

● Part Numbering

AC Line Filters

(Part Number)

PL	A	10	A	S	152	2R0	R	2	B
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Product ID

Product ID	
PL	Common Mode Choke Coils

② Type

Code	Type
A	AC Standard
H	AC High-frequency
Y	AC Hybrid Choke Coils

③ Applications

Code	Applications
10	for AC Line
17	

④ Structure

Code	Structure
A	Core Vertical
B	Core Horizontal

⑤ Features

Code	Features
S	Safety Recognized
N	General Use
H	High Inductance
V	High Inductance Safety Recognized

⑥ Inductance

Expressed by three figures. The unit is micro-henry (μH). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

⑦ Rated Current

Expressed by three-digit alphanumerics. The unit is amperes (A). A decimal point is expressed by the capital letter "R." In this case, all figures are significant digits.

⑧ Winding Mode

Code	Winding Mode
A	Parallel Winding
B	Parallel Winding (High-Performance)
D	Sectional Winding
R	Standard
P	Single Layer Winding

⑨ Lead Dimensions

Code	Lead Dimensions
2	3.5mm

⑩ Packaging

Code	Packaging	Series
B	Bulk	All series

Outline of EMI Suppression Filter (EMIFIL[®]) for AC Power Lines

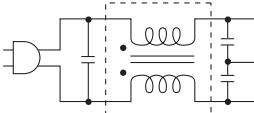
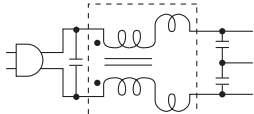
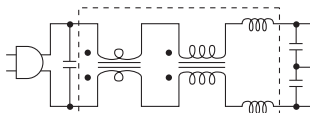
EMI (Electromagnetic Interference) suppression filters for AC power lines eliminate noise entering equipment from commercial power lines or noise generated from electronic equipment.

Common mode chokes, line bypass capacitors, and across the line capacitors are generally used as AC EMI suppression filter devices. In suppressing common mode noise, common mode chokes are the most important devices. Because the characteristics of common mode chokes influence the

performance of the total filter block, MURATA provides two types of common mode chokes (standard type and high frequency type).

A hybrid choke coil is a high-performance EMI suppression device that can suppress both common mode noise and differential mode noise at the same time. It is effective in AC power supplies with active devices for a higher harmonic countermeasure, which tends to emit relatively higher differential mode noise.

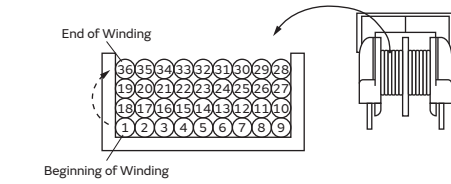
Classification of EMI Suppression Filter for AC Power Lines

Product Name	Appearance	Effective Frequency Range (Hz)						Application
		10k	100k	1M	10M	100M	1G	
Common Mode Choke Coil	Standard Type							Suppression of general common mode noise
	  PLA10							
	High Frequency Type							Suppression of common mode noise which contains high frequency noise above 10MHz
	 PLH10							
Hybrid Choke Coil	  PLY10							Suppression of conduction noise in AC power line with active device for higher harmonic countermeasure. Suppression of AC power line noise which contains both common mode noise and differential mode noise.
Hybrid Choke Coil	  PLY17							For AC power supply, AC adaptor. Set for low-profile equipment.

Outline of EMI Suppression Filter (EMIFIL[®]) for AC Power Lines

Common Mode Choke Coil Standard Winding and Sectional Winding

Standard Winding



High-frequency noise can pass through the Filter easily because both edges of coils are close, as shown above

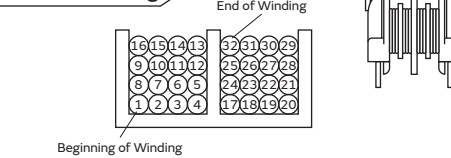
Standard Winding

Large inductance is available
→Highly Efficient in Low Frequency

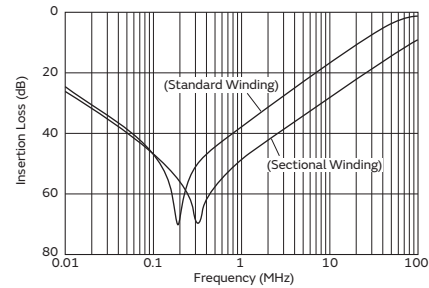
Sectional Winding

Excellent performance in high frequency
Stray capacity between windings is low

Sectional Winding



High-frequency noise can hardly pass through the Filter because both edges of coil are not close as shown above

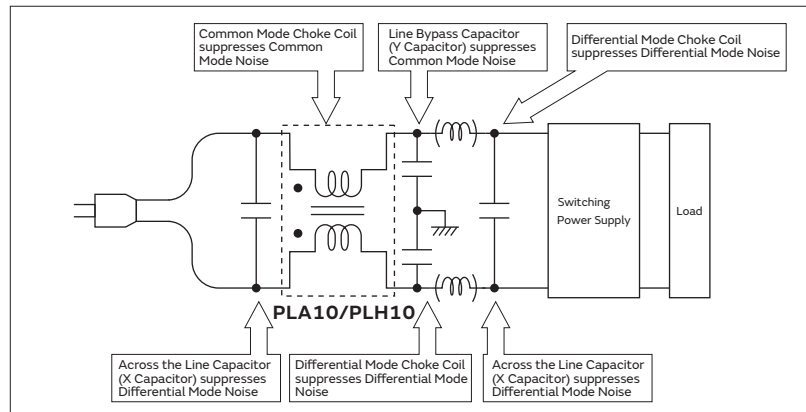


Noise Measures for Switching Power Supply

Noise is generated from Switching Power Supply

Common Mode Noise

Differential Mode Noise



PLY17 Series

Features

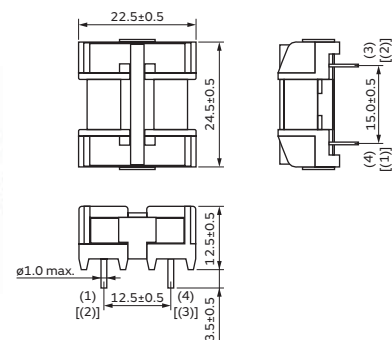
1. Integration of choke coil function to suppress differential mode/Low and High Frequency common mode noise.
2. Low Profile (H=<13mm)

Applications

1. For AC power supply, AC adapter
2. Low-profile equipment such as lighting equipment, FPD, Digital Amplifier



A/B Type



(in mm)

A Type

Part Number	Common Mode Inductance (min.) (mH)	Normal Mode Inductance (min.) (μH)	Rated Current (A)	Rated Voltage (VAC)
PLY17BN4912R4A2B	0.49	18	2.4	300
PLY17BN9612R0A2B	0.96	36	2.0	300
PLY17BN1023R0A2B	1.0	36	3.0	300
PLY17BN1121R8A2B	1.1	44	1.8	300
PLY17BN1721R5A2B	1.7	67	1.5	300
PLY17BN2921R2A2B	2.9	110	1.2	300
PLY17BN3721R0A2B	3.7	140	1.0	300
PLY17BN5620R8A2B	5.6	210	0.8	300
PLY17BN7820R7A2B	7.8	290	0.7	300
PLY17BN9320R6A2B	9.3	350	0.6	300

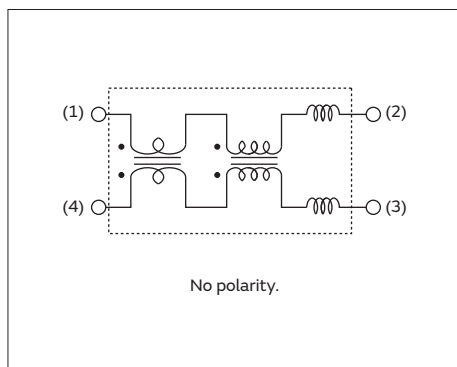
Operating Temperature Range: -25°C to 60°C Winding Temperature Rise (at Rated Current): 60°C (max.)

B Type

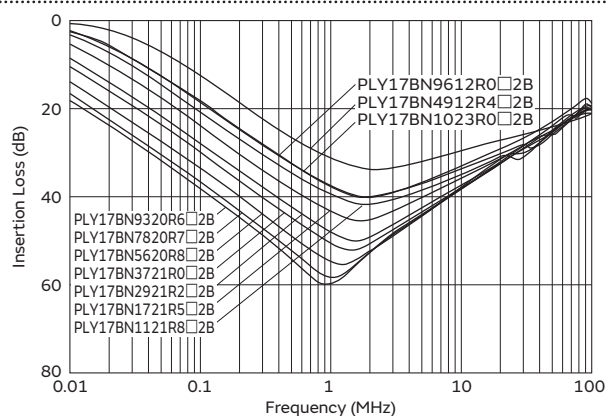
Part Number	Common Mode Inductance (min.) (mH)	Normal Mode Inductance (min.) (μH)	Rated Current (A)	Rated Voltage (VAC)
PLY17BN4912R4B2B	0.49	24	2.4	300
PLY17BN9612R0B2B	0.96	47	2.0	300
PLY17BN1023R0B2B	1.0	47	3.0	300
PLY17BN1121R8B2B	1.1	58	1.8	300
PLY17BN1721R5B2B	1.7	88	1.5	300
PLY17BN2921R2B2B	2.9	140	1.2	300
PLY17BN3721R0B2B	3.7	180	1.0	300
PLY17BN5620R8B2B	5.6	280	0.8	300
PLY17BN7820R7B2B	7.8	390	0.7	300
PLY17BN9320R6B2B	9.3	460	0.6	300

Operating Temperature Range: -25°C to 60°C Winding Temperature Rise (at Rated Current): 60°C (max.)

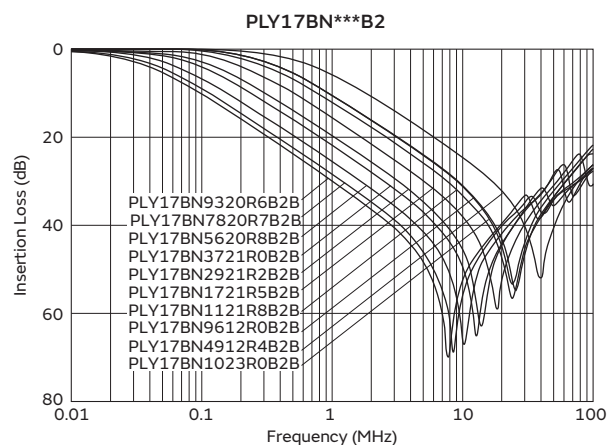
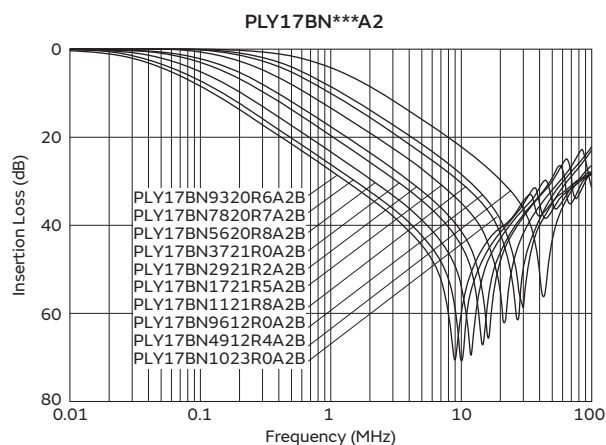
Equivalent Circuit Diagram



Common Mode Insertion Loss - Frequency Characteristics



Differential Mode Insertion Loss - Frequency Characteristics



⚠Caution/Notice

⚠Caution (Rating)

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. 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 the coil (ambient temperature + winding temperature rise) is in accordance with each safety standard applicable to the final assembled product.

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

2. Inrush Current

Inrush current should not exceed 10 times the rated current within 1/4 cycle of 50/60Hz commercial power line. Inrush current should be limited to a minimum of 10 seconds after last inrush.

If these conditions are exceeded, excessive heat may cause fumes or permanent damage to the component, or at worst cause ignition.

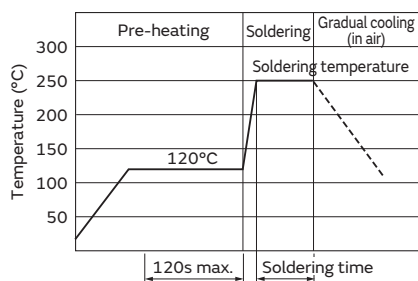
Notice (Storage and Operating Conditions)

1. Soldering Conditions

(1) Flux, Solder

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

(2) Flow soldering profile



Standard profile		Limit profile		
Sn-3.0Ag-0.5Cu solder				
Soldering temp.	Soldering time	Soldering temp.	Soldering time	Cycle of flow
250±2°C	4-6s	265±3°C	5s	2 times

For additional mounting methods, please contact Murata.

Notice (Soldering and Mounting)

Magnetic Flux Leakage

Choke coils generate small amounts of magnetic flux leakage that may adversely affect equipment operation according to component arrangement. Testing should be completed on final assembly to ensure equipment performance is not affected.

2. Cleaning

Avoid cleaning the product due to non-waterproof construction.

3. Storage and Handling Requirements

(1) Storage period

Product should be used within 12 months after receiving. Solderability should be checked if this period is exceeded.

(2) Storage conditions

Storage Temperature: -10 to 40 °C
Relative humidity: 30 to 70%
Avoid sudden changes in temperature and humidity. Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, as it may cause oxidation of lead terminals resulting in poor solderability or corrosion of component windings.

(3) Handling conditions

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

Notice (Rating)

Coil Humming Noise

Magnetic flux generated between coil and core or 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 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.

Packaging

Minimum Quantity

Part Number	Minimum Quantity (pcs.)
	Box
PLA10	1260
PLH10	1260
PLY10	1200
PLY17	1080