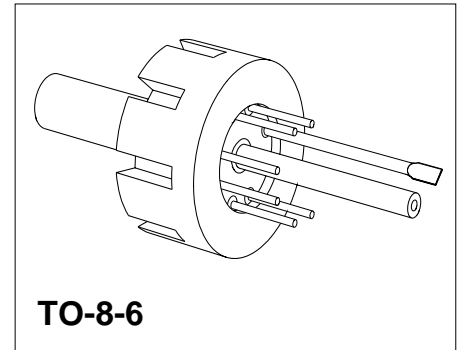


## Silicon Piezoresistive Relative Pressure Sensor

**KPY 51-RK**  
**KPY 57-RK**

### Features

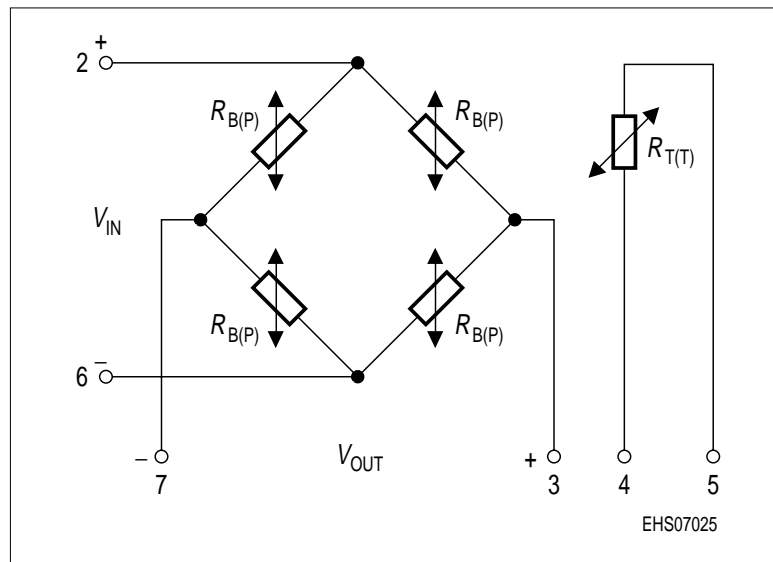
- Low pressure and temperature hysteresis
- Fast response
- High sensitivity and linearity
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- High long term stability
- Built in silicon temperature sensor
- Provided for further fabrication, protection cap



Type	Symbol	Pressure Range	Unit	Ordering Code
KPY 51-RK	$P_0 \dots P_N$	0 ... 0.25	bar	Q62705-K189
KPY 52-RK		0 ... 0.6		Q62705-K190
KPY 53-RK		0 ... 1.6		Q62705-K191
KPY 54-RK		0 ... 4		Q62705-K193
KPY 55-RK		0 ... 10		Q62705-K195
KPY 56-RK		0 ... 25		Q62705-K197
KPY 57-RK		0 ... 60		Q62705-K199

### 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-RK KPY 52-RK KPY 53-RK KPY 54-RK KPY 55-RK KPY 56-RK KPY 57-RK	$P_{MAX}$	2 6 10 16 30 75 100	2 6 10 16 30 40 70	bar
Operating temperature range	$T_A$	- 40 ... + 125		°C
Storage temperature range	$T_{stg}$	- 50 ... + 150		°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-RK KPY 52-RK KPY 53-RK KPY 54-RK KPY 55-RK KPY 56-RK KPY 57-RK	$s$	16.8 11.0 5.6 4.0 1.8 0.88 0.47	24.0 15.0 8.8 6.0 2.6 1.2 0.67	32.0 24.0 12.5 9.0 4.0 2.0 1.0	mV/ Vbar
Output voltage KPY 51-RK KPY 52-RK KPY 53-RK KPY 54-RK KPY 55-RK KPY 56-RK KPY 57-RK	$V_{fin}$	21 33 45 80 90 110 140	30 45 70 120 130 150 200	40 72 100 180 200 250 300	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.	
Offset voltage $P = P_0$	$V_0$	- 25	-	+ 25	mV
Linearity error (Best fit straight line) $P_0 = P_0 \dots P_N$	$F_L$	-	$\pm 0.15$	$\pm 0.35$	% $V_{fin}$
	KPY 51 ... 55-RK	-	$\pm 0.15$	-	
	KPY 56/57-RK	-	$\pm 0.15$	-	
Pressure hysteresis $P_1 = P_0, P_2 = P_N, P_3 = P_0$	$P_H$	-	$\pm 0.1$	-	% $V_{fin}$
	KPY 51 ... 57-RK	-	$\pm 0.1$	-	

### 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.

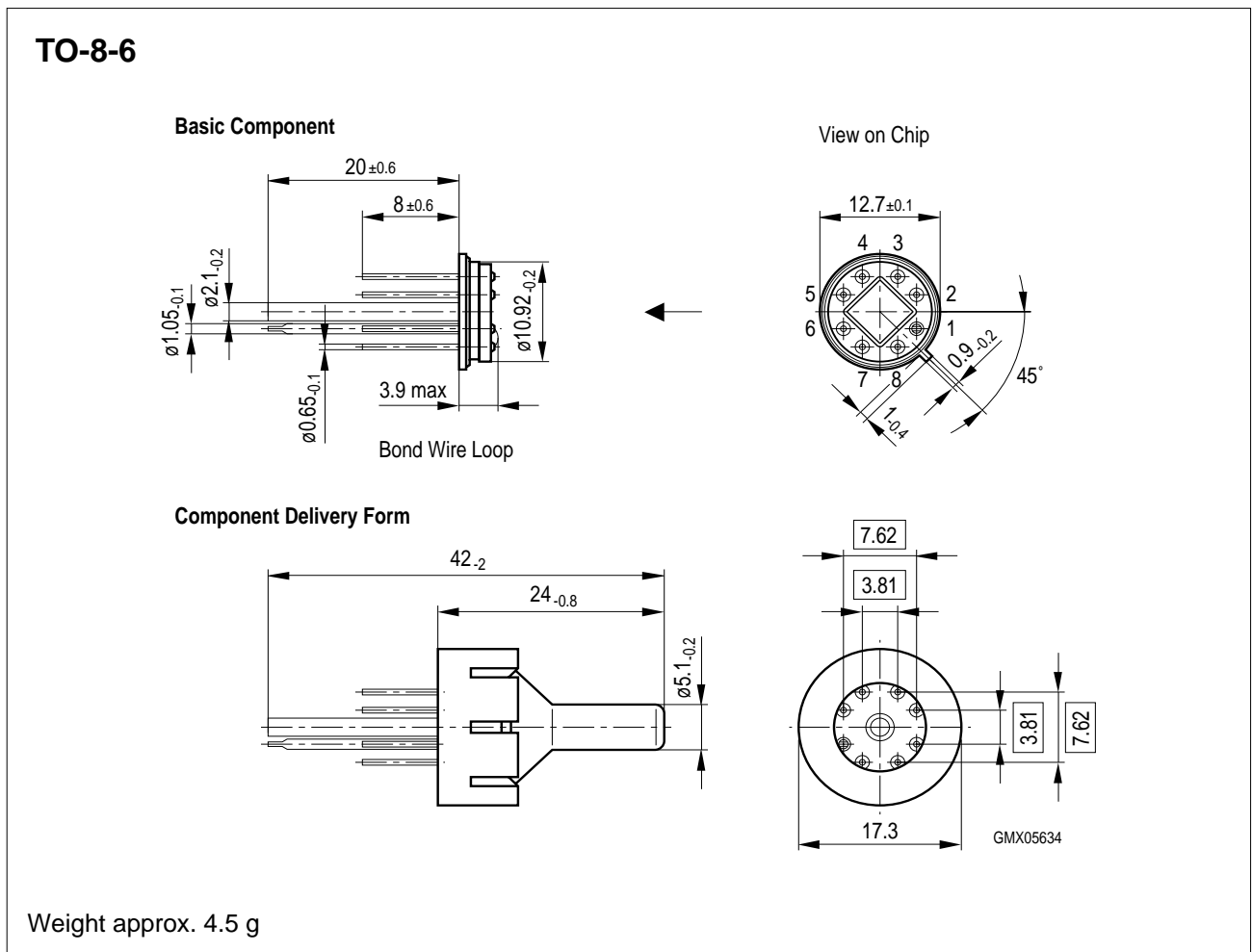
Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Temperature coefficient of $V_{fin}$	$TC_{V_{fin}}$				%/K
	KPY 51-RK	- 0.19	- 0.13	- 0.09	
	KPY 52-RK	- 0.19	- 0.15	- 0.12	
	KPY 53-RK	- 0.19	- 0.16	- 0.13	
	KPY 54-RK	- 0.19	- 0.17	- 0.14	
	KPY 55-RK	- 0.19	- 0.17	- 0.14	
	KPY 56-RK	- 0.19	- 0.17	- 0.15	
	KPY 57-RK	- 0.19	- 0.17	- 0.15	
Temperature coefficient of $V_0$	$TC_{V_0}$				%/K
	KPY 51-RK	- 0.05	-	+ 0.05	
	KPY 52-RK	- 0.05	-	+ 0.05	
	KPY 53-RK	- 0.03	-	+ 0.03	
	KPY 54-RK	- 0.03	-	+ 0.03	
	KPY 55-RK	- 0.03	-	+ 0.03	
	KPY 56-RK	- 0.03	-	+ 0.03	
	KPY 57-RK	- 0.01	-	+ 0.01	
Temperature coefficient of $R_B$	$TC_{R_B}$				%/K
	KPY 51 ... 57-RK	-	+ 0.095	-	

**Electrical Characteristics (cont'd)**

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 hysteresis of $V_0$ ; $V_{fin}$	<i>TH</i>				% v. $V_{fin}$
KPY 51-RK		- 0.7	-	+ 0.7	
KPY 52-RK		- 0.5	-	+ 0.5	
KPY 53 ... 57-RK		- 0.3	-	+ 0.3	

**Package Outlines**



**Sorts of Packing**

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information".

Dimensions in mm