

# Installation and Handling Manual for Dielectric Ceramic Duplexer / Filter

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## **I. MANUFACTURING CONSIDERATIONS**

### **1. Component Handling:**

All necessary special handling techniques shall be adopted in order to avoid contamination of metallization / terminations. Examples include use of finger cots, plastic tweezers, etc.

## 2. Part Placement:

A placement force of up to 200 grams is applied (using a 2.00 mm or a 0.080 inch diameter rod) to the center of the part while remaining in its tape carrier.

## 3. Reflow Soldering Conditions:

The standard reflow soldering condition is shown in figure 3. The temperature in figure 3 should be the temperature at the device.

T1: 200 °C	,	T2 : 150±10°C	,	T3 : 130±10°C
a : Pre-heating time				: 20~40 sec.
b : Main-heating time				: 20~30 sec.
c : Maximum temperature				: 230±10 °C
d : Heating rate				: 4 °C / sec. max.
e : Cooling rate				: 8 °C / sec. max.

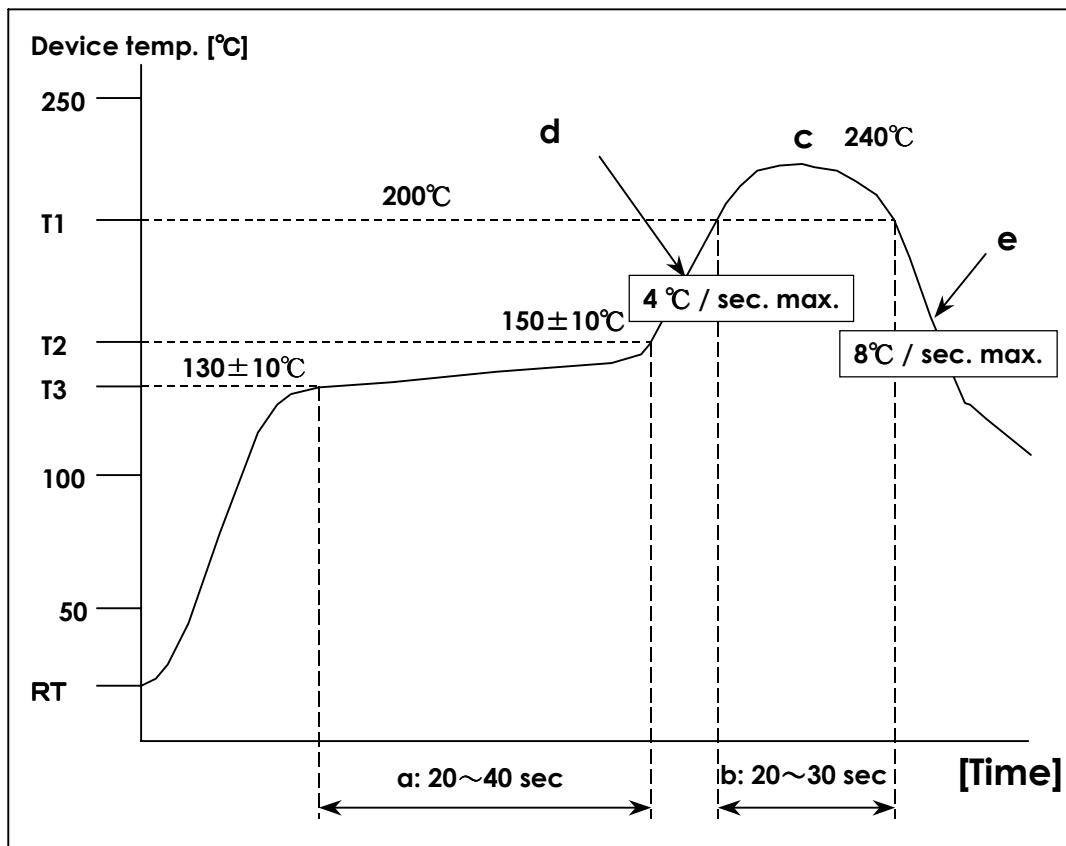


Figure 3 Standard reflow soldering conditions

## **II. ENVIRONMENTAL**

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The following standard tests are carried out to make sure that the device withstand the various environmental stresses.

### **(1) Operating Temperature Range**

Over the temperature range of  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ , the device usually satisfy the specifications.

### **(2) Temperature Resistance**

The device shall satisfy the specifications after leaving at  $+85^{\circ}\text{C}$  (or  $-40^{\circ}\text{C}$ ) for  $96\pm 2$  hours, provided it would be measured after 1 hour leaving in  $25\pm 5^{\circ}\text{C}$  and less than 65% relative humidity.

### **(3) Heat Shock Resistance**

After the device is subjected to heat shock  $-40^{\circ}\text{C} \Leftrightarrow +85^{\circ}\text{C}$  (5 cycles of 30min.), the device shall satisfy the specifications, provided it would be measured after 1 hour leaving at  $25\pm 5^{\circ}\text{C}$  and in less than 65% relative humidity.

### **(4) Humidity Resistance**

The device is subjected to 95% relative humidity at  $60^{\circ}\text{C}\pm 2^{\circ}\text{C}$  for  $96\pm 2$  hours. Then dry out at  $25\pm 5^{\circ}\text{C}$  and less than 65% relative humidity for  $2\pm 2$  hours. After dry out the device shall satisfy the specifications.

### **(5) Vibration Resistance**

The device is subjected to vibration in each of three mutually perpendicular planes. Frequency shall be varied within 10Hz - 50Hz with amplitude of 1.5 mm for 20 minutes. The device shall satisfy the specifications after the test.

### **(6) Mechanical Shock Resistance**

The device is subjected to 3 shocks in each direction of three mutually perpendicular planes (a total of 9 shocks). Each shock shall be a half-sine wave shaped with a magnitude of 30G's and a duration of 11 msec., the device shall satisfy the specifications.

### **III. INSTALLING A DUPLEXER**

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This section is the reference for installing a duplexer on PCB board.

#### **1. How to Install Duplexer:**

We recommend reflow process for the installation of duplexer onto a PCB board. Soldering the duplexer onto a PCB board with a hand soldering iron is not recommended.

#### **2. Connecting I/Os:**

The edge of metal shield, if any, shall be soldered to the electrode of PCB board by reflow process.

Tx, Ant, and Rx portion of the PCB shall have either via hole or through hole.

I/Os of the duplexer shall be connected to 50-Ohm strip lines that pass through these holes to the backside of the PCB. The 50-Ohm strip lines from the duplexer shall be connected to the next circuit element.

It is important to place the duplexer on one side and the connecting strip lines on the other side in order to avoid the interferences by the signal radiation from the strip lines. Such interferences may change the duplexer performances.

#### **3. Solder and Resist Area:**

Solder and Resist area shall be prepared according to the Referenced Land Pattern for each part number provided by Ube Electronics Limited. The Referenced Land Pattern may be found in UBE's Product Catalog. The solder area under the duplexer shall be divided into smaller patches with narrow strips of resist area. This is to help the evacuation of the gasses generated from solder paste during reflow process.

Disclaimer: The content of this section is presented only as the recommendation or the reference for the use and installation of UBE dielectric ceramic duplexer. Since UBE does not know any particular conditions, circumstances, and environment of each reader, UBE does not take responsibility for the consequences caused by use of this document. The readers of this document should examine all possible technical issues regardless of being discussed in this document or not. The readers should take all necessary precautions before applying the information presented here to the actual use.

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