

PRODUCT	Humidity Sensor (Pb Less)	SHINYEI KAISHA ELECTRONICS DIVISION ENGINEERING DEPT.	Issued	2 0 0 5 . 1 . 1 4
			Rev.1	
			Rev.2	
MODEL NO.	CL-M53R	APPROVED BY: M.UEDA	Rev.3	
		CHECKED BY :	Rev.4	
		DRAWN BY : S.YAMAMOTO	Rev.5	

1. Application range

This specification is applied to the Humidity Sensor Type CL-M53R.

2. Configuration

The configuration of this Humidity Sensor is shown in the drawing of page 3/4 in Fig.1.

3. Electrical characteristics

- (3- 1)Rated voltage: 1Vrms (MAX)
- (3- 2)Rated power: 0.2mA(MAX)
- (3- 3)Operating Frequency range: 500Hz~2kHz
- (3- 4)Operating Temperature range: 0~60°C
- (3- 5)Operating Humidity range: 90%rh or less
- (3- 6)Humidity-Resistance and Humidity Accuracy:

at 25°C,1kHz,1VAC(SINE WAVE)

HUMIDITY(%rh)	60
Nominal Value( k Ω )	31.0
Range( k Ω )	19.8 ~ 50.2
Accuracy(%rh)	±5

\*\*Measurement by LCR meter

\*\*Standard characteristics : Page4/4 Fig. 2.

4. Standard measuring condition

25°C, Frequency: 1kHz, Voltage: 1vrms (sine wave)

Leave the sensor in dry air at 25°C, 0%rh for 30 minutes, then leave it at 60%rh and measure its resistance after 15 minutes.

Measuring instruments

Accurate Humidity Generator: Model SRH-1 (SHINYEI)

LCR meter : Model 4261A (HP)

Lead wire for measurement : Single wick sealed lead wire

### 5. Packaging

- (1) 100 pcs of sensors to be put into a special tray.
- (2) Arrange 10 trays as one package, and pile up 10 to 20 packages in one carton-box.

Size of carton-box : Large... 470(L) x 320(W) x 340(H) mm  
Small... 470(L) x 320(W) x 170(H) mm

Q'ty/carton-box : Large... 20,000pcs Max.  
Small... 10,000pcs Max.

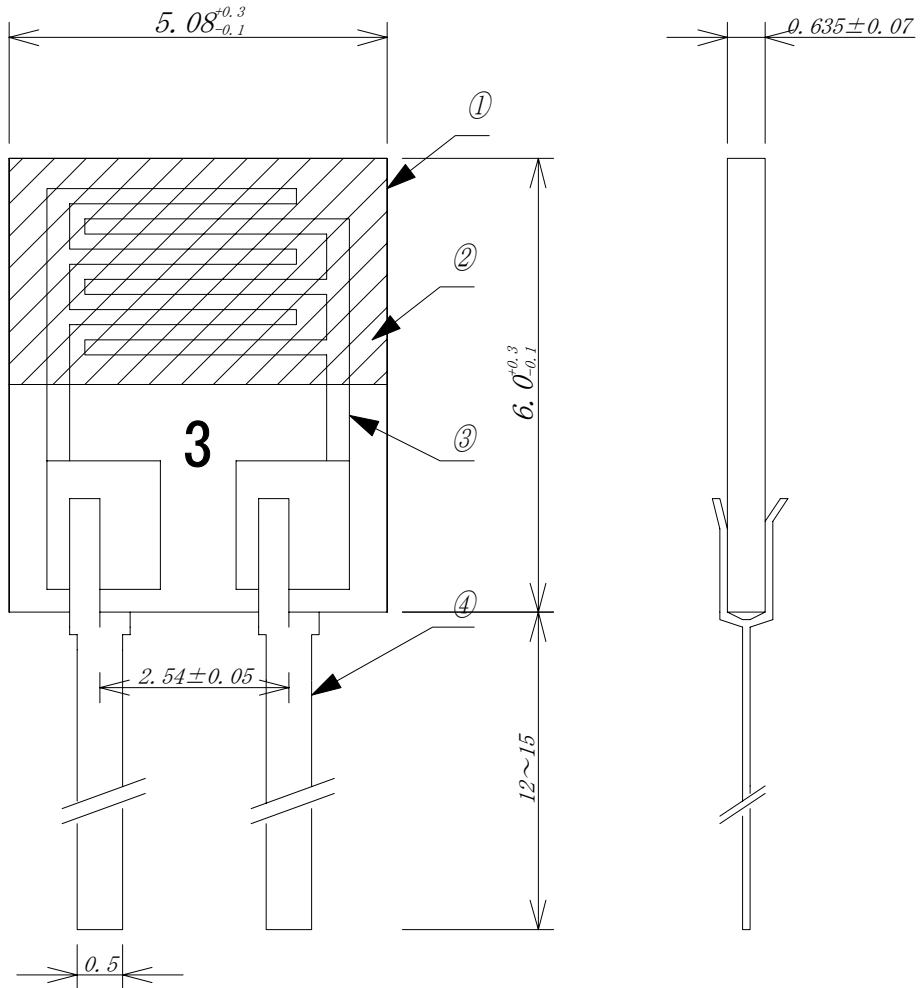
Remark: For choice of carton-box, to be chosen in the point of efficient way for the total shipping quantity.

- (3) In case of fractional shipping quantity, also make the packing in accordance with above method as near as possible.

### 6. Caution remarks on operation

- (1) Please do not touch the sensor surface(the part② in the Page3/4 figure 1)by hand directly ,handle with globe or something.
- (2) Please do not touch the sensor surface by the sharp-edged tool such as tweezers etc.
- (3) Please mind the sensor surface not to be flawed.
- (4) Please avoid direct input of DC voltage.
- (5) Please avoid condensation and drenching.
- (6) Please avoid to operate in the following environmental.
  - (a)Salt
  - (b)Inorganic gas Sulfide dioxide , Chlorine , Ammonium , etc.
  - (c)Organic gas Alcoholic , Glycols , Aldehydes , etc.
- (8) Recommendable storage condition
  - Temperature range 10 ~ 40°C
  - Humidity range 60%rh or less

Figure. 1 Configuration

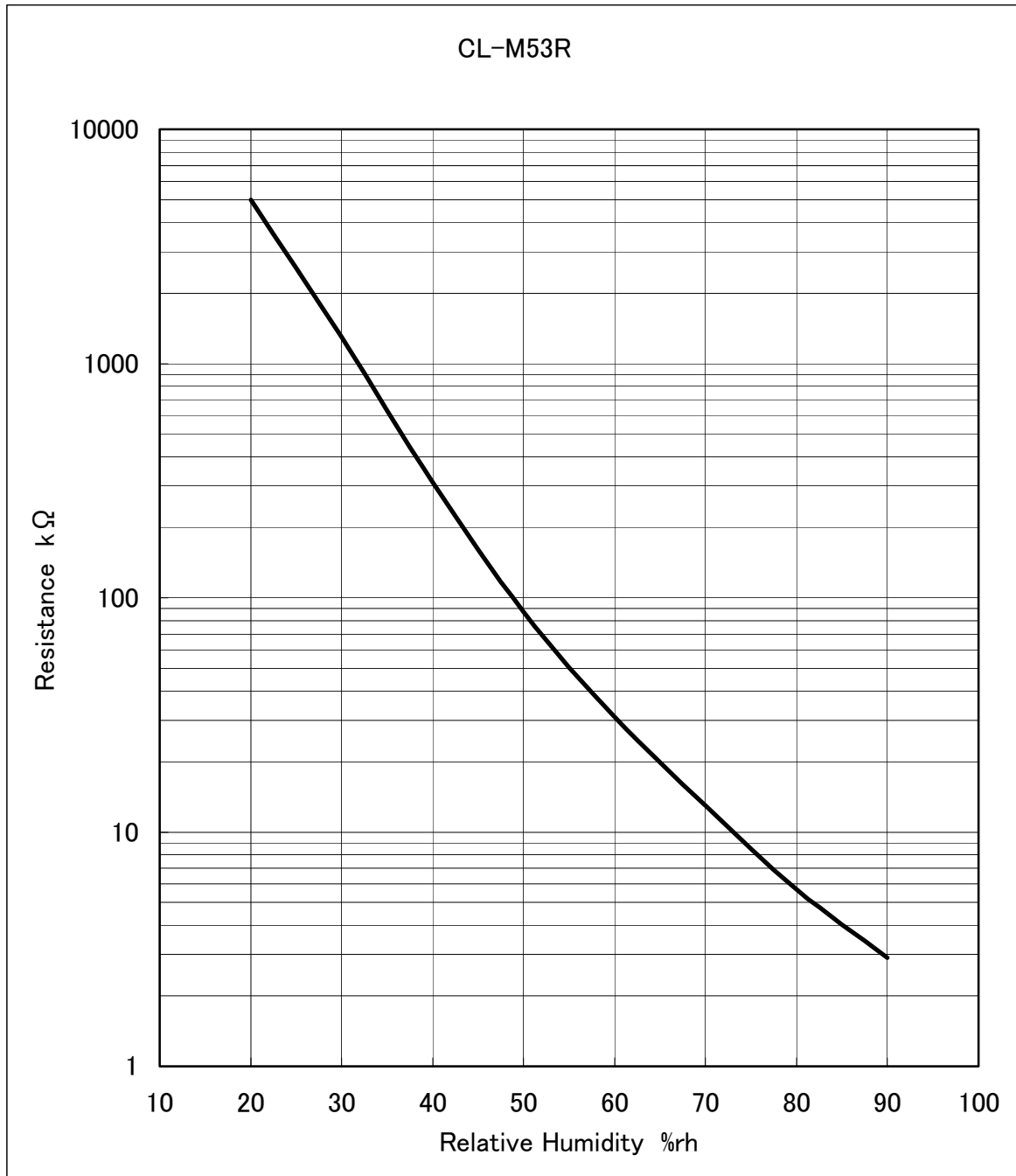


UNIT : mm

No.	Parts	Remark
1	Substrate	
2	Humidity sensitive material	
3	electrode	
4	Lead frame	Pb Less

Figure.2 Relative humidity - Resistance characteristics

The Relative humidity and Resistance characteristics of this sensor are shown in the following graph.



Temperature 25deg.c  
Voltage 1VAC  
Frequency 1kHz  
Wave form Sine wave  
Measured by LCR

HISTORY OF REVISIONS

Rev No	Date	Sym	Revisions
Issued	2005. 1. 14		SPECIFICATION No SP-01-D-05006
Rev 1			
Rev2			
Rev3			

## REFERENCE

Impedance VS%rh

M52(3)R(C) Standard Characteristic

LCR METER:1kHz

UNIT: K  $\Omega$

%RH	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
20				10000	6700	5000	3900	3000	2400	1750	1450	1150	970
25		10000	7000	5000	3400	2600	1900	1500	1100	880	700	560	450
30	6400	4600	3200	2300	1750	1300	970	740	570	420	340	270	215
35	2900	2100	1500	1100	850	630	460	380	280	210	170	130	105
40	1400	1000	750	540	420	310	235	190	140	110	88.0	70.0	57.0
45	700	500	380	280	210	160	125	100	78.0	64.0	50.0	41.0	34.0
50	370	260	200	150	115	87.0	69.0	56.0	45.0	38.0	21.0	25.0	21.0
55	190	140	110	84.0	64.0	49.0	39.0	33.0	27.0	24.0	19.5	17.0	14.0
60	105	80.0	62.0	50.0	39.0	31.0	25.0	20.0	17.5	15.0	13.0	11.0	9.40
65	62.0	48.0	37.0	30.0	24.0	19.5	16.0	13.0	11.5	10.0	8.60	7.60	6.80
70	38.0	30.0	24.0	19.0	15.5	13.0	10.5	9.00	8.00	7.00	6.00	5.40	4.80
75	23.0	18.0	15.0	12.0	10.0	8.40	7.20	6.20	5.60	4.90	4.20	3.80	3.40
80	15.5	12.0	10.0	8.00	7.00	5.70	5.00	4.30	3.90	3.40	3.00	2.70	2.50
85	10.5	8.20	6.80	5.50	4.80	4.00	3.50	3.10	2.80	2.40	2.10	1.90	1.80
90	7.10	5.30	4.70	4.00	3.30	2.80	2.50	2.20	2.00	1.80	1.55	1.40	1.30