Spec.No. S102	910EN01	P 1	1	/	/8
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1.Scope

This specification applies to Common Mode Choke Coil (PLH10AN \(\subseteq \subseteq \subseteq 2B \) series).

2.Part Numbering

3.Rating

Item	Specification
Withstand Voltage (between coils)	2000 V(AC)(1minute) or 2400 V(AC)(1second)
Insulation Resistance(between coils)	100 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℃ 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 No.	Rated Rated Voltage			Direct Current	Inductance (L1,L2)	Inductance Difference	
r arrivo.	(A)	(Vac)	c) (Vdc) Resistance (Ω max.)		(µH min.)	L1-L2 (µH max.)	
PLH10AN3711R0P2B	1.0	300	100	0.30	370.0	40.0	
PLH10AN2911R2P2B	1.2	300	100	0.21	290.0	36.0	
PLH10AN2211R5P2B	1.5	300	100	0.14	220.0	31.0	
PLH10AN1612R1P2B	2.1	300	500	0.08	160.0	26.0	
PLH10AN1112R6P2B	2.6	300	500	0.06	110.0	22.0	
PLH10AN7003R6P2B	3.6	300	500	0.03	70.0	17.0	

4. Appearance, Dimensions and Equivalent Circuit Diagram See Fig.1 .

5. Marking

5-1.Product

(Ex. PLH10AN3711R0P2B) \rightarrow 3711R0 Lot No.

***** STAMP

371 1R0 A

① Inductance

2 Rated Current

③ Lot No.

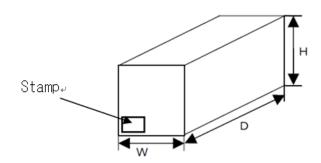
LOT NO. STAMP MANUFACTURE YEARS CABLE ADDRESS TABLE/ EIAJ RC-1001A,2.3ITEM Π **A**

	Month												
Year		1	2	3	4	5	6	7	8	9	10	11	12
2017	2021	Α	В	С	D	Е	F	G	Н	J	K	L	M
2018	2022	N	Р	Q	R	S	Т	U	V	W	Х	Y	Z
2019	2023	a	b	С	d	е	f	g	h	j	k	l	m
2020	2024	n	p	q_i	r	s	t	u	v	ω	x	y	3

5-2. Packaging

Product Name	Lot No.	1	
		٤	
Amount	TOKYO PARTS INDUSTRIAL CO., LTD.	25 m	
PCS	MADE IN OOOO	20	
1			
100 mm			

6. Specification of Outer Case



Outer Ca	Quantity /		
W	D	Η	Box (Pcs)
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.)

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8.Electrical Performance

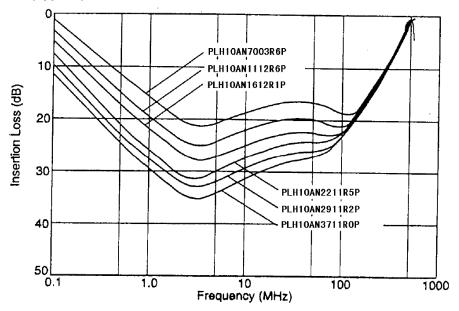
NO.	Item	Specification	Test Method
8-1	Inductance L1,L2 Inductance Difference L1-L2	Inductance shall meet item 3.	Measuring terminal :T1-T2(L1), T3-T4(L2) Measuring Instrument : 4284A or equivalent Frequency : 1kHz Mode : SERIES DC BIAS : OFF Range : 1000µH Measuring Current : 10 m A (Caution) Range shall be fixed when inductance is measured. When using equivalent to 4284A, Measuring Current shall be adjusted on the same value.
8-2	Direct Current Resistance	Direct Current Resistance shall meet item 3.	Measuring terminal : T1-T2, T3-T4 Ambient Temperature : 20 °C
8-3	Temperature rise	The surface of coil : 60°C max.	Applying Current : Rated Current
8-4	Coil humming noise	Coil humming noise is little audible.	Applying Current : Rated Current AC Voltage : 50Hz or 60Hz, sine wave
8-5	Withstand Voltage (line to line)	Products shall be no failure.	Measuring terminal : T1/T2-T3/T4 (between coils) Test Voltage : 2000V(AC)(1minute) or 2400V(AC)(1second) Cut-off : 2mA
8-6	Insulation Resistance	Insulation Resistance shall meet item 3.	Measuring terminal : T1/T2-T3/T4 (between coils) Test Voltage : 500V(DC) Time : 1 minute

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Spec.N				TYPE PLH10A P 4/8	
	hanical Performar				
NO.	Item	Specification		Test Method	
9-1	Appearance and	There shall not		Visual Inspection	
	Dimensions	conspicuous dir	rt, crack	Measured with slide calipers	
		and so on.			
		Dimensions sha			
		shown in Fig.1.			
9-2	Terminal	The Terminal st	nall not be	The body of product shall be fixed, and the force of 9.8N	
	Strength	damaged.	· · · · · · · · · · · · · · · · · · ·	shall be applied gradually and sustained for 5 seconds to	
		` •	I wire, missing of	each terminal in axial direction of the terminal.	
9-3	Solderability	terminal etc.) Along the circur	mforence of	Flux : Ethanol solution of rosin,25(wt)%	
9-3	Soluciability	terminal shall be		Pre-heat : 150°C ± 10°C, 60s to 90s	
		new solder at le		Solder : Sn-3.0Ag-0.5Cu	
		TIOW Solder at 10	,ast 50 /u.	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	Products shall r	meet Table 1	Flux : Ethanol solution of rosin,25(wt)%	
	soldering heat			Pre-heat: 150°C ± 10°C, 60s to 90s	
	(In the case	Table 1		Solder : Sn-3.0Ag-0.5Cu	
	of solder bath)	Appearance	No damage	Solder Temperature : 270 ± 5 °C	
		Inductance		Immersion Time: 10 ± 1 s	
		Change	within ± 10%	Immersion Depth: 3.6 ± 0.8 mm from the root of terminal	
			 	Then measured after exposure in the room condition for	
9-5	Resistance to	Insulation Resistance	100 MΩ min.	4 to 24 hours. Tip Temperature : 380 ± 10 °C	
9-0	soldering heat	Withstand	Products shall	Time : 3s (+1s,-0s)	
	(In the case of	Voltage	be no failure.	Then measured after exposure in the room condition for	
	soldering iron)	Voltage	De no idiaio.	4 to 24 hours	
9-6	Vibration	†		Vibration Frequency : 10 to 55 to Hz / for 1 minute	
	Vibration			Amplitude : 1.5 mm	
.				Time and direction : A period of 2 hours in each of 3	
				mutually perpendicular directions. (Total 6 hours)	
9-7	Shock	1		Maximum Acceleration : 981 m / s ²	
-				Normal Duration : 6 ms	
				Wave form : Half-sine wave	
				Velocity Change : 3.75 m / s	
				Direction : along the three mutually perpendicular axes of	
				the product	
<u> </u>	L			Times : each direction (total 6 times)	
10.Env	vironmental Perfo	rmance			

No.	Item	Specification	Test Method
10-1	Temperature	Products shall meet Table 1.	1 cycle :
	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		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		Temperature : -40 ± 2 °C
	Resistance		Time: 1000 h (+24h,-0h)
			Then measured after exposure in the room condition for 4 to 24 hours.
10-4	Heat		Temperature: 85 ± 2 °C
	Resistance		Time: 1000 h (+24h,-0h)
			Then measured after exposure in the room condition for 4 to 24 hours.
10-5	Heat Life①		Temperature: 85 ± 2 °C
	Tiout Liio		Test Voltage : 500 V(AC)
			Time: 1000 h (+24h,-0h)
			Then measured after exposure in the room condition for 4 to 24 hours.
10-6	Heat Life②		Temperature: 85 ± 2 °C
	1.104.1 2.110		Test Voltage : Rated Voltage (DC)
			Time: 1000 h (+24h,-0h)
			Then measured after exposure in the room condition for 4 to 24 hours.

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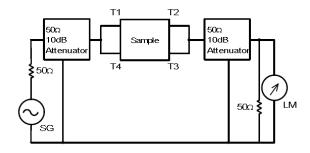
11. Insertion Loss (Typical)



Measuring circuit (based on MIL-STD-220) Insertion Loss (dB)=20 log (E1 / E2) E1:The output voltage of the signal generator

with the component in the circuit

E2:The output voltage of the signal generator with the component not in the circuit



12. 🔨

Caution

12-1.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 (common mode choke coil) and from surrounding heat sources.

If exceeding these conditions, excessive heat may cause fumes or permanent damage to the product (common mode choke coil).

Please ensure that the product (common mode 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.

12-2.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 (common mode choke coil).

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12-3.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

12-4.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.

13.Notice

13-1. Magnetic flux leakage

Common Mode 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.

13-2.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.

13-3. Soldering conditions

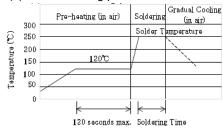
(1)Flux, Solder

· 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.

13-4.Cleaning

Avoid cleaning product due to non-waterproof construction.

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13-5. 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 storaged 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 storaged on the palette for prevention of the influence from humidity, dust and so on.
- · Products should be storaged 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.

13-6.Other

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

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.]

15. 🛕 Note

- 15-1.Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- 15-2. You are requested not to use our product deviating from the agreed specifications.
- 15-3. 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.
- 15-4.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.

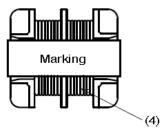
SHANTOU SPECIAL ECONOMIC ZONE TOKYO PARTS CO., LTD.
R&D DEPARTMENT

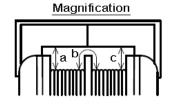
<u>Spec.No. S1021910EN01</u> TYPE PLH10A P 8/8

Fig. 1

PLH10A Appearance and Dimensions

Method to unite Core and Bobbin : Varnish



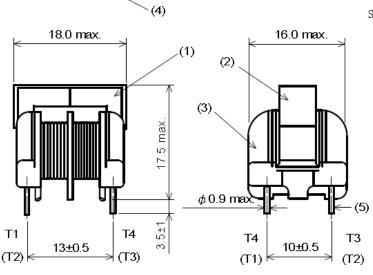


Spacing through air (a+c): 3.2 min.

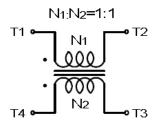
(a): 1.0 min.

(c): 1.0 min.

Spacing over surface (b): 3.2 min.



Equivalent Circuit Diagram



Bobbin thickness: 0.5 min.

(in mm)

■Unit Weight (Typical value) 5.0 g

Material

NO.	Item	Material
(1)	Core	Ferrite
(2)	Spring	SUS301
(3)	Bobbin	Phenolic(PF): PM-8315,UL94V-0
(4)	Coil	Polyurethane Enameled Copper Wire 2UEW
(5)	Terminal	Solder coated CP wire (Sn-5Cu)

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