

FUJIPOLY[®]

W connector

Oriented Wire Through Connector.

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FUJIPOLY DATA SHEET NUMBER FPDS 96-01 / Version 4

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FUJIPOLY[®] DATA SHEET FPDS 96-01 (Version 4)

1] Product Name :

W connector WSL - Type
W connector WSC - Type
W connector WBC - Type

2] Features :

FUJIPOLY[®] W connector capable of connecting fine pitch linear pads and pad grid arrays will be described.

FUJIPOLY[®] W connector is conductive only in the thickness direction which makes it appropriate for low profile "z-axis" connections.

Fine pitch connections for linear pads 0.2mm to 0.3mm pad widths are possible, with connections for pad grid arrays possible at 0.35mm widths.

FUJIPOLY[®] W connector is a of durable, highly reliable connector which has been extensively tested under various electrical and mechanical conditions to demonstrate it's properties and performance.

Electrical conductivity is obtained through multiple gold-plated wires which are oriented in the thickness direction and are arranged in designated patterns, These patterns are embodied in a transparent silicone elastomer. Typical designated patterns include a linear, and triangular pattern embodied in silicone elastomer having a standard thickness of 0.5mm and 1.0mm.

Reliable electrical connection is obtained through the use of multiple gold-plated wire conductors. Typical low thru contact resistance values of 0.15 to 0.30 ohms per one square mm pad are achieved. Typical current carrying capacities of 500mA per square mm pad are also obtained.

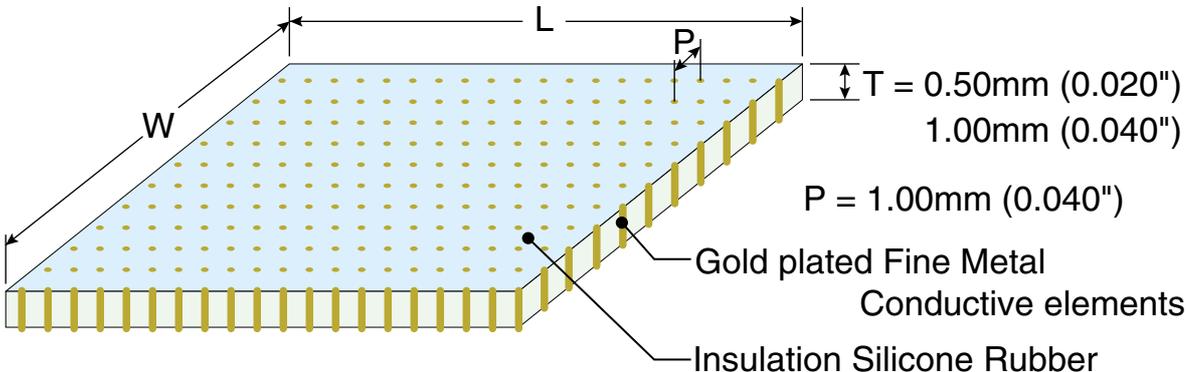
In addition to describing the connector material in detail, the following will provide electrical as well as mechanical data. Environmental testing characteristics and their effects on electrical continuity and contact resistance are also illustrated.

The main features of this new material are :

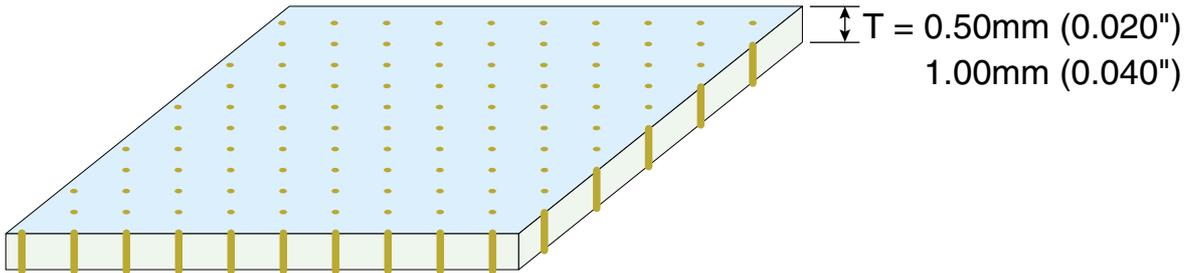
- 1) Low electrical resistivity with high sensitivity to compression.
- 2) Large current carrying capacity.
- 3) Electrical conductivity only in thickness "z-axis" direction and non-conductive in "X and Y-axis" direction.
- 4) Conductive wire are completely plated with gold, including end surfaces. Both ends of each wire can protrude from the surfaces of the rubber sheet, therefore electrical reliability of connections is high.(WSL and WSC type)
- 5) Some design restrictions in thickness depending on the methods of production and application.

3] Variety of W connectors.

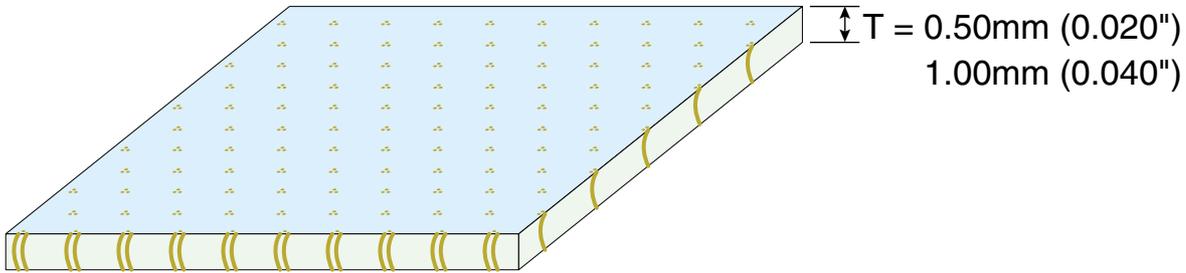
-1) WSL - Type (Figure 1)



-2) WSC - Type (Figure 2)

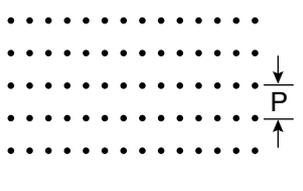
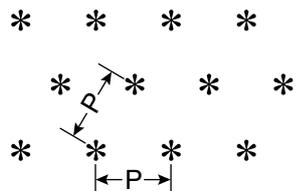
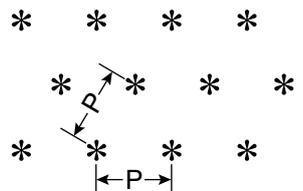
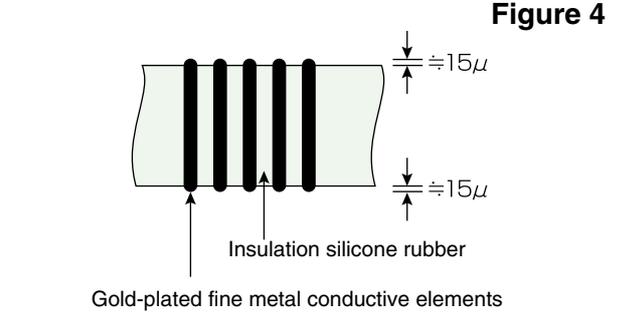
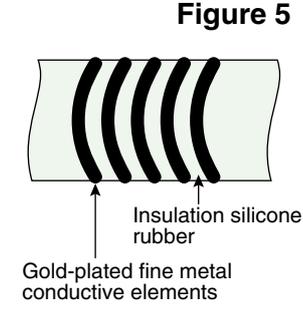


-3) WBC - Type (Figure 3)



4] Available Size and Tolerance :

Table - 1

Measurement	Mark	Nominal	WSL - Type (mm)	WSC - Type (mm)	WBC - Type (mm)
Thickness (Height)	T	0.50	0.485 ± 0.030	0.485 ± 0.030	0.490 ± 0.030
		1.00	0.985 ± 0.030	0.985 ± 0.030	0.990 ± 0.030
Length	L		76.0 Max	76.0 Max	76.0 Max
Width	W		76.0 Max	76.0 Max	76.0 Max
Pattern of Conductive - elements	Plan - view				
	Side - view				
Pitch			1.00	0.35	0.35

Note :

- 1) The **WSL** and **WSC** types have straight metal conductors protruding slightly from both top and bottom of the silicone rubber sheet to ensure perfect connections with slight pressure. Designed for mounting applications.
- 2) The **WBC** type has curved fine metal conductors embedded in a silicone rubber sheet which are flush with the top and bottom planes. The curved configuration facilitates repeated compressions. Ideal for testing applications.

5] Typical Product Propertis :

Table - 2

Item	Unit	Thickness (mm)		Remarks
		0.5	1.0	
Continuity resistance	ohm	0.25	0.45	± 30%
Current Carrying Capacity	mA / mm ²	500		More than 1,500 hours
Resistance between adjacent conductors	ohm	10 ¹⁰ or more		C Pattern P = 0.35
Light transmission	%	90		WSL - Type 1.00mm Thickness, P = 1.0
Operating Temperature Range	°C (°F)	-20 ~ 120 (68 ~ 250)		

6] Basic Environmental Testing Characteristics (Continuity / Contact Resistance)

Table - 3

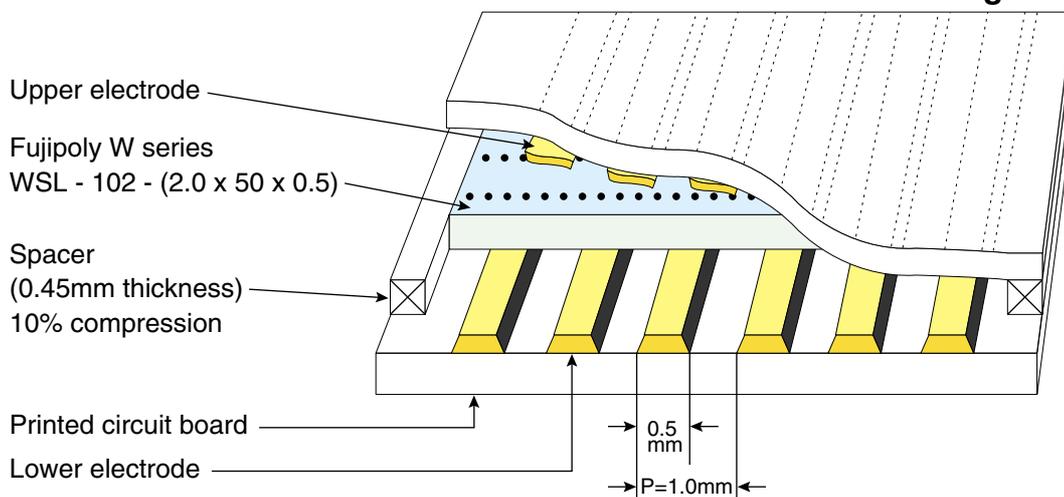
Item	Test method	Test material	Test results		
			Exposure to the test condition with connectors embedded in the circuit		Exposure using connector element only (No current)
			Live*	No current	
Accelerated moisture resistance test	Based on MIL-202D-106C	Test cycle : - 20°C → 23°C → 65°C, 95%RH 1 Test cycle / day x 10 days	–	No change	No change
Moisture test	Based on MIL-202D-103B	40°C 95%RH Continuous 1,500 hours	No change	No change	No change
Thermal shock test	Based on MIL-202E-107D	Test cycle : - 65°C → 25°C → 150°C → 25°C 5 cycles	–	No change	No change
SO₂ gas corrosion test	Based on IEC-68-2-42	SO ₂ gas, 25PPM 25°C 75%RH 21 days	–	No change	No change
Thermal resistance test	Based on MIL-202D-108A	120°C, 500 hours	–	No change	No change

Note :

- 1) Current density 10 mA / mm² (DC)
- 2) Method for testing the basic environmental characteristics
- 3) Specimen : WSL – 102 – (2.0 x 50 x 0.5)

4) Method of Insertion

Figure 6

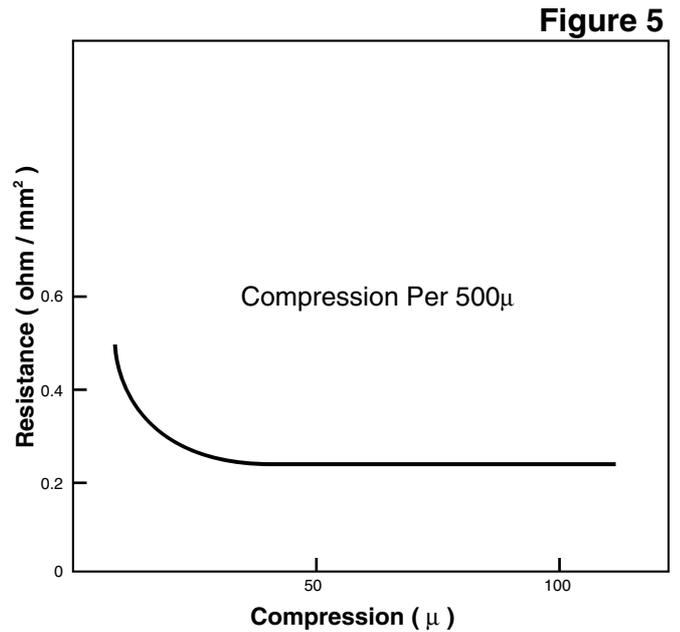
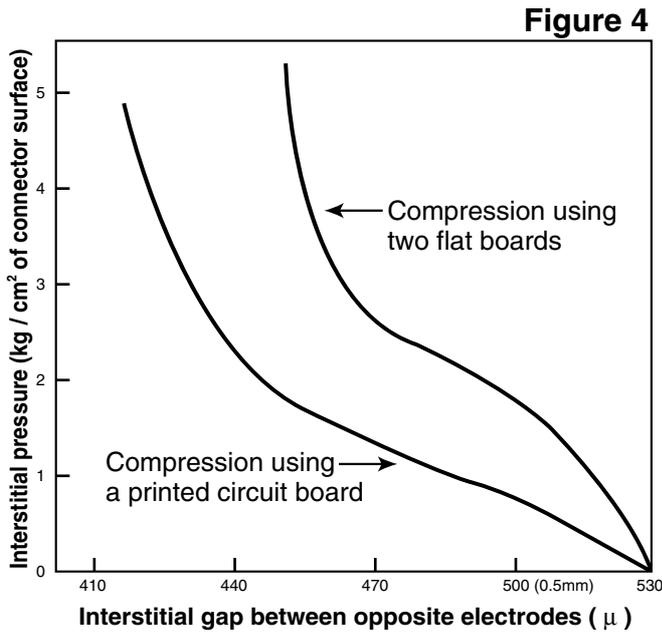


7] Design Data :

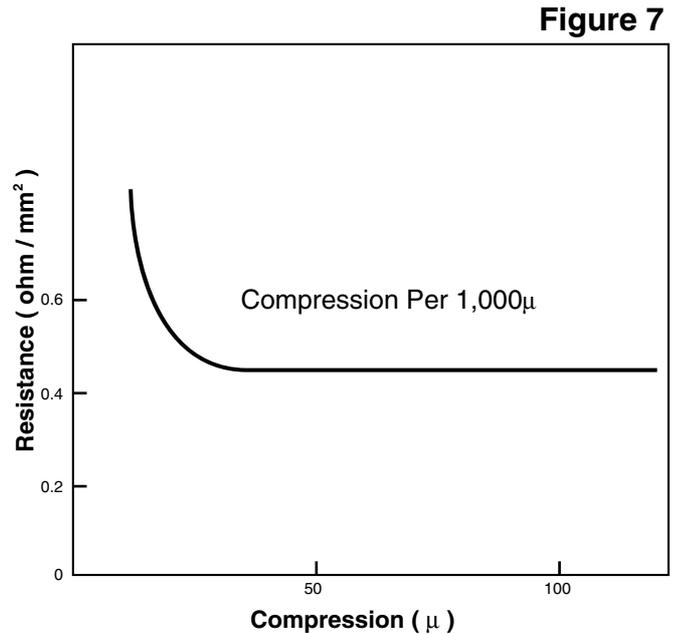
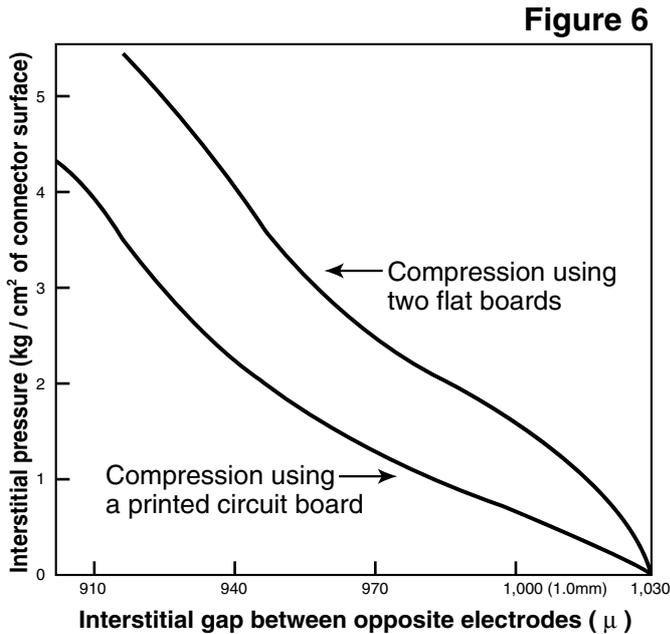
● Interstitial Pressure

The relationship between the pressure applied to opposite electrodes, known as interstitial pressure, and the gap across these opposing electrodes is dependent upon various factors including the shape of the connectors (that is, their width and thickness) and the shape of the compression joint surface (that is, the electrode height / surface area ratio). This is illustrated below by using a practical example.

● WSL - 102 - (2.0 x 10 x 0.5) Compression Characteristics (WSL - Type 0.50mm Thickness)



● WSL - 102 - (2.0 x 10 x 1.0) Compression Characteristics (WSL - Type 1.00mm Thickness)



Note :

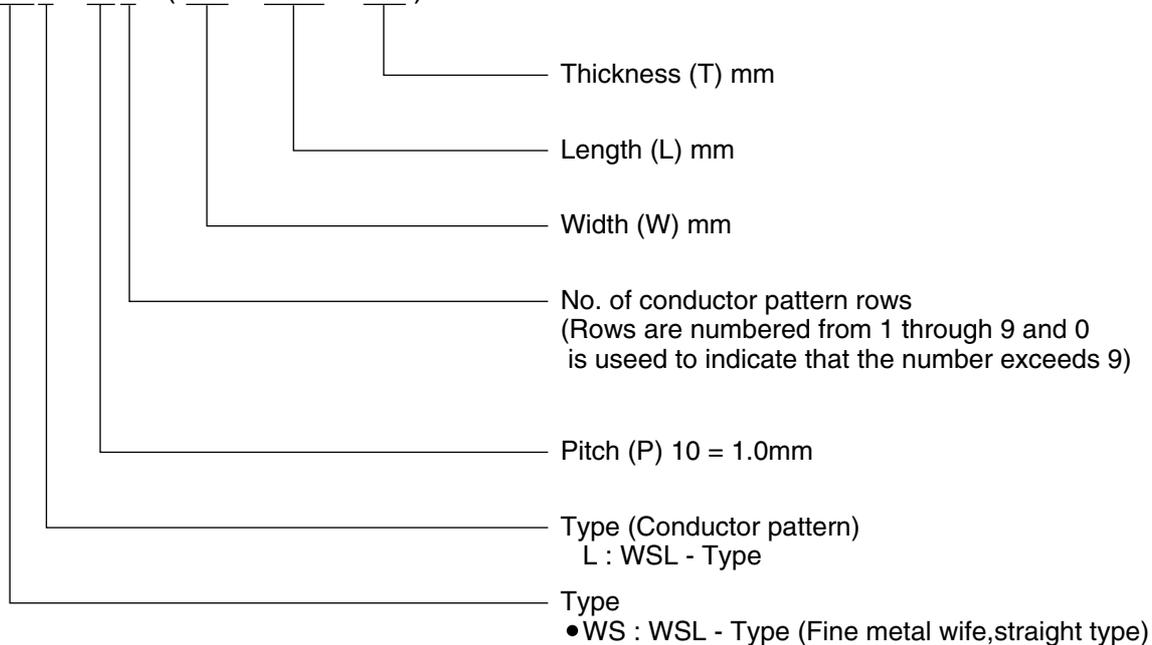
- 1) The printed circuit board uses comb-shaped full-array electrodes spaced at 1.0mm pitch, with 1 ounce electrodes of 0.5mm width.

8] Part Number Nomenclature :

1) For WSL - Type conductor arrangement

Fujipoly Connector

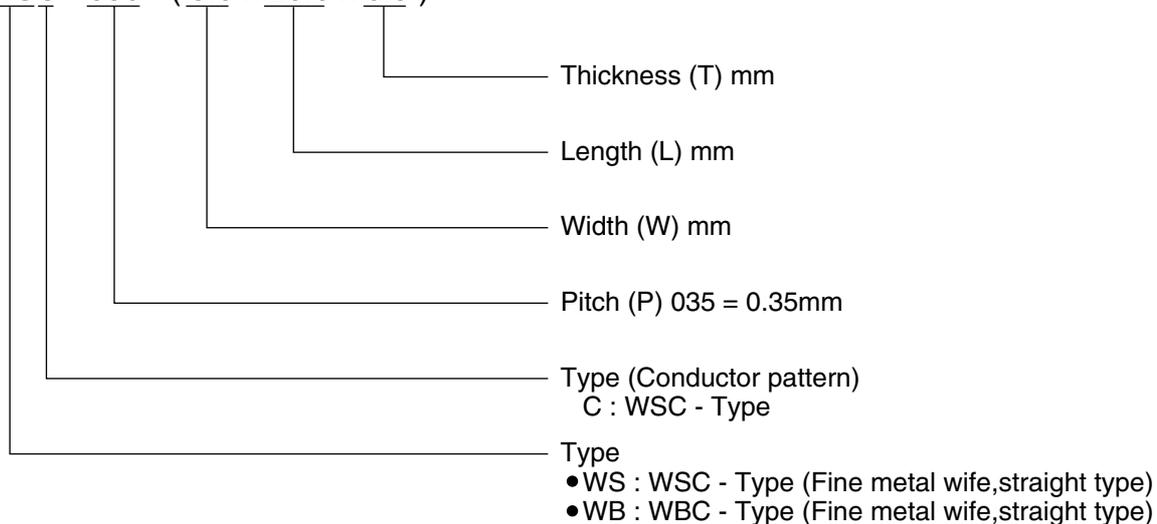
WSL - 102 - (2.0 x 20.0 x 0.5)



2) For WSC - Type and WBC - Type conductor arrangement

Fujipoly Connector

WSC - 050 - (5.0 x 20.0 x 0.5)



9] Others Technical Informations.

Fuji Poly website <http://www.fujipoly.com>

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