Messrs.: Specification No. JEMFGB-1357H

GuangDong Oppo Mobile Telecommunications Co.,Ltd

Agent:

SHENZHEN SANET ELECTRONICS CO., LTD

Product Specification

Issued Date: Aug. 26. 2011

Part Description: CHIP MULTILAYER LC FILTER

Customer Part No.:

MURATA Part No.: LFB212G45CG7D227

Acknowledgement of reception

We have received the attached specification.	
Date: Company:	Date: Agent:
Received by (Signature) (Type) Representative (Signature) (Type)	Received by (Signature) (Type) Representative (Signature) (Type)

Sales office

(Signature)
(Type)

(Company name/Dept.)

Technical Dept.

Prepared by

(Signature)
Ayumi KAKUTANI
(Type)

Representative

(Signature)
Koji FUJIOKA
(Type)
Manager
Product Engineering Section I
Products Department I
Communication Module Division
Module Business Unit
MURATA MFG. CO., LTD.

(Company name/Dept.)

1. STYLE

MURATA P/N	CENTER FREQUENCY (NOMINAL)
LFB212G45CG7D227	2450.00 MHz

2. OPERATING TEMPERATURE

-40 °C ~ +85 °C

3. SPECIFICATIONS

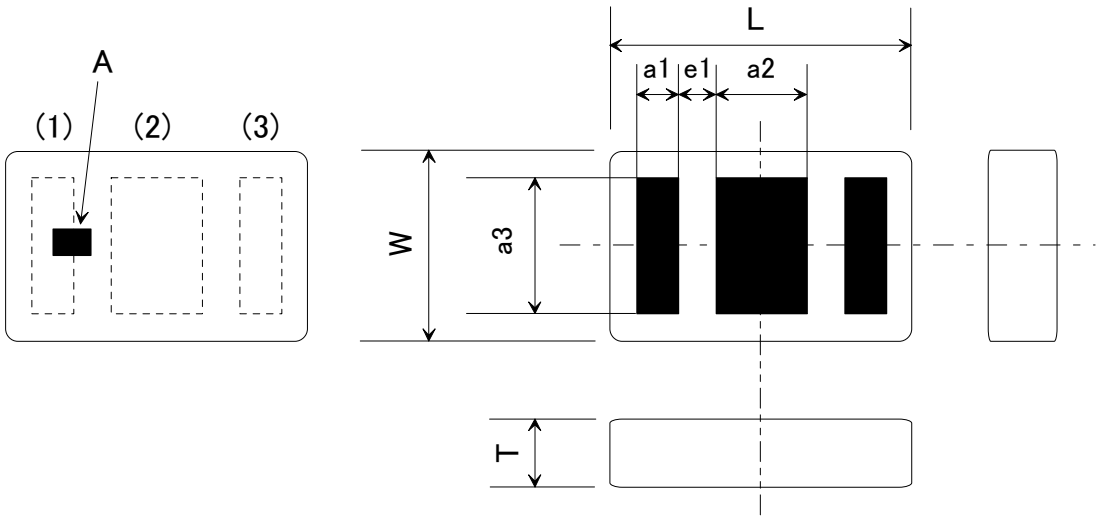
According to Pages 3/15 ~ P7/15

4. RoHS compliance

This component can meet with RoHS compliance.

5. CONSTRUCTION, DIMENSIONS & MARKING

<Top View> <Bottom View>



Mark	Meaning
A	Directional Input Mark

(in mm)

Mark	Dimension	Mark	Dimension
L	2.00 ± 0.15	a2	0.60 ± 0.10
W	1.25 ± 0.10	a3	0.95 ± 0.10
T	0.95 max.	e1	0.25 ± 0.05
a1	0.275 ± 0.100	-	-

TERMINAL CONFIGURATION

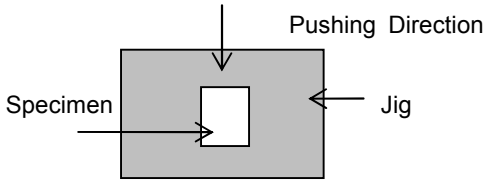
Terminal No.	Terminal Name	Terminal No.	Terminal Name
(1)	IN	(3)	OUT
(2)	GND	-	-

6. ELECTRICAL CHARACTERISTICS (-40 ~ +85 °C)

Nominal Center Frequency	2450.00 MHz
Nominal Characteristics Impedance	50 ohm
Pass Band Range (BW)	fo ± 50.00 MHz
Insertion Loss in BW	1.50 dB max. at 25 °C 1.80 dB max. at -40 ~ +85 °C
Attenuation (Absolute value)	35.0 dB min. at 824.00 ~ 960.00 MHz 28.0 dB min. at 1540.00 ~ 1605.00 MHz 30.0 dB min. at 1710.00 ~ 1990.00 MHz 29.0 dB min. at 2170.00 MHz 6.0 dB min. at 3200.00 MHz 30.0 dB min. at 4800.00 ~ 4967.00 MHz 20.0 dB min. at 5150.00 ~ 6000.00 MHz 18.0 dB min. at 7200.00 ~ 7450.50 MHz
V.S.W.R. in BW	2.00 max.
Power Capacity	500 mW max.

NOTE : The above-mentioned values have been obtained according to our own measuring methods(testing jig : Fig.1,Zo=50 Ω) and may vary depending on the circuit, in which this component is actually incorporated.
You are, therefore, kindly requested to test the performance of this component incorporating in your set.

7. OTHER SPECIFICATION AND METHODS

No.	Items		Specifications	Test Methods
1	Vibration Resistance	Appearance	No severe damages	Solder specimens on the testing jig (glass fluorine boards) shown in appended Fig.1 by a solder. The soldering shall be done either by iron or reflow and be conducted with care so that the soldering is uniform and free of defect such as by heat shock. Frequency : 10~2000~10 Hz Acceleration : 196 m/s^2 Direction : X,Y,Z 3 axis Period : 2 h on each direction Total 6 h.
		Electrical Specifications	Satisfy specifications listed in paragraph 6 over operational temperature range	
2	Shock	Appearance	No severe damages	Solder specimens on the testing jig (glass fluorine boards) shown in appended Fig.1 by a solder. The soldering shall be done either by iron or reflow and be conducted with care so that the soldering is uniform and free of defect such as by heat shock. Acceleration : 980 m/s^2 Period : 6 ms. Cycle : 10 times
		Electrical Specifications	Satisfy specifications listed in paragraph 6 over operational temperature range	
3	Deflection		No damage with 2mm deflection	Solder specimens on the testing jig (glass epoxy boards) shown in appended Fig.2 by a solder. The soldering shall be done either by iron or reflow and be conducted with care so that the soldering is uniform and free of defect such as by heat shock.
4	Soldering strength (Push Strength)		9.8 N Minimum	Solder specimens onto test jig shown below. Apply pushing force at 0.5mm/s until electrode pads are pealed off or ceramics are broken. Pushing force is applied to longitudinal direction. 
5	Solderability of Termination		75% of the terminations is to be soldered evenly and continuously.	Immerse specimens first a ethanol (JIS-K-8101) solution of rosin (JIS-K-5902) (25% rosin in weight proportion), then in a solder solution for 2±0.5 s at 230±5 °C. Preheat : 100 ~ 120 °C、60 s Solder Paste : Sn-Ag-Cu Flux : Solution of ethanol and rosin (25 % rosin in weight proportion)

<table>
<tr><td>6</td><td>Resistance to Soldering Heat (Dipping)</td><td>Appearance</td><td>No severe damages</td><td>Immerse the chip in a solder solution of 270±5 °C for 20±0.5 s (flow soldering bath) after preheating for 1 min at 120 to 150 °C. Then set it for 2 to 24 h at room temperature and measure.</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Resistance to Soldering Heat (Reflow)</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Preheat Temperature : 150±10 °C
Preheat Period : 60 s. min.
Peak Temperature : 255±5 °C
Peak Temp. Period : 10 s.
Specimens are soldered twice with the above condition, then kept in room condition for 24 h before measurements.</td></tr>
<tr><td>Electrical specifications</td><td>Satisfy specifications listed in paragraph 6 over operational temperature range</td></tr>
<tr><td rowspan="2">8</td><td rowspan="2">High Temp. Exposure</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Temperature : 85±2 °C
Period : 1000+48/-0 h
Room Condition : 2 ~ 24 h</td></tr>
<tr><td>Electrical specifications</td><td>Satisfy specifications listed in paragraph 6 over operational temperature range</td></tr>
<tr><td rowspan="2">9</td><td rowspan="2">Temperature Cycle</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Set the specimens to the supporting jig in the same manner and under the same conditions as Fig.1 and conduct the 100. cycles according to the temperatures and time shown in the following table. Set it for 2 to 24 h at room temperature, then measure.
<table>
<tr><td>Step</td><td>1</td><td>2</td></tr>
<tr><td>Temp.(°C)</td><td>Min. Operating Temp.+0/-3</td><td>Max. Operating Temp.+3/-0</td></tr>
<tr><td>Time(min)</td><td>30±3</td><td>30±3</td></tr>
</table></td></tr>
<tr><td>Electrical specifications</td><td>Satisfy specifications listed in paragraph 6 over operational temperature range</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Humidity (Steady State)</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Temperature : 85±2 °C
Humidity : 85±5 %RH
Period : 1000+48/-0 h
Room Condition : 2 ~ 24 h</td></tr>
<tr><td>Electrical specifications</td><td>Satisfy specifications listed in paragraph 6 over operational temperature range</td></tr>
</table>

Excessive mechanical force or thermal stress may damage the products. Appropriate handling is required.

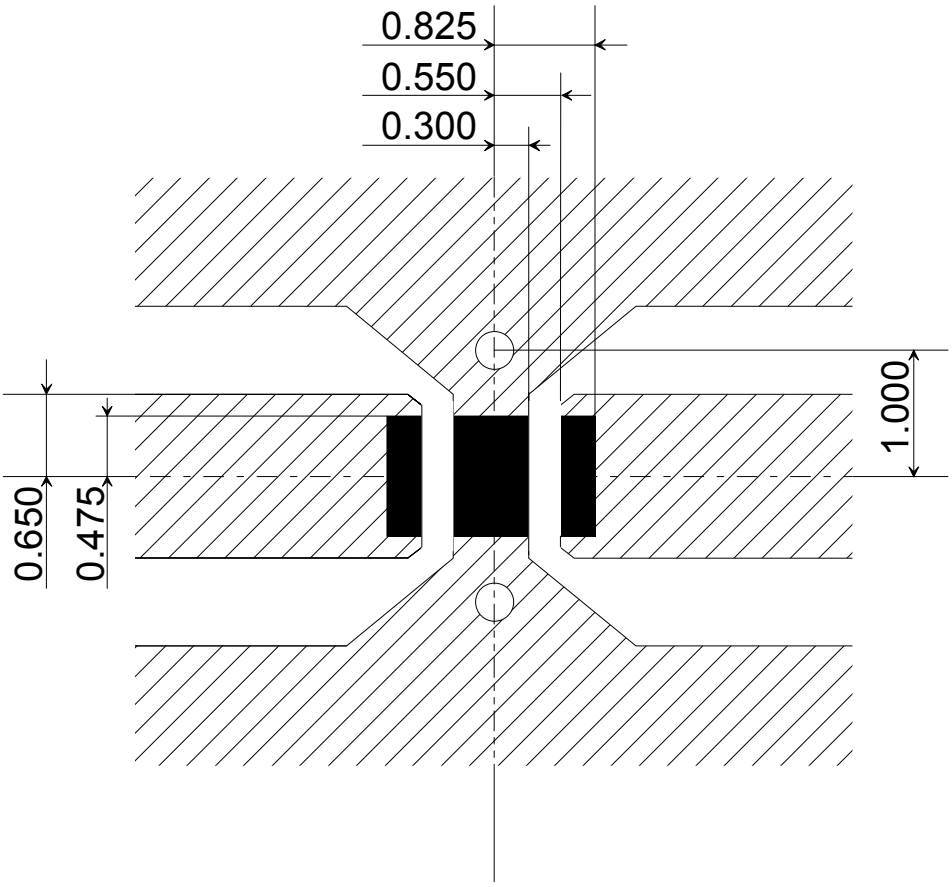
Production Site

FUKUI MURATA MFG. CO., LTD.
OKAYAMA MURATA MFG. CO., LTD.

Fig. 1

Land Pattern

(in mm)



BT Resin - board t=0.6mm
Copper thickness 35μm

Land

Solder resist

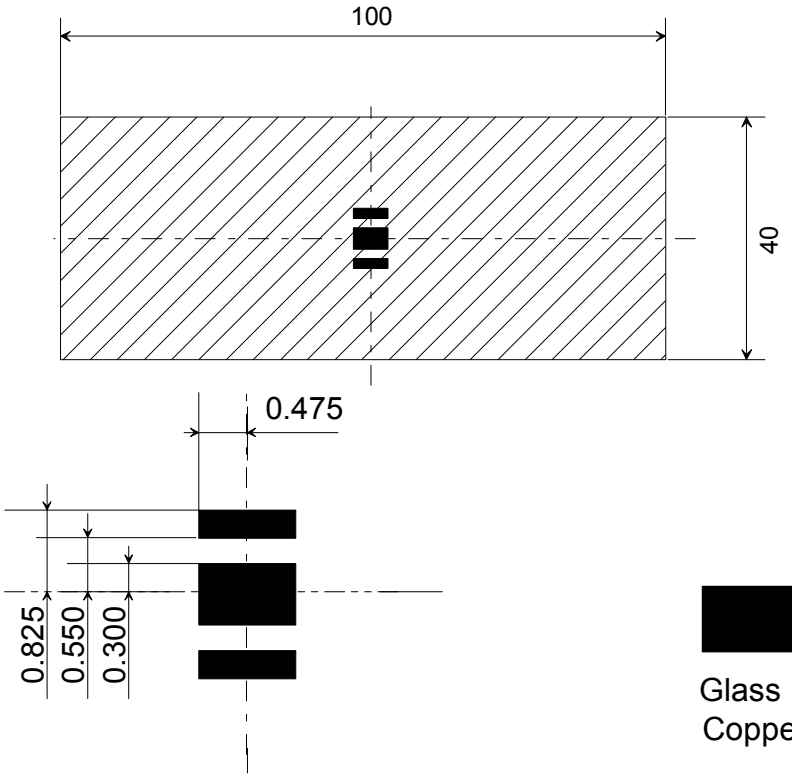
No pattern
Solder resist

Through Hole Φ0.30

Fig. 2-1

Testing board

(in mm)



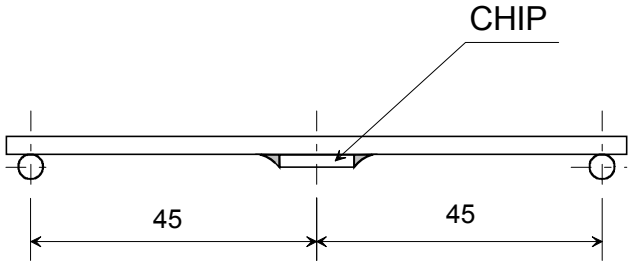
Land

Glass epoxy board t=1.6mm
Copper thickness 35μm

Fig. 2-2

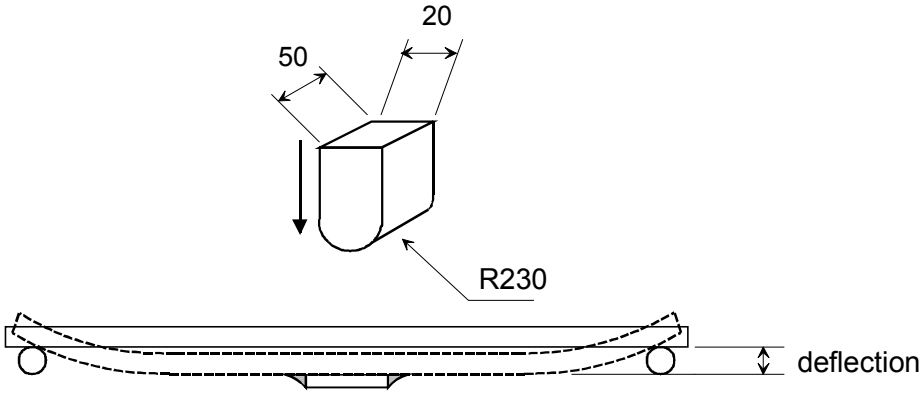
Mounted situation

(in mm)



Test method

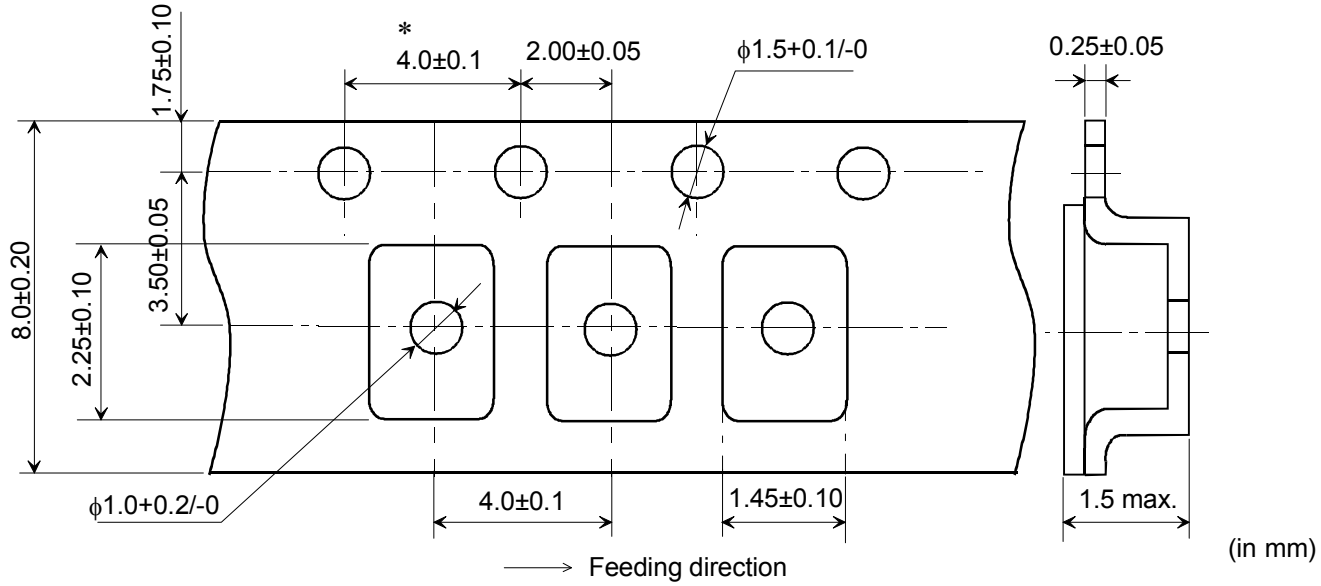
(in mm)



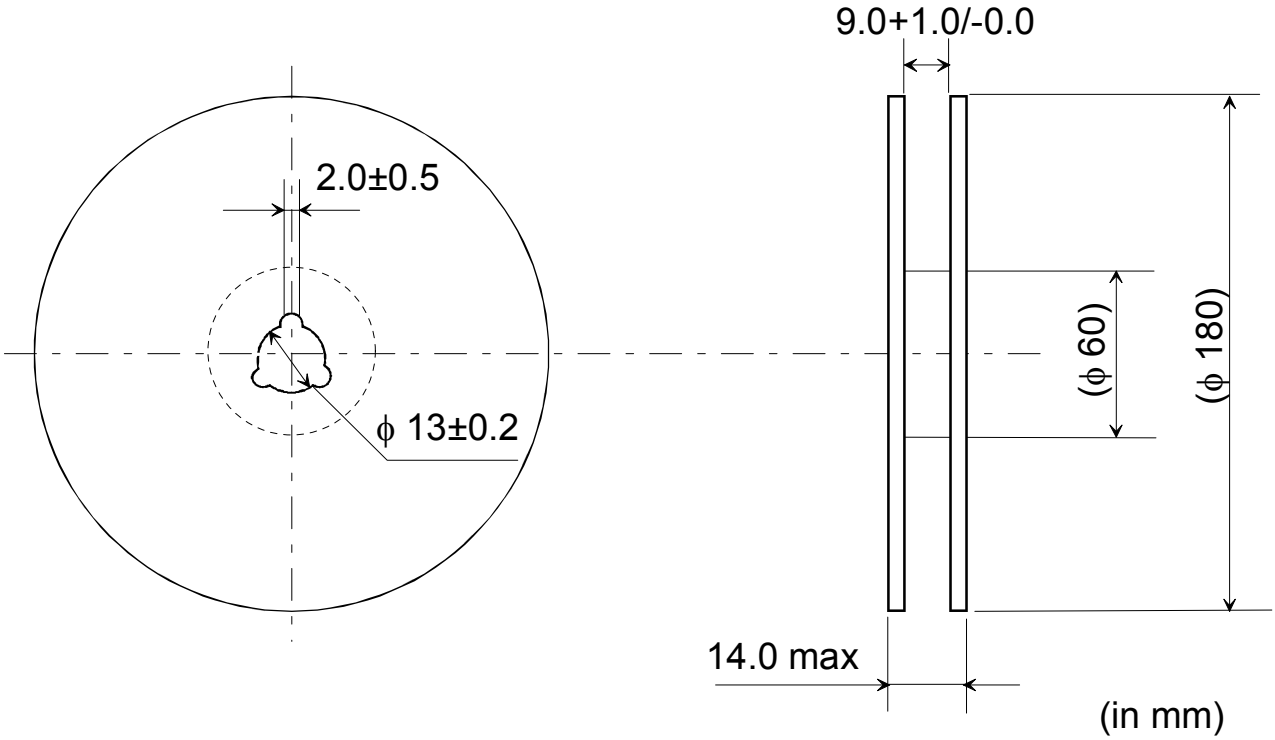
8. Tape and Reel Packing

(1) Dimensions of Tape (Plastic tape)

＊ Cumulative tolerance of max. ± 0.3 every 10 pitches.



(2) Dimensions of Reel



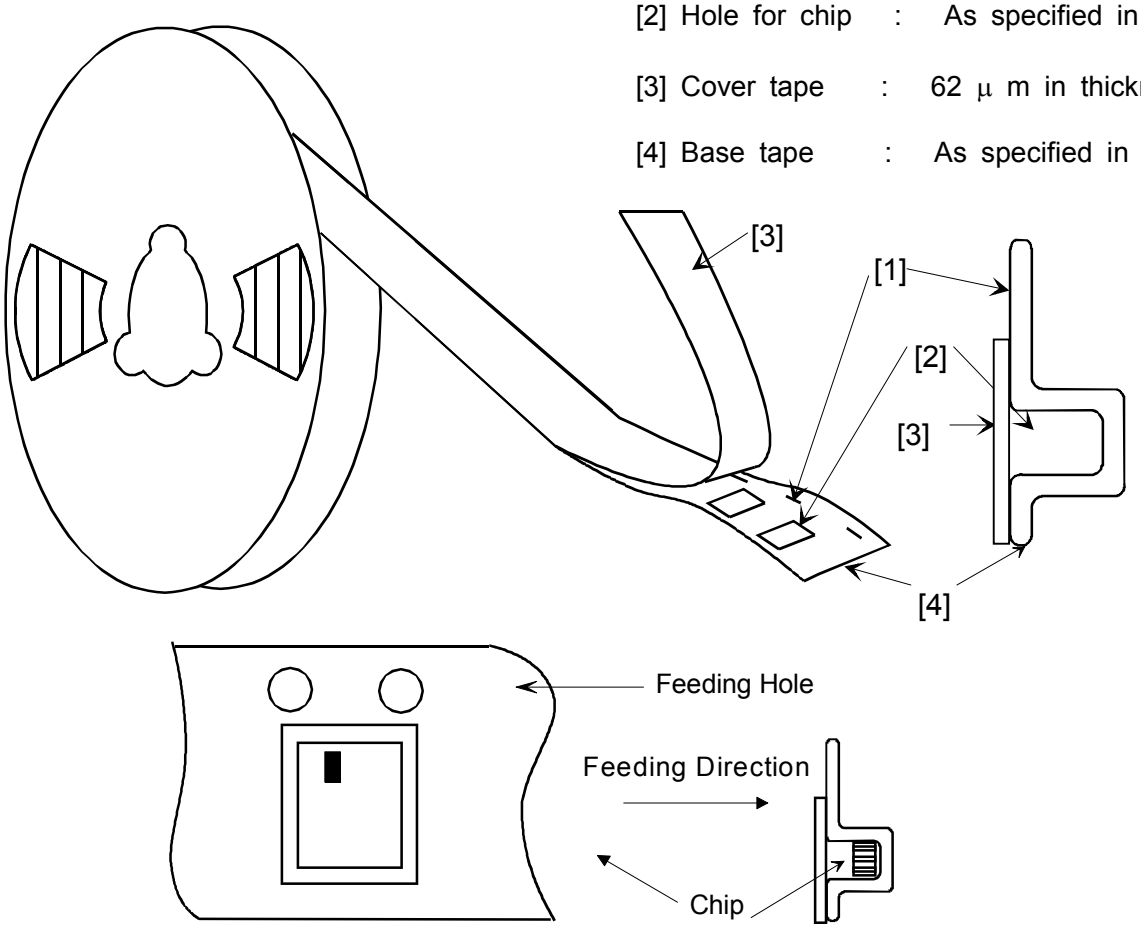
(3) Taping Diagrams

[1] Feeding Hole : As specified in (1)

[2] Hole for chip : As specified in (1)

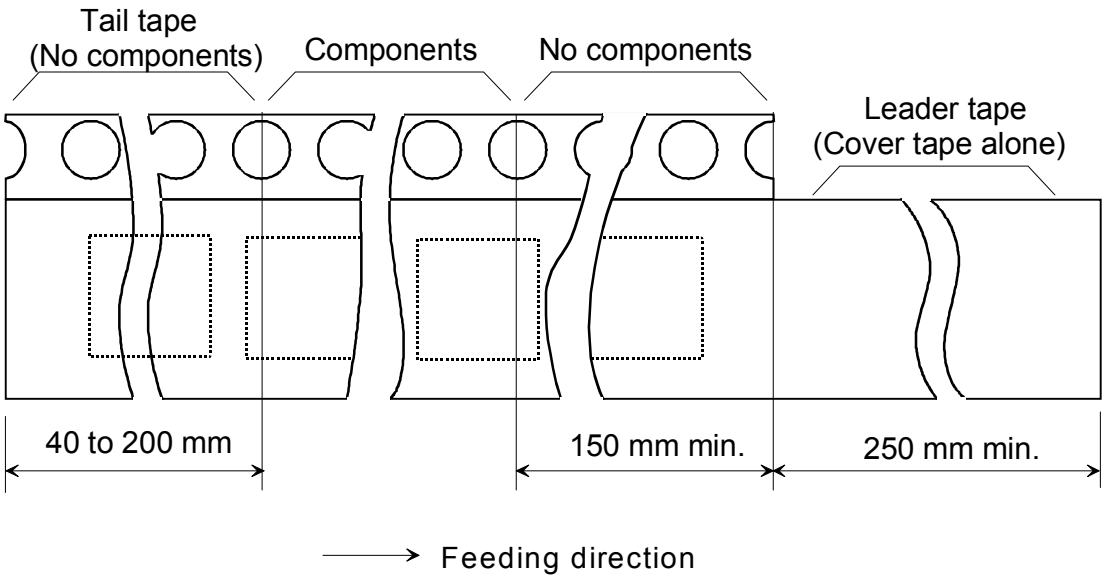
[3] Cover tape : 62 μ m in thickness

[4] Base tape : As specified in (1)



Package chips

(4) Leader and Tail tape



(5) The tape for chips are wound clockwise, the feeding holes to the right side as the tape is pulled toward the user.

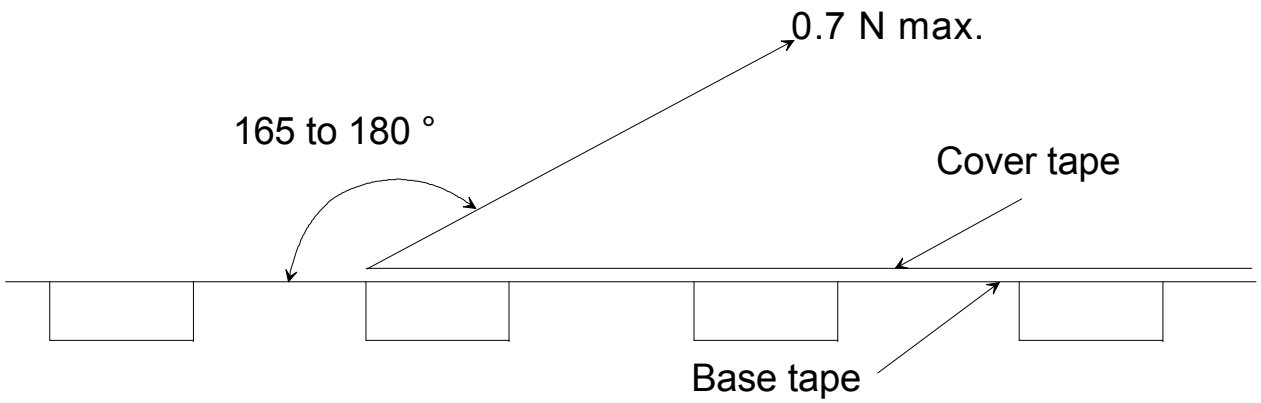
(6) The cover tape and base tape are not adhered at no components area for 250 mm min.

(7) Tear off strength against pulling of cover tape : 5 N min.

(8) Packaging unit : 4000 pcs. / reel

(9) Material : Base tape .....Plastic
Reel .....Plastic

(10) Peeling of force : 0.7 N max. in the direction of peeling as shown below.



NOTICE

1. Storage Conditions:

To avoid damaging the solderability of the external electrodes, be sure to observe the following points.

- Store products where the ambient temperature is 15 to 35 °C and humidity 45 to 75% RH. (Packing materials, In particular, may be deformed at the temperature over 40 °C.).

- Store products in non corrosive gas (Cl_2, NH_3,SO_2, No_x, etc.).

- Stored products should be used within 6 months of receipt. Solderability should be verified if this period is exceeded.

This product is applicable to MSL1 (Based on IPC/JEDEC J-STD-020)

2. Handling Conditions:

Be careful in handling or transporting products because excessive stress or mechanical shock may break products due to the nature of ceramics structure.

Handle with care if products may have cracks or damages on their terminals, the characteristics of products may change. Do not touch products with bear hands that may result in poor solderability.

3. Standard PCB Design (Land Pattern and Dimensions):

All the ground terminals should be connected to the ground patterns. Furthermore, the ground pattern should be provided between IN and OUT terminals. Please refer to the specifications for the standard land dimensions.

The recommended land pattern and dimensions is as Murata's standard. The characteristics of products may vary depending on the pattern drawing method, grounding method, land dimensions, land forming method of the NC terminals and the PCB material and thickness. Therefore, be sure to verify the characteristics in the actual set. When using non-standard lands, contact Murata beforehand.

4. Notice for Chip Placer:

When placing products on the PCB, products may be stressed and broken by uneven forces from a worn-out chucking locating claw or a suction nozzle. To prevent products from damages, be sure to follow the specifications for the maintenance of the chip placer being used. For the positioning of products on the PCB, be aware that mechanical chucking may damage products.

5. Soldering Conditions:

Carefully perform preheating so that the temperature difference (ΔT) between the solder and products surface should be in the following range. When products are immersed in solvent after mounting, pay special attention to maintain the temperature difference within 100 °C. Soldering must be carried out by the above mentioned conditions to prevent products from damage. Contact Murata before use if concerning other soldering conditions.

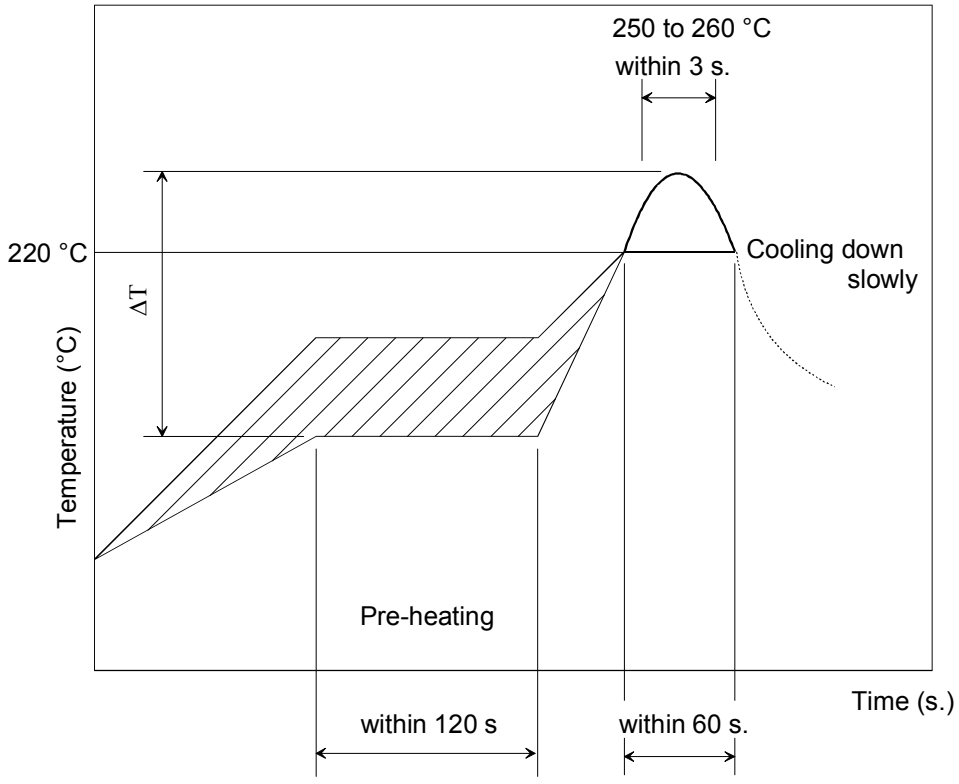
Soldering method	Temperature
Soldering iron method	ΔT<=130 °C
Reflow method	

- Soldering iron method conditions are indicated below.

Item \ Kind of iron	Ceramics heater
Soldering iron wattage	<=18 W
Temperature of iron-tip	<=350 °C
Iron contact time	within 3 s

- Diameter of iron-tip : φ3.0 mm max.
- Do not allow the iron-tip to directly touch the ceramic element.

Reflow soldering standard conditions(Example)

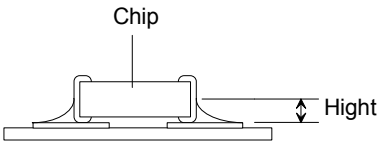


Use rosin type flux or weakly active flux with a chlorine content of 0.2 wt % or less.

Amount of Solder Paste:

- Ensure that solder is applied smoothly to a minimum height of 0.2 to 0.5 mm at the end surface of the external electrodes. If too much or little solder is applied, there is high possibility that the mechanical strength will be insufficient, creating the variation of characteristics.

Amount of solder paste



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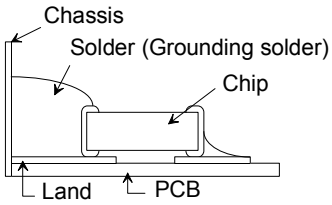
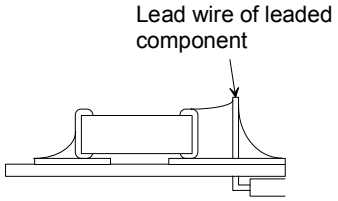
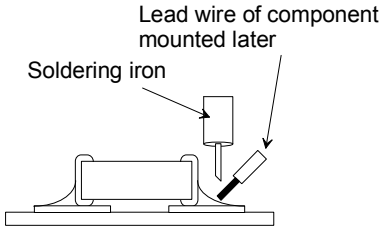
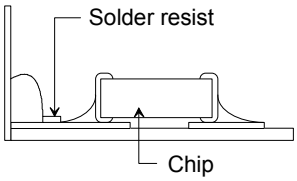
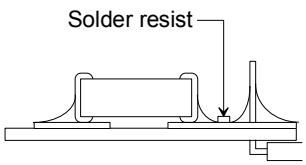


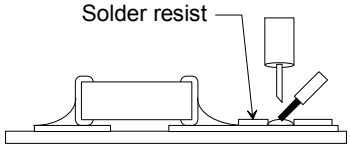




<Improvements by land division>







6. Cleaning Conditions:

The total cleaning time of soaking, ultrasonic and steam methods should be within 5 minutes.

Consult with Murata concerning the cleaning solvent. In order to totally abolish ODC (Freon, Trichrolethan), Murata has carried out testing on non-cleaning and water cleaning (water- soluble flux, water-soluble cream solder, water-based cleaning solvent). Therefore, be sure to contact Murata beforehand for details when applying any of the above mentioned cleaning fluid.

The ultrasonic cleaning conditions are indicated below :

Power	20 W per liter
Frequency	50 ~ 60 kHz
Temperature	40 °C or less

If the ultrasonic output power is too high, the PCB may resonate and products mounted on the PCB may be damaged. The ultrasonic cleaning conditions may change depending on the size of the vessel and the size of the PCB. Contact Murata regarding conditions other than those stated above.

Be sure to completely dry up products immediately after cleaning.

7. Operational Environment Conditions:

Products are designed to work for electronic products under normal environmental conditions (ambient temperature, humidity and pressure). Therefore, products have no problems to be used under the similar conditions to the above-mentioned. However, if products are used under the following circumstances, it may damage products and leakage of electricity and abnormal temperature may occur.

- In an atmosphere containing corrosive gas (Cl_2, NH_3, SO_x, NO_x etc.).
- In an atmosphere containing combustible and volatile gases.
- Dusty place.
- Direct sunlight place.
- Water splashing place.
- Humid place where water condenses.
- Freezing place.

If there are possibilities for products to be used under the preceding clause, consult with Murata before actual use.

8. Input Power Capacity:

Products shall be used in the input power capacity as specified in this specifications.
Inform Murata beforehand, in case that the components are used beyond such input power capacity range.

9. Limitation of Applications:

The product is designed and manufactured for consumer application only and is not available for any application listed below which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property.

- Aircraft equipment.
- Aerospace equipment
- Undersea equipment.
- Medical equipment.
- Transportation equipment (vehicles, trains, ships, etc.).
- Traffic signal equipment.
- Disaster prevention / crime prevention equipment.
- Application of similar complexity and/ or reliability requirements to the applications listed in the above.

⚠ Note:

Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.

All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.

We consider it not appropriate to include other terms and conditions for transaction warranty in product specifications, drawings or other technical documents. Therefore, even if your original part of this product specification includes such terms and conditions as warranty clause, product liability clause, or intellectual property infringement liability clause, we are not able to accept such terms and conditions in this product specification unless they are based on the governmental regulation or what we have agreed otherwise in a separate contact. We would like to suggest that you propose to discuss them under negotiation of contract.

The contents of this reference specification sheet are subject to change without notice.