

## Capacitance measurement for MLCC Class2 (X5R, X7R, Y5V, etc.)

### I. Capacitance measurement

1. For accurate capacitance measurement, measurement condition is stipulated.  
Adequate measurement condition shall be used per each capacitor.
2. For high capacitance component, (when a component has low impedance), applied voltage to the chip declines under the influence of the internal impedance relation to LCR meter. And this lower applied voltage to the chip results in inaccurate capacitance values. The impedance relation varies depending on capacitance value and measurement meter type. To prevent this issue, usage of ALC function, which can automatically keep measurement voltage stable, is recommended for capacitance measurement.
3. High dielectric capacitor Class2 type has a characteristic of capacitance value declining with passage of time.  
The initial value shall be measured after chip heat-treatment\*1 as explained below for correct capacitance value.

### II. Capacitance measurement condition

Measuring frequency and voltage is listed below

Heat treatment shall be conducted prior to measurement

Measurement condition

Rated capacitance	Measuring frequency	Measuring voltage
$C > 10\mu\text{F}$	120Hz $\pm$ 10Hz	0.5 $\pm$ 0.1Vrms
$C \leq 10\mu\text{F}$ * <u>2</u>	1kHz $\pm$ 10%	1.0 $\pm$ 0.2Vrms
	1kHz $\pm$ 10%	0.5 $\pm$ 0.1Vrms

#### \*1 Heat treatment

Expose chip into 150 $\pm$ 0/-10°C for 1 hour condition

Keep component at room temperature for 24 hours

#### \*2 Measuring condition

Measuring voltage is stipulated in individual component specification

Note. The above measurement method is not for restriction on your usage condition but for accurate capacitance measurement based on capacitance specification.

Reference material: JEITA RCR-2335B

Safety application guide for fixed ceramic capacitors for use in electronic equipment