

# TRANSDUCER QUALITY STRAIN GAGE

## FULL BRIDGE LINEAR DIAPHRAGM PATTERN

OMEGA offers transducer quality, linear diaphragm pattern strain gages for use in pressure transducer designs. These patterns have 4 strain gages mounted onto a single carrier. The strain gages in the center will go into tension, and the outer 2 will go into compression. In the pressure transducer design, a diaphragm is clamped around the outer edge, and subjected to a uniform pressure. Near the center of the diaphragm the radial and tangential strains will be positive, and will be nearly equal. The radial strain decreases and becomes negative as you move away from the center toward the outer edge. Midway between the center and the outer edge the strain is at its lowest and the leads/Solder Pads are located in this low stress area. In these patterns, there are 2 half-bridges. Each half-bridge has a common lead/Solder Pads.

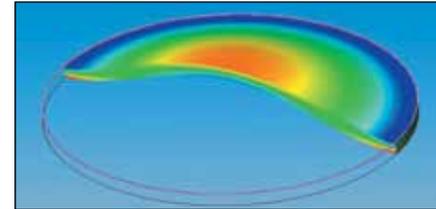
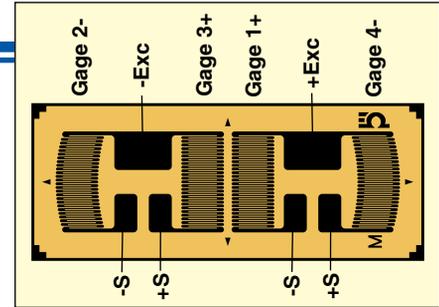
One of the patterns has been enlarged to show the detail. The strain gages and terminal pads have been numbered and labeled. The corners of the Wheatstone bridge have been left open for the addition of zero temperature compensation resistors, and zero balance compensation resistors if required. Several sizes are available.

SGT-9/350-LD\*\* can be used for a 0.4" diameter diaphragm.

SGT-12/350-LD\*\* can be used for a 0.5" diameter diaphragm.

SGT-18/350-LD\*\* and SGT-18/1000-LD\*\* can be used for 0.75 to 0.8" diameter diaphragms.

SGT-24/350-LD\*\* can be used for 1" diameter diaphragms.



### To Order

GAGE PATTERN Leads not shown	MODEL NO. Pkg of 5	NOM. RESIS- TANCE (Ω)	DIMENSIONS mm (inch)†				MAX V* (Vrms)	TERMINATION	TEMP COMP
			GRID		CARRIER				
			A	B	C	D			
<b>Shown actual size, 10.2 mm</b> 	SGT-9/350-LD11	350	0.8 (0.031)	2.6 (0.102)	10.2 (0.402)	4.0 (0.157)	4.5	Ribbon Leads	ST
	SGT-9/350-LD13	350	Full-bridge, 10.2 mm (0.4") diameter diaphragm				6.5	Ribbon Leads	AL
	SGT-9/350-LD41	350	350 Ω				4.5	Solder Pads	ST
	SGT-9/350-LD43	350					6.5	Solder Pads	AL
<b>Shown actual size, 13.5 mm</b> 	SGT-12/350-LD11	350	1.0 (0.039)	2.6 (0.102)	13.5 (0.534)	4.0 (0.157)	5.5	Ribbon Leads	ST
	SGT-12/350-LD13	350	Full-bridge, 13.5 mm (0.5") diameter diaphragm				7.5	Ribbon Leads	AL
	SGT-12/350-LD41	350	350 Ω				5.5	Solder Pads	ST
	SGT-12/350-LD43	350					7.5	Solder Pads	AL
<b>Shown actual size, 19.2 mm</b> 	SGT-18/350-LD11	350	1.8 (0.071)	5.0 (0.197)	19.2 (0.756)	6.4 (0.252)	10	Ribbon Leads	ST
	SGT-18/350-LD13	350	Full-bridge, 19.2 mm (0.75 to 0.8") diameter diaphragm				14	Ribbon Leads	AL
	SGT-18/350-LD41	350	350 Ω				10	Solder Pads	ST
	SGT-18/350-LD43	350					14	Solder Pads	AL
<b>Shown actual size, 19.2 mm</b> 	SGT-18/1000-LD11	1000	1.8 (0.071)	4.0 (0.157)	19.2 (0.756)	5.5 (0.217)	9	Ribbon Leads	ST
	SGT-18/1000-LD13	1000	Full-bridge, 19.2 mm (0.75 to 0.8") diameter diaphragm, higher resistance, reduced heat generation				13	Ribbon Leads	AL
	SGT-18/1000-LD41	1000	1000 Ω				9	Solder Pads	ST
	SGT-18/1000-LD43	1000					13	Solder Pads	AL
<b>Shown actual size, 25.4 mm</b> 	SGT-24/350-LD11	350	1.8 (0.071)	5.0 (0.197)	25.4 (1)	6.4 (0.252)	10	Ribbon Leads	ST
	SGT-24/350-LD13	350	Full-bridge, 25.4 mm (1") diameter diaphragm				14	Ribbon Leads	AL
	SGT-24/350-LD41	350	350 Ω				10	Solder Pads	ST
	SGT-24/350-LD43	350					14	Solder Pads	AL

### DISCOUNT SCHEDULE

1 to 10 pkgs. ....	Net
11 to 24 pkgs. ....	5%
25 to 49 pkgs. ....	10%
50 and up and OEM . .	Consult Factory

† For dimensions key, visit us online.

\* Maximum permitted bridge energizing voltage (Vrms). \*\* LD11, LD13, LD41 or LD43.

Note: For strain gage accessories, visit us online.

Ordering Example: SGT-9/350-LD11, package of 5, full bridge linear diaphragm pattern.

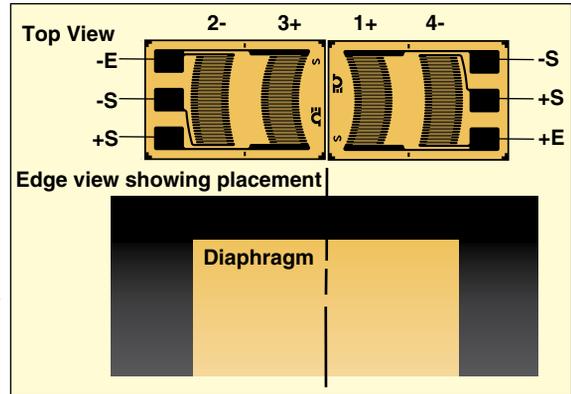
**NOTE**  
ST = Steel  
AL = Aluminum

# TRANSDUCER QUALITY STRAIN GAGE 1/2 BRIDGE LINEAR DIAPHRAGM

The following types of linear diaphragm strain gages can be used when the bonding area is larger than the diaphragm diameter. For example, if a body has a flat surface with a diameter of 1" onto which the strain gage is to be bonded, but a 0.5" diameter hole is drilled through the body leaving just a thin layer of material, then this thin 0.5" diameter is the diaphragm. So the strain gage grids are located above the thin high stress area and the leads/solder pads are over the solid part of the body in the low stress area. This linear diaphragm pattern has 2 strain gages mounted onto a single carrier. These types are used in pairs on a 0.5" diameter diaphragm. The strain gage closer to center will go into tension, and the outer gage will go into compression. Near the center of the diaphragm the radial and tangential strains will be positive, and will be nearly equal. The radial strain decreases and becomes negative as you move away

from the center toward the outer edge of the diaphragm. The leads/solder pads are in the low stress area over thicker material. In this pattern, each carrier piece has one half-bridge with a common lead/solder pad. The corners of the Wheatstone bridge have been left open for the addition of zero temperature compensation resistors, and zero balance compensation resistors, if required. SGT-8/350-LD\*\* and SGT/500-LD\*\* are used in pairs on a 0.5" diameter diaphragm. Below we show a diagram with 2 pieces of the SGT-8/350-LD\*\*, shown as they might be positioned on a 0.5" diameter diaphragm. The strain gages have been numbered and labeled. Also available is the SGT-7/350-LD\*\* which offers

2 half-bridges mounted onto one carrier piece, which can be used on a 0.28" diameter diaphragm again where the bonding area is larger. The grids are placed, centered over the diaphragm, and the leads/solder pads are over solid material in a low stress area.

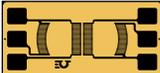


## To Order

GAGE PATTERN Leads not shown	MODEL NO. Pkg of 5	NOM. RESIS- TANCE (Ω)	DIMENSIONS mm (inch)†				MAX V* (Vrms)	TERMINATION	TEMP COMP
			GRID		CARRIER				
			A	B	C	D			
<b>Shown actual size, 8.4 mm</b> 	SGT-8/350-LD11	350	1.1 (0.043)	4.3 (0.169)	8.4 (0.331)	5.5 (0.217)	7	Ribbon Leads	ST
	SGT-8/350-LD13	350	Half-bridge, used in pairs, 13 mm (0.5") diameter diaphragm				10	Ribbon Leads	AL
	SGT-8/350-LD41	350	350 Ω				7	Solder Pads	ST
	SGT-8/350-LD43	350					10	Solder Pads	AL
<b>Shown actual size, 8.4 mm</b> 	SGT-8/500-LD11	500	1.2 (0.047)	4.3 (0.169)	8.4 (0.331)	5.5 (0.217)	7.5	Ribbon Leads	ST
	SGT-8/500-LD13	500	Half-bridge, used in pairs, 13 mm (0.5") diameter diaphragm				11	Ribbon Leads	AL
	SGT-8/500-LD41	500	nominal resistance				75	Solder Pads	ST
	SGT-8/500-LD43	500	500 Ω				11	Solder Pads	AL

## FULL BRIDGE LINEAR DIAPHRAGM

### To Order

GAGE PATTERN Leads not shown	MODEL NO. Pkg of 5	NOM. RESIS- TANCE (Ω)	DIMENSIONS mm (inch)†				MAX V* (Vrms)	TERMINATION	TEMP COMP
			GRID		CARRIER				
			A	B	C	D			
<b>Shown actual size, 12.3 mm</b> 	SGT-7/350-LD11	350	0.5 (0.02)	2.5 (0.098)	12.3 (0.484)	5.8 (0.228)	3.5	Ribbon Leads	ST
	SGT-7/350-LD13	350	Full-bridge, 7 mm (0.28") diameter diaphragm				5	Ribbon Leads	AL
	SGT-7/350-LD41	350	350 Ω				3.5	Solder Pads	ST
	SGT-7/350-LD43	350					5	Solder Pads	AL

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Ordering Example: SGT-8/350-LD11, package of 5, half bridge linear diaphragm pattern.

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