Notice

1. Storage Conditions
   This product is applicable to MSL1 (Based on IPC/JEDEC J-STD-020).
   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 (Cl2, NH3, SO2, NOx, etc.)
   • Stored products should be used within 6 months of receipt. Solderability should be verified if this period is exceeded.

2. Handling Conditions
   Be careful in handling or transporting products because excessive stress or mechanical shock may break products.
   Handle with care if products may have cracks or damages on their terminals, the characteristics of products may change. Do not touch products with bare 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
   The recommendation conditions of soldering are as in the following figure.

   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. Set up the highest temperature of reflow within 260 °C. Contact Murata before use if concerning other soldering conditions.

   Reflow Soldering Standard Conditions (Example)

   Please use the reflow within 2 times.
   Use rosin type flux or weakly active flux with a chlorine content of 0.2 wt % or less.

6. Cleaning
   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:
   Cleaning Solution: Pineapple alpha, Water
   Frequency: 50 to 60 kHz
   Temperature: <40°C

   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.

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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 (Cl₂, NH₃, SOₓ, NOₓ, etc.)
- In an atmosphere containing combustible and volatile gases
- Dusty place
- Direct sunlight place
- Water splashing place
- Humid place where water condenses
- Freezing place

8. Input Power Capacity

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

The product shall not be used in 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. You acknowledge and agree that, if you use our products in such applications, we will not be responsible for any failure to meet such requirements. Furthermore, YOU AGREE TO INDEMNIFY AND DEFEND US AND OUR AFFILIATES AGAINST ALL CLAIMS, DAMAGES, COSTS, AND EXPENSES THAT MAY BE INCURRED, INCLUDING WITHOUT LIMITATION, ATTORNEY FEES AND COSTS, DUE TO THE USE OF OUR PRODUCTS IN SUCH APPLICATIONS.

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

We expressly prohibit you from analyzing, breaking, Reverse-Engineering, remodeling altering, and reproducing our product. Our product cannot be used for the product which is prohibited from being manufactured, used, and sold by the regulations and laws in the world.

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Caution · Notice

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Please do not use our products, our technical information and other data provided by us for the purpose of developing of mass-destruction weapons and the purpose of military use. Moreover, you must comply with “foreign exchange and foreign trade law”, the “U.S. export administration regulations”, etc.

Please note that we may discontinue the manufacture of our products, due to reasons such as end of supply of materials and/or components from our suppliers. Customer acknowledges that Murata will, if requested by you, conduct a failure analysis for defect or alleged defect of Products only at the level required for consumer grade Products, and thus such analysis may not always be available or be in accordance with your request (for example, in cases where the defect was caused by components in Products supplied to Murata from a third party).

By signing on specification sheet or approval sheet, you acknowledge that you are the legal representative for your company and that you understand and accept the validity of the contents herein. When you are not able to return the signed version of specification sheet or approval sheet within 90 days from receiving date of specification sheet or approval sheet, it shall be deemed to be your consent on the content of specification sheet or approval sheet.

Customer acknowledges that engineering samples may deviate from specifications and may contain defects due to their development status. We reject any liability or product warranty for engineering samples. In particular we disclaim liability for damages caused by
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