

## Silicon Piezoresistive Relative Pressure Sensor

**KPY 51-R**  
**KPY 56-R**

### Features

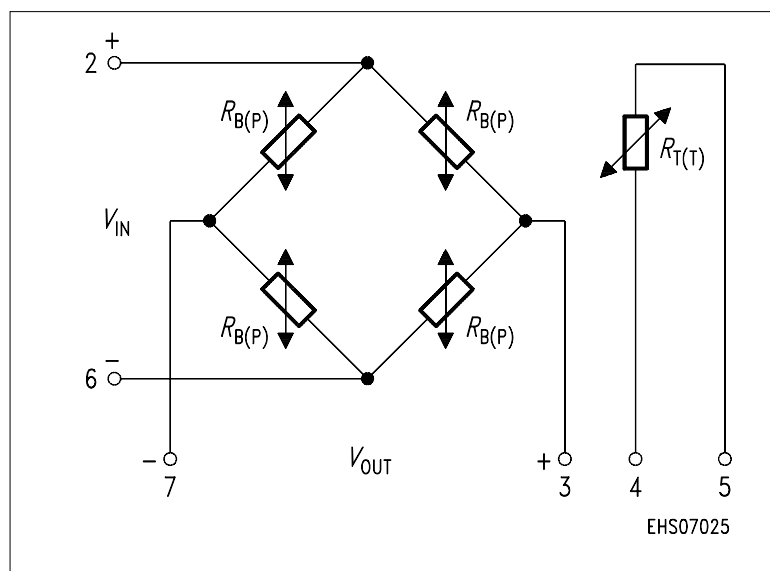
- Low pressure and temperature hysteresis
- Fast response
- High sensitivity and linearity
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- High long term stability
- Built in silicon temperature sensor
- Media compatible stainless housing



Type and Marking	Symbol	Pressure Range	Unit	Ordering Code
KPY 51 R	$P_0 \dots P_N$	0 ... 0.25	bar	Q62705-K174
KPY 52 R		0 ... 0.6		Q62705-K171
KPY 53 R		0 ... 1.6		Q62705-K176
KPY 54 R		0 ... 4		Q62705-K178
KPY 55 R		0 ... 10		Q62705-K180
KPY 56 R		0 ... 25		Q62705-K182

### Pin Configuration

1	Capillary tube
2	+ $V_{IN}$
3	- $V_{OUT}$
4	Temperature sensor (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 <sup>1)</sup>		Unit
		Frontside	Rearside	
Pressure overload KPY 51 R KPY 52 R KPY 53 R KPY 54 R KPY 55 R KPY 56 R	$P_{MAX}$	2 6 10 16 30 75	2 6 10 16 30 40	bar
Operating temperature range	$T_A$	- 40 ... + 125		°C
Storage temperature range	$T_{stg}$	- 50 ... + 130		°C
Supply voltage	$V_{IN}$	12		V

- 1) Frontside coupling applies pressure onto chip face.  
Rearside coupling applies pressure through Kovar centre tube.

## Electrical Characteristics

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

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Bridge resistance	$R_B$	4	–	8	kΩ
Sensitivity KPY 51 R KPY 52 R KPY 53 R KPY 54 R KPY 55 R KPY 56 R	$s$	16.8 11.0 5.6 4.0 1.8 0.88	24.0 15.0 8.8 6.0 2.6 1.2	32.0 24.0 12.5 9.0 4.0 2.0	mV/ Vbar
Output voltage KPY 51 R KPY 52 R KPY 53 R KPY 54 R KPY 55 R KPY 56 R	$V_{fin}$	21 33 45 80 90 110	30 45 70 120 130 150	40 72 100 180 200 250	mV
Offset voltage $P = P_0$	$V_0$	- 25	–	+ 25	mV

### Electrical Characteristics (cont'd)

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

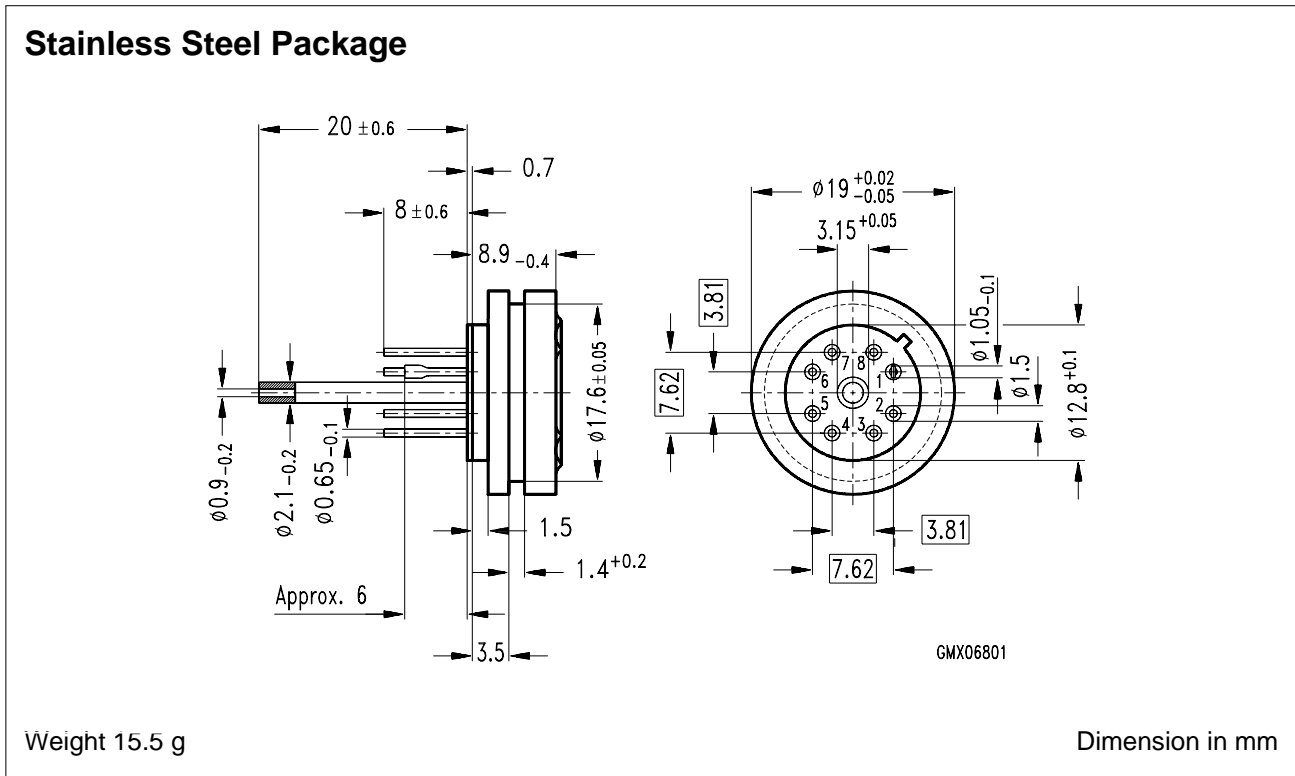
Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Linearity error (Best fit straight line) $P_0 = P_0 \dots P_N$	$F_L$				% $V_{fin}$
KPY 51 ... 55 R		–	± 0.15	± 0.35	
KPY 56 R		–	± 0.15	–	
Pressure hysteresis $P_1 = P_0, P_2 = P_N, P_3 = P_0$	$P_H$				% $V_{fin}$
KPY 51 ... 56 R		–	± 0.1	–	

### Electrical Characteristics

at  $T_1 = 25\text{ °C}$ ,  $T_2 = 80\text{ °C}$ ,  $T_3 = 25\text{ °C}$  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 51 R		– 0.20	–	– 0.09	
KPY 52 R		– 0.20	–	– 0.12	
KPY 53 R		– 0.20	–	– 0.13	
KPY 54 R		– 0.20	–	– 0.14	
KPY 55 R		– 0.20	–	– 0.15	
KPY 56 R		– 0.20	–	– 0.15	
Temperature coefficient of $V_0$	$TC_{V_0}$				% / K
KPY 51 R		– 0.03	–	+ 0.08	
KPY 52 R		– 0.03	–	+ 0.08	
KPY 53 R		– 0.03	–	+ 0.05	
KPY 54 R		– 0.03	–	+ 0.05	
KPY 55 R		– 0.03	–	+ 0.05	
KPY 56 R		– 0.03	–	+ 0.05	
Temperature coefficient of $R_B$	$TC_{R_B}$				% / K
KPY 51 ... 56 R		–	+ 0.095	–	
Temperature hysteresis of $V_0$ ; $V_{fin}$	$TH$				% v. $V_{fin}$
KPY 51 ... 56 R		–	± 0.2	–	

**Package Outline**



**Exterior Packaging**

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