■ Test and Measurement Conditions

<Unless otherwise specified>
Temperature: Ordinary Temp. 15 to 35°C
Humidity: Ordinary Humidity 25 to 85% (RH)

<In case of doubt>
Temperature: 20±2°C
Humidity: 60 to 70% (RH)
Atmospheric Pressure: 86 to 106kPa

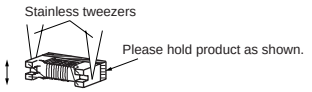
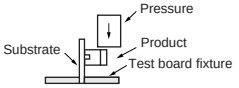
■ Specifications

1. Electrical Performance

No.	Item	Specifications	Test Methods
1	Common Mode Impedance (Zc) *1	Within the specified tolerance.	Measuring Equipment: Agilent 4291A or the equivalent Measuring Frequency: 100±1MHz
2	Common Mode Inductance (Lc) *2		Measuring Equipment: Agilent 4294A or the equivalent Measuring Frequency: 1MHz or 0.1MHz (DLW43SH101XP2)
3	Insulation Resistance (I.R.)	10MΩ min.	Measuring Voltage: Rated Voltage Charging Time: 1 minute max.
4	Withstanding Voltage	Products should not be damaged.	Test Voltage: 2.5 times for Rated Voltage Tsting Time: 1 to 5 s Charge/Discharge Current: 1mA max.
5	DC Resistance	Meet the initial value specification.	Measuring Current: 10mA max. (In case of doubt in the above mentioned standard conditions, measure by 4 terminal methods.)

*1 DLW31S only.
*2 DLW43S only.

2. Mechanical Performance

No.	Item	Specifications	Test Methods
1	Appearance and Dimensions	Meet dimensions.	Visual Inspection and measured with micrometer.
2	Solderability	The electrodes should be at least 90% covered with new solder coating.	Flux: Ethanol solution of rosin, 25wt% includes activator equivalent to 0.06 to 0.10wt% chlorine Pre-heating: 150±5°C, 60±5s Solder: ①Sn/Pb=60/40 ②Sn-3.0Ag-0.5Cu solder Solder Temperature: ①230±5°C ②245±3°C Immersion Time: ①3±0.5s ②4±1s Immersion and emersion rates: 25mm/s 
3	Resistance to Soldering Heat	Meet Table 1, next page.	Flux: Ethanol solution of rosin, 25wt% includes activator equipment to 0.06 to 0.10wt% chlorine Pre-heating: 150±5°C, 60±5s Solder: Sn/Pb=60/40 or Sn-3.0Ag-0.5Cu solder Solder Temperature: 260±5°C Immersion Time: 10±0.5s Immersion and emersion rates: 25mm/s Then measured after exposure in room condition for 4 to 48 hrs.
4	Bonding Strength	No evidence of coming off substrate. Products should not be mechanically damaged.	It should be soldered on the substrate. Applying Force (F): 10N (DLW31S Series) 17.7N (DLW43S Series) Applying Time: 5±1s (DLW31S Series) 60s (DLW43S Series) 

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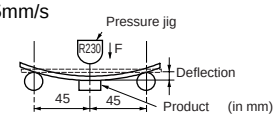
No.	Item	Specifications	Test Methods
5	Bending Strength	Meet Table 1, below.	It should be soldered on the Glass-epoxy substrate. (t=1.0mm DLW31S Series) (t=1.6mm DLW43S Series) Deflection (n): 2.0mm Keeping time: 5s (DLW31S Series) 60s (DLW43S Series) Speed of Applying Force: 0.5mm/s 
6	Vibration		It should be soldered on the substrate. Oscillation Frequency: 10 to 2000 to 10Hz for 20 min. Total Amplitude 1.5mm or acceleration amplitude 49m/s^2 whichever is smaller. (DLW31S Series) Total Amplitude 3.0mm or acceleration amplitude 245m/s^2 whichever is smaller. (DLW43S Series) Testing Time: A period of 4 hrs. in each of 3 mutually perpendicular directions. (Total 12 hrs.)

3. Environmental Performance (It should be soldered on the substrate.)

No.	Item	Specifications	Test Methods
1	Humidity	Meet Table 1, below.	Temperature: 85±2°C Humidity: 85% (RH) Time: 1000hrs. ($\pm^{48}_{0}$ hrs.) Then measured after exposure in room condition for 4 to 48 hrs.
2	Heat Life		Temperature: 125±2°C Applying Current: Rated Current Time: 1000hrs. ($\pm^{48}_{0}$ hrs.) Then measured after exposure in room condition for 4 to 48 hrs.
3	Cold Resistance		Temperature: -40± 2°C Time: 1000hrs. ($\pm^{48}_{0}$ hrs.) Then measured after exposure in room condition for 4 to 48 hrs.
4	Temperature Cycle		1 Cycle Step 1: $-40\pm^{0}_{3}$°C/30±3 minutes Step 2: Room Temperature/within 5 minutes Step 3: $+125\pm^{3}_{0}$°C/30±3 minutes Step 4: Room Temperature/within 5 minutes Total of 1000 cycles Then measured after exposure in room condition for 4 to 48 hrs.

Table 1

Appearance	No damage
Common Mode Impedance Change	within ±20% (DLW31S Series)
Common Mode Inductance	Meet the initial value specification. (DLW43S Series)
Insulation Resistance	10MΩ min.
DC Resistance	Meet the initial value specification. (DLW43S Series)
Withstanding Voltage	No damage

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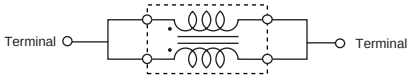
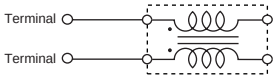
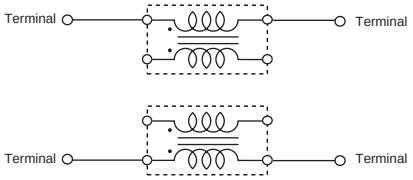
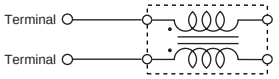
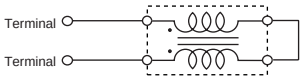
4. Test Terminal (When measuring and supplying the voltage, the following terminal is applied.)

No.	Item	Terminal to be Tested
1	Common Mode Impedance (Measurement Terminal) Common Mode Inductance (Measurement Terminal)	
2	Withstanding Voltage (Measurement Terminal)	
3	DC Resistance (Measurement Terminal)	
4	Insulation Resistance (Measurement Terminal)	
5	Heat Life (Supply Terminal)	

■ Measuring Method for Common Mode Impedance

Measured common mode impedance may include measurement error due to stray capacitance, residual inductance of test fixture.

To correct this error, the common mode impedance should be calculated as follows;

(1) Measure admittance of the fixture (opened), Go Bo.

(2) Measure impedance of the fixture (shorted), Rs Xs.

(3) Measure admittance of the specimen, Gm Bm.

(4) Calculate corrected impedance |Z| using the formula below.

$$|Z| = (Rx^2+Xx^2)^{1/2}$$

Where

$$Rx = \frac{Gm - Go}{(Gm-Go)^2 + (Bm-Bo)^2} - Rs$$

$$Xx = \frac{-(Bm - Bo)}{(Gm-Go)^2 + (Bm-Bo)^2} - Xs$$