

1  
-36

# STRAIN GAGES



## Strain Gages

## Outline

Lead-wire cable

General

Waterproof

Concrete

Composite material  
PCB  
Plastics

Ultra-small strain  
High temp.  
Low temp.

High elongation

Non-

Hydrogen gas  
Bending

With protector

Embedded  
Crack

Adhesive  
Coating agent

Custom-  
designed

1-36

Patterns, Gage Resistance, Gage Factor	Models	Dimensions (mm)				Remarks
		Gage (Grid)		Base		
		Length	Width	Length	Width	

● KSNB Series Self-temperature-compensation Semiconductor Strain Gages

NEW

RoHS


The KSNB series gages use an N-type silicon as the resistive element to control the resistance temperature coefficient of the material according to the linear expansion coefficient of the measuring object. Thus, the change of thermally-induced resistance is minimized. (Excluding E5)

Applicable Adhesives

	Operating Temp. after Curing the Adhesive
EP-340	-50 to 150°C
CC-33A	-50 to 120°C
CC-36	-30 to 100°C

Uniaxial

Resistance: 120 Ω  
Gage factor: Approx. -100




KSNB-2-120-E3-11	2	0.3	5	3	4 gages/ pkg
KSNB-2-120-E3-16					

\*The above picture is KSNB-2-120-E3-11.

Uniaxial

Resistance: 120 Ω  
Gage factor: Approx. -100




KSNB-2-120-E4-11	2	0.3	7.7	4	4 gages/ pkg
KSNB-2-120-E4-16					

\*The above picture is KSNB-2-120-E4-11.

Uniaxial

Resistance: 120 Ω  
Gage factor: Approx. -110

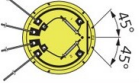


KSNB-2-120-E5-11	2	0.3	-		4 gages/ pkg Oxygen-free tin-plated copper wires 40 mm long
KSNB-2-120-E5-16					

\*The above picture is KSNB-2-120-E5-11.

Biaxial, 0°/90°  
plane arrangement

Resistance: 120 Ω  
Gage factor: Approx. -100




KSNB-2-120-F3-11	2	0.3	φ11		2 gages/ pkg
KSNB-2-120-F3-16					

\*The above picture is KSNB-2-120-F3-11.

Uniaxial 350Ω gages

Resistance: 350 Ω  
Gage factor: Approx. -100



KSNB-6-350-E4-11	6	0.31	13	5	4 gages/ pkg
KSNB-6-350-E4-16					

\*The above picture is KSNB-6-350-E4-11.



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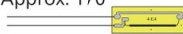


High elongation

Non-  
magnetoresistiveHydrogen gas  
Bending

With protector

Embedded  
CrackAdhesive  
Coating agentCustom-  
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## Gages for Ultra-small Strain Measurement (KSPH & KSPLB)

Patterns, Gage Resistance, Gage Factor	Models	Dimensions (mm)				Remarks												
		Gage (Grid)		Base														
		Length	Width	Length	Width													
<div>●KSPH Series High-output Semiconductor Strain Gages</div> <div>RoHS</div> <div>Uniaxial 2000Ω gage</div> <div>Resistance: 2000 Ω</div> <div>Gage factor: Approx. 170</div> <div></div> <div><table><tr><td></td><td>Operating Temp. after Curing the Adhesive</td></tr><tr><td>CC-33A</td><td>-50 to 120°C</td></tr><tr><td>CC-36</td><td>-30 to 100°C</td></tr></table></div> <div><table><tr><td>KSPH-4-2K-E4</td><td>4</td><td>0.73</td><td>11</td><td>4</td><td>4 gages/ pkg</td></tr></table></div>								Operating Temp. after Curing the Adhesive	CC-33A	-50 to 120°C	CC-36	-30 to 100°C	KSPH-4-2K-E4	4	0.73	11	4	4 gages/ pkg
	Operating Temp. after Curing the Adhesive																	
CC-33A	-50 to 120°C																	
CC-36	-30 to 100°C																	
KSPH-4-2K-E4	4	0.73	11	4	4 gages/ pkg													
<div>Uniaxial 10000Ω gage</div> <div>Resistance: 10000 Ω</div> <div>Gage factor: Approx. 170</div> <div></div> <div><table><tr><td>KSPH-9-10K-E4</td><td>9</td><td>0.58</td><td>16</td><td>5</td><td>4 gages/ pkg</td></tr></table></div>							KSPH-9-10K-E4	9	0.58	16	5	4 gages/ pkg						
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Patterns, Gage Resistance, Gage Factor	Models	Dimensions (mm)				Remarks												
		Gage (Grid)		Base														
		Length	Width	Length	Width													
<div>●KSPLB Ultra Linear Semiconductor Strain Gage</div> <div>RoHS</div> <div>Uniaxial 60Ω gage</div> <div>Resistance: 60 Ω</div> <div>Gage factor: Approx. 90</div> <div></div> <div><table><tr><td></td><td>Operating Temp. after Curing the Adhesive</td></tr><tr><td>CC-33A</td><td>-50 to 120°C</td></tr><tr><td>EP-340</td><td>-50 to 150°C</td></tr></table></div> <div><table><tr><td>KSPLB-7-60-E4</td><td>7</td><td>0.28</td><td>14</td><td>5</td><td>4 gages/ pkg</td></tr></table></div>								Operating Temp. after Curing the Adhesive	CC-33A	-50 to 120°C	EP-340	-50 to 150°C	KSPLB-7-60-E4	7	0.28	14	5	4 gages/ pkg
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## Encapsulated Gages

### ●Encapsulated Gages ■MI cable length codes and optional accessories

E.g.  
 1) KHCS-10-120-G12B-11 C5M for KHCS with 5 m long MI cable.  
 2) KHCS-10-120-G12B-11 C2MV for KHCS with 2 m long MI cable and a bridge adapter pre-attached.

#### Optional Accessories

##### ■Bridge box DB-120A/L

Connect KHCV or KBW to form the Wheatstone bridge.



##### ●DB-120A

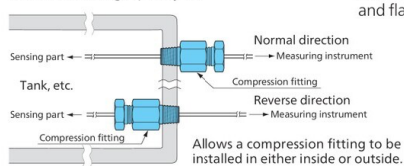
Cable: Chloroprene-coated 5 m long, terminated with a connector (NDIS4102 (7 pins)).  
 Dimensions: 60 × 42 × 25 mm  
 Weight: Approx. 600 g (Including cable)

##### ●DB-120L (Compact plug-in type)

Cable: Removable type 5 m long, terminated with a connector (NDIS4102 (7 pins)).  
 Dimensions: 60 × 20 × 20 mm  
 Weight: Approx. 60 g (Excluding cable)

##### ■Compression fitting

For fixing MI cables.  
 When ordering, specify it.



Hermetically sealed weldable strain gages consist of sensing part and cable.

When ordering, specify the model together with code of the desired MI cable length, suffixed with a space in between. The suffix may include codes of the optional bridge adapter and compression fitting (see table below.) In all case, the length of soft cable is 50 cm. (For extension, contact us.)

MI cable length	Code of MI cable length	Bridge adapter A	Compression fitting B	A & B
1 m	C1M	C1MV	C1MF	C1MFV
2 m (Std.)	C2M	C2MV	C2MF	C2MFV
3 m	C3M	C3MV	C3MF	C3MFV
4 m	C4M	C4MV	C4MF	C4MFV
5 m	C5M	C5MV	C5MF	C5MFV
6 m	C6M	C6MV	C6MF	C6MFV
8 m	C8M	C8MV	C8MF	C8MFV
10 m	C10M	C10MV	C10MF	C10MFV

##### ■Sensing part (2-element)



##### ■Half bridge adapter

Equipped with optimum temperature compensation resistors for the operating temperature range. When delivered, it is pre-attached to the soft cable to prevent erroneous wiring and ensures labor saving.

##### ■Quarter bridge adapter

A dedicated adapter to the KHCV, enables easy selection of the cutoff frequencies (1.6, 7.23, 16 Hz, and flat) as well as easy connection to the measuring instrument to prevent erroneous wiring.

