

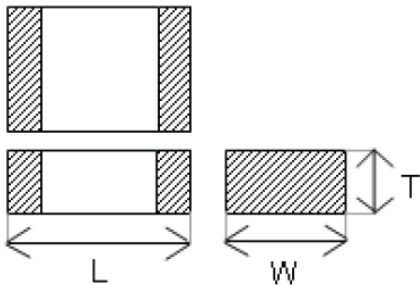
Chip Monolithic Ceramic Capacitors

Electrical Characteristics Data

<< **Made in Japan** vs **Made in Singapore** >>

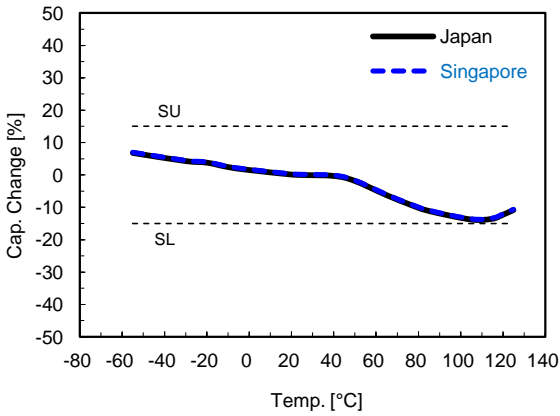
Murata Global Part No	Size (mm/inch)	Temp.Chara.	Cap.Value	Cap.Tol.	Volt.	Durability (% Rated vol.)
GRM31CR72J223KW03_	3216 / 1206	X7R	22000pF	+/- 10%	630V	120%

Dimension



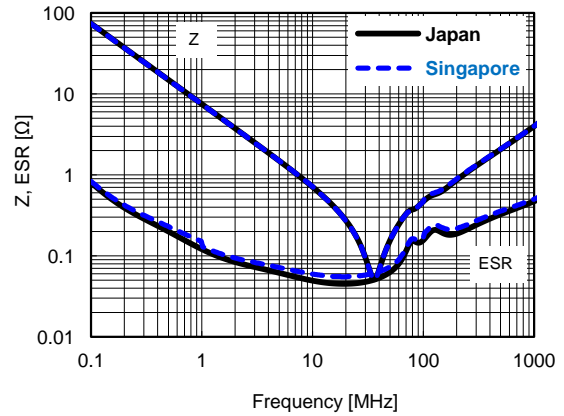
L	W	T
3.2+0.2/-0.2	1.6+0.2/-0.2	1.6+0.2/-0.2
(mm)		

Capacitance - Temperature Characteristics



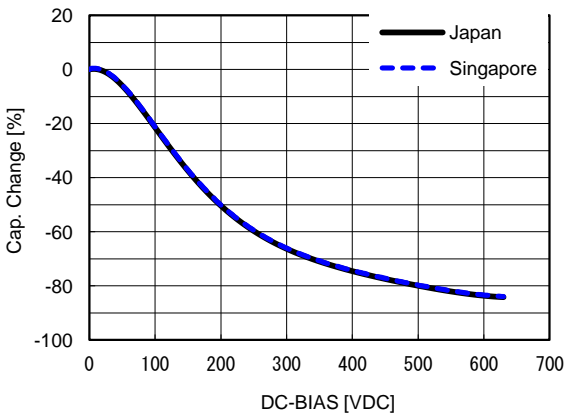
Test Condition : 1Vrms, 1kHz
 Test Equipment : HEWLETT PACKARD / HP4284A

Z & ESR - Frequency Characteristics



Test Condition : 1Vrms / 20mA
 Test Equipment : HEWLETT PACKARD / E5071C

Capacitance - DC Bias Characteristics



Test Condition : 1Vrms, 1kHz + DC Bias
 Test Equipment : HEWLETT PACKARD / HP4284A

This PDF data is a typical data as of Sep, 2015.

They are subject to change or our products in it may be discontinued without advance notice.

Therefore please approve our product specification or transact the approval sheet for product specification before ordering.

RELIABILITY TEST DATA

MEDIUM VOLTAGE CHIP MONOLITHIC CERAMIC CAPACITOR

MURATA PN : GRM31CR72J223KW03L

- SINGAPORE PRODUCT -

MURATA PN : GRM31CR72J223KW03L

- JAPAN PRODUCT -

	PAGE
1. INITIAL (Cap., D.F., I.R.)	... 1
2. TEMPERATURE CHARACTERISTIC	... 2
3. ADHESIVE STRENGTH of TERMINATION	... 2
4. DEFLECTION	... 3
5. SOLDERABILITY of TERMINATION	... 3
6. RESISTANCE to SOLDERING HEAT	... 4
7. TEMPERATURE CYCLE	... 5
8. HUMIDITY (STEADY STATE)	... 6
9. LIFE (HIGH TEMPERATURE LOADING)	... 7
10. HUMIDITY LOADING	... 8

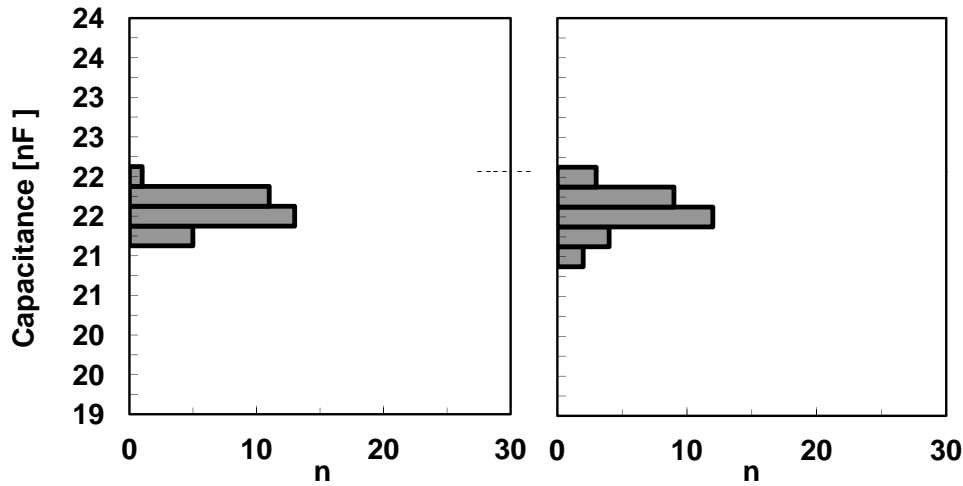
1. INITIAL (CAP., D.F., I.R.)

Condition : (Cap., D.F.) 1.0 kHz, 1.0 V(r.m.s.)
 (I.R.) DC250V , 60 s
 (Temp.) 20° C

Sample Qty. : 30 pcs.

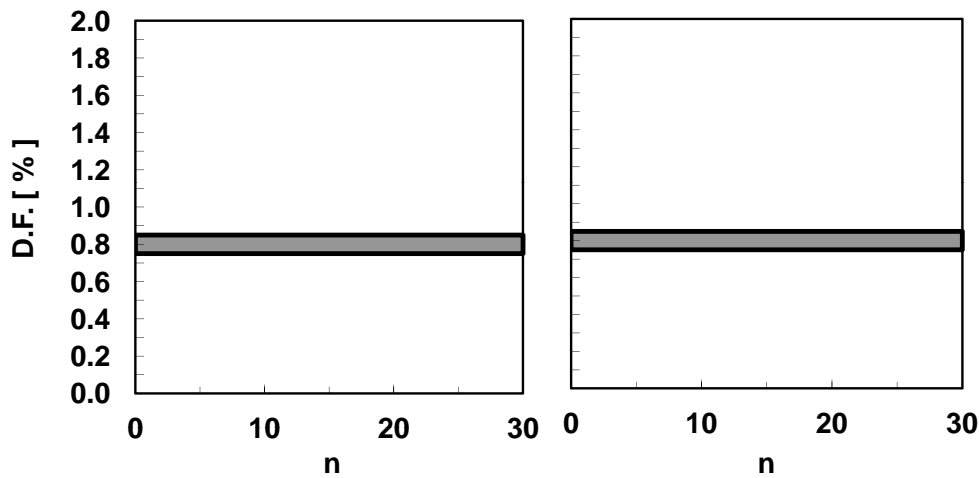
- SINGAPORE PRODUCT -

- JAPAN PRODUCT -



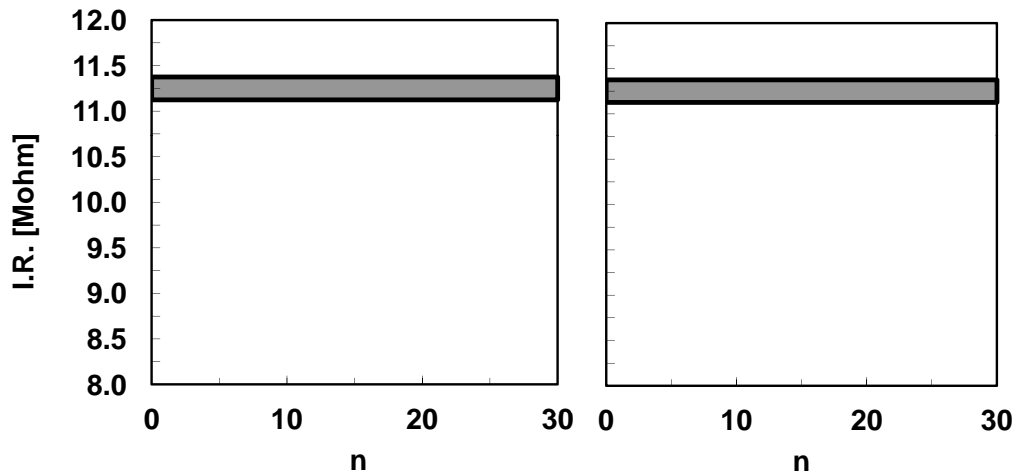
Spec.

Within 22 nF $\pm 10\%$
 (19.8 to 24.2 nF)



Spec.

2.5 % max.



Spec.

4545 Mohm min.
 (Log I.R. : 9.65)

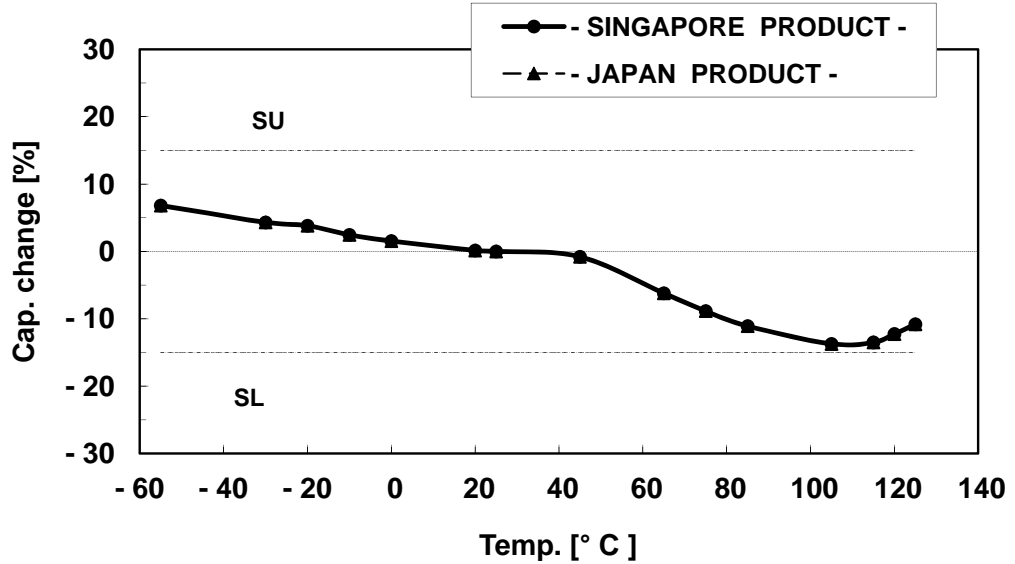
2. TEMPERATURE CHARACTERISTIC

Condition : 1.0 kHz, 1.0 V(r.m.s.)

Pre-treatment ... Store at 150 ° C for 1 h, and then, place at room condition for 24 h.

Specification : ±15 % (Temp. Range : -55 to 125 ° C , Reference Temp. : 25 ° C)

Sample Qty. : 5 pcs.



3. ADHESIVE STRENGTH of TERMINATION

Condition : Solder the capacitor to the glass epoxy board shown in Fig.1, using an eutectic solder. Then apply 10N force in the direction of the arrow on Fig.1.

Specification : No removal of the external electrode or other defects.

Sample Qty. : 10 pcs.

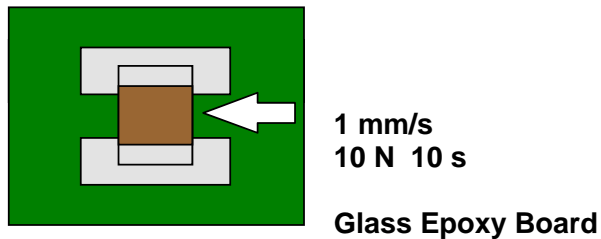


Fig.1

RESULT

No.	- SINGAPORE PRODUCT -	- JAPAN PRODUCT -
1	OK	OK
2	OK	OK
3	OK	OK
4	OK	OK
5	OK	OK
6	OK	OK
7	OK	OK
8	OK	OK
9	OK	OK
10	OK	OK

4. DEFLECTION

Condition : Solder the capacitor to the glass epoxy board shown in Fig.2, using an eutectic solder. Then apply the force in the direction of the arrow on Fig.3, for 5 s.

Sample Qty. 10 pcs.

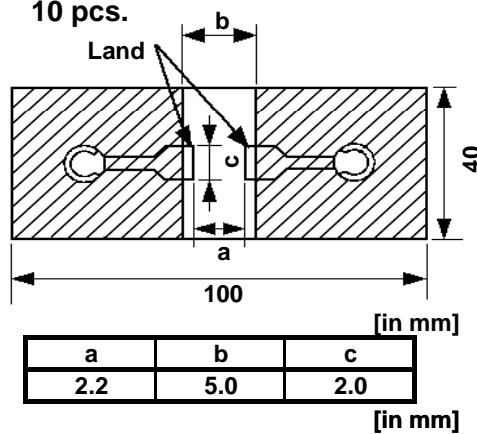


Fig.2

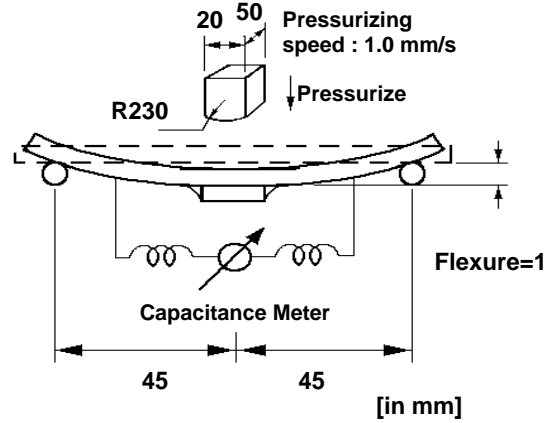


Fig.3

RESULT

No.	- SINGAPORE PRODUCT -	- JAPAN PRODUCT -
1	OK	OK
2	OK	OK
3	OK	OK
4	OK	OK
5	OK	OK
6	OK	OK
7	OK	OK
8	OK	OK
9	OK	OK
10	OK	OK

5. SOLDERABILITY of TERMINATION

Condition : Immerse the capacitor in ethanol(JIS-K-8101) and rosin(JIS-K-5902) (25% rosin in weight proportion) solution. And then, immerse in eutectic solder solution (Sn-3.0Ag-0.5Cu : 245°C ,H60A : 235°C) for 2s.

Specification : Solder covers more than 75% area of the external electrode, evenly and continuously.

Sample Qty. : 10 pcs.

RESULT

No.	- SINGAPORE PRODUCT -	- JAPAN PRODUCT -
1	OK	OK
2	OK	OK
3	OK	OK
4	OK	OK
5	OK	OK
6	OK	OK
7	OK	OK
8	OK	OK
9	OK	OK
10	OK	OK

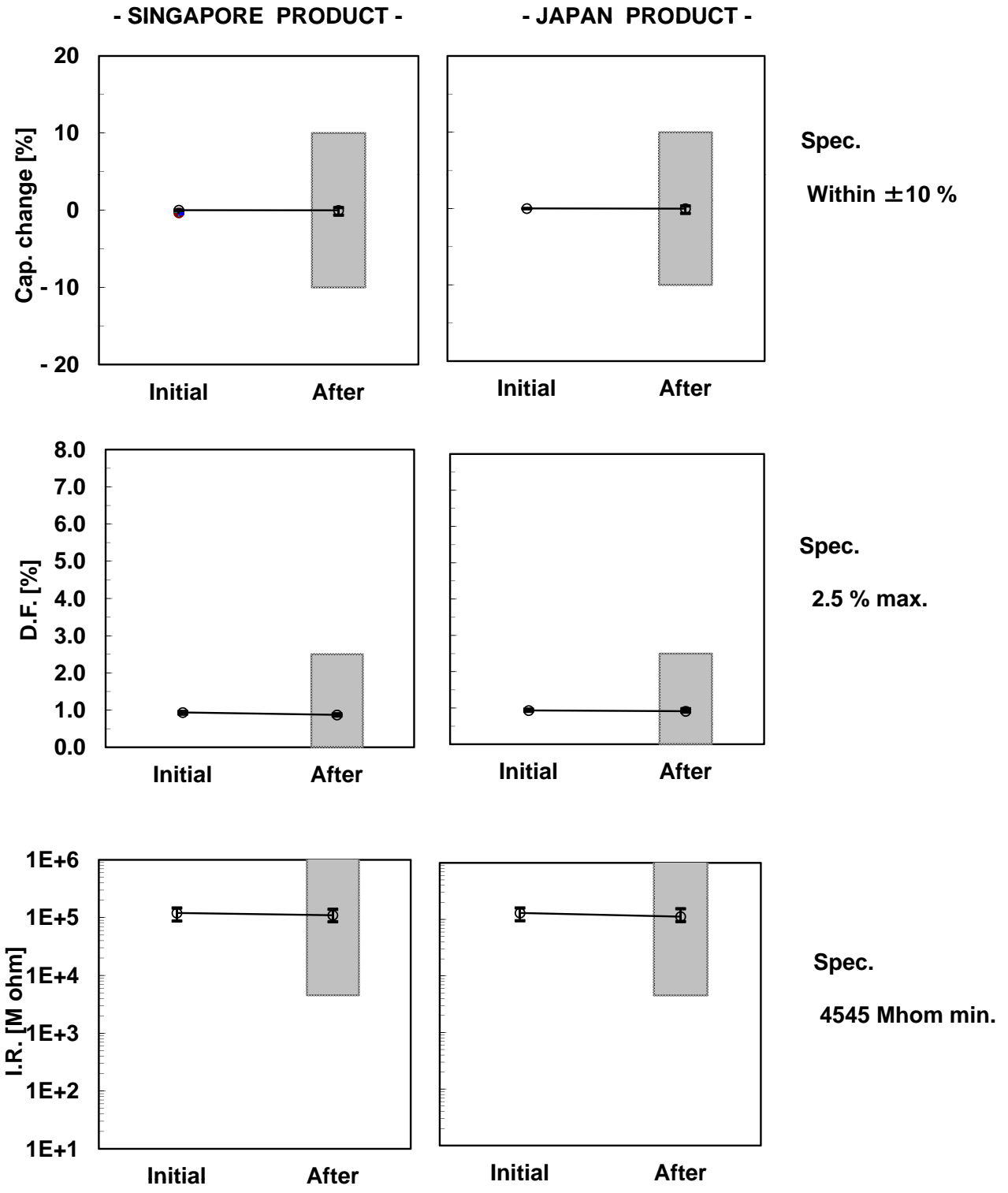
6. RESISTANCE to SOLDERING HEAT

Condition : Preheat the capacitor between 120 and 150 ° C for 1 min.
 Immerse the capacitor in eutectic solder solution at 260 ° C for 10s.

Pre-treatment ... Store at 150 ° C for 1 h, and then,
 place at room condition for 24 h.

Post-treatment... Place at room condition for 24 h.

Sample Qty. : 20 pcs.



Room Condition

Temperature : between 15 to 35 ° C
 Relative humidity : between 45 to 75 %
 Atm. pressure : between 86 to 106 kPa

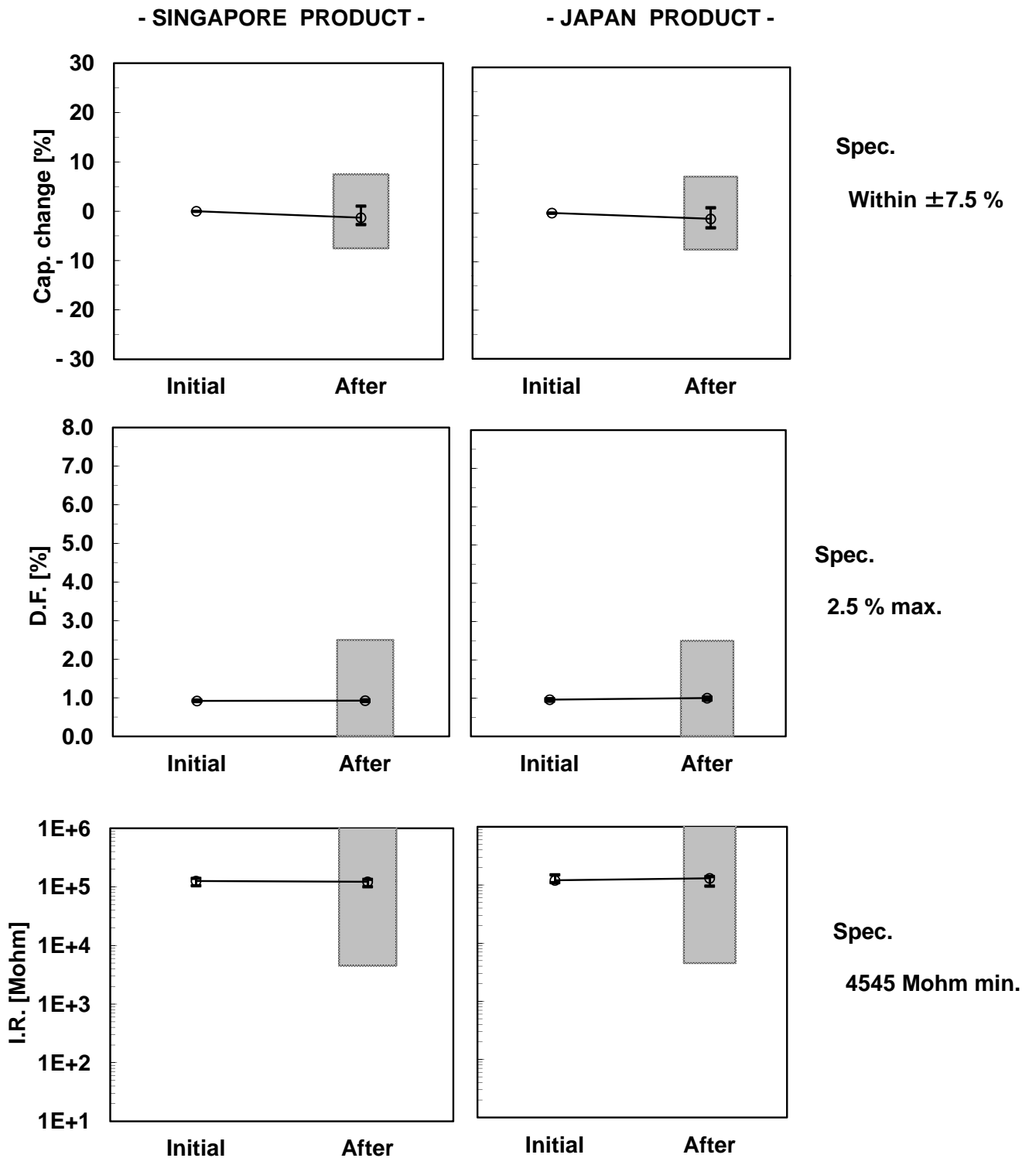
7. TEMPERATURE CYCLE

Condition : Store the 5 cycles of the 4 steps heat treatment of following Table.

Step	1	2	3	4
Temp.[° C]	-55	20	+125	20
Time[min]	30	2	30	2

Pre-treatment ... Store at 150 ° C for 1 h, and then, place at room condition for 24 h.
 Post-treatment... Place at room condition for 24 h.

Sample Qty. : 10 pcs.



8. HUMIDITY (STEADY STATE)

Condition : Temperature ... 40 ° C
 Relative Humidity ... 95 %
 Duration ... 500 h

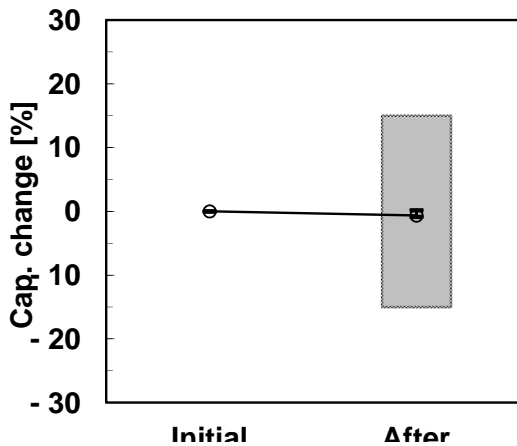
Pre-treatment ... Store at 150 ° C for 1 h, and then,
 place at room condition for 24 h.

Post-treatment... Place at room condition for 24 h.

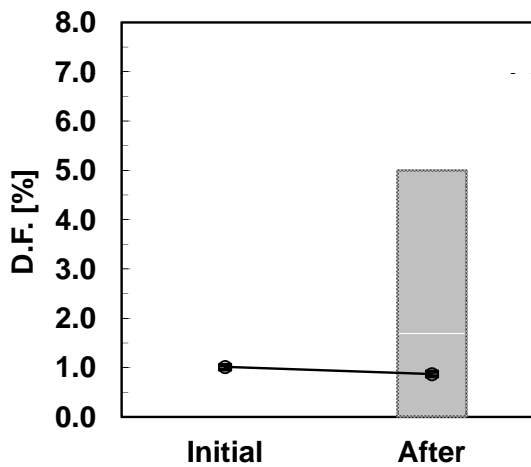
Sample Qty. : 20 pcs.

- SINGAPORE PRODUCT -

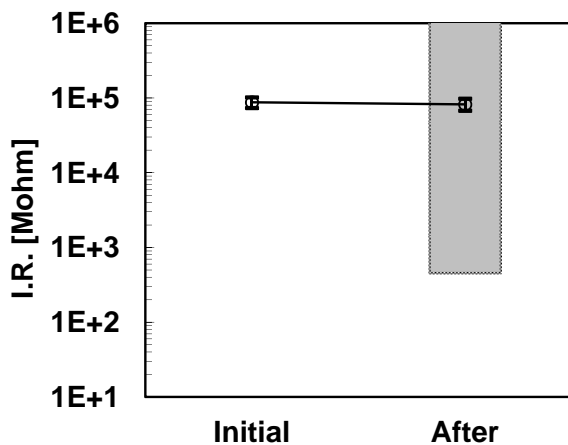
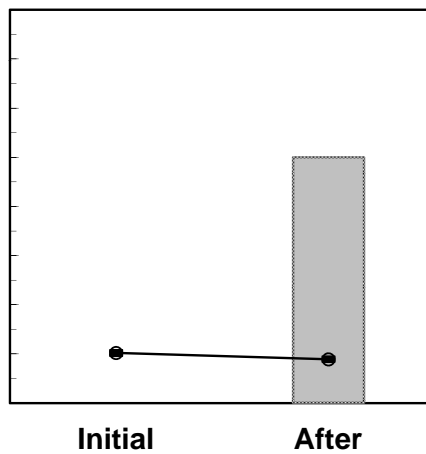
- JAPAN PRODUCT -



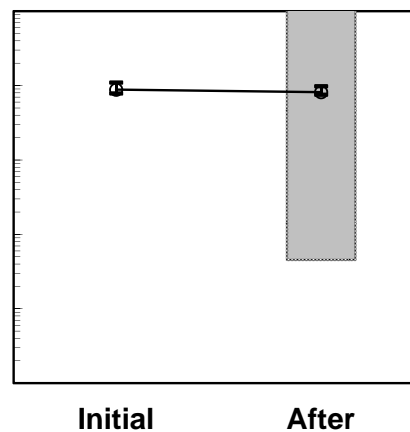
Spec.
 Within ±15 %



Spec.
 5 % max.



Spec.
 454 Mohm min.



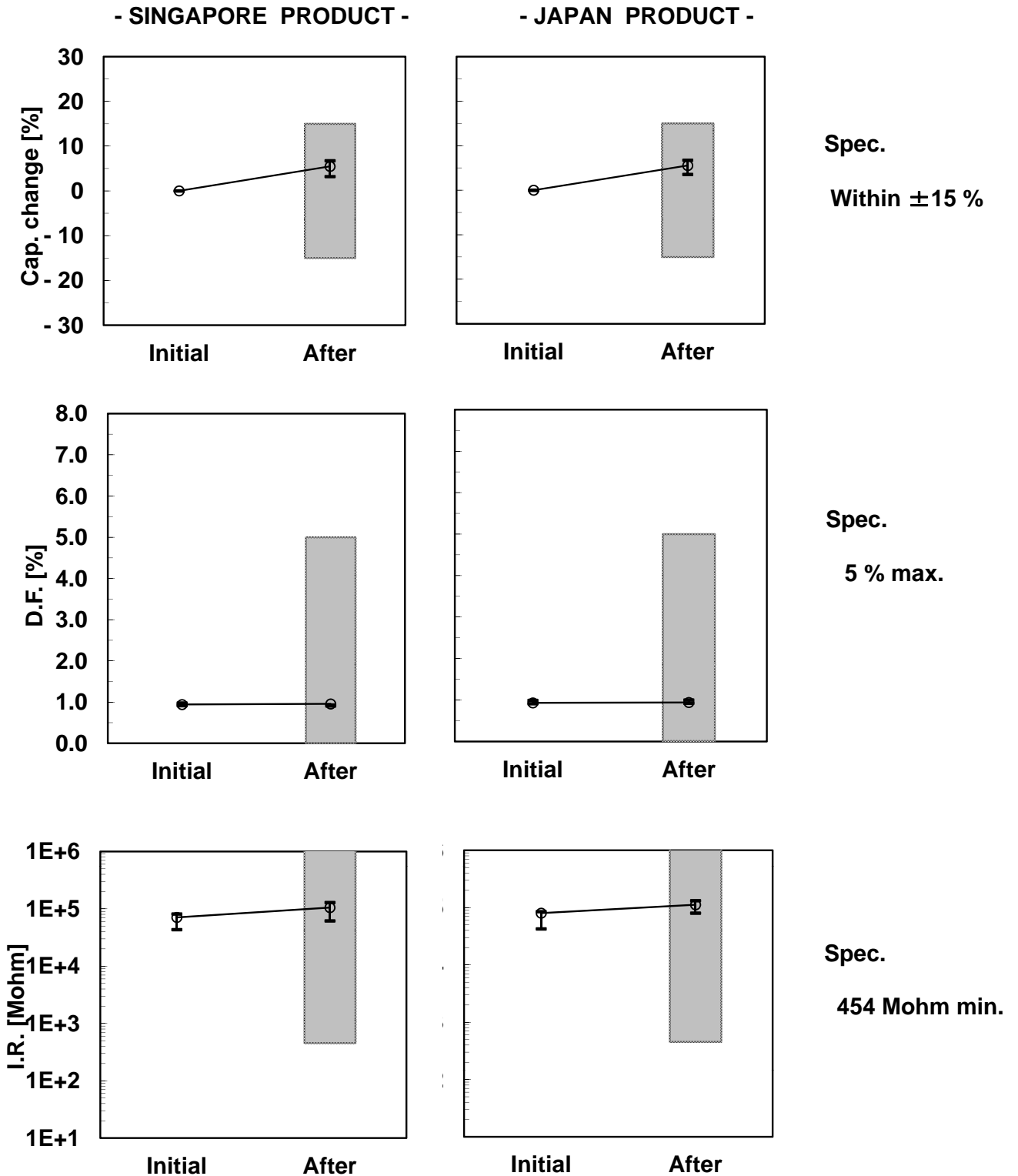
9. LIFE (HIGH TEMPERATURE LOADING)

Condition : Temperature ... 125 ° C
 Load ... 120 % of the Rated Voltage
 Duration ... 1000 h

Pre-treatment ... Apply 120 % of the rated voltage at 125 ° C for 1 h,
 and then, place at room condition for 24 h.

Post-treatment... Place at room condition for 24 h.

Sample Qty. : 20 pcs.



9. HUMIDITY LOADING

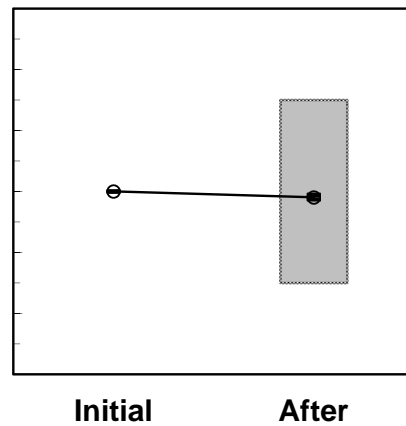
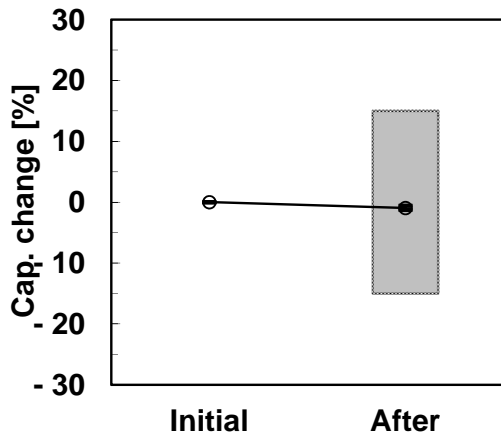
Condition : Temperature ... 40 ° C
 Relative Humidity ... 95 %
 Load ... Rated Voltage
 Duration ... 500 h

Pre-treatment ... Apply test voltage for 1 h, and then, place at room condition for 24 h.

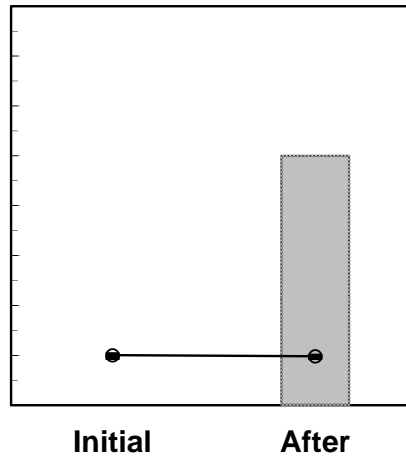
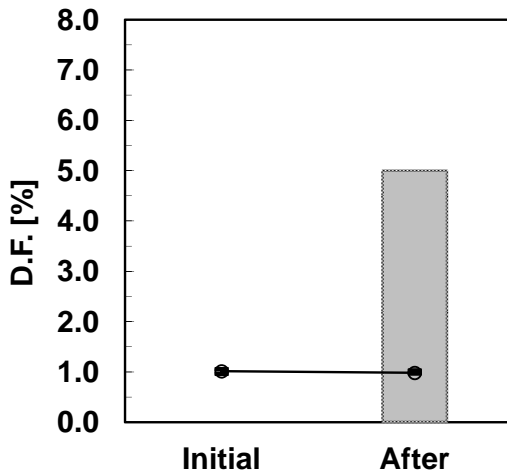
Sample Qty. : Post-treatment... Place at room condition for 24 h.
 20 pcs.

- SINGAPORE PRODUCT -

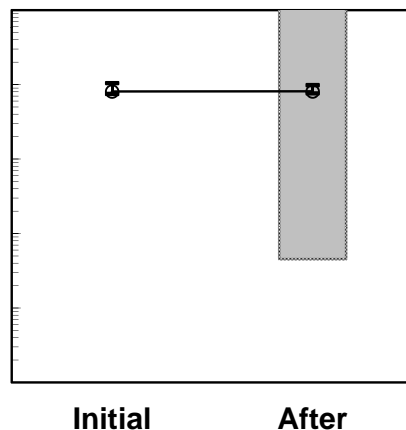
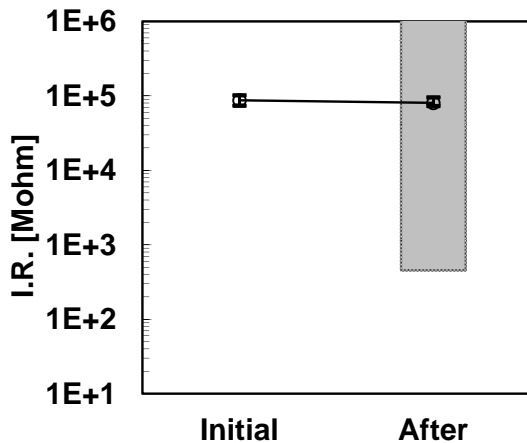
- JAPAN PRODUCT -



Spec.
 Within ±15 %



Spec.
 5 % max.



Spec.
 454 Mohm min.