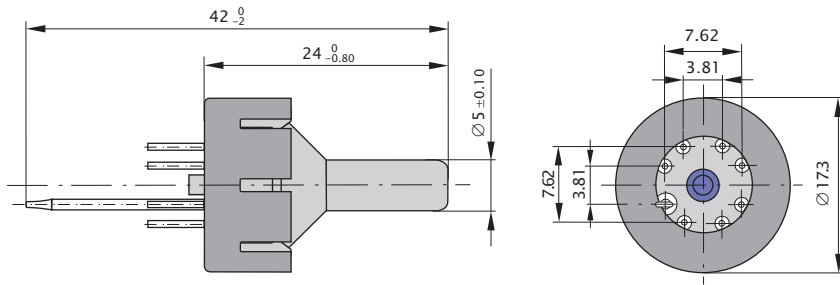


Pressure Sensor Module Differential Measurements



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.

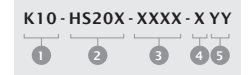
Applications

- 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.



- Product Code**
K-Series STARe D
- 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)
- Pressure Range [Pa]**
03k0: 3kPa = 30mbar
01M0: 1MPa = 10bar
- Type (X)**
D: Differential (Si)
- 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	0.50	
Static pressure effect on offset	-	-	<0.05	±%F.S.S./100 bar
Static pressure effect on output span	-	-	<0.1	

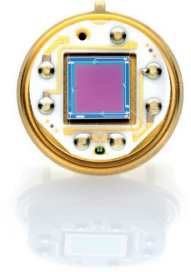
1) Measured from 25°C to 85°C · 2) End point straight line setting
3) Pressure applied onto the front side of the die

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



Order No.

K10 - HS20X - XXXX - X YY


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D: Differential (Si)
- Thickness Dies Back Plate**
YY: 05 (0.53mm Back Plate)

Certificate

ISO/TS 16949

Contact

First Sensor AG
www.first-sensor.com

Pressure Sensor Module Differential Measurements

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	

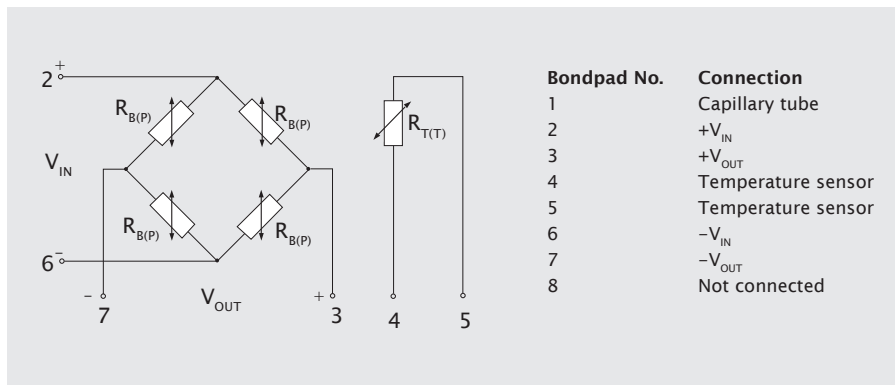
$$R_{th} = R_{25} \cdot (1 + \alpha \cdot \Delta T_A + \beta \cdot \Delta^2 T_A) [\Omega] = f(T_A)$$

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

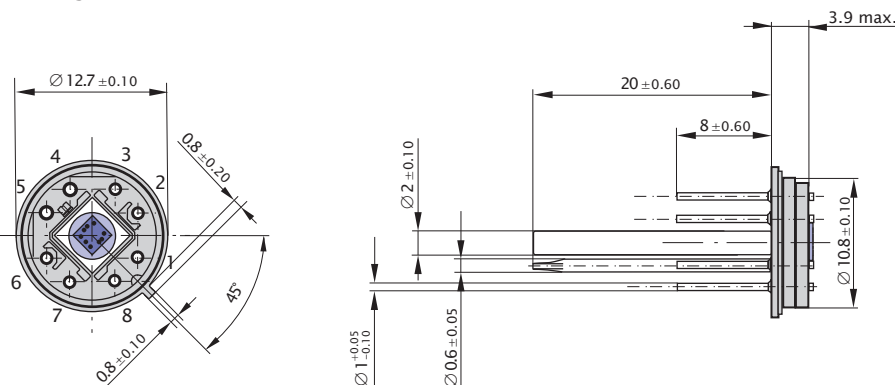
$$k_T = \frac{R_{th}}{R_{25}} = 1 + \alpha \cdot \Delta T_A + \beta \cdot \Delta^2 T_A = f(T_A)$$

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

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.



Order No.

K10-HS20X-XXXX-XYY
1 2 3 4 5

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