL

Temperature Range  
 operating: -17°C to 63°C  
 storage: -40°C to 63°C

Acoustic Polarity  
 Increased pressure at sound inlet  
 causes a positive going voltage to  
 appear at the output terminal, relative  
 to the negative terminal

ESD Tolerance  
 MIL-STD-750 Class 1 rating  
 EOS/ESD-S5.1-1993 Class 2 rating

\*For standard, damped and undamped models only

**Mechanical**

Weight  
 0.08 grams

Case Material  
 Type 305 stainless steel

Dimensions  
 See outline drawings, page 7

Solder Content  
 Sn62Pb36Ag02

**Optional Soldering Fixture**

Base: ET-3838  
 Nest Plate: ET-804

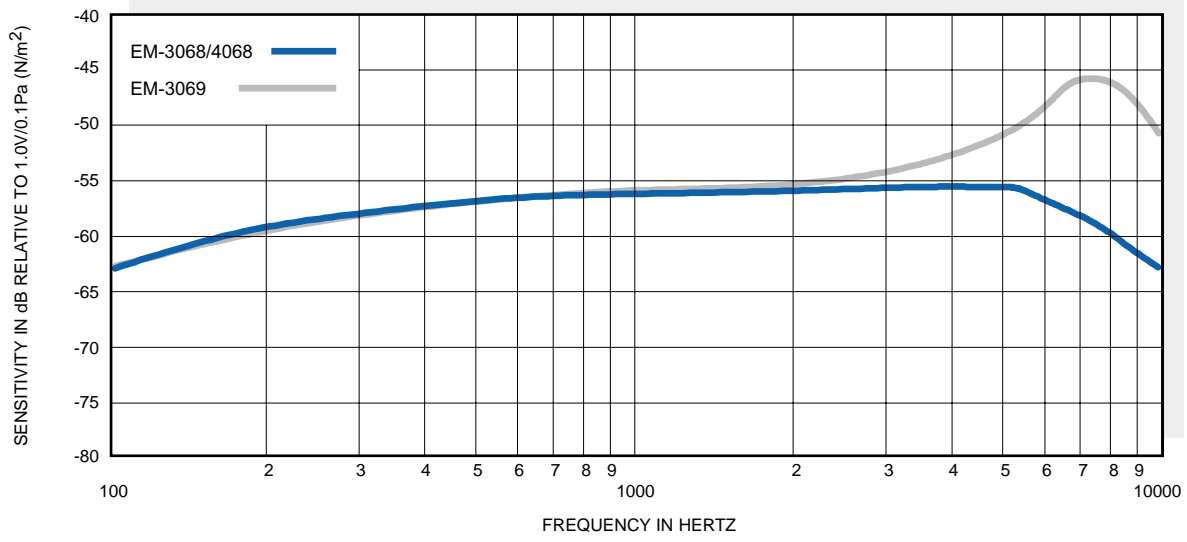
<b>Model</b>	<b>Port</b>	<b>Response</b>
EM-3046	12B	Standard
EM-3047	12B	6dB/octave Ski Slope
EM-3056	12KP	Standard
EM-3058	12B	Step
EM-3059	12B	12dB/octave Ski Slope
EM-3068	12B	Damped Peak
EM-3069	12Kn	Undamped Peak
EM-3070	12Kn	6dB/octave Ski Slope
EM-3084	12Kn	12dB/octave Ski Slope
EM-4046	12SL	Standard
EM-4047	12SL	6dB/octave Ski Slope
EM-4058	12SL	Step
EM-4059	12SL	12dB/octave Ski Slope
EM-4068	12SL	Damped Peak
EM-5046	12SL	Standard (Screenless, Shifted Peak)
EM-5047	12SL	6dB/octave Ski Slope (Shifted Peak)
EM-5059	12SL	12dB/octave Ski Slope (Shifted Peak)
EM-7012	12B	6dB/octave Ski Slope, Damped
EM-7013	12B	12dB/octave Ski Slope, Damped
EM-7079	12n	Undamped
EM-7080	12n	6dB/octave Ski Slope
EM-7131	12SL	6dB/octave Ski Slope, Damped
EM-7133	12SL	12dB/octave Ski Slope, Damped
EM-7451	12SL	6dB/octave Ski Slope, Damped
EM-7452	12SL	12dB/octave Ski Slope, Damped
EM-9867	12KP	6dB/octave Ski Slope
EM-9896	12KP	12dB/octave Ski Slope
EM-9932	12KP	Damped Peak

**Microphones are also available with RFI suppression filters.**

**Other model variations available upon request. Contact Knowles Electronics for details.**

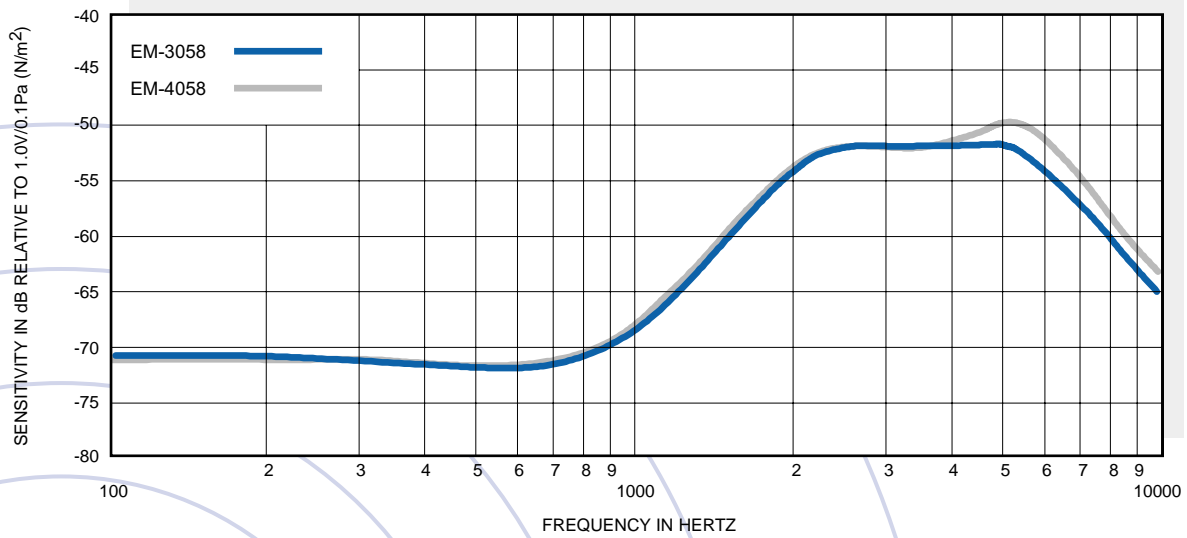


## Damped and Undamped Peak Response



Open circuit sensitivity with 1.3VDC supply

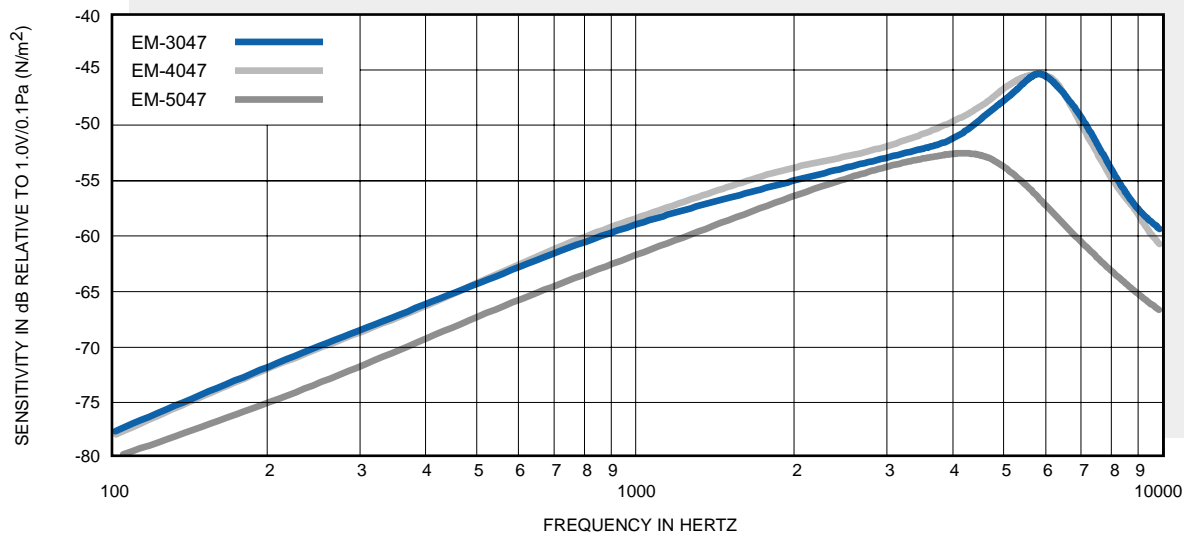
## Step Response



Open circuit sensitivity with 1.3VDC supply

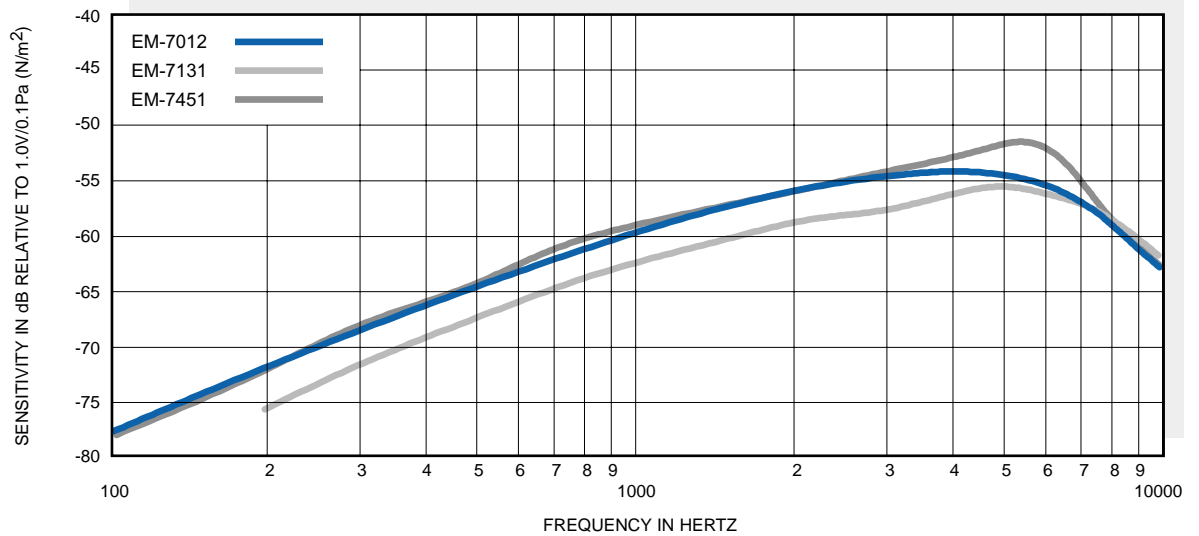


## 6dB/Octave Ski Slope Response



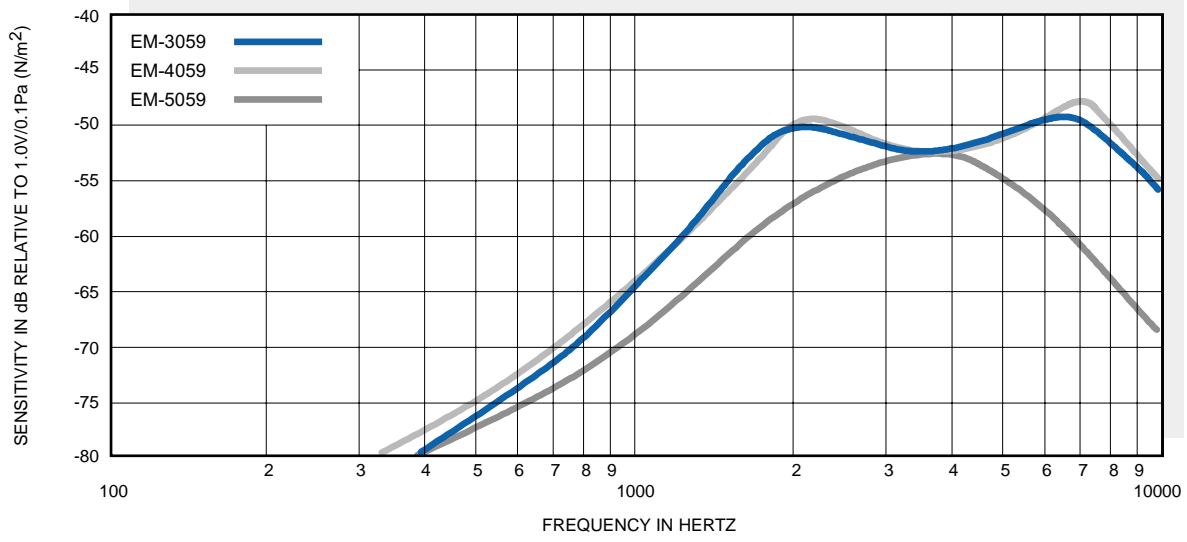
Open circuit sensitivity with 1.3VDC supply

## 6dB/Octave Ski Slope, Damped Response



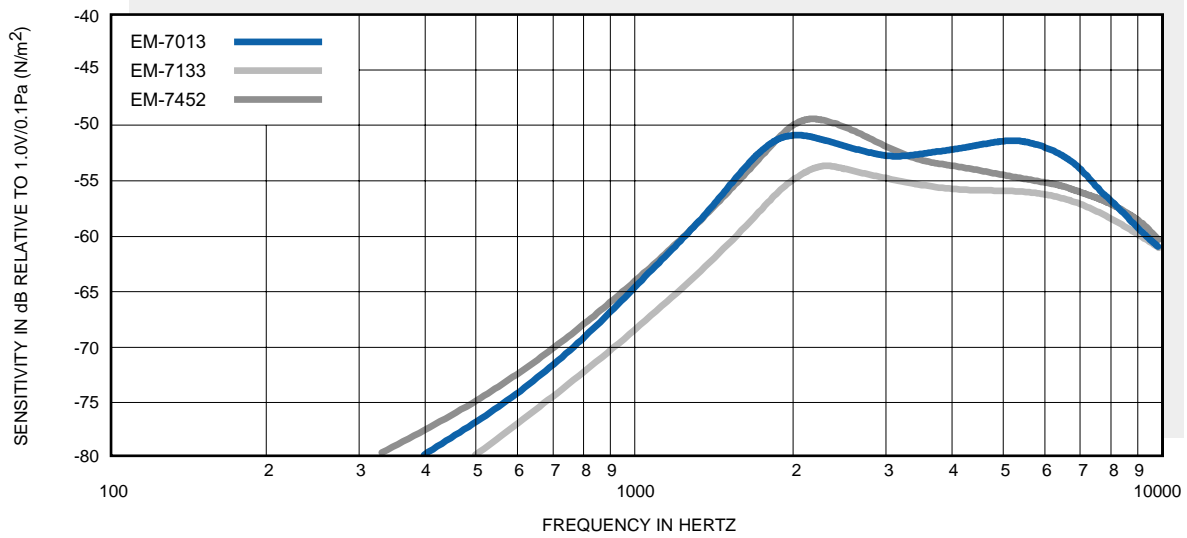
Open circuit sensitivity with 1.3VDC supply

## 12dB/Octave Ski Slope Response



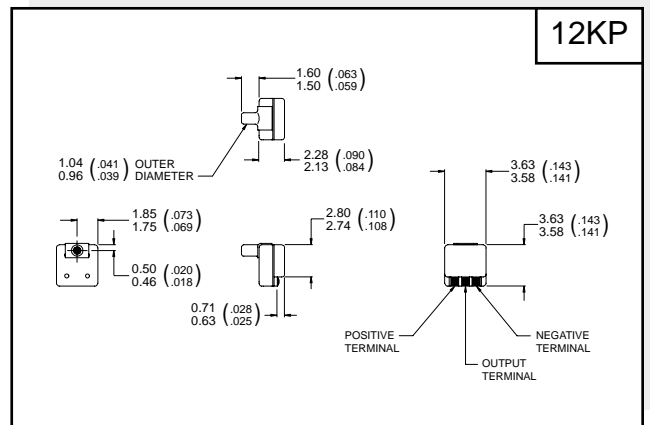
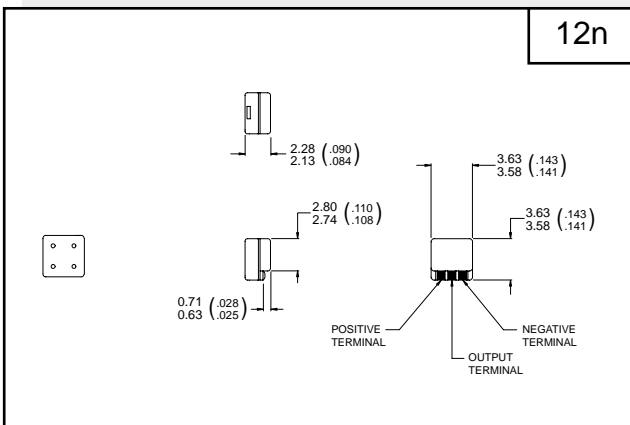
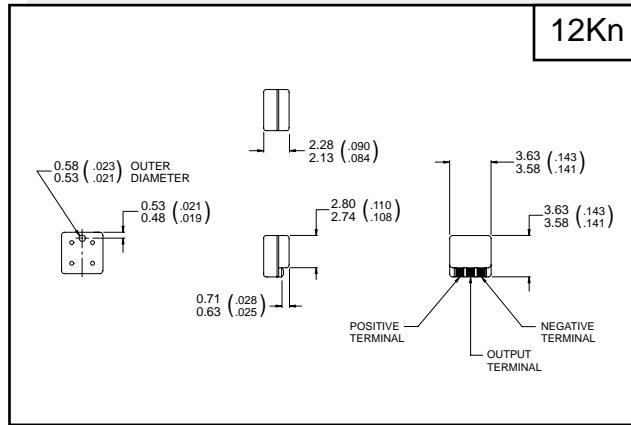
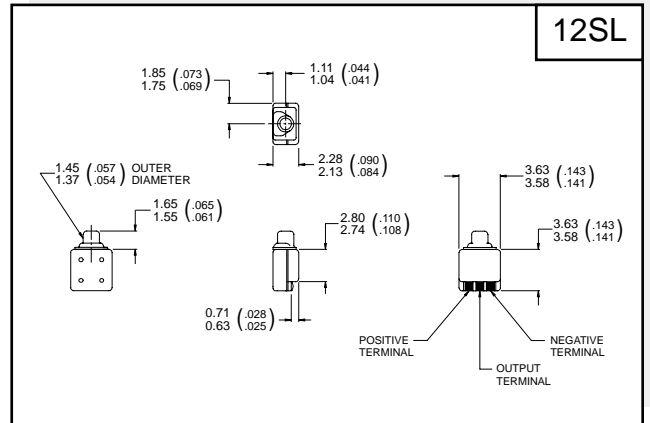
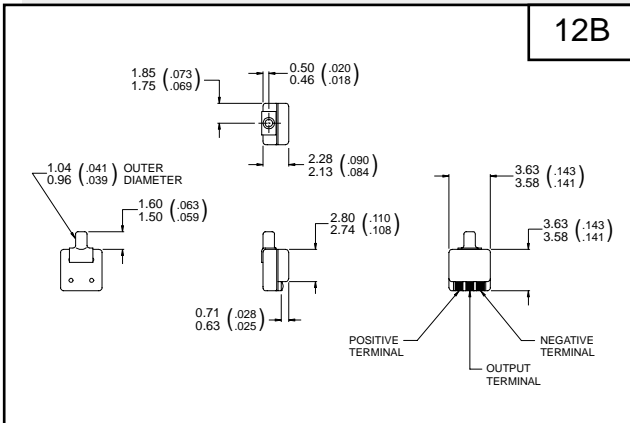
Open circuit sensitivity with 1.3VDC supply

## 12dB/Octave Ski Slope, Damped Response



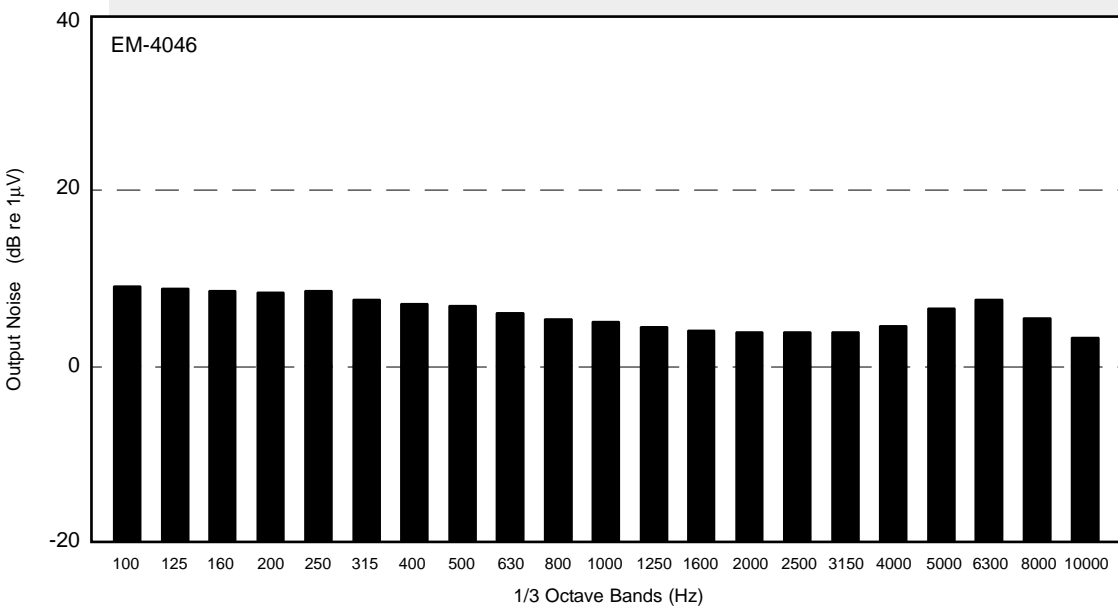
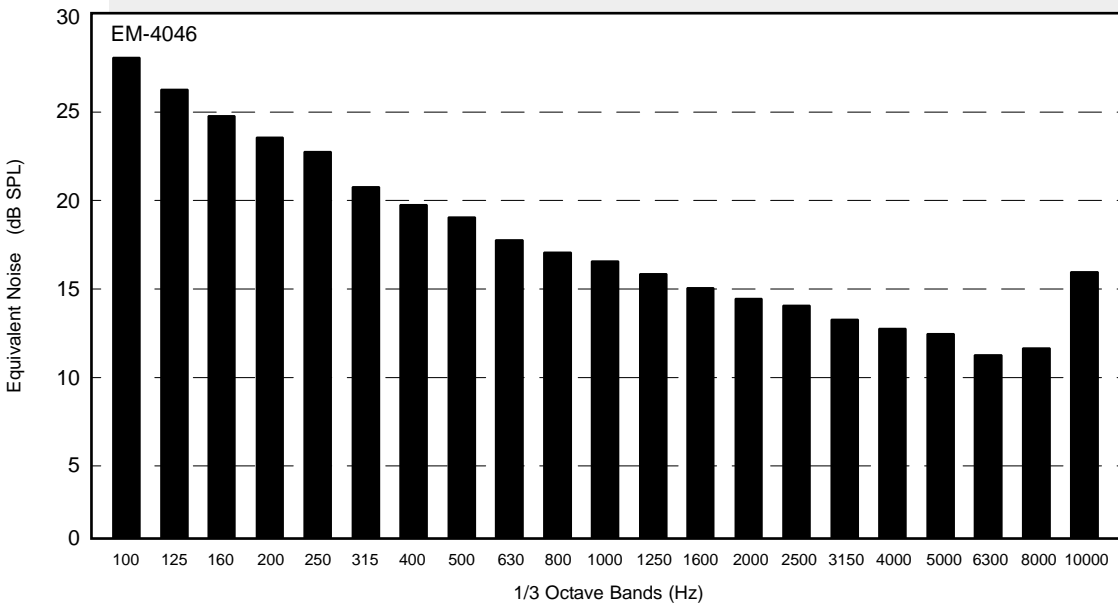
Open circuit sensitivity with 1.3VDC supply

# Signal Port Locations



Dimensions in millimeters (inches)

## 1/3 Octave Equivalent Noise & Output Noise



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NOTE: Specifications are subject to change without notice. The information on this Data Sheet reflects typical applications. Specific test specifications defining each model are available by requesting Outline Drawing Sheets 1.1 and Performance Specifications Sheets 2.1 of that model number. Knowles' responsibility is limited to compliance with the Outline Drawing and the Performance Specification application to the subject model at time of manufacture.

**Knowles Electronics, Inc.**