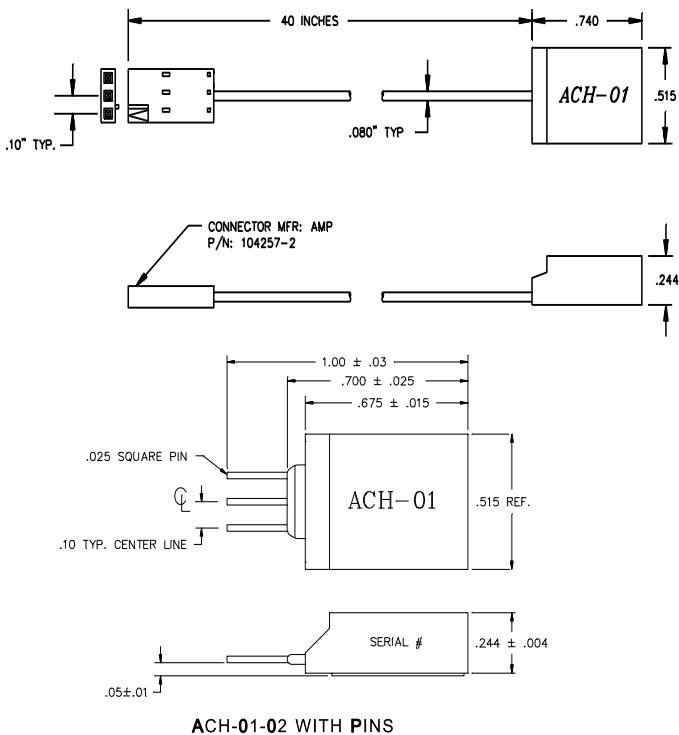


# ACCELEROMETER ACH-01



## dimensions



## SPECIFICATIONS

- Piezoelectric Accelerometer
- Wide Bandwidth; AC Coupled
- Ultra Low Power
- High G Ranges

The ACH-01 is an inexpensive, general purpose accelerometer with outstanding performance characteristics. The use of piezoelectric polymer film in the ACH-01 provides many cost/performance advantages that allow it to be used in a wide range of applications where the use of traditional accelerometer technology is impractical. It is specifically designed for high volume applications which require the permanent installation of an accelerometer.

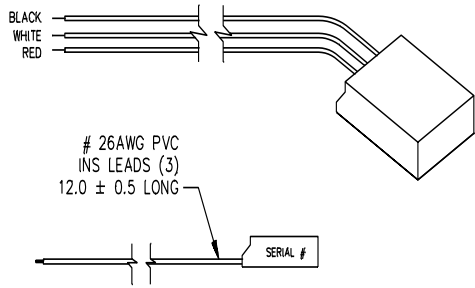
## FEATURES

- Wide Frequency Response
- Excellent Phase Response
- Small Temperature Dependence
- Wide Supply Voltage Range
- Excellent Linearity
- Very High Resonant Frequency
- Wide Dynamic Range
- Low Transverse Sensitivity
- Wide Temperature Range
- Low Impedance Output
- Ultra Low Power

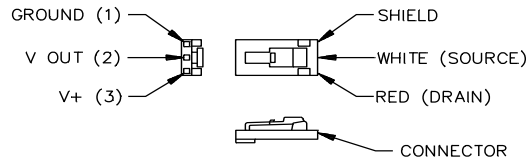
## APPLICATIONS

- Machine Health Monitoring
- Model Analysis
- Automotive Sensors
- Appliances
- Feedback Control Systems

# ACCELEROMETER ACH-01



ACH-01-04 WITH WIRES



CONNECTOR DETAIL

## PERFORMANCE SPECIFICATIONS

| PERFORMANCE (T=25EC)                    | Symbol    | Min          | Typ | Max | Units             |
|---|-----------|--------------|-----|-----|-------------------|
| Sensitivity                             | $M_o$     | 7            | 9   | 11  | mV/g              |
| Lower Frequency Limit (1)               | $f_l$     | --           | 2   | 5   | Hz                |
| Upper Frequency Limit(1)                | $f_u$     | 10           | 20  | --  | kHz               |
| Equivalent Noise Floor                  |           |              |     |     |                   |
| 10Hz                                    |           | --           | 130 | --  | $\mu g/\sqrt{Hz}$ |
| 100Hz                                   |           | --           | 20  | --  |                   |
| 1kHz                                    |           | --           | 6   | --  |                   |
| Dynamic Range                           | --        | $\nabla 150$ | --  | --  | g                 |
| Linearity                               | --        | --           | 0.1 | 1.0 | %                 |
| Transverse Sensitivity                  | $M_t$     | --           | 2.0 | 5   | %                 |
| Resonant Frequency                      | $f_o$     | --           | 35  | --  | kHz               |
| Phase Deviation ( $\nabla 5E$ Limit)(6) | $\theta$  | 10           | --  | 10  | kHz               |
| Drain Voltage (6)                       | V+        | 3            | --  | 40  | Volts             |
| Supply Current (6)                      | $I_{dss}$ | 30           | --  | 90  | $\mu A$           |
| Output Impedance (6)                    | --        | --           | 20  | --  | k $\Omega$        |

### ENVIRONMENTAL CHARACTERISTICS

|                                |       |      |      |    |                 |
|--------------------------------|-------|------|------|----|-----------------|
| Operating Temperature (2)      | $T_o$ | -40  | --   | 85 | EC              |
| Storage Temperature            | $T_s$ | -40  | --   | 85 | EC              |
| Maximum Shock Level            | $A_m$ | 1000 | --   | -- | g               |
| Base Strain Sensitivity (3)    | --    | --   | 0.3  | -- | $g/\mu\epsilon$ |
| Transient Temp Sensitivity (4) | --    | --   | 0.35 | -- | $g/EC$          |

### PHYSICAL CHARACTERISTICS

|                  |   |    |   |    |       |
|------------------|---|----|---|----|-------|
| Weight (5) Cable | W | -- | 8 | -- | grams |
|------------------|---|----|---|----|-------|

(1)  $\nabla 3$  dB limit

(2)  $\nabla 2$  dB from nominal  $M_o$  at 1kHz

(3) @ 250 $\mu\epsilon$  in base plane

(4) @ 3Hz LLF

(5) Includes 40" cable and connector

(6) Typical Value

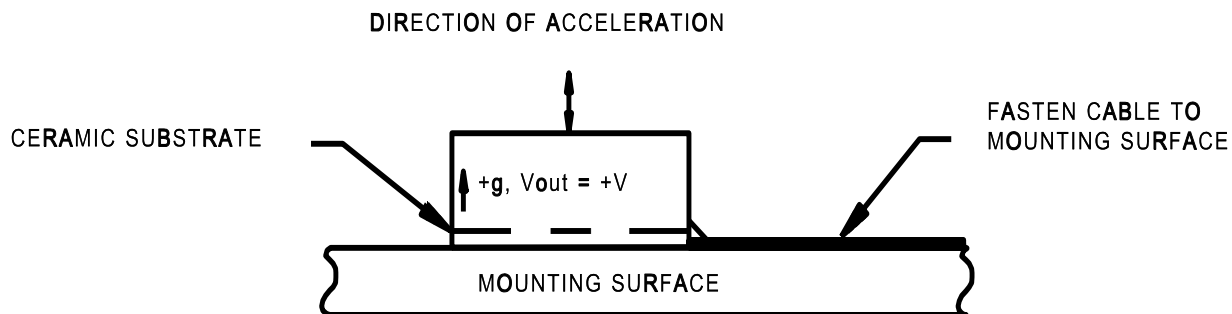
## ACCELEROMETER ACH-01

Mounting methods play a critical role in determining the overall performance of any accelerometer. The ACH-01 is no exception. An improperly mounted accelerometer can give erroneous results. We recommend using an Adhesive Mounting Method.

The surface should be flat. The area where the ACH-01 is to be mounted should be thoroughly cleaned to remove any dirt or oil present on the surface. Use a quick setting, viscous methyl cyanoacrylate adhesive such as Loctite's Black Max<sup>™</sup> or any epoxy such as Devcon's 5-Minute epoxy. Apply the adhesive sparingly to one surface following the manufacturer's directions. Apply pressure and allow the adhesive to set. Soft adhesives, such as double-sided tape or pressure sensitive adhesives, should not be used since they can adversely affect the ACH-01's performance. Cable should be adhered to the surface.

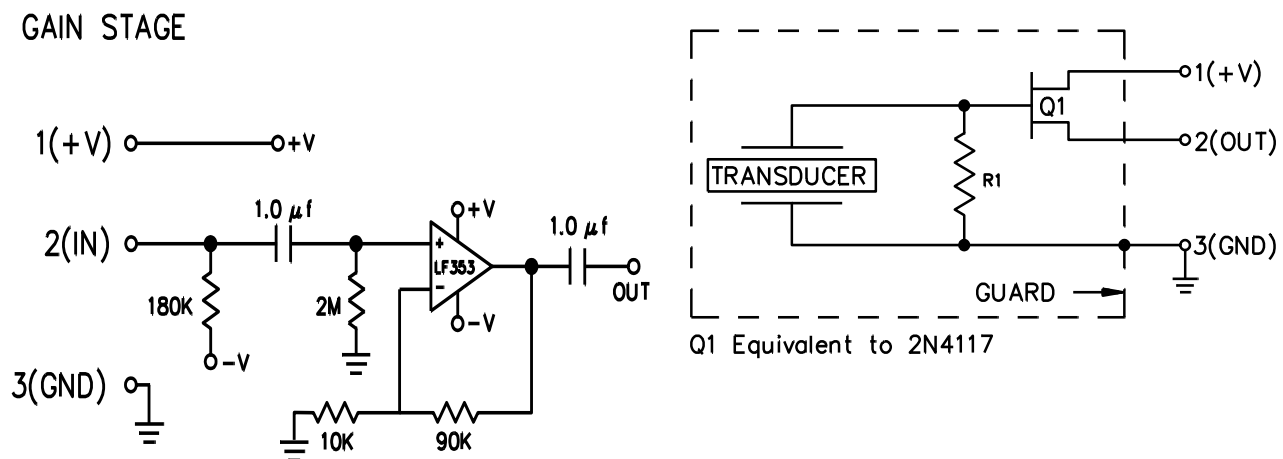
There is an interface amplifier available to simplify connection to the ACH-01, the IB-ACH-01. Please see the appropriate data sheet.

In an effort to keep the product cost low, the ACH-01 uses a ceramic substrate as the mounting base. Because of this, the ACH-01 is susceptible to base strain and temperature transient effects. A mechanically rigid and thermally non-conductive mounting surface is highly recommended to limit these effects. MEAS application engineers are available to recommend various mounting arrangements for your specific application.



## ELECTRICAL INTERFACE CIRCUITS

The accelerometer ACH-01 accommodates various electrical interface circuits. A typical example is provided in the following figure. The ACH-01 equivalent electrical schematic is also shown.



## ACCELEROMETER ACH-01

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## ORDERING INFORMATION

| Description   | Interface      | Model No. | Part No.    |
|---------------|----------------|-----------|-------------|
| Accelerometer | Pins           | ACH-01-02 | 0-1000985-0 |
|               | Shielded Cable | ACH-01-03 | 1-1001220-0 |
|               | Discrete Wires | ACH-01-04 | 1-1001497-0 |
| Amplifier     | Amplifier Box  | IB-ACH-01 | 1003058     |

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