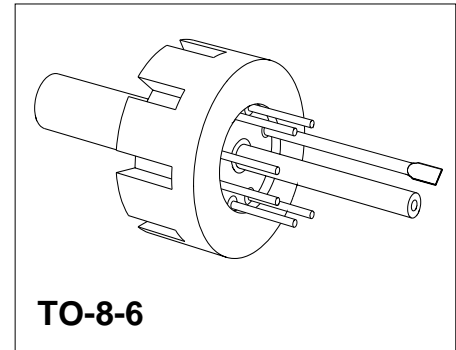


Silicon Piezoresistive Relative Pressure Sensor

KPY 51-RK
KPY 57-RK

Features

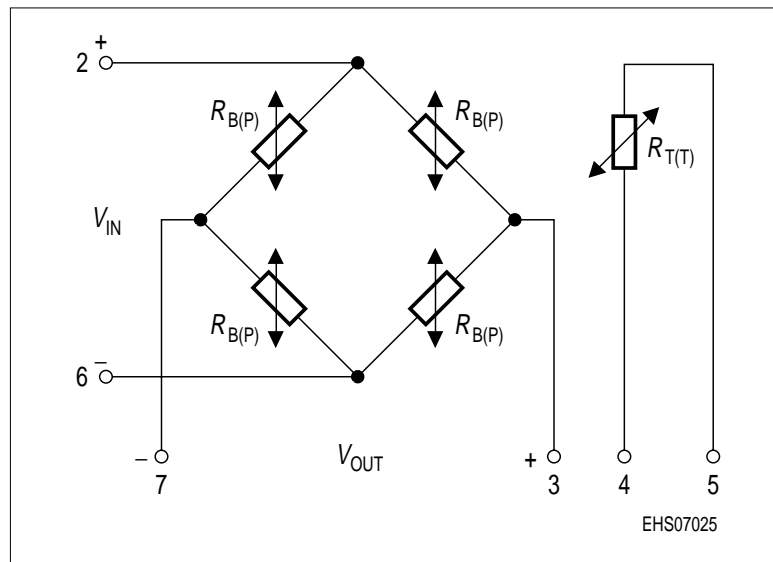
- Low pressure and temperature hysteresis
- Fast response
- High sensitivity and linearity
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- High long term stability
- Built in silicon temperature sensor
- Provided for further fabrication, protection cap



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 ¹⁾		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	-	± 0.15	± 0.35	% V_{fin}
	KPY 51 ... 55-RK	-	± 0.15	-	
	KPY 56/57-RK	-	± 0.15	-	
Pressure hysteresis $P_1 = P_0, P_2 = P_N, P_3 = P_0$	P_H	-	± 0.1	-	% V_{fin}
	KPY 51 ... 57-RK	-	± 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.

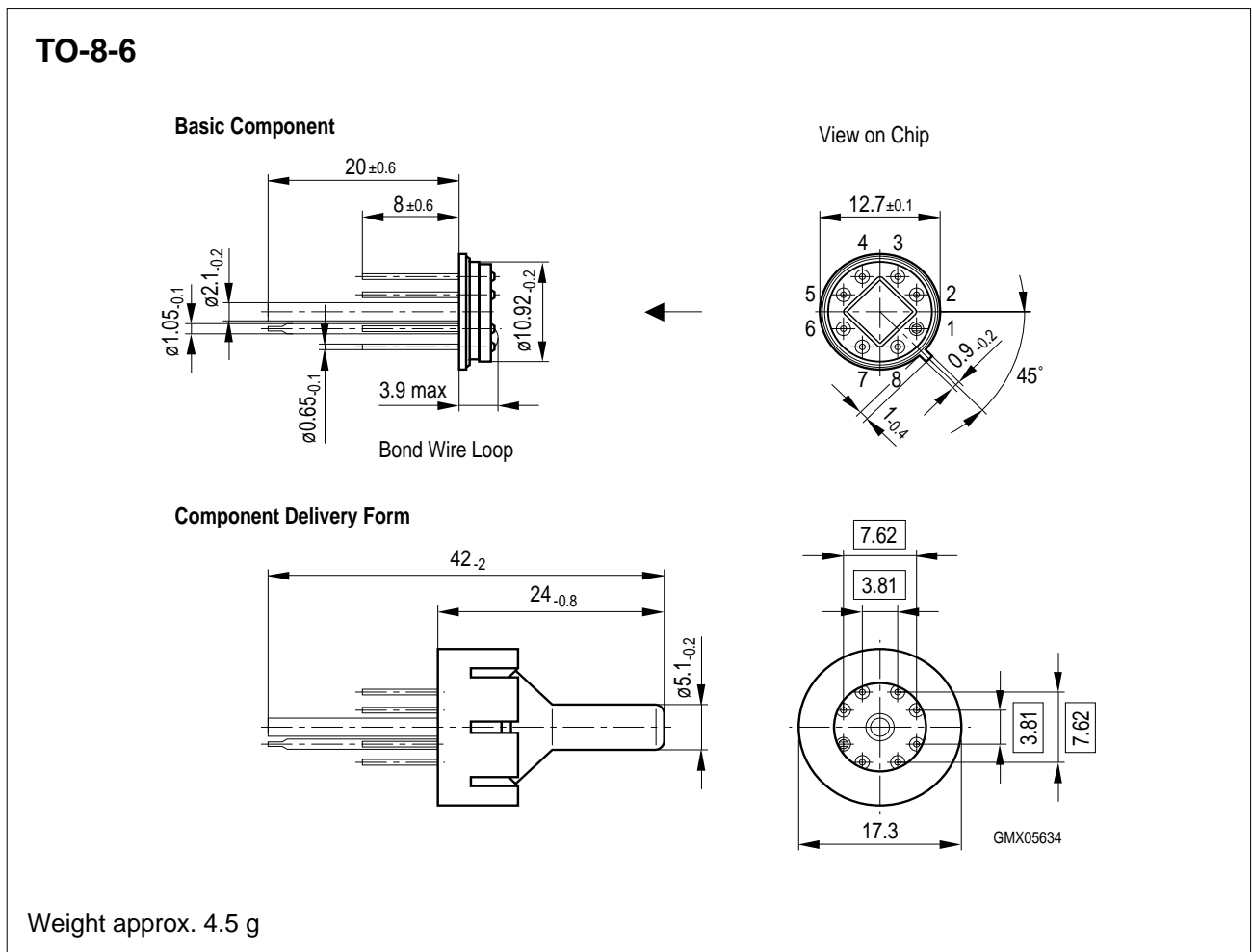
Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Temperature coefficient of V_{fin}	$TC_{V_{fin}}$				%/K
	KPY 51-RK	- 0.19	- 0.13	- 0.09	
	KPY 52-RK	- 0.19	- 0.15	- 0.12	
	KPY 53-RK	- 0.19	- 0.16	- 0.13	
	KPY 54-RK	- 0.19	- 0.17	- 0.14	
	KPY 55-RK	- 0.19	- 0.17	- 0.14	
	KPY 56-RK	- 0.19	- 0.17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