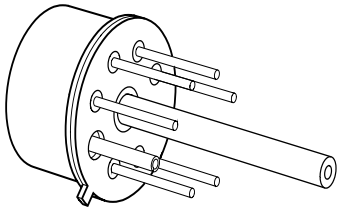
Silicon Piezoresistive Relative Pressure Sensor

KPY 41-R
KPY 46-R

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
- Pressure coupled to rearside of silicon diaphragm
- Built in silicon temperature sensor

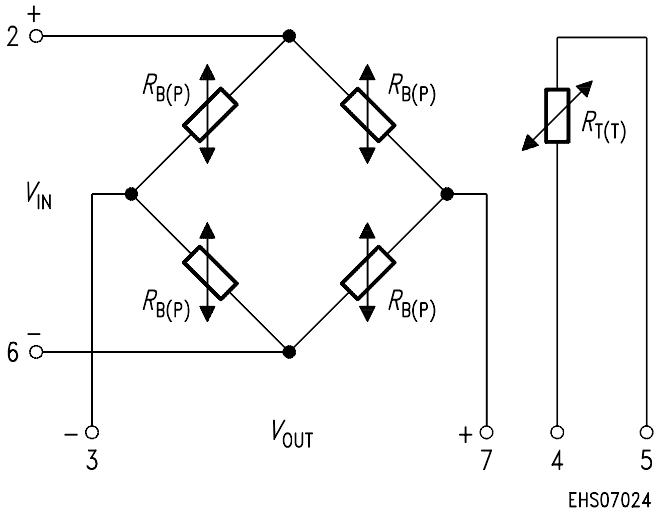


TO-8-4

Type	Symbol	Pressure Range	Unit	Ordering Code
KPY 41-R	$P_0 \ldots P_N$	0 … 0.25	bar	Q62705-K159
KPY 42-R		0 … 0.6		Q62705-K160
KPY 43-R		0 … 1.6		Q62705-K161
KPY 44-R		0 … 4		Q62705-K163
KPY 45-R		0 … 10		Q62705-K165
KPY 46-R		0 … 25		Q62705-K167

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	Unit
Pressure overload	P_{MAX}		bar
KPY 41-R		2	
KPY 42-R		6	
KPY 43-R		10	
KPY 44-R		16	
KPY 45-R		30	
KPY 46-R		40	
Operating temperature range	T_A	– 40 … + 125	°C
Storage temperature range	T_{stg}	– 50 … + 150	°C
Supply voltage	V_{IN}	12	V

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/Vbar
KPY 41-R		16.8	24.0	32.0	
KPY 42-R		11.0	15.0	24.0	
KPY 43-R		5.6	8.8	12.5	
KPY 44-R		4.0	6.0	9.0	
KPY 45-R		1.8	2.6	4.0	
KPY 46-R		0.88	1.2	2.0	
Output voltage	V_{fin}				mV
KPY 41-R		21	30	40	
KPY 42-R		33	45	72	
KPY 43-R		45	70	100	
KPY 44-R		80	120	180	
KPY 45-R		90	130	200	
KPY 46-R		110	150	250	
Offset voltage $P = P_0$	V_0	– 25	–	+ 25	mV
Linearity error (Best fit straight line)	F_L				% V_{fin}
$P_0 = P_0 \ldots P_N$ KPY 41 … 45-R		–	± 0.15	± 0.35	
KPY 46-R			± 0.15	–	
Pressure hysteresis $P_1 = P_0$, $P_2 = P_N$, KPY 41 … 46-R $P_3 = P_0$	P_H	–	± 0.1	–	% V_{fin}

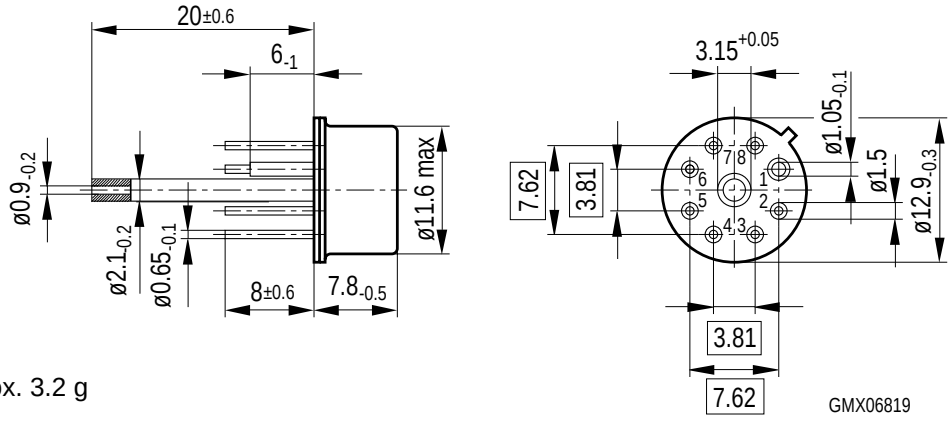
Electrical Characteristics

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 41-R		– 0.19	– 0.13	– 0.09	
KPY 42-R		– 0.19	– 0.15	– 0.12	
KPY 43-R		– 0.19	– 0.16	– 0.13	
KPY 44-R		– 0.19	– 0.17	– 0.14	
KPY 45-R		– 0.19	– 0.17	– 0.14	
KPY 46-R		– 0.19	– 0.17	– 0.15	
Temperature coefficient of V_0	TC_{V0}				%/K
KPY 41-R		– 0.05	–	+ 0.05	
KPY 42-R		– 0.05	–	+ 0.05	
KPY 43-R		– 0.03	–	+ 0.03	
KPY 44-R		– 0.03	–	+ 0.03	
KPY 45-R		– 0.03	–	+ 0.03	
KPY 46-R		– 0.03	–	+ 0.03	
Temperature coefficient of R_B	TC_{RB}				%/K
KPY 41 … 46-R		–	+ 0.095	–	
Temperature hysteresis of V_0; V_{fin}	TH				% v. V_{fin}
KPY 41-R		– 0.7	–	+ 0.7	
KPY 42-R		– 0.5	–	+ 0.5	
KPY 43 … 46-R		– 0.3	–	+ 0.3	

Package Outline

TO-8-4



Weight approx. 3.2 g

Sorts of Packing

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

Dimensions in mm