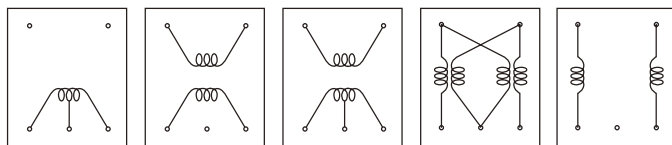


# バルントランス BALUN TRANSFORMERS

回路例  
Example circuits

OPERATING TEMP. -25~+105°C (製品自己発熱含む)  
(Including self-generated heat)



上記回路は参考例です。詳細につきましては弊社へご連絡下さい。

The above circuits are referetial examples. For details, Please contact us.



フロー/WAVE  
MB type

リフロー/REFLOW  
MC type

## 特長 FEATURES

- ・多孔型（メガネ状）及びリング状フェライトコアにバイファラ巻線したバルントランス
- ・MCタイプはベース一体構造により薄型を実現

- ・High stability due to pair wire windings
- ・MC type: pins are molded into the base to create a singular structure
- ・This item can be custom designed to meet customer requirements

## 用途 APPLICATIONS

- ・インピーダンス変換器
- ・分配器

- ・Impedance transformers
- ・Distribution transformers

## 形名表記法 ORDERING CODE

1 形式	
BU	バルントランス
2 コアの長辺寸法 [mm]	
05	5.0, 5.3
06	6.0

3 形状	
MB	ピンタイプ
MC	面実装タイプ
4 試作番号	
例	01

5 包装記号	
T	テーピング
△	単品 (ピンタイプのみ)
△=スペース	

6 当社管理記号	
△	標準品
△=スペース	



1 Type	
BU	Balun transformer
2 Length of component [mm]	
05	5.0, 5.3
06	6.0

3 Shape	
MB	pin type
MC	Surface-mount type
4 Product classification code	
example	01

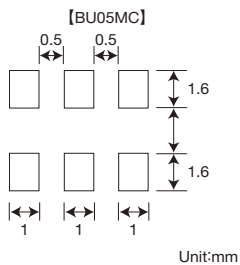
5 Packaging	
T	Tape&Reel
△	Bulk (Only pin type)
△=Blank space	

6 Internal code	
△	Standard product
△=Blank space	

Type	ピンタイプ Pin type MB		面実装タイプ Surface-mount type MC
			MC
Fig			
Type	BU05MB	BU06MB	BU05MC
A	5.5 max (0.217 max)	8 max (0.315 max)	5.3±0.5 (0.209±0.020)
B	5.5 max (0.217 max)	8 max (0.315 max)	5.0±0.3 (0.197±0.012)
C	6.0 max (0.236 max)	8 max (0.315 max)	2.7±0.2 (0.106±0.008)
D	1.75±0.2 (0.069±0.008)	2.25±0.2 pitch (0.089±0.008)	1.5±0.2 pitch (0.059±0.008)
E	3.5 (0.138)	3.5~5.0 (0.138±0.197)	—

Unit : mm (inch)

推奨ランドパターン Recommended Land Patterns



セレクションガイド  
Selection Guide



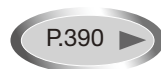
etc

アイテム一覧  
Part Numbers



※営業窓口にご相談ください。Please contact our Sales Department.

特性図  
Electrical Characteristics



梱包  
Packaging



信頼性  
Reliability Data



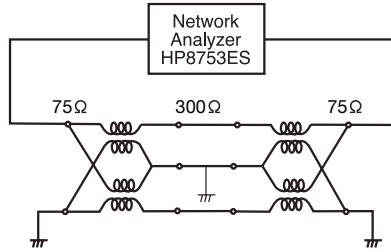
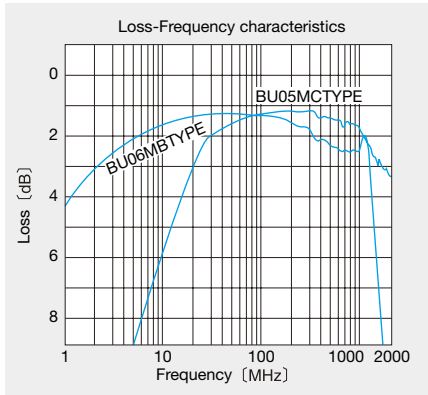
使用上の注意  
Precautions



## 特性図 ELECTRICAL CHARACTERISTICS

- ・特性は参考例を示します。
- ・ご用命の際は下記項目をご指定ください。
- ①挿入損失 (LOSS)
- ②定在波比 (VSWR)
- ③使用周波数
- ④指定測定回路

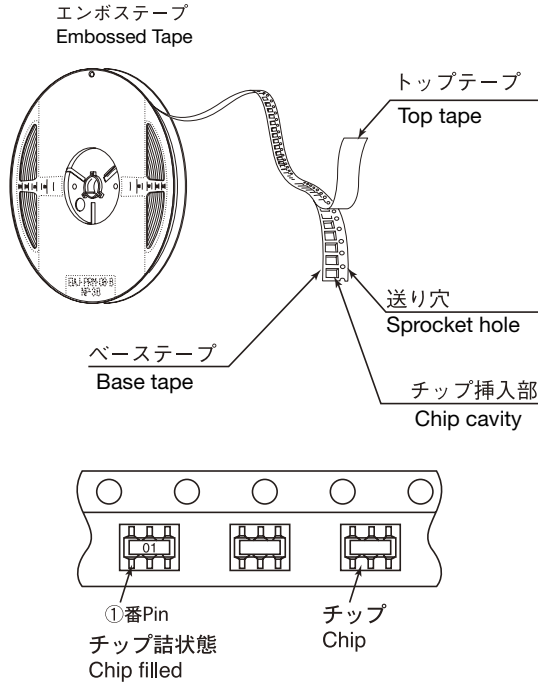
- ・ The following chart shows typical ranges for operating characteristics.
- ・ Please specify the following when ordering.
- ① loss
- ② standing wave ratio (VSWR)
- ③ operating frequency
- ④ specified test circuit



①最小受注単位数 Minimum Quantity

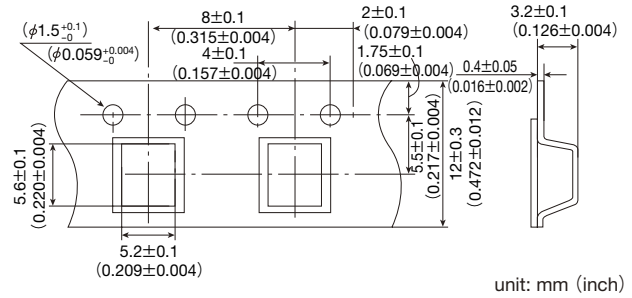
形式 Type	最小受注単位数 Minimum Quantity (pcs.)	
	箱詰め Box	テーピング Taping
BU05MC	—	2500
BU05MB	200	—
BU06MB	150	—

②テーピング材質 Tape material

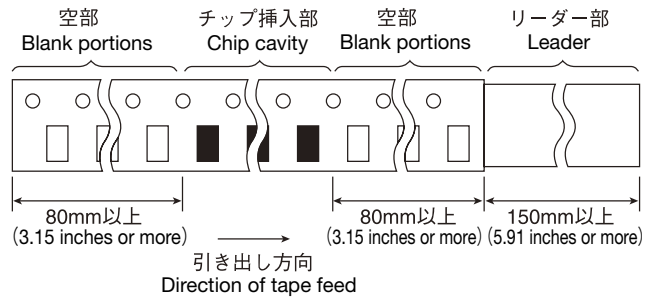


③テーピング寸法 Taping dimensions

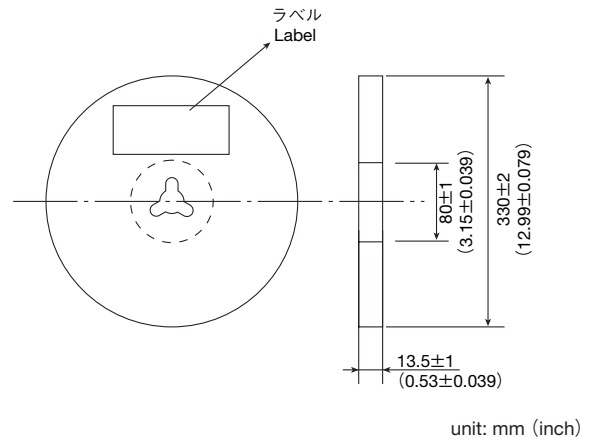
(1)エンボステープ (16mm幅) Embossed tape (0.630 inches wide)



④リーダー部・空部 Leader and Blank portion



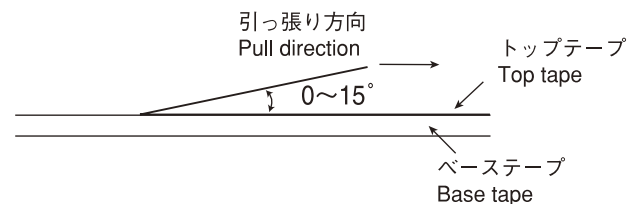
⑤リール寸法 Reel size

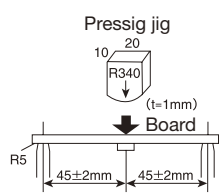


⑥トップテープ強度

トップテープのはがし力は、下図矢印方向にて0.1~0.7Nとなります。

The top tape requires a peel-off force of 0.1 to 0.7N in the direction of the arrow as illustrated below.

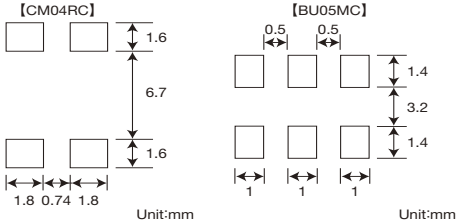


Item	Specified Value		Test Method and Remarks								
	CommonMode Choke Coils CM04RC	CommonMode Choke Coils BU05MC									
1.Operating Temperature Range	-25°C ~ +120°C		Including self-generated heat								
2.Storage Temperature Range	-40°C ~ +85°C		-5 to +40°C in taped packaging								
3.Rated current	Within the specified tolerance		The maximum DC value having temperature increase within specified temperature,as detailed in individual specification.								
4.Impedance	Within the specified tolerance		Measuring equipment : HP 4291A or its equivalent Measuring frequency : Specified frequency								
5. Inductance	Within the specified tolerance										
6.DC Resisitance	Within the specified tolerance		SMD transformer · Commom mode choke coil : Measuring equipment : DC ohmmeter								
7.Resisitance to flexure of substrare	Refer to individual specification.		Accoding to JIS C0051 <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>CM04RC · BU05MC</th> </tr> </thead> <tbody> <tr> <td>Warp</td> <td>3mm</td> </tr> <tr> <td>Pressing speed</td> <td>0.5mm/sec.</td> </tr> <tr> <td>Duration</td> <td>5 ± 1sec.</td> </tr> </tbody> </table> 		CM04RC · BU05MC	Warp	3mm	Pressing speed	0.5mm/sec.	Duration	5 ± 1sec.
	CM04RC · BU05MC										
Warp	3mm										
Pressing speed	0.5mm/sec.										
Duration	5 ± 1sec.										
8. Insulation resistance : between wires	100M.Ω min.		Applied voltage : Rated voltage Duration : 60 sec.								
9.Rated current	Within the specification										
10.Withstanding voltage : between wires	No abnormality		Applied voltage : Regulation voltage Duration : 60 sec.								
11.Resisitance to vibration	Refer to individual specification.		Accoding to JIS C0040 Directions : 2 hrs each in X, Y, and Z directions. Total : 6 hrs Frequency range : 10 to 55 to 10 Hz (1 min.) Amplitude : 1.5mm (Shall not exceed acceleration 196m/s <sup>2</sup> ) Mounting method : soldering onto printed board Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 24 hrs. A kind of vibration : A								
12.Solderability	At least 75% of terminal electrode is covered by new solder.		<table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>CM04RC · BU05MC</th> </tr> </thead> <tbody> <tr> <td>Solder temperature</td> <td>235 ± 5°C</td> </tr> <tr> <td>Duration</td> <td>2 ± 0.5 sec.</td> </tr> <tr> <td>Immersion depth</td> <td>Up to 0.5mm from terminal root</td> </tr> </tbody> </table>		CM04RC · BU05MC	Solder temperature	235 ± 5°C	Duration	2 ± 0.5 sec.	Immersion depth	Up to 0.5mm from terminal root
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Solder temperature	235 ± 5°C										
Duration	2 ± 0.5 sec.										
Immersion depth	Up to 0.5mm from terminal root										
13.Resisitance to soldering heat	Refer to individual specification.		① Reflow soldering Preheating : 100 to 150°C 1 to 2min. Peak : 230 to 240°C Within 5sec. More than 200°C Within 40 sec. Number of reflow : Within 2 times. ② Manual soldering Solder temperature : 350 ± 5°C Duration : 3 ± 1sec. Recovery : 1 to 2 hrs of recovery under the standard condition after the test.								

Item	Specified Value		Test Method and Remarks																
	CommonMode Choke Coils CM04RC	CommonMode Choke Coils BU05MC																	
14. Thermal shock	Refer to individual specification.		According to JIS C0025 Conditions of 1 cycle <table border="1"> <thead> <tr> <th rowspan="2"></th> <th>Temperature (°C)</th> <th rowspan="2">Duration (min)</th> </tr> <tr> <th>CM04RC · BU05MC</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25±3°C</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>3</td> </tr> <tr> <td>3</td> <td>85±3°C</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>3</td> </tr> </tbody> </table> Number of cycle : 10 cycles Recovery : 1~2 hrs of recovery under the standard condition after removal from test chamber.		Temperature (°C)	Duration (min)	CM04RC · BU05MC	1	-25±3°C	30±3	2	Room temperature	3	3	85±3°C	30±3	4	Room temperature	3
	Temperature (°C)	Duration (min)																	
	CM04RC · BU05MC																		
1	-25±3°C	30±3																	
2	Room temperature	3																	
3	85±3°C	30±3																	
4	Room temperature	3																	
15. Loading under damp heat	Refer to individual specification.		<table border="1"> <thead> <tr> <th></th> <th>CM04RC · BU05MC</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>40±3°C</td> </tr> <tr> <td>Humidity</td> <td>90~95%</td> </tr> <tr> <td>Applied current</td> <td>Rated current</td> </tr> <tr> <td>Duration</td> <td>1000±24</td> </tr> </tbody> </table> Recovery : 1~2 hrs of recovery under the standard condition after removal from test chamber.		CM04RC · BU05MC	Temperature	40±3°C	Humidity	90~95%	Applied current	Rated current	Duration	1000±24						
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16. High temperature life test	Refer to individual specification.		<table border="1"> <thead> <tr> <th></th> <th>CM04RC · BU05MC</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>85±3°C</td> </tr> <tr> <td>Duration</td> <td>1000±24</td> </tr> </tbody> </table> Recovery : 1~2 hrs of recovery under the standard condition after removal from test chamber.		CM04RC · BU05MC	Temperature	85±3°C	Duration	1000±24										
	CM04RC · BU05MC																		
Temperature	85±3°C																		
Duration	1000±24																		
17. Low Temperature life Test	Refer to individual specification.		<table border="1"> <thead> <tr> <th></th> <th>CM04RC · BU05MC</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>-40±3°C</td> </tr> <tr> <td>Duration</td> <td>1000±24</td> </tr> </tbody> </table> Recovery : 1~2 hrs of recovery under the standard condition after removal from test chamber.		CM04RC · BU05MC	Temperature	-40±3°C	Duration	1000±24										
	CM04RC · BU05MC																		
Temperature	-40±3°C																		
Duration	1000±24																		

Note on standard condition: "standard condition" referred to herein is defined as follows:  
 5 to 35°C of temperature, 45 to 85% relative humidity and 86 to 106kPa of air pressure.  
 When there are questions concerning measurement results:  
 In order to provide correlation data, the test shall be conducted under condition of 20±2°C of temperature, 45 to 85% relative humidity and 86 to 106kPa of air pressure.  
 Unless otherwise specified, all the tests are conducted under the "standard condition."

CM04RC, BU05MC

Stages	Precautions	Technical considerations
1.Circuit Design	<p>Operating environment,</p> <p>1.The products described in this specification are intended for use in general electronic equipment,(office supply equipment, telecommunications systems, measuring equipment, and household equipment). They are not intended for use in mission-critical equipment or systems requiring special quality and high reliability (traffic systems, safety equipment, aerospace systems, nuclear control systems and medical equipment including life-support systems,) where product failure might result in loss of life, injury or damage. For such uses, contact TAIYO YUDEN Sales Department in advance.</p>	
2.PCB Design	<p>Land pattern design</p> <p>1.Please contact any of our offices for a land pattern, and refer to a recommended land pattern of specifications.</p>	<p>Surface Mounting</p> <ul style="list-style-type: none"> <li>• Mounting and soldering conditions should be checked beforehand.</li> <li>• Applicable soldering process to this products is reflow soldering only.</li> <li>• Recommended Land Patterns</li> </ul>  <p style="text-align: center;">Unit:mm</p>
3.Considerations for automatic placement	<p>Adjustment of mounting machine</p> <p>1.Excessive impact load should not be imposed on the products when mounting onto the PC boards.</p> <p>2.Mounting and soldering conditions should be checked beforehand.</p>	<p>1. When installing products, care should be taken not to apply distortion stress as it may deform the products.</p>
4.Soldering	<p>Reflow soldering</p> <p>1.Please contact any of our offices for a reflow soldering, and refer to the recommended condition specified.</p> <p>2.This products is reflow soldering only.</p> <p>3.SMD Inductors</p> <p>Please do not add any stress to a product until it returns in normal temperature after reflow soldering.</p> <p>Lead free soldering</p> <p>1.When using products with lead free soldering, we request to use them after confirming of adhesion, temperature of resistance to soldering heat, soldering etc sufficiently.</p> <p>Recommended conditions for using a soldering iron:</p> <ul style="list-style-type: none"> <li>Put the soldering iron on the land-pattern.</li> <li>Soldering iron's temperature - Below 350 °C</li> <li>Duration - 3 seconds or less</li> <li>The soldering iron should not directly touch the inductor.</li> </ul>	<p>1.If products are used beyond the range of the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of the products.</p>
5.Cleaning	<p>Cleaning conditions</p> <p>1.SMD Inductors</p> <p>Please contact any of our offices for a cleaning.</p>	
6.Handling	<p>Handling</p> <p>1.Keep the product away from all magnets and magnetic objects.</p> <p>Breakaway PC boards (splitting along perforations)</p> <p>1.When splitting the PC board after mounting product, care should be taken not to give any stresses of deflection or twisting to the board.</p> <p>2.Board separation should not be done manually, but by using the appropriate devices.</p> <p>Mechanical considerations</p> <p>1.Please do not give the product any excessive mechanical shocks.</p> <p>2.SMD Inductors</p> <p>Please do not add any shock and power to a product in transportation.</p> <p>Pick-up pressure</p> <p>1.SMD Inductors</p> <p>Please do not push to add any pressure to a winding part.</p> <p>Please do not give any shock and push into a ferrite core exposure part.</p> <p>Packing</p> <p>1.SMD Inductors</p> <p>Please avoid accumulation of a packing box as much as possible.</p>	<p>1.There is a case that a characteristic varies with magnetic influence.</p> <p>1.Planning pattern configurations and the position of products should be carefully performed to minimize stress.</p> <p>1.There is a case to be damaged by a mechanical shock.</p> <p>2.SMD Inductors</p> <p>There is a case to be broken by the handling in transportation.</p> <p>1.SMD Inductors</p> <p>Damage and a characteristic can vary with an excessive shock or stress.</p> <p>1.There is a case that transformation and a product of tape are damaged by accumulation of a packing box.</p>
7.Storage conditions	<p>Storage</p> <p>1.To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled..</p> <ul style="list-style-type: none"> <li>•Recommended conditions</li> <li>Ambient temperature 0~40°C</li> <li>Humidity Below 70% RH</li> </ul> <p>The ambient temperature must be kept below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, product should be used within one year from the time of delivery.</p> <p>In case of storage over 6 months, solderability shall be checked before actual usage.</p>	<p>1.Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place.</p>