#### DC Common Mode Choke Coil PLT09HN2003R0P1B Reference Specification

#### 1. Scope

This reference specification applies to DC Common Mode Choke Coil (PLT09H Series).

#### 2. Part Numbering

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	T	09	Н	N	200	3R0	P	1	В
Product ID	Туре	Applications	Structure	Safety	Inductance	Rated	Winding Mode	Lead	Packaging
				Standard		Current		Dimensions	(B:Bulk)
			1)	Not certifi	ed)	(	P:Aligned Windir	ng)	

#### 3. Rating

Item	Specification
Customer Part Number	
Murata Part Number	PLT09HN2003R0P1B
Rated Voltage	50 V(DC)
Rated Current	3 A
Withstand Voltage	125 V(DC) (1 minute)
Insulation Resistance	10 M $\Omega$ min.
Direct Current Resistance	0.03 Ω max.
Inductance L1,L2	20 μH min.
Inductance Difference  L1-L2	2 μH max.
Temperature Characteristic (Inductance change)	within $\pm \frac{100}{50}$ %
Temperature Rise	30 °C max.
Operating Temperature Range (Ambient Temperature)	- 40 °C to + 85 °C
Storage Temperature Range	- 40 °C to + 85 °C

#### 4. Standard Testing Conditions

< Unless otherwise specified >

Temperature : Ordinary Temp. 15 °C to 35 °C Humidity : Ordinary Humidity 25 %(RH) to 85 %(RH) < In case of doubt >

Temperature : 20 °C  $\pm$  2 °C Humidity : 60 %(RH) to 70 %(RH) Atmospheric pressure : 86 kPa to 106 kPa

#### 5. Appearance, Dimensions and Equivalent Circuit Diagram

See Fig.1.

#### 6. Marking

(1) Inductance : 200
(2) Manufacturer Identification : muRata

#### 7. Electrical Performance

No.	Item	Specification	Test Method
7.1	Inductance L1,L2  L1 - L2	Meet item 3.	Measuring terminal : T1-T2(L1) , T3-T4(L2) Frequency : 1 kHz
7.2	Insulation Resistance		Measuring terminal : (T1,T2) – (T3,T4) Test Voltage : 100 V(DC) Time : 1 minute
7.3	Direct Current Resistance		Measuring terminal : T1-T2 , T3-T4

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No.	Item	Specification	Test Method
7.4	Temperature Characteristics	Meet item 3.	Inductance shall be measured at each stepspecified in Table 1 after reaching the thermalepuilibrium.The inductance change against the inductance atstep 3 shall be calculated.Table 1Step Temperature1 $+20 \pm 2 \ ^{\circ}C$ 2 $-25 \pm 2 \ ^{\circ}C$ 3 $+20 \pm 2 \ ^{\circ}C$
7.5	Temperature rise	The surface of coil : 30 °C max.	Applying Current : Rated Current
7.6	Withstand Voltage	Products shall be no failure.	Measuring terminal : (T1,T2) - (T3,T4) (between terminals)
	-		Test Voltage : 125 V(DC) (1 minute)

#### 8. Mechanical Performance

No.	Item	Specification	Test Method
8.1	Appearance and	There shall not be a conspicuous	Visual Inspection
	Dimensions	dirt, crack,and so on.	Measured with slide calipers
		Dimensions shall be as shown in Fig.1.	
8.2	Lead wire	Products shall not be damaged.	The body of products shall be fixed, and the force
	Strength	(cutting of lead wire, missing of pin,	of 5N shall be applied gradually and sustained for
		etc.)	30s to each lead wires in the axial direction of
0.0	O a lala na hilite a		the lead wires.
8.3	Solderability	The lead wires shall be covered	Flux : Ethanol solution of rosin, $25(wt)\%$ Pre-heat : $150 \pm 10$ °C, $60 \sim 90$ s
		with new solder at least 75% along the circumference of the immersed	Solder : Sn-3Ag-0.5Cu
		part.	Solder Temperature : 245 ± 5 °C
			Immersion Time : $2 \pm 0.5$ s
			Immersion Depth : 2.6 ± 0.8 mm from the root of
			lead wire
8.4	Resistance to	Meet Table 2.	Flux : Ethanol solution of rosin, 25(wt)%
	soldering heat	Table 2	Pre-heat : 150 ± 10 °C, 60 ~ 90 s
			Solder : Sn-3Ag-0.5Cu
		Appearance No damage	Solder Temperature : $260 \pm 5 \degree$ C Immersion Time : $10 \pm 1 \$$
		Inductance within ± 10 %	Immersion Depth : $2.6 \pm 0.8$ mm from the root of
		Change Within 2 10 /0	lead wire
		Voltage Meet item 7.6	Then measured after exposure in the room
		vollago	condition for 4 to 24 hours.
8.5	Vibration		Vibration Frequency : 10Hz to 55Hz to 10Hz
			for 1 minute
			Amplitude : 1.5 mm
			Time : A period of 2 hours in each of 3 mutually
		_	perpendicular directions. (Total 6 hours)
8.6	Shock		Maximum Acceleration : 981 m / s <sup>2</sup>
			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
			Times : Three shocks in each directions
			(total 18 times)

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### 9. Enviromental Performance

No.	Item	Specification	Test Method
9.1	Temperature Cycle	Meet Table 2.	1 cycle : 1 step : - 40 °C (+ 0 °C, - 3 °C) / 30 min. 2 step : Ordinary Temp. / 3 min. max. 3 step : + 85 °C (+ 3 °C, - 0 °C) / 30 min. 4 step : Ordinary Temp. / 3 min. max. Total of 10 cycles Then measured after exposure in the room condition for 4 to 24 hours.
9.2	Humidity		Temperature : 40 °C $\pm$ 2 °C Humidity : 90 %(RH) to 95 %(RH) Time : 1000 h (+24h , -0h) Then measured after exposure in the room condition for 4 to 24 hours.
9.3	Cold Resistance		Temperature : - 40 °C $\pm$ 2 °C Time : 1000 h (+24h , -0h) Then measured after exposure in the room condition for 4 to 24 hours.
9.4	Heat Resistance		Temperature : 85 °C $\pm$ 2 °C Time : 1000 h (+24h , -0h) Then measured after exposure in the room condition for 4 to 24 hours.
9.5	Heat Life		Temperature : 85 °C $\pm$ 2 °C Test Voltage : 50 V(DC) Time : 1000 h (+24h , -0h) Then measured after exposure in the room condition for 4 to 24 hours.

#### 10. Insertion Loss (Typical)



# Insertion Loss measuring circuit T1 T2



Measuring circuit (based on MIL-STD-220)  $A = 20 \log(E1/E2)$ 

A : Insertion Loss (dB)

E1 : Level with Common mode choke coil

E2 : Level without Common mode choke coil

### 11. Specification of Packaging

**11.1.Packing Quantity** 

Individual packaging	
100pcs	

#### 11.2. Packing Method

Styrene foam of the stuck products on are placed in an Individual packaging . A quantity in an Outer packaging is depending on a quantity of an order.

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#### 11.3. Marking of packaging

(1) Individual packaing

The following items shall be marked on a label and the label is sticked on the Individual packaing.

Customer part number, MURATA part number, Inspection number(\*\*1), RoHS marking (\*\*2), Quantity, etc

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•*1) « Expression of Inspec	tion No. »	<u> </u>	<u>×××</u>
		(1) (2)	(3)
(1) Factory Code			
(2) Date	First digit	: Year / Las	t digit of year
	Second digit	: Month / Jan	. to Sep. $\rightarrow$ 1 to 9, Oct. to Dec. $\rightarrow$ O,N,D
	Third, Fourth	digit : Day	
(3) Serial No.			
•*2) « Expression of RoHS	marking »	ROHS – <u>Y</u> ( <u>△</u> )	
		(1) (2)	
<ol><li>RoHS regulation</li></ol>	n conformity pa	arts.	

(2) MURATA classification number

(2) Marking for Outside package

The following items shall be marked on a label and the label is sticked on the outside package. Customer name, Purchasing Order Number, Customer Part Number, MURATA part number, RoHS marking (•\*2), Quantity, etc

#### **11.4 Specification of Outer Case**



	Outer Case Dimensions (mm)			Standard Individual package Quantity
abel	W	D	Н	in Outer Case
	265	89	118	5

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

## 12. 🗥 Caution

#### **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

(5) Medical equipment

- (7) Traffic signal equipment
- (8) Transportation equipment (vehicles, trains, ships, etc.)
- (9) Data-processing equipment
- (10) Applications of similar complexity and /or reliability requirements to the applications listed in the above
- (6) Disaster prevention / crime prevention equipment

#### 13. Notice

#### 13.1. Soldering conditions

- (1) Flux, Solder
  - Rosin-based flux should be used.

(4)Power plant control equipment

Do not use strong acidic flux with halide content exceeding 0.2(wt)% (chlorine conversion value.) • Use Sn-3.0Ag-0.5Cu solder.

(2) Standard flow soldering profile.



Solder Temperature	Soldering Time
250 ~ 260 °C	4 ~ 6 s

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- P 5/ 6
- (3) Resistance to soldering iron goes in the following condition that tip temperature is 350 °C max. and soldering time is 3 s max. Products and the leads should not be subjected to any mechanical stress during soldering process. (and also while subjected to the equivalent high temperature.)

#### 13.2. Cleaning

Avoid cleaning product due to non-waterproof construction.

#### 13.3. Storage and Handling Requirements

- (1) Storage period
  - Use the products within 12 months after delivered.

Solderability should be checked if this period is exceeded.

- (2) Storage conditions
  - Products should be stored in the warehouse on the following conditions.
    - Temperature : -10 °C to 40 °C

Humidity : 15 % to 85 % relative humidity No rapid change on temperature and humidity Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of lead terminals resulting in poor solderability or corrosion of component windings.

- Products should be stored on the palette for the 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 Condition

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

# 14. 🛆 Note

- (1) Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- (2) You are requested not to use our product deviating from the reference specifications.
- (3) The contents of this reference specification are subject to change without advance notice. Please approve our product specifications or transact the approval sheet for product specifications before ordering.

# **Reference Only**

Fig. 1

## PLT09H Appearance and Dimensions

