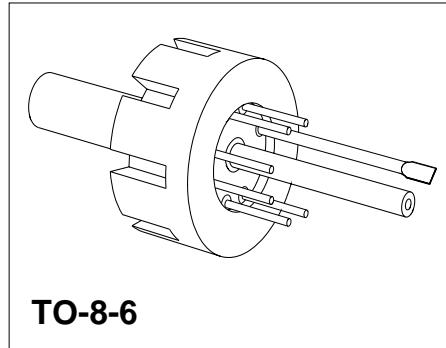


Silicon Piezoresistive Relative Pressure Sensor

KPY 51-RK
KPY 57-RK

Features

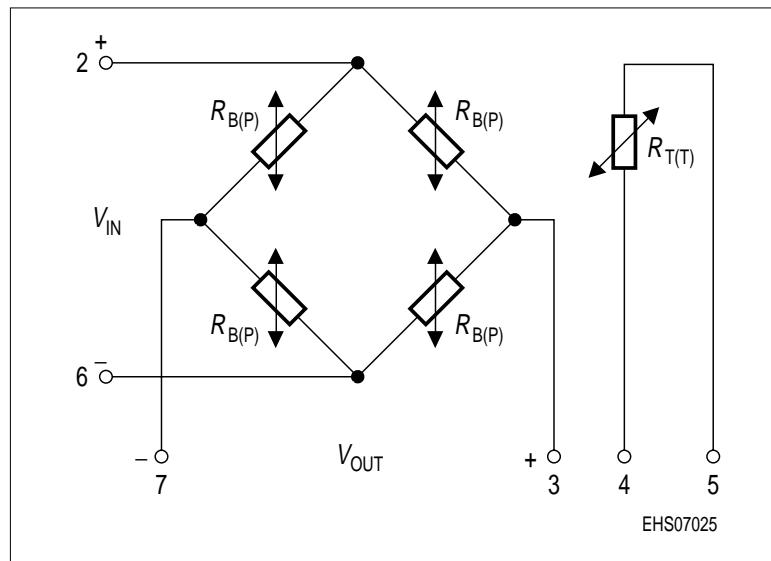
- Low pressure and temperature hysteresis
- Fast response
- High sensitivity and linearity
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- High long term stability
- Built in silicon temperature sensor
- Provided for further fabrication, protection cap



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	P_{MAX}	2	2	bar
		6	6	
		10	10	
		16	16	
		30	30	
		75	40	
		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	16.8	24.0	32.0	mV/ Vbar
		11.0	15.0	24.0	
		5.6	8.8	12.5	
		4.0	6.0	9.0	
		1.8	2.6	4.0	
		0.88	1.2	2.0	
		0.47	0.67	1.0	
Output voltage	V_{fin}	21	30	40	mV
		33	45	72	
		45	70	100	
		80	120	180	
		90	130	200	
		110	150	250	
		140	200	300	

Electrical Characteristics (cont'd)

at $T_A = 25^\circ\text{C}$ 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) $P_0 = P_0 \dots P_N$ KPY 51 ... 55-RK KPY 56/57-RK	F_L	-	± 0.15 ± 0.15	± 0.35 -	% V_{fin}
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 $T_1 = 25^\circ\text{C}$, $T_2 = 125^\circ\text{C}$, $T_3 = 25^\circ\text{C}$ and $V_{IN} = 5 \text{ V}$, unless otherwise specified.

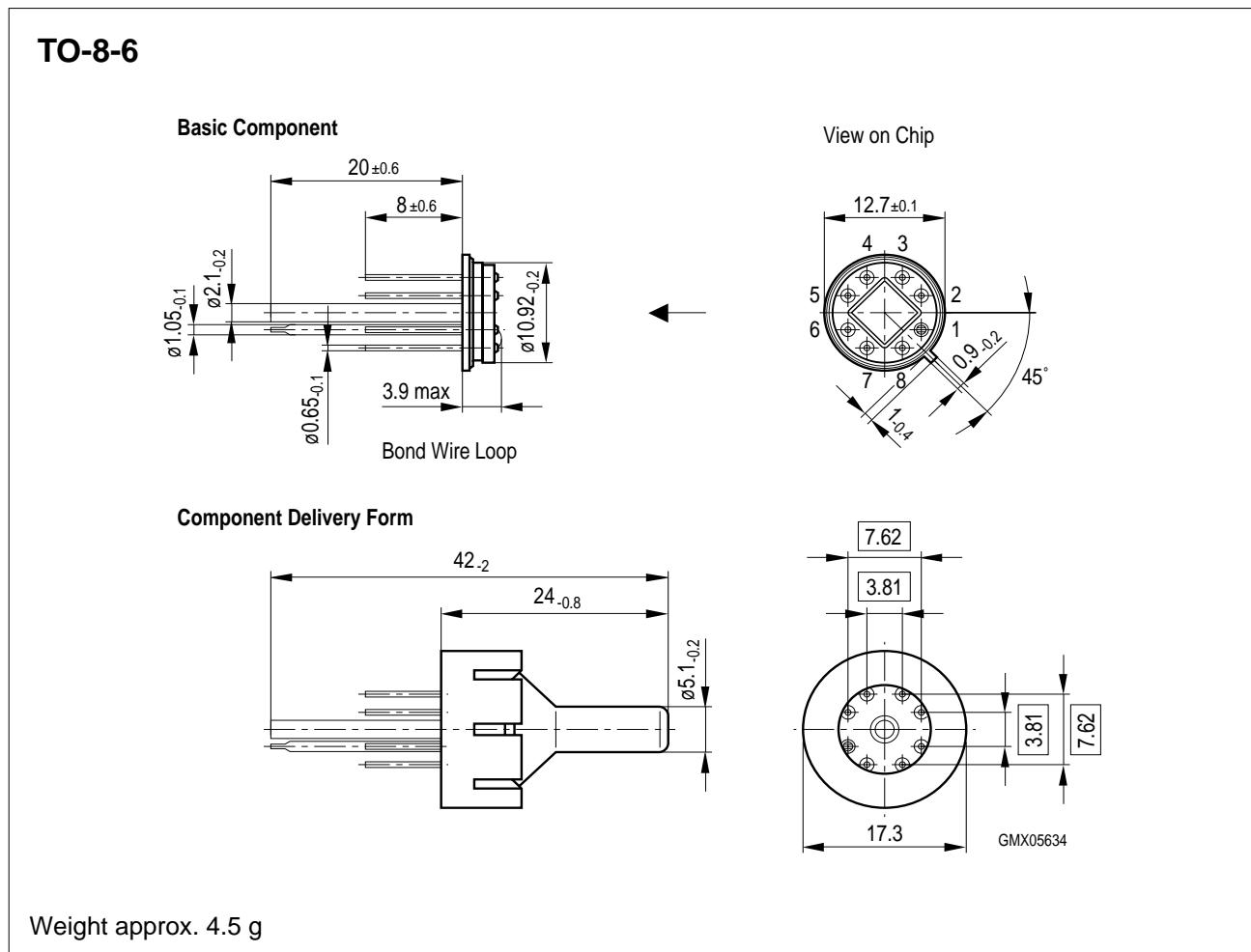
Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Temperature coefficient of V_{fin} KPY 51-RK KPY 52-RK KPY 53-RK KPY 54-RK KPY 55-RK KPY 56-RK KPY 57-RK	TC_{Vfin}	- 0.19	- 0.13	- 0.09	%/K
		- 0.19	- 0.15	- 0.12	
		- 0.19	- 0.16	- 0.13	
		- 0.19	- 0.17	- 0.14	
		- 0.19	- 0.17	- 0.14	
		- 0.19	- 0.17	- 0.15	
		- 0.19	- 0.17	- 0.15	
Temperature coefficient of V_0 KPY 51-RK KPY 52-RK KPY 53-RK KPY 54-RK KPY 55-RK KPY 56-RK KPY 57-RK	TC_{V0}	- 0.05	-	+ 0.05	%/K
		- 0.05	-	+ 0.05	
		- 0.03	-	+ 0.03	
		- 0.03	-	+ 0.03	
		- 0.03	-	+ 0.03	
		- 0.03	-	+ 0.03	
		- 0.01	-	+ 0.01	
Temperature coefficient of R_B KPY 51 ... 57-RK	TC_{RB}	-	+ 0.095	-	%/K
		-	+ 0.095	-	

Electrical Characteristics (cont'd)

at $T_1 = 25^\circ\text{C}$, $T_2 = 125^\circ\text{C}$, $T_3 = 25^\circ\text{C}$ and $V_{\text{IN}} = 5\text{ V}$, 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 Outlines



Sorts of Packing

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

Dimensions in mm