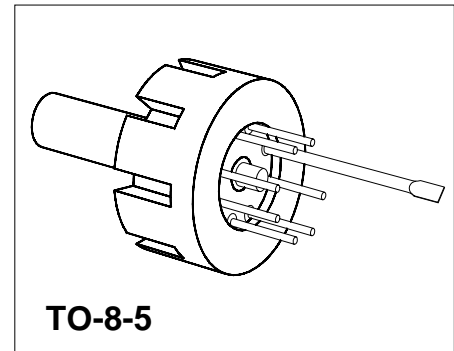


## Silicon Piezoresistive Absolute Pressure Sensor

KPY 52-AK  
KPY 56-AK

### Features

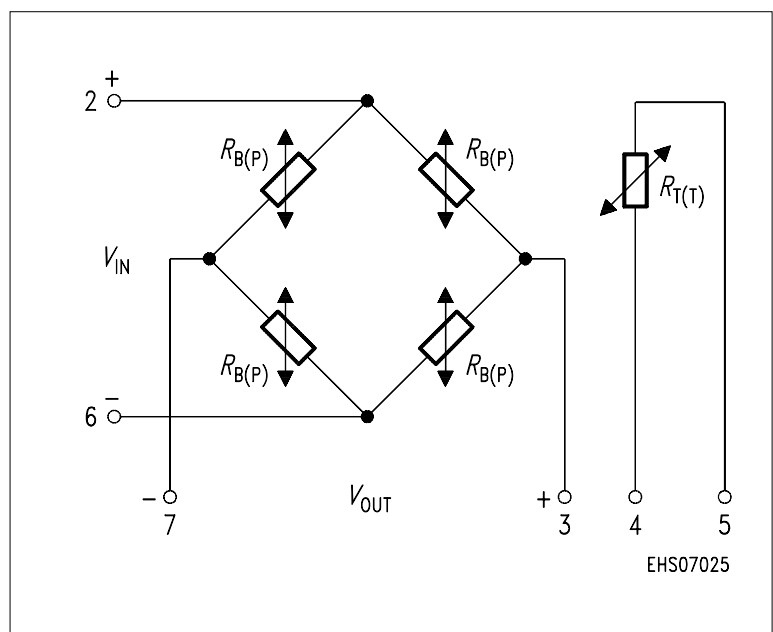
- Low pressure and temperature hysteresis
- Fast response
- High sensitivity and linearity
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- High long term stability
- Built in silicon temperature sensor
- Provided for further fabrication, protection cap



| Type and Marking | Symbol          | Pressure Range | Unit | Ordering Code |
|------------------|-----------------|----------------|------|---------------|
| KPY 52 AK        | $P_0 \dots P_N$ | 0 ... 0.6      | bar  | Q62705-K205   |
| KPY 53 AK        |                 | 0 ... 1.6      |      | Q62705-K192   |
| KPY 54 AK        |                 | 0 ... 4        |      | Q62705-K194   |
| KPY 55 AK        |                 | 0 ... 10       |      | Q62705-K196   |
| KPY 56 AK        |                 | 0 ... 25       |      | Q62705-K198   |

### Pin Configuration

|   |  |
|---|--|
| 1 | Capillary tube   |
| 2 | + $V_{IN}$   |
| 3 | - $V_{OUT}$  |
| 4 | Temperature sensor<br>(typ. $R_{25} = 2 \text{ k}\Omega$ ) |
| 5 | Temperature sensor   |
| 6 | - $V_{IN}$   |
| 7 | + $V_{OUT}$  |
| 8 | Not connected  |



## Absolute Maximum Ratings

| Parameter                   | Symbol    | Limit Values   | Unit |
|-----------------------------|-----------|----------------|------|
| Pressure overload           | $P_{MAX}$ | 6              | bar  |
| KPY 52 AK                   |           | 10             |      |
| KPY 53 AK                   |           | 16             |      |
| KPY 54 AK                   |           | 30             |      |
| KPY 55 AK                   |           | 75             |      |
| KPY 56 AK                   |           |                |      |
| Operating temperature range | $T_A$     | - 40 ... + 125 | °C   |
| Storage temperature range   | $T_{stg}$ | - 50 ... + 150 | °C   |
| Supply voltage              | $V_{IN}$  | 12             | V    |

## Electrical Characteristics

at  $T_A = 25$  °C and  $V_{IN} = 5$  V, unless otherwise specified.

| Parameter   | Symbol    | Limit Values |        |        | Unit        |
|---|-----------|--------------|--------|--------|-------------|
|   |           | min.         | typ.   | max.   |             |
| Bridge resistance   | $R_B$     | 4            | –      | 8      | kΩ          |
| Sensitivity   | $s$       | 11.0         | 15.0   | 24.0   | mV/<br>Vbar |
| KPY 52 AK   |           | 5.6          | 8.8    | 12.5   |             |
| KPY 53 AK   |           | 4.0          | 6.0    | 9.0    |             |
| KPY 54 AK   |           | 1.8          | 2.6    | 4.0    |             |
| KPY 55 AK   |           | 0.88         | 1.2    | 2.0    |             |
| KPY 56 AK   |           |              |        |        |             |
| Output voltage  | $V_{fin}$ | 33           | 45     | 72     | mV          |
| KPY 52 AK   |           | 45           | 70     | 100    |             |
| KPY 53 AK   |           | 80           | 120    | 180    |             |
| KPY 54 AK   |           | 90           | 130    | 200    |             |
| KPY 55 AK   |           | 110          | 150    | 250    |             |
| KPY 56 AK   |           |              |        |        |             |
| Offset voltage<br>$P = P_0$                                       | $V_0$     | - 25         | –      | + 25   | mV          |
| Linearity error (Best fit straight line)<br>$P_0 = P_0 \dots P_N$ | $F_L$     | –            | ± 0.15 | ± 0.35 | % $V_{fin}$ |
| KPY 52 ... 55 AK  |           | –            | ± 0.15 | –      |             |
| KPY 56 AK   |           |              |        |        |             |
| Pressure hysteresis<br>$P_1 = P_0, P_2 = P_N, P_3 = P_0$          | $P_H$     | –            | ± 0.1  | –      | % $V_{fin}$ |
| KPY 52 ... 56 AK  |           |              |        |        |             |

## Electrical Characteristics

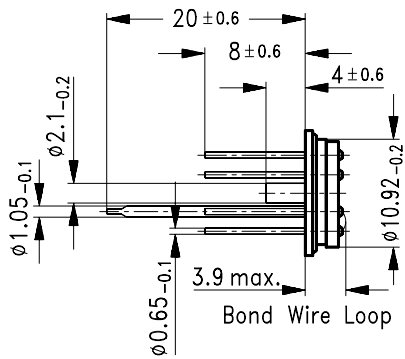
at  $T_1 = 25\text{ °C}$ ,  $T_2 = 125\text{ °C}$ ,  $T_3 = 25\text{ °C}$  and  $V_{IN} = 5\text{ V}$ , unless otherwise specified.

| Parameter                                   | Symbol         | Limit Values |         |        | Unit           |
|---|----------------|--------------|---------|--------|----------------|
|   |                | min.         | typ.    | max.   |                |
| Temperature coefficient of $V_{fin}$        | $TC_{V_{fin}}$ |              |         |        | %/K            |
| KPY 52 AK                                   |                | - 0.19       | - 0.15  | - 0.12 |                |
| KPY 53 AK                                   |                | - 0.19       | - 0.16  | - 0.13 |                |
| KPY 54 AK                                   |                | - 0.19       | - 0.17  | - 0.14 |                |
| KPY 55 AK                                   |                | - 0.19       | - 0.17  | - 0.14 |                |
| KPY 56 AK                                   |                | - 0.19       | - 0.17  | - 0.15 |                |
| Temperature coefficient of $V_0$            | $TC_{V_0}$     |              |         |        | %/K            |
| KPY 52 AK                                   |                | - 0.05       | -       | + 0.05 |                |
| KPY 53 AK                                   |                | - 0.03       | -       | + 0.03 |                |
| KPY 54 AK                                   |                | - 0.03       | -       | + 0.03 |                |
| KPY 55 AK                                   |                | - 0.03       | -       | + 0.03 |                |
| KPY 56 AK                                   |                | - 0.03       | -       | + 0.03 |                |
| Temperature coefficient of $R_B$            | $TC_{R_B}$     |              |         |        | %/K            |
| KPY 52 ... 56 AK                            |                | -            | + 0.095 | -      |                |
| Temperature hysteresis of $V_0$ ; $V_{fin}$ | $TH$           |              |         |        | % v. $V_{fin}$ |
| KPY 52 AK                                   |                | - 0.5        | -       | + 0.5  |                |
| KPY 53 ... 56 AK                            |                | - 0.3        | -       | + 0.3  |                |

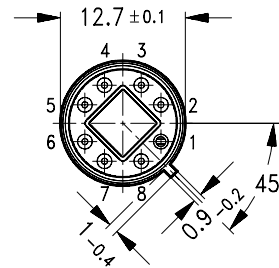
**Package Outline**

**TO-8-5**

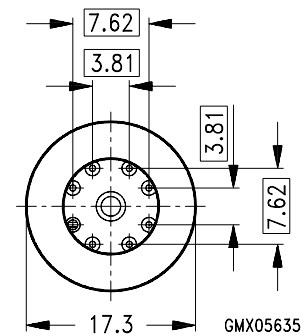
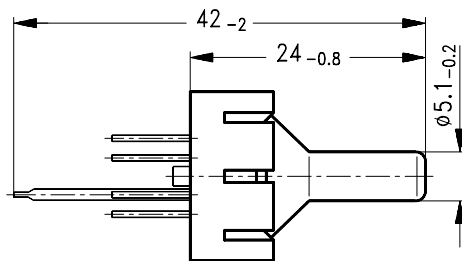
**Basic Component**



**View on Chip**



**Component Delivery Form**



Weight approx. 4.1 g

Dimension in mm

**Exterior Packaging**

I.e. tubes, trays, boxes are shown in our Data Book "Package Information".