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発行区分
Classification: 新規 New 変更 Change 更新 Renewal

To Digi-Key

納入仕様書

PRODUCT SPECIFICATION FOR INFORMATION

製品名称
Product Description : High Frequency Filter

製品品番
Product Part Number : ELB2A004

松下品番
Matsushita Part Number : ELB2A004

適用(使用機種等)
Applications : Cordless phone

上記以外の適用に際しては、事前に弊社担当者までご連絡ください。
For other applications, contact our person signed below.

製造部署
Manufactured by : JAPAN

本仕様書の有効期間
Term of Validity : 発行日から
まで有効とします。
from the date of issue

お客様ご使用欄 CUSTOMER USE ONLY

この書類を確かに受領しました。
This was certainly received by us.

松下電子部品株式会社
変成器ビジネスユニット
Matsushita Electronic Components Co.,Ltd.
Power Supply and Inductive Products Business Unit

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発行部署名 Prepared by

コイル技術グループ

Inductive Engineering Group

Tel (06)6908-1215
Fax (06)6908-7307

責任者
Approved

検印
Checked

担当者
Designed

Signature

M. Shiba

1. この製品の使用材料は、「化学物質の審査及び製造等の規制に関する法律」に基づき、すべて既存化学物質として記載されている材料です。

All the materials used in this product are registered material under the Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances.

2. 本製品は、モントリオール議定書で規制されているオゾン層破壊物質(ODC)を製造工程及び購入部品・材料で一切使用していません。

This product has not been manufactured with any ozone depleting chemical controlled under the Montreal Protocol.

3. この製品に使用している全ての材料には、臭素系特定難燃物質「PBBOs、PBBs」を含有しておりません。

All the materials used in this product contain no brominated materials of PBBOs or PBBs as the flame-retardant.

4. 納入仕様書の「有効期間」について
有効期間は、特に、申し出のない限り(お客様の要望を含み)自動更新とします。
その際、連絡書・仕様書は、発行致しません。

"The Term of Validity" of Product Specifications for Information
Unless otherwise requested (including from customer), the term of validity shall be renewed automatically.

Then , informations and specifications shall be not issued.

SPECIFICATIONS (Record of Revision)

| Customer's Code | ELB2A004 | Company name | Matsushita Electronic Components Co.,Ltd. | |
|-----------------|-------------|-------------------|---|------------------|
| Matsushita Code | ELB2A004 | Publisher | Matsushita Electronic Components Co.,Ltd. | |
| No. | Date | Details of change | Operation | Checked |
| 1 | Feb.25.2005 | New | After Receiving Spec. | <i>g. Minato</i> |
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|-----------------------|--------------------------------|------------------------------|
| Classification | SPECIFICATIONS | Code No. (R 0) T1LC-05004 |
| Name | High-Frequency Bandpass Filter | 1 - 1 |

1.SCOPE

This specification covers the High-Frequency Bandpass Filter to be delivered to Digi-Key

2.PARTNUMBER

The part number of the products in this specification shall be ELB2A004

3.INDIVIDUAL

Code No. 151- ELB2A004 (R 0)

- (1) APPEARANCE & DIMENSIONS
As specified in the appearance & dimensions.
- (2) MOUNTING DETAIL AND METAL MASK DETAIL
As specified in the mounting detail and metal mask detail.
- (3) ELECTRICAL CHARACTERISTICS
As specified in the electrical characteristics.
- (4) PERFORMANCE CHARACTERISTICS
As specified in the freq. response & group delay.

4.COMMON

Code No. 151- LC2A005 (R 0)

- (1) RELIABILITY CHARACTERISTICS
As specified in the reliability characteristics.
- (2) ATTENTION
As specified in the attention.
- (3) TEST METHOD
As specified in the test method.
- (4) CONSTRUCTION
As specified in the construction.
- (5) PACKAGE
As specified in the package.

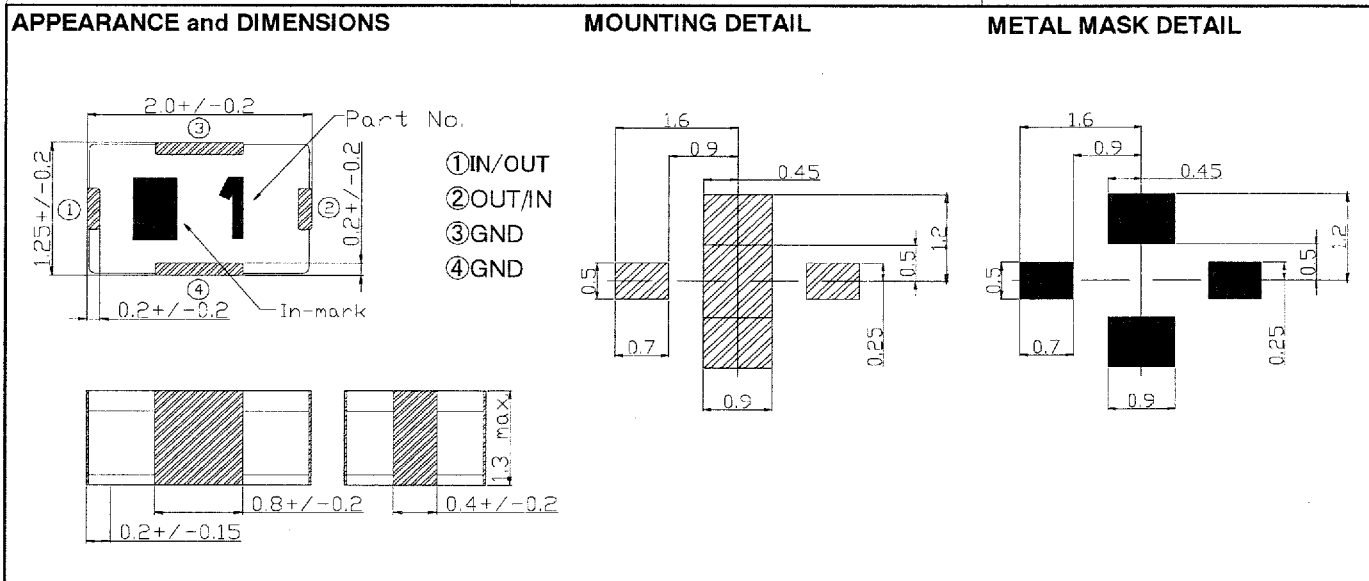
5.REMARKS

- (1) PRODUCING DISTRICT
Module BU Module DC Matsushita Electronic Components Co.,Ltd.

992-1 Aiba Ohno-Cho Ibi-Gun Gifu PREF,501-0598,Japan.

| No. | Date | Revision | Checked | Date | Feb.25.2005 | | |
|-----|------|----------|---------|------|--------------------|---------|-----------------|
| | | | | | Approval | Checked | Design |
| | | | | | <i>9. March 20</i> | | <i>M. Phiba</i> |
| | | | | | | | |
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|------------------------|------------------------|-----------------------|
| Classification | | Code No. (R 0) |
| SPECIFICATIONS | | 151- ELB2A004 |
| Name | | 1 - 2 |
| Customer's Code | Matsushita Code | Tentative Code |
| ELB2A004 | ELB2A004 | SLBBPF1025 |



ELECTRICAL CHARACTERISTICS

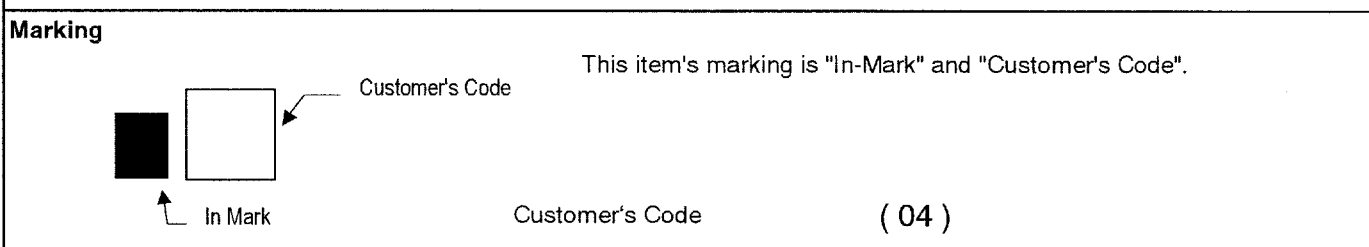
| | |
|--------------------------|--|
| Characteristic Impedance | IN:50. / OUT:50. |
| VSWR | 2.0 max. |
| Power ploof | 0.5W max. |
| Ripple | 1.0dB max. |
| Insertion Loss | 2.5dB max. [at 4.822GHz~4.947GHz] Test method (F-1) |
| Relative Attenuation | 22.0dB min. [at 5.8GHz] |
| | 28.0dB min. [at 9.644GHz~9.894GHz] |

Electrical Characteristics is subject to change by mounting of component.(dimention and position (ground pattern and land pattern) etc). Please make sure of using printed board of yours.
 Electrical Characteristics is measured by printed board endorsed by ours.(Fig. 1)
 Whenever a doubt about this product,please make sure of using our printed board.

ENVIRONMENT CHARACTERISTICS and RELIABILITY

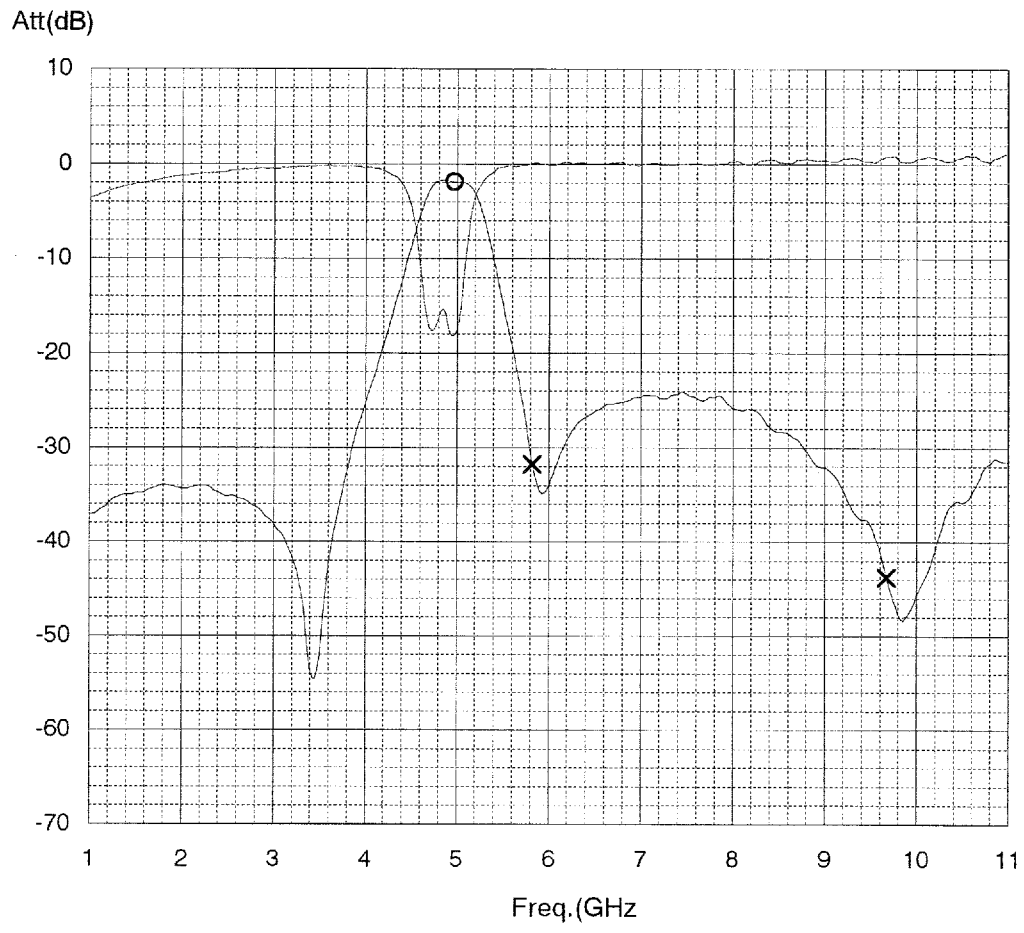
This table is Specifications of electrical characteristics after environment and mechanical test regulated by "Specifications(Common) "of High-Frequency Bandpass Filter.

| Item | Table 1 |
|--|-------------|
| Insertion Loss [at 4.822GHz~4.947GHz] | 3.5dB max. |
| Relative Attenuation [at 5.8GHz] | 20.0dB min. |
| Relative Attenuation [at 9.644GHz~9.894GHz] | 26.0dB min. |
| Relative Attenuation | min. |



| | | |
|------------------------------------|------------------------------------|---|
| Classification | | Code No. (R 0) 151- ELB2A004 |
| Name | | PERFORMANCE CHARACTERISTICS 2 - 2 |
| Customer's Code ELB2A004 | Matsushita Code ELB2A004 | Tentative Code SLBBPF1025 |

Frequency Characteristics.



| | | |
|-----------------------|---|------------------------------|
| Classification | SPECIFICATION(COMMON) | Code No. (R0) 151-LC2A005 |
| Subject | High-Frequency Bandpass Filter Reliability Characteristics | 1 - 8 |

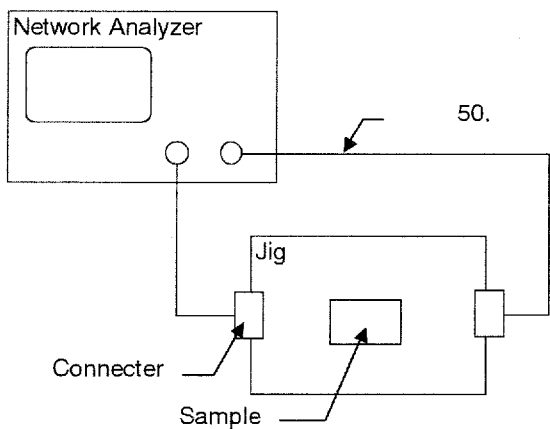
| | Items | Specification | Test Method/Condition |
|-------------------------------|--------------------------------|---|---|
| Environmental Characteristics | Moisture Resistance | The electrical characteristic shall be as shown in Table of individual specification | Filters shall be subjected to 90% ~ 95%RH at 60°C±2°C for 500h±8h. Measurements shall be made after 48h stabilization at room temperature. |
| | Thermal Resistance | | Filters shall be subjected to 85°C±2°C for 500h±8h. Measurements shall be made after 48h stabilization at room temperature. |
| | Cold Resistance | | Filters shall be subjected to -40°C±2°C for 500h±8h. Measurements shall be made after 48h stabilization at room temperature. |
| | Thermal Impact | | Filters shall be subjected to repeat 100 times to the following temperature cycle. 1. -40°C±2°C 30 min , 2. 85°C±2°C 30 min Measurements shall be made after 48 hour stabilization at room temperature. |
| | Thermal Characteristic | | Checked at any temperature from -20°C±3°C to 85°C±3°C. (standard at 20°C) |
| | Moisture Life | | Filters shall be subjected to 90% ~ 95%RH at 60°C±2°C for 500h±2h with DC 15V loaded between the terminals. Measurements shall be made after 48h stabilization at room conditions. |
| | Thermal Life | | Filters shall be subjected to 85°C±2°C for 500h±2h with DC 15V loaded between the terminals. Measurements shall be made after 48h stabilization at room conditions. |
| Mechanical | Dipping Solder Heat Resistance | The electrical characteristic shall be as shown in Table of individual specification Appearance and structure shall be no abnormality. | Filters shall be subjected to dipping in solder at 270°C±5°C for 5s ±0.5s up to 1.0mm~1.5mm from attachment surface. Measurements shall be made after dipping in solder for 10s±0.5s. |
| | Reflow Solder Heat Resistance | | 150±10°C preheat cycle for 2 minutes, and through reflow at 230°C±5°C for 10s±0.5s, and more than 2minutes stabilization, repeat 2 times. |
| | Impact Resistance | | Fall on a hard wooden board from a height of 1.0m 10 times. |
| | Vibration Resistance | | Vibrating at the frequency varying uniformly between the approximate limits of 10Hz and 55 Hz, an amplitude of 1.5mm for 2h in each of 3 mutually perpendicular directions. |
| | Bending Strength | | Apply pressure to test Jig (Fig.2) mounted component until 2mm 5 times. |
| | Solderability | | The terminals shall be at least 90% covered with solder. |
| Operating temp. range | -20°C~85°C | | |
| Failure rate | 1.0FIT max. | | |

| | | |
|-----------------------|---|------------------------------|
| Classification | SPECIFICATION(COMMON) | Code No. (R0) 151-LC2A005 |
| Subject | High-Frequency Bandpass Filter Attention | 2 - 8 |

| Items | Specified Conditions for Use |
|---------------------|--|
| Reflow profile | <p>the residual heat 150°C~200°C more than 3min ↓ the real heat 220°C~240°C more than 45s ↓ the peak heat less than 240°C no more than 10s</p> <p>the residual heat (Preheating) the real heat more than 2 min</p> <p>Reflow soldering with soldering iron should not be conducted 2 times.</p> <p>When you use other profiles than our recommendation illustrated below, please consult us in advice.</p> |
| Washing of PC board | When the soldered PC board is washed by Fleon or others, you are requested to contact engineering department as for washer and washing conditions in advance. |
| Storage | Care shall be taken to temperature, humidity, gas and magnetic field. Temp. : -20°C~85°C Humidity. : 85% max. |
| Mounting | Placement force should not exceed 4.9 N (0.5kgf), because electric and magnetic characteristics change by applying force. |
| Repair soldering | Temperature : 270°C max. , Period time : 3s max. |

| | |
|--|------------------------------|
| Classification <p style="text-align: center;">SPECIFICATION(COMMON)</p> | Code No. (R0) 151-LC2A005 |
| Subject High-Frequency Bandpass Filter Test Method | 3 - 8 |

1. Test Circuit



Note 1; Test Jig is recorded by Fig.1.

2. Test Method of Insertion Loss Frequency Characteristic (F-1)

Using the test circuit as shown Test circuit,calibrate 0 dB without Sample being tested at shorting "IN-OUT",then observe the levels at specified frequency by connecting Sample.
Insertion loss and Attenuation are determined by read-out level (A1)[dB] at the base frequency.
Insertion loss and attenuation level are shown as following.

•Insertion loss = (A1) [dB]

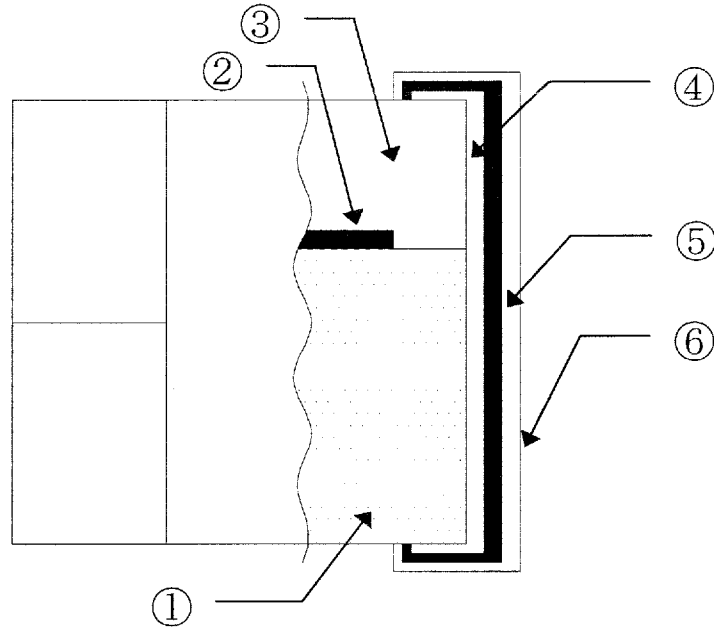
•Attenuation = (A1) [dB]

3.Measurement Equipment

Network Analyzer ; HP 8720 or Equivalent

| | | |
|-----------------------|--|------------------------------|
| Classification | SPECIFICATION(COMMON) | Code No. (R0) 151-LC2A005 |
| Subject | High-Frequency Bandpass Filter Construction | 4 - 8 |

Structure



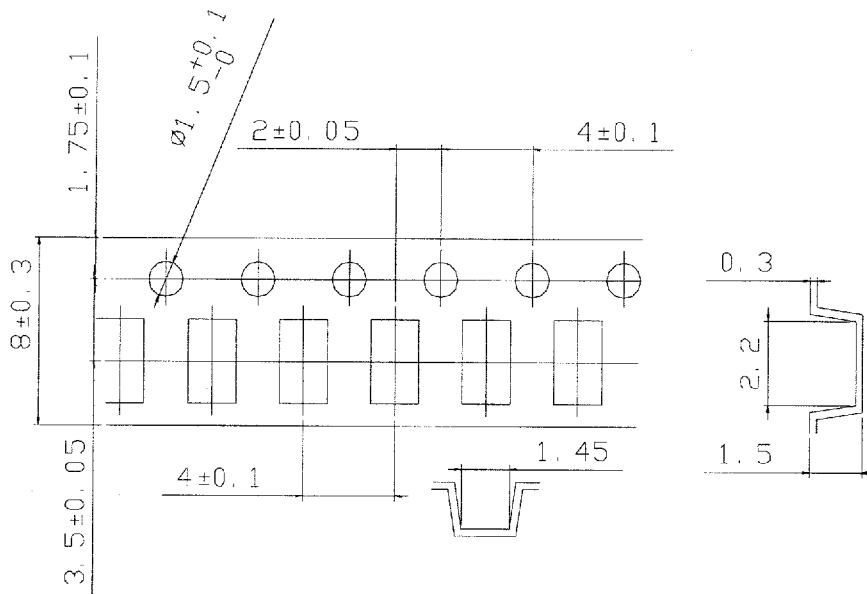
Material List

| No. | Code | Material |
|-----|------------------------|----------|
| 1 | Insulation materials A | Ceramic |
| 2 | Internal pattern | Ag |
| 3 | Insulation materials B | Glass |
| 4 | Terminal electrode | Ag |
| 5 | | Ni |
| 6 | | Sn |

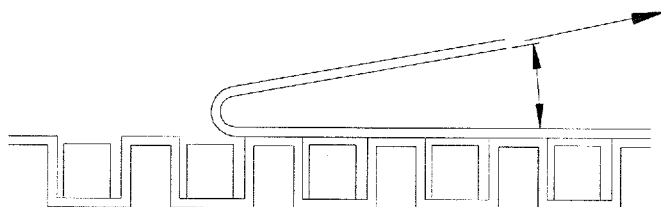
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| Classification <p style="text-align: center;">SPECIFICATION(COMMON)</p> | Code No. (R0) 151-LC2A005 |
| Subject High-Frequency Bandpass Filter Packaging (Taping) | 5 - 8 |

1. Carrier Tape

(1) Measure Unit mm



(2) Carrier Tape Peel Strength

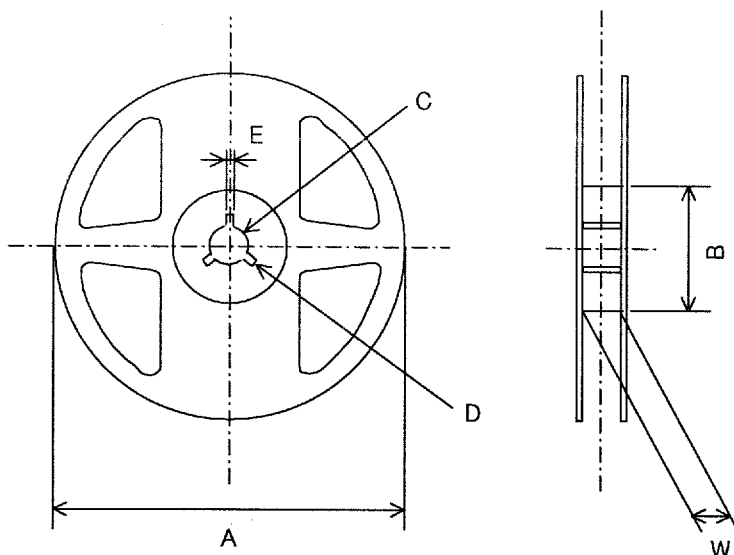


Direction of peel

- Peel speed : 300mm/min
- Peel accuracy : 10°
- Peel strength : 0.098N~0.686N

2. Reel Dimensions

(1) Marking ; Customer's Part No., quantity, Lot No. and our Part No. shall be marked on the reel.



| Code | Dimension |
|------|-----------|
| A | 178±2.0 |
| B | 60±0.5 |
| C | 13.0±0.5 |
| D | 21.0±0.8 |
| E | 2.0±0.5 |
| W | 9.0±0.3 |

Classification

SPECIFICATION(COMMON)

Code No. (R0)

151-LC2A005

Subject

High-Frequency Bandpass Filter
Packaging (Taping)

6 - 8

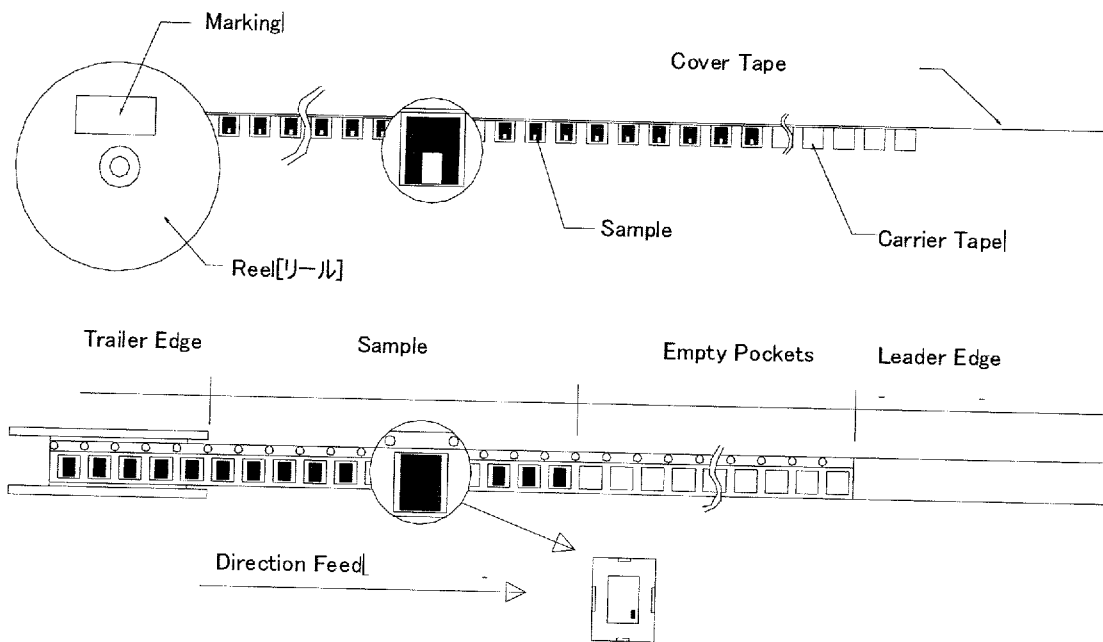
3. Packaging

Carrier tape (8mm width, 2mm pitch) and 178mm diameter reel shall be employed as per JIS C 0806.

(1) Quantity per Reel

3,000 pcs. There shall not be more empty pockets than two and those pockets shall not be consecutive.

(2) Packaging



(2)-1. Trailer Edge, Empty Pockets and Leader Edge

As shown above, there shall be a leading edge consisting of 25 empty pockets as well as cover tape and a trailing edge consisting of 10 or more empty pockets.

(2)-2. Inserting Method

Both electrodes shall be vertical to the longitude of the pockets.

(2)-3. Take-up Method

Samples shall be oriented as specified on the above illustration.

(2)-4. Marking

Customer's P/N, MATSUSHITA'S P/N, quantity and manufacture's name shall be marked on the reel.

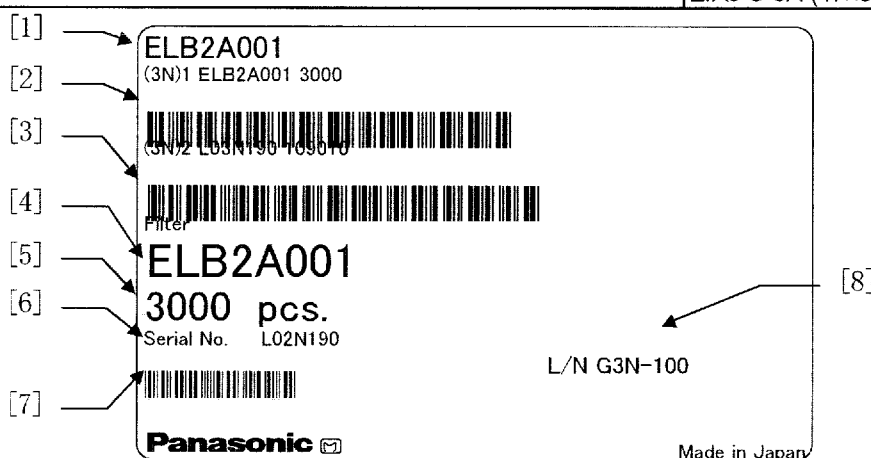
| | | |
|-----------------------|--|------------------------------|
| Classification | SPECIFICATION(COMMON) | Code No. (R0) 151-LC2A005 |
| Subject | High-Frequency Bandpass Filter Packaging(Bar Code Label for the reel) | 7 - 8 |

Part.No.

High Frequency Bandpass Filter ELB2A series

Bar-Code Label Spec.

| Item | Spec. |
|--|------------------------|
| Code | 3 of 9 |
| Code Density | 15.63 to 11.72 cpi |
| Width of Narrow Bar | 0.125 mm min. |
| Bar Ratio of Narrow:Wide | 1 : 2 (Narrow : Wide) |
| Bar Code Height | 4 mm min. |
| Margins (Quiet Zones)/Left&Right Margins | 3.81 mm min. |
| Label Size | EIAJ C-3A (47×64×79mm) |



| Item | Spec. |
|---|---------------------------|
| [1] Customer's Part Number | Human Readable |
| [2] Matsushita's Part Number & Quantity | Bar Code & Human Readable |
| [3] Serial (Lot) Number & Vender Code | Bar Code & Human Readable |
| [4] Matsushita's Part Number | Human Readable |
| [5] Quantity | Human Readable |
| [6] Serial Number | Human Readable |
| [7] Matsushita's Part Number | Bar-Code |
| [8] Lot Number | Human Readable |

Contents About Serial Number

(ex.) L 03 1 06 0

[1] [2] [3] [4] [5]

[1] (1 column) : "R" or "Z" or "L" (Fixation)

[2] (2 column) : shipment year (One column of end of the Christian era)
(ex.) 2002 → 02 , 2003 → 03

[3] (1 column) : shipment month

[ex.] Jan. to Sep. > Number ("1" to "9") , Oct. > "O" , Nov. > "N" , Dec. > "D"

[4] (2 column) : shipment day

[ex.] 10 > Number ("01"to"09") , 10 < Number ("11" to "31")

[5] (1 column) : mixed other Lot No.

[ex.] 0 → only 1 lot. , 1 →mixed other lot.

Contents About Lot Number

(ex.) G 3 1 1 1

[1] [2] [3] [4]

[1] (1 column) : Producing District [ex.] G → Made in Gifu

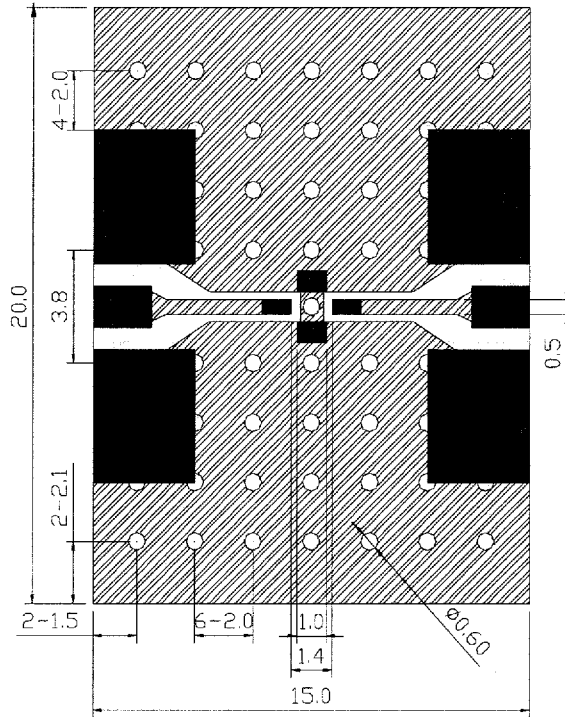
[2] (1 column) : shipment year (One column of end of the Christian era)

[3] (1 column) : shipment month

[4] (2 column) : management number for inside production

| | | |
|----------------|--|------------------------------|
| Classification | SPECIFICATION(COMMON) | Code No. (R0) 151-LC2A005 |
| Subject | High-Frequency Bandpass Filter Figure | 8 - 8 |

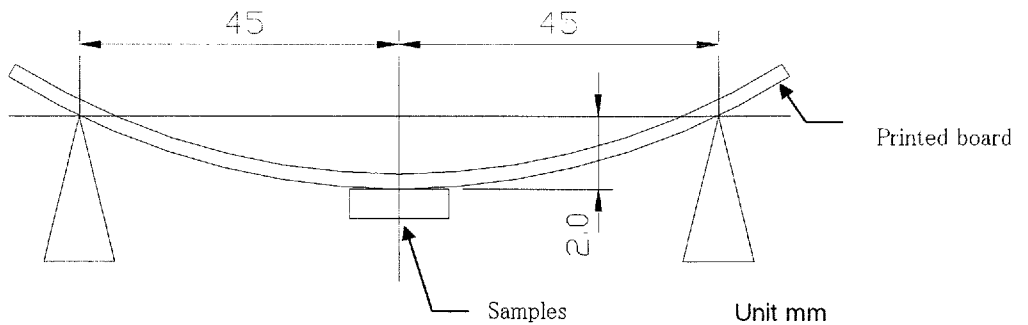
Fig.1 Measuring Jig



- :Land
- :Solder resist
- :No pattern solder resist
- :Through hole (. 0.6)

Multilayer printed board(4-layer) : glassfabric base,epoxy resin (1.0t,Copper leaf 18um)

Fig.2 Bending strength



Single sided printed board : glassfabric base,epoxy resin (0.8t,Copper leaf 35um)