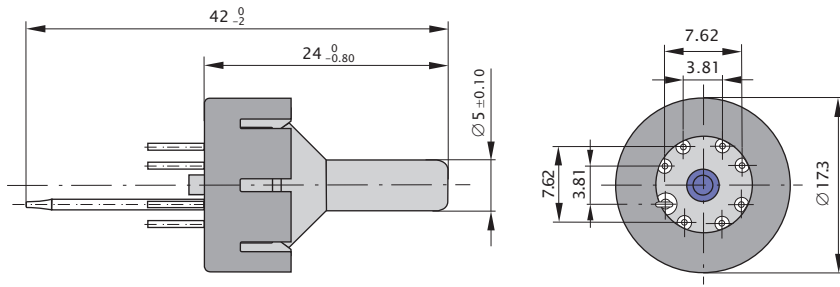


Pressure Sensor Module Differential Measurements



Component delivery form
Weight approx. 4.5g; Protection cap is suitable for applying pressure up to 10bar



Overview

The pressure sensor module K-series STARe has specifications similar to the sense die of our High Stability Line STARe. The die is mounted on TO-8 header and used for differential pressure measurements (V-, L- and M-Layout).

Note: The sensor consist of silicon, glass, glue and gold. Therefore, substances which might react with these materials should be tested before use.

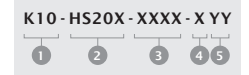
Applications

- Industrial transmitter
- Measurement and control

Features

- Very high long term stability
- Very low pressure and temperature hysteresis
- High static pressure applicable
- Fast response
- High bridge resistance
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- Temperature sensor (spreading resistance)
- Filling volume consists of ceramic components (no swelling in oil)

Order No.



- 1 **Product Code**
K-Series STARe D
- 2 **Outside Dimension**
V: 4.75 X 4.75mm (3kPa...10kPa)
L: 2.75 X 2.75mm (35kPa...100kPa)
M: 2.15 X 2.15mm (250kPa...1MPa)
- 3 **Pressure Range [Pa]**
03k0: 3kPa = 30mbar
01M0: 1MPa = 10bar
- 4 **Type (X)**
D: Differential (Si)
- 5 **Thickness Dies Back Plate**
YY: 05 (0.53mm Back Plate)

Common Characteristics

Type	Pressure range	Parameter	min.	typ.	max.	Unit
K10-HS20V-03k0-D05	3kPa		50	80	120	
K10-HS20V-06k0-DXX	6kPa					
K10-HS20V-10k0-DXX	10kPa					
K10-HS20L-35k0-DXX	35kPa					
K10-HS20L-100k-DXX	100kPa	Span voltage	60	100	140	mV at 5V
K10-HS20M-250k-DXX	250kPa					
K10-HS20M-500k-DXX	500kPa					
K10-HS20M-01M0-DXX	1.0MPa					

Certificate

ISO/TS 16949

Contact

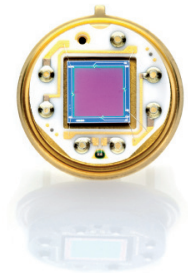
First Sensor AG
www.first-sensor.com

Pressure Sensor Module Differential Measurements

Electrical Characteristics
(measured at 5V supply and 25°C, unless otherwise specified)

Parameter	min.	typ.	max.	Unit
Bridge resistance	5,000	6,000	7,000	Ω
Offset voltage	-25	0	+25	mV
Temperature coefficient of bridge resistance ¹	+0.07	+0.09	+0.11	%/K
Temperature coefficient of offset ¹	-0.05	±0.01	+0.05	%F.S.S./K
Temperature coefficient of span ¹	-0.23	-0.20	-0.17	
Temperature hysteresis ¹	-	<0.05	-	±%F.S.S.
Pressure hysteresis	-	<0.02	-	
Linearity error ² (higher than 10 kPa) p-range: higher than 10MPa	-	<0.30 <1.00	0.50	
Static pressure effect on offset	-	-	<0.05	±%F.S.S./100 bar
Static pressure effect on output span	-	-	<0.1	

1) Measured from 25°C to 85°C · 2) End point straight line setting
3) Pressure applied onto the front side of the die



Order No.

K10 - HS20X - XXXX - X YY				
1	2	3	4	5

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Certificate

ISO/TS 16949

Maximum Rating

Type	Over Pressure (100kPa)		Burst Pressure (100kPa)	
	FS min.	RS min.	FS min.	RS min.
K10-HS20-03k0-D05	3	1.5	>3	>1.5
K10-HS20V-06k0-DXX	4	2	>4	>2
K10-HS20V-10k0-DXX	6	3	>6	>3
K10-HS20L-35k0-DXX	10	5	>10	>5
K10-HS20L-100k-DXX	20	10	>20	>10
K10-HS20M-250k-DXX	40	20	>40	>20
K10-HS20M-500k-DXX	50	25	>50	>25
K10-HS20M-01M0-DXX	60	30	>60	>30

FS: Frontside; RS: Rearside

Parameter	Limit Values			Unit
	min.	typ.	max.	
Operating temperature range	-40	-	+125	°C
Storage temperature range	-50	-	+130	
Supply voltage	-	5	12	V

Contact

First Sensor AG
www.first-sensor.com

Silicon Temperature Sensor
(at $T_A = 25^\circ\text{C}$ and $I_B = 1\text{mA}$, unless otherwise specified)

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Sensor resistance at $T_A=25^\circ\text{C}$	R_{th}	1.85	2.00	2.15	
Spread of temperature factor		-	-	-	
$T_A=-25^\circ\text{C}$		0.655	0.66	0.675	
$T_A=0^\circ\text{C}$		0.812	0.82	0.826	
$T_A=25^\circ\text{C}$	k_T	-	1	-	$k\Omega$
$T_A=50^\circ\text{C}$		1.195	1.20	1.215	
$T_A=75^\circ\text{C}$		1.42	1.43	1.45	
$T_A=100^\circ\text{C}$		1.66	1.68	1.70	
$T_A=125^\circ\text{C}$		1.92	1.95	1.98	

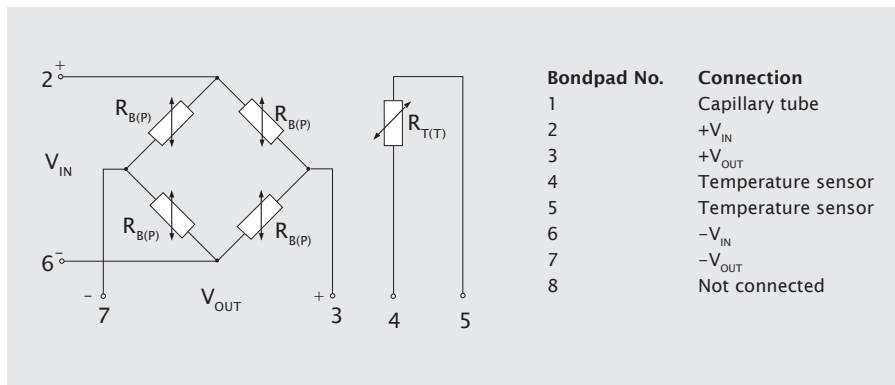
$$R_{th} = R_{25} \cdot (1 + \alpha \cdot \Delta T_A + \beta \cdot \Delta^2 T_A) [\Omega] = f(T_A)$$

$$\alpha = 7.68 \cdot 10^{-3} [K^{-1}], \beta = 1.88 \cdot 10^{-5} [K^{-2}]$$

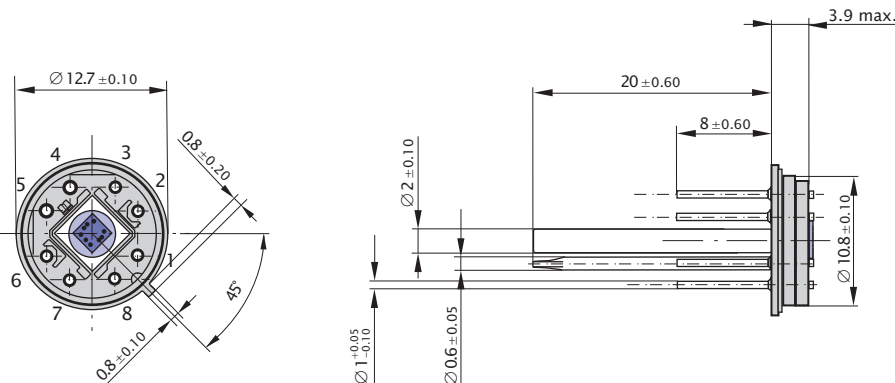
$$k_T = \frac{R_{th}}{R_{25}} = 1 + \alpha \cdot \Delta T_A + \beta \cdot \Delta^2 T_A = f(T_A)$$

$$T = 25 + \frac{\sqrt{\alpha^2 - 4\beta + 4\beta \cdot k_T} - \alpha}{2\beta} [^\circ\text{C}]$$

Pin configuration

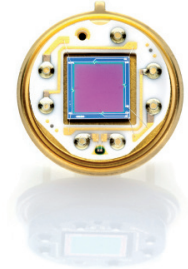


Package outlines - Basic component

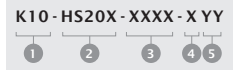


Disclaimer

All informations are only for product description without any legal binding. For further improvement of technical details, it is subject to change.



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