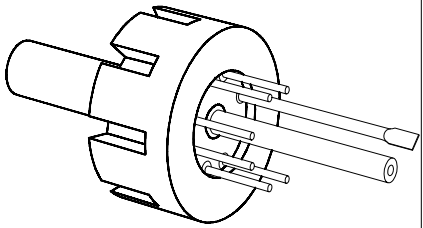
SIEMENS

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 monocrystaline silicon diaphragm giving high load cycle stability
- High long term stability
- Built in silicon temperature sensor
- Provided for further fabrication, protection cap



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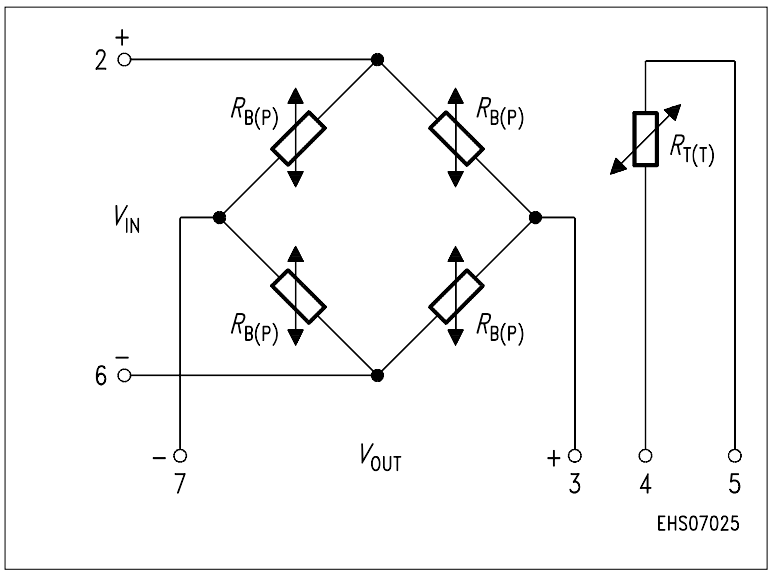
Type and Marking	Symbol	Pressure Range	Unit	Ordering Code
KPY 51 RK	$P_0 \ldots P_N$	0 … 0.25	bar	Q62705-K189
KPY 52 RK		0 … 0.6		Q62705-K190
KPY 53 RK		0 … 1.6		Q62705-K191
KPY 54 RK		0 … 4		Q62705-K193
KPY 55 RK		0 … 10		Q62705-K195
KPY 56 RK		0 … 25		Q62705-K197
KPY 57 RK		0 … 60		Q62705-K199

Pin Configuration

1	Capillary tube
2	+ V_{IN}
3	– V_{OUT}
4	Temperature sensor (typ. R_{25} = 2 kΩ)
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	P_{MAX}			bar
KPY 51 RK		2	2	
KPY 52 RK		6	6	
KPY 53 RK		10	10	
KPY 54 RK		16	16	
KPY 55 RK		30	30	
KPY 56 RK		75	40	
KPY 57 RK		100	70	
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 ˚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				mV/
KPY 51 RK		16.8	24.0	32.0	Vbar
KPY 52 RK		11.0	15.0	24.0	
KPY 53 RK		5.6	8.8	12.5	
KPY 54 RK		4.0	6.0	9.0	
KPY 55 RK		1.8	2.6	4.0	
KPY 56 RK		0.88	1.2	2.0	
KPY 57 RK		0.47	0.67	1.0	
Output voltage	V_{fin}				mV
KPY 51 RK		21	30	40	
KPY 52 RK		33	45	72	
KPY 53 RK		45	70	100	
KPY 54 RK		80	120	180	
KPY 55 RK		90	130	200	
KPY 56 RK		110	150	250	
KPY 57 RK		140	200	300	

Electrical Characteristics (cont'd)
at T_A = 25 ˚C and V_{IN} = 5 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) $P_0 = P_0 \ldots P_N$	F_L				% V_{fin}
KPY 51 … 55 RK		–	± 0.15	± 0.35	
KPY 56/57 RK		–	± 0.15	–	
Pressure hysteresis $P_1 = P_0$, $P_2 = P_N$, $P_3 = P_0$ KPY 51 … 57 RK	P_H	–	± 0.1	–	% V_{fin}

Electrical Characteristics
at T_1 = 25 ˚C, T_2 = 125 ˚C, T_3 = 25 ˚C and V_{IN} = 5 V, unless otherwise specified.

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Temperature coefficient of V_{fin}	TC_{Vfin}				%/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_{V0}				%/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_{RB}				%/K
KPY 51 … 57 RK		–	+ 0.095	–	

Electrical Characteristics (cont'd)
at T_1 = 25 ˚C, T_2 = 125 ˚C, T_3 = 25 ˚C and V_{IN} = 5 V, unless otherwise specified.

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Temperature hysteresis of V_0; V_{fin}	TH				% 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 Outline

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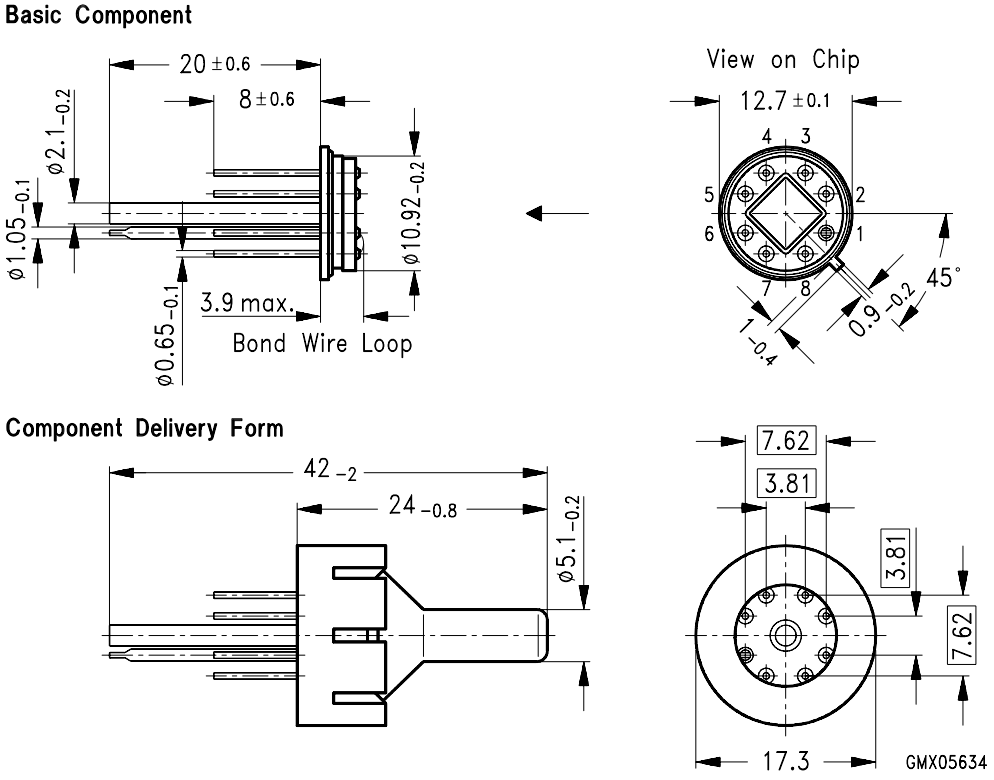

Weight approx. 4.5 g

Dimension in mm

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