

This specification applies to Hybrid Choke Coil (PLY10A series).

(Ex.)

<u>P L</u>	<u>Y</u>	<u>1 0</u>	<u>A</u>	<u>N</u>	<u>1 4 3</u>	<u>0 R 5</u>	<u>R</u>	<u>2</u>	<u>B</u>
Product ID	Type	Applications	Structure	Safety Standard (N : Not certified)	Inductance	Rated Current	Winding Mode (R : Standard Type) (D : Sectional Winding Type)	Lead Dimensions	Packaging (B : Bulk)

Item	Specification
Withstand Voltage (between coils)	1600 V(AC)(1minute) or 2000V(AC)(2seconds)
Insulation Resistance(between coils)	10 MΩ min.
Winding Temperature rise	60 °C max. (with Rated Current)
Operating Temperature Range	-25 to +60 °C
Storage Temperature Range	-25 to +85 °C

※Please use in the condition that operating temperature is 120°C max. on operating in the final assembled product.

※Maximum allowable temperature at the surface of coil (ambient temperature + winding temperature rise) is in accordance with each safety standard that final assembled product is applicable to.

Part Number	Rated Current (A)	Rated Voltage		Direct Current Resistance (Ω max.)	Common Mode		Normal Mode Inductance Ln (μH min.)
		(V ac)	(V dc)		Inductance L1,L2 (m H min.)	Inductance Difference L1-L2 (m H max.)	
PLY10AN1430R5R2B	0.5	300	50	2.50	14.0	0.22	1000
PLY10AN9920R6R2B	0.6	300	50	1.70	9.9	0.19	690
PLY10AN8720R7R2B	0.7	300	50	1.20	8.7	0.17	530
PLY10AN6220R8R2B	0.8	300	50	1.00	6.2	0.15	400
PLY10AN4321R0R2B	1.0	300	500	0.70	4.3	0.14	300
PLY10AN2821R2R2B	1.2	300	500	0.50	2.8	0.11	190
PLY10AN2121R4R2B	1.4	300	500	0.37	2.1	0.092	150
PLY10AN1521R6R2B	1.6	300	500	0.30	1.5	0.063	110
PLY10AN1121R8R2B	1.8	300	500	0.25	1.1	0.064	90
PLY10AN9012R0R2B	2.0	300	500	0.19	0.9	0.059	65

Sectional Winding type

Part Number	Rated Current (A)	Rated Voltage		Direct Current Resistance (Ω max.)	Common Mode		Normal Mode Inductance Ln (μH min.)
		(V ac)	(V dc)		Inductance L1,L2 (m H min.)	Inductance Difference L1-L2 (m H max.)	
PLY10AN1130R5D2B	0.5	300	50	2.70	11.0	0.20	840
PLY10AN9720R6D2B	0.6	300	50	2.00	9.7	0.21	670
PLY10AN8720R7D2B	0.7	300	50	1.10	8.7	0.21	500
PLY10AN4420R8D2B	0.8	300	50	0.90	4.4	0.13	320
PLY10AN3521R0D2B	1.0	300	500	0.70	3.5	0.12	240
PLY10AN2321R2D2B	1.2	300	500	0.50	2.3	0.099	160
PLY10AN1421R4D2B	1.4	300	500	0.43	1.4	0.069	110
PLY10AN1121R7D2B	1.7	300	500	0.25	1.1	0.068	65
PLY10AN7012R0D2B	2.0	300	500	0.18	0.7	0.053	50

4. Appearance, Dimensions and Equivalent Circuit Diagram

See Fig.1 and Fig.2

5. Marking

5-1.Product

(Ex. PLY10AN1430R5R2B) → 1430R5 Lot No.

- ① Inductance
② Rated Current
③ Lot No.

※ STAMP

143 0R5 A.
① ② ③

LOT NO. STAMP MANUFACTURE YEARS CABLE ADDRESS TABLE/ EIAJ RC-1001A,2.3 ITEM



A

Month		Year											
1	2	3	4	5	6	7	8	9	10	11	12		
2017	2021	A	B	C	D	E	F	G	H	J	K	L	M
2018	2022	N	P	Q	R	S	T	U	V	W	X	Y	Z
2019	2023	a	b	c	d	e	f	g	h	i	j	k	m
2020	2024	n	o	p	q	r	s	t	u	v	w	x	y

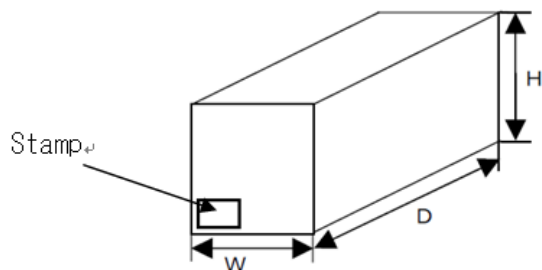
5-2. Packaging

Product Name		Lot No.	
Amount		TOKYO PARTS INDUSTRIAL CO., LTD. MADE IN ○○○○○	
PCS			

100 mm

25 mm

6. Specification of Outer Case



Outer Case Dimensions(mm)			Quantity / Box (Pcs)
W	D	H	
385	310	218	1000

※Above Outer Case size is typical. It depends on a quantity of an order.

7.Reference test condition

<Unless otherwise specified>

Temperature : 15 to 35 °C

Humidity : 25 to 85%(RH)

<In case of doubt>

Temperature : 20 ± 2 °C

Humidity : 60 to 70 %(RH)

Atmospheric Pressure : 86 to 106 kpa

For an AC Voltage, unless otherwise specified, frequency is 50 or 60 Hz, and value of AC Voltage is measured in term of Root-mean-square value.

(After, the reference test condition is called room condition.)

8.Electrical Performance

NO.	Item	Specification	Test Method									
8-1	Common Mode Inductance (L1,L2 L1-L2)	Inductance shall meet item 3.	Measuring terminal :T1-T2(L1), T3-T4(L2) Measuring Instrument : 4284A or equivalent Frequency : 1kHz Mode : SERIES DC BIAS : OFF									
	<table><tr><th>Inductance (Typical)</th><th>Range</th><th>Measuring Current</th></tr><tr><td>1mH max.</td><td>1000 μH</td><td>10 mA</td></tr><tr><td>more than 1mH to 10mHmax.</td><td>10 mH</td><td>1 mA</td></tr><tr><td>more than 10mH</td><td>100 mH</td><td>0.1 mA</td></tr></table> <p>(Caution) Range shall be fixed when inductance is measured. When using equivalent to 4284A , Measuring Current shall be adjusted on the same value.</p>		Inductance (Typical)	Range	Measuring Current	1mH max.	1000 μH	10 mA	more than 1mH to 10mHmax.	10 mH	1 mA	more than 10mH
Inductance (Typical)	Range	Measuring Current										
1mH max.	1000 μH	10 mA										
more than 1mH to 10mHmax.	10 mH	1 mA										
more than 10mH	100 mH	0.1 mA										
	Normal Mode Inductance (Ln)		Measuring terminal : T1-T4(Ln) (Connect terminal T2 to T3) The other test method shall be done by the above.									
8-2	Withstand Voltage (line to line)	Products shall be no failure.	Measuring terminal : T1(T2)-T3(T4) (between coils) Test Voltage : 1600V(AC)(1minute) or 2000V(AC)(2seconds)									
8-3	Insulation Resistance	Insulation Resistance shall meet item 3.	Measuring terminal : T1(T2)-T3(T4) (between coils) Test Voltage : 500V(DC) Time : 1 minute									
8-4	Direct Current Resistance	Direct Current Resistance shall meet item 3.	Measuring terminal : T1-T2, T3-T4									
8-5	Temperature rise	Surface of coil : 60°C max.	Applying Current : Rated Current									

9.Mechanical Performance

N0.	Item	Specification	Test Method				
9-1	Appearance and Dimensions	There shall not be a conspicuous dirt, crack and so on. Dimensions shall be as shown in Fig.1 and Fig.2	Visual Inspection Measured with slide calipers				
9-2	Terminal Strength	The Terminal shall not be damaged. (Cutting of lead wire, missing of terminal etc.)	The body of product shall be fixed, and the force of 9.8N shall be applied gradually and sustained for 1 to 5 seconds to each terminal in axial direction of the terminal.				
9-3	Solderability	Along the circumference of terminal shall be covered with new solder at least 90%.	Flux : Ethanol solution of rosin,25(wt)% Pre-heat : 150°C ± 10°C, 60s to 90s Solder : Sn-3.0Ag-0.5Cu Solder Temperature : 240 ± 3 °C Immersion Time : 3 ± 1 s Immersion Depth : 3.6 ± 0.8 mm from the root of terminal				
9-4	Resistance to soldering heat	Products shall meet Table 1 <table><tr><td>Appearance</td><td>No damage</td></tr><tr><td>Inductance Change</td><td>within ± 10%</td></tr></table>	Appearance	No damage	Inductance Change	within ± 10%	Flux : Ethanol solution of rosin,25(wt)% Pre-heat : 150°C ± 10°C/ 60s to 90s Solder : Sn-3.0Ag-0.5Cu Solder Temperature : 270 ± 5 °C Immersion Time : 10 ± 1 s Immersion Depth : 3.6 ± 0.8 mm from the root of terminal Then measured after exposure in the room condition for 4 to 24 hours.
Appearance	No damage						
Inductance Change	within ± 10%						
9-5	Vibration	<table><tr><td>Insulation Resistance</td><td>10 MΩ min.</td></tr><tr><td>Withstand Voltage</td><td>Products shall be no failure.</td></tr></table>	Insulation Resistance	10 MΩ min.	Withstand Voltage	Products shall be no failure.	Vibration Frequency : 10 to 55 to Hz / for 1 minute Amplitude : 1.5 mm Time and direction : A period of 2 hours in each of 3 mutually perpendicular directions. (Total 6 hours)
Insulation Resistance	10 MΩ min.						
Withstand Voltage	Products shall be no failure.						

10.Environmental Performance

No.	Item	Specification	Test Method
10-1	Temperature Cycle	Products shall meet Table 1.	1 cycle : step 1 : -25 °C(+0°C, -3°C) / 30minutes step 2 : Ordinary temp. / 3 minutes max. step 3 : +85 °C(+3°C, -0°C) / 30minutes step 4 : Ordinary temp. / 3 minutes max. Total of 10 cycles Then measured after exposure in the room condition for 4 to 24 hours.
10-2	Humidity	Products shall meet Table 1.	Temperature : 40 ± 2 °C Humidity : 90 to 95 %(RH) Time : 1000 h (+24h,-0h) Then measured after exposure in the room condition for 4 to 24 hours.
10-3	Cold Resistance		Temperature : -40 ± 2 °C Time : 1000 h (+24h,-0h) Then measured after exposure in the room condition for 4 to 24 hours.
10-4	Heat Life①		Temperature : 85 ± 2 °C Test Voltage : 500 V(AC) Time : 1000 h (+24h,-0h) Then measured after exposure in the room condition for 4 to 24 hours.
10-5	Heat Life②		Temperature : 85 ± 2 °C Test Voltage : Rated Voltage (DC) Time : 1000 h (+24h,-0h) Then measured after exposure in the room condition for 4 to 24 hours.

11. Caution

11-1. Rated Current

Operating Current should not exceed the rated value.

Even if operating current is under the rated value, adequate ventilation is required to avoid excessive heat generated within the product (choke coil) and from surrounding heat sources.

If exceeding these conditions, excessive heat may cause fumes or permanent damage to the product (choke coil). Please ensure that the product (choke coil) is evaluated and confirmed against the specification when it is mounted in your final assembled product.

Winding temperature should be less than 120°C.

Maximum allowable temperature at the surface of coil (ambient temperature + winding temperature rise) is in accordance with each safety standard that final assembled products applicable to.

When the temperature at winding exceeds maximum allowable temperature of safety standard, the rated current should be derated.

11-2. Surge current

Surge current should not exceed 10 times rated current within 1/4 cycle of 50/60Hz commercial power line.

Excessive surge current or excessively repeated surge current (with interval between surge : less than 10 seconds) may cause fumes or permanent damage to the product (choke coil).

11-3. Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

(1) Aircraft equipment (2) Aerospace equipment (3) Undersea equipment

(4) Power plant control equipment (5) Medical equipment

(6) Transportation equipment (vehicles, trains, ships, etc.)

(7) Traffic signal equipment (8) Disaster prevention / crime prevention equipment

(9) Data-processing equipment

(10) Application of similar complexity and/or reliability requirements to the applications listed in the above

11-4. Fail-safe

Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

12. Notice

12-1. Magnetic flux leakage

Choke Coils generate small amounts magnetic flux leakage that may adversely affect equipment operation according to components arrangement.

Testing should be completed by your final assembly product to ensure equipment performance is not effected.

12-2. Coil humming noise

Magnetic flux generated between the choke coil windings creates repulsive power between the coil windings.

This repulsive power causes the coil winding to vibrate and create a humming noise.

The amount of hum produced by the coil windings is proportionate to the amount of harmonic distortion generated by the operating current.

This does not influence the electrical performance of the coils, but it should be considered and tested in actual circuit application.

12-3. Soldering conditions

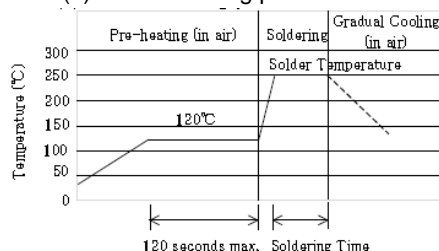
(1) Flux, Solder

- Rosin-based flux should be used.

Do not use strong acidic flux with halide content exceeding 0.2(wt)% (chlorine conversion value).

- Use Sn-3.0Ag-0.5Cu solder.

(2) Flow soldering profile.



< Limited s

oldering profile >

Solder Temperature	Soldering Time	Cycle of flow
265°C ± 3°C	5 s	2 cycles

<Standard soldering profile >

Solder Temperature	Soldering Time
250°C ± 2 °C	4 ~ 6 s

(3)Solder iron

Tip temperature : 350°C max.
 Solder Time : 3(+1,-0)s
 Times : 2 times max.

12-4.Cleaning

Avoid cleaning product due to non-waterproof construction.

12-5.Storage and Handling conditions

(1)Storage period

Use the products within 12 months after delivered.
 Solderability should be checked if this period is exceeded.

(2)Storage condition

- Storage temperature : -10 to +40°C
- Relative humidity : 30 to 70%
- Products should be stored without sudden changes in temperature and humidity.
- Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidation of lead terminals resulting in poor solderability or corrosion of windings.
- Products should be stored on the palette for prevention of the influence from humidity, dust and so on.
- Products should be stored in the warehouse without heat shock, vibration, direct sunlight and so on.

(3)Handling conditions

Care should be taken when transporting or handling products to avoid excessive vibration or mechanical shock.

12-6.Other

Please do not proceed productsd secondary, like processing of lead or pouring a resin



13. ! Note

13-1.Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.

13-2.You are requested not to use our product deviating from the agreed specifications.

13-3.Please return one duplicate of this product specification to us with your signature to acknowledge your receipt. If the duplicate is not returned by two month after issued date, the product specification will be deemed to have been received by you.

13-4.We consider it not appropriate to include any terms and conditions with regard to the business transaction in the product specifications, drawings or other technical documents. Therefore, if your technical documents as above include such terms and conditions such as warranty clause, product liability clause, or intellectual property infringement liability clause, they will be deemed to be invalid.

14. Country of origin, Production Plant

MADE IN CHINA

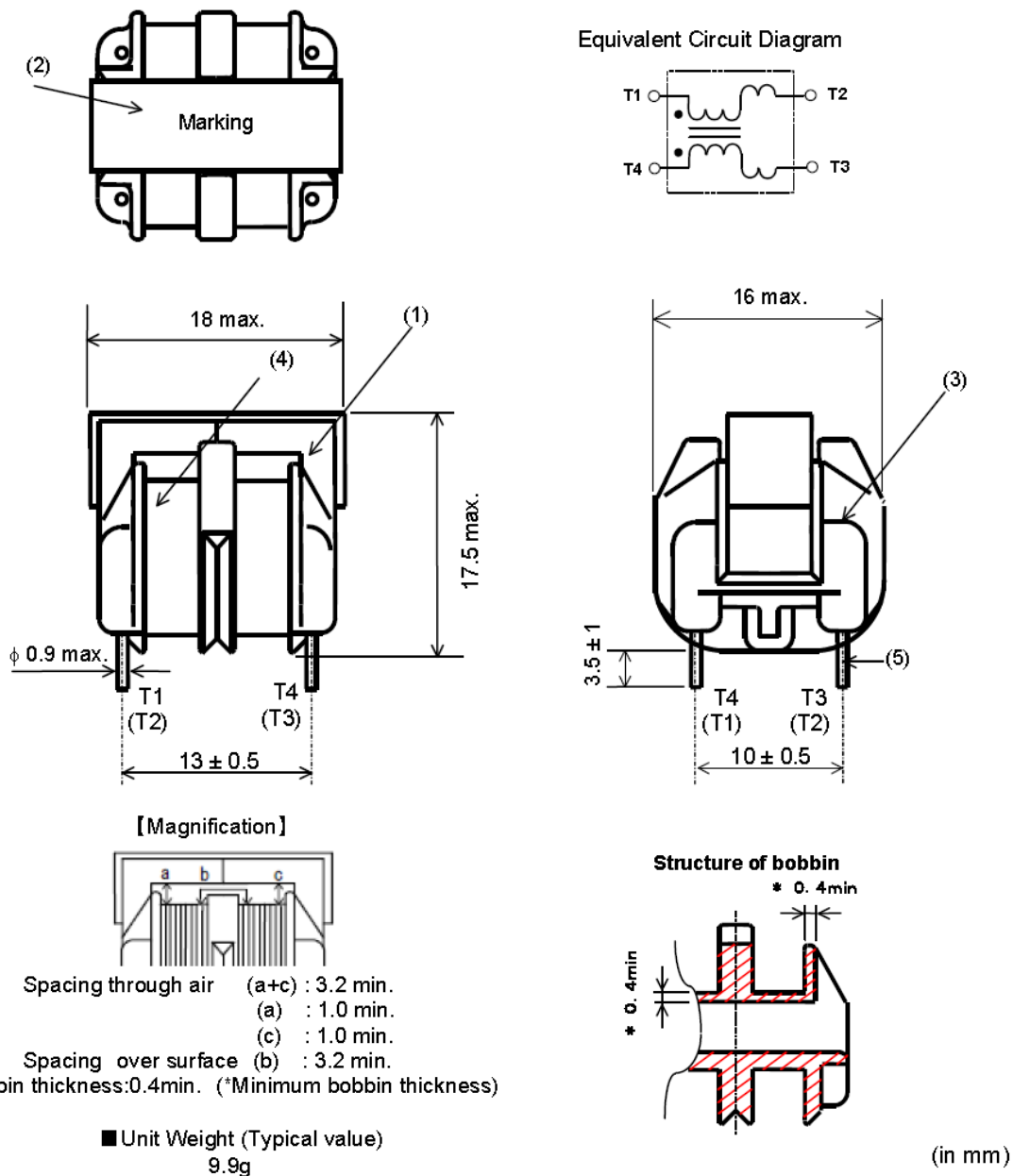
[SHANTOU SPECIAL ECONOMIC ZONE TOKYO PARTS CO.,LTD:6/F, 8TH Building, Longhu Processing Disteict, SHANTOU SEZ, Guangdong, China.]

Fig. 1

PLY10A Type Appearance and Dimensions

(Standard Type)

Method to unite Core and Bobbin : Varnish

**Material**

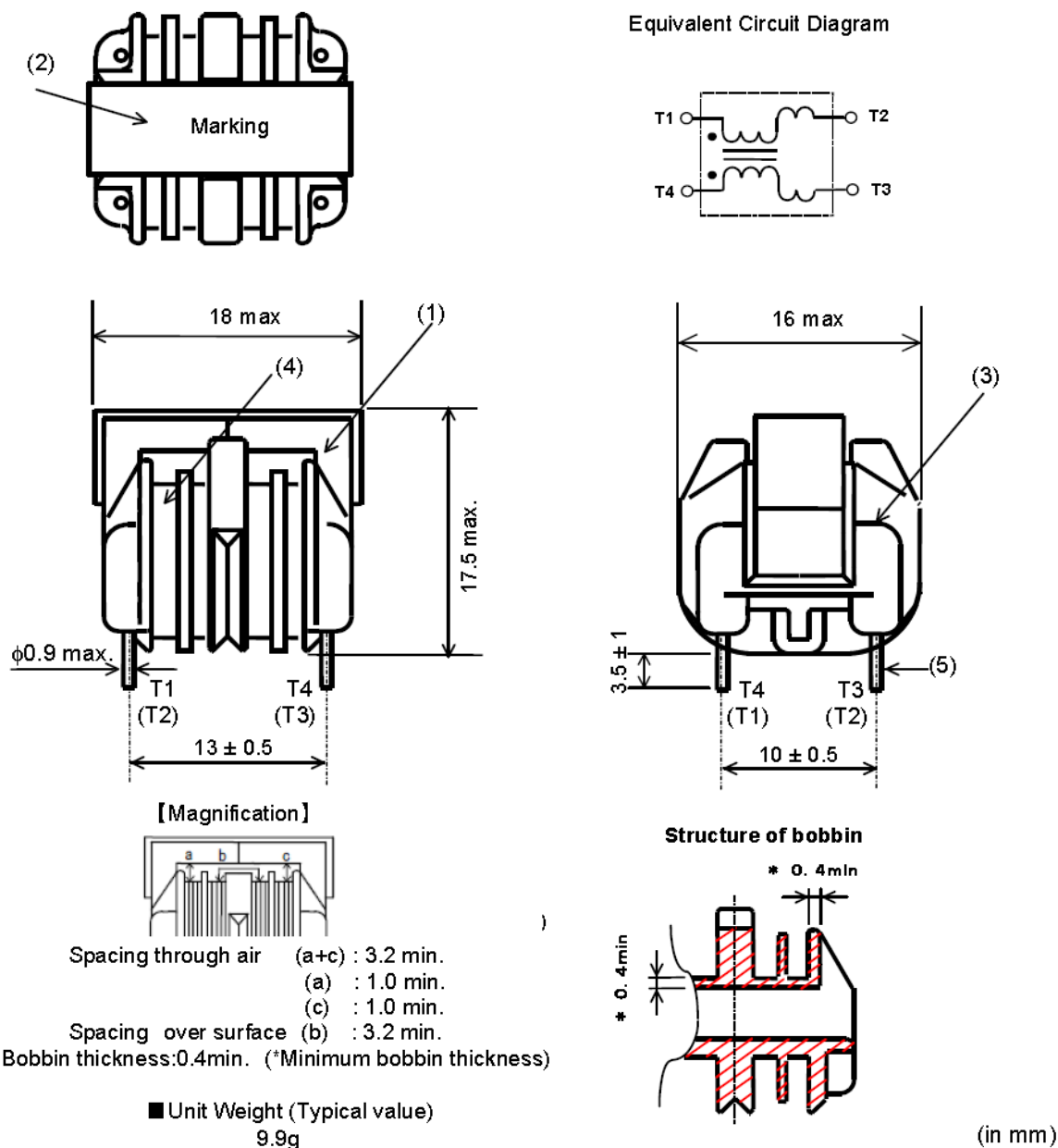
NO.	Item	Material
(1)	Core	Ferrite
(2)	Spring	SUS301
(3)	Bobbin	Polyamide 6(PA6) : MC100LK31, UL94V-0
(4)	Coil	Polyurethane Enameled Copper Wire(2UEW)
(5)	Terminal	Solder coated CP wire (Sn-5Cu)

Fig. 2

PLY10A Type Appearance and Dimensions

(Sectional Winding Type)

Method to unite Core and Bobbin : Varnish

**Material**

NO.	Item	Material
(1)	Core	Ferrite
(2)	Spring	SUS301
(3)	Bobbin	Polyamide 6(PA6) : MC100LK31, UL94V-0
(4)	Coil	Polyurethane Enameled Copper Wire(2UEW)
(5)	Terminal	Solder coated CP wire (Sn-5Cu)