



Selection Guide

LCA[®] Ceramic EMI/RFI Component products



EMI/RFI filters

Ring capacitors

Trimmer capacitors

Copper audio capacitors

High frequency low pass

Screw-in, solder-in, tubular

Tel: 86-591-83636011

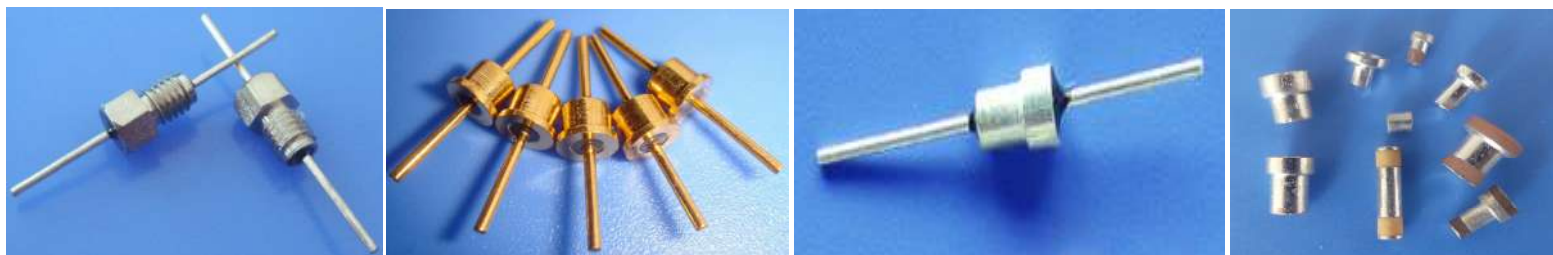
Fax: 86-591-83668200

www.lcamic.com

lotus.lca@0591xw.com

“High frequency, small size, excellent

High frequency low pass: Screw-in, solder-in, tubular



LCA has a wide range of high frequency, low pass filters that are small sized and offers excellent performance. These filters save bulkhead space and eliminate EMI while reducing cost.

SPECIFICATIONS

- Frequency range from 1MHz to 10GHz
- Material: X7R. SL.NPO.KL.Y5V.Y5U.Y5P
- Operating temperature: -55°C to +125°C -25 °C to +85°C
- Capacitance values up to 100,000 pF
- Capacitance tolerance (+100%. 0%) (+80%. -20%)(-20%.+80%). Or customer specific
- Working voltage: 50-2,000 V
- Current: 5-25 AMPS
- Circuit: C. L. LC. Pi. T
- Suggested mounting torque from 2 in-lbs to 9 in-lbs (0.231 to 1.04 Nm)
- Hex nut 0.125 in -0.5 in across the flats
- Max. Solder temperature 500°F (260°C)
- Custom design is available.

APPLICATIONS:

National defense, military and telecommunication equipments, broadcast and CATV, power supplies, telemetry, radar, amplifiers, RF switches, automobile and electronic products, computer and electric appliance and other industrial controls.



EMI FILTER FEATURES & APPLICATIONS:

1) Soldering Mount EMI Filter

The most ideal products for installing in a narrow space

Rated voltage: up to 1000VDC

Circuit type: C、Pi、L.

High temperature structure: Prevent backflow when installation

Authentication: MIL-F-15733 QPL and MIL-C-11015 (CK99)

Application: Mainly used for filtering the signal, data line and AC power line, telecommunication equipment、transmission equipment、microwave filter、IPC、Composite circuit filter components.

2) Resin sealed thread mount EMI Filter

It can be easily installed into the hole position with the nut and washer

Rated voltage: up to 2500VDC/240VAC

Circuit type: C、L、Pi

Authentication: MIL-F-15733

Application: mainly used in signal, data line, DC power line filter. The micro extrusion installation or screw is ideal for application when unfavorable for welding. Suitable for RF microwave and other high frequency application.

3) High current and voltage resin sealed EMI filter

It's mainly used in high current and voltage power switch, DC charging systems etc.

High current can up to 100Amps

Voltage: up to 3000VDC and 2500VAC@400HZ

4) Glass sealed EMI filter

This series of filter is glass sealed, with excellent EMI filtering performance. For those require high reliability of filtering in harsh environment, this product is the best choice, providing 10 KHz to over 10 GHz Broadband high performance EMI Filter. Moisture proofed, corrosion resistance in severe conditions encountered in military applications.

Application: power source, signal line, rocket igniter, aircraft, military communications, medical facility

Optimization design: Various sizes , shapes and C ,L, Pi type circuits, instant restrain Pi、T、&TT circuit

Reliability: refer to MIL-F-15733 and MIL-F-28861 standard manufacture, meet QPL demands

Base on MIL-F-28861, space application “S” level

FED/MIL Authentication: meet the MIL-F-15733 and the MIL-F-28861 standard

Features: Range of Dissipation Factor 0.01MHz-10GHz

Capacitance and temperature characteristics: 1pF-10 μ F; NPO、Y5P、X7R、Y5U、Z5U etc.

Temperature Range: -55℃～+125℃ 、-40℃～+85℃、-20℃～+85℃

Maximum voltage value: 3000VDC; 2500VAC

Maximum current: 100A

EMI FILTER ELECTRICAL CONFIGURATION: & APPLICATIONS:

There are a wide variety of EMI/RFI Filter applications,including(but not limited to):

1. Energy Management Systems
2. Computers
3. Automatic Lighting
4. AM Radio Equipment
5. Factory Automation Equipment
6. Implantable Medical Devices(Cochlear Implants,Cardiac Pacemakers,etc.)
7. Military / Space Electronic Modules
8. Radio Controls
9. Telecommunications
10. Televisions and Monitors
11. Laboratory Equipment

Electrical Configuration:

A number of different electrical configurations are available in EMI filters,including the common types shown opposite.A single element filter(a capacitor or an inductor) theoretically provides an insertion loss characteristic of 20dB per decade,a dual element filter(capacitor and inductor) 40dB per decade whilst a triple element filter(Pi or T configuration) theoretically yields 60dB per decade.In practise,the insertion loss curves do not exactly match the predictions.and the data of electrical configuration is made primarily on the source and load impedances and may also be influenced by the level of attenuation required at various frequencies.

C Filter

This is a feedthrough capacitor with low(hardly) inductance.It shunts high frequency noise to ground and is suitable for use with a high impedance source and load.

LC Filter

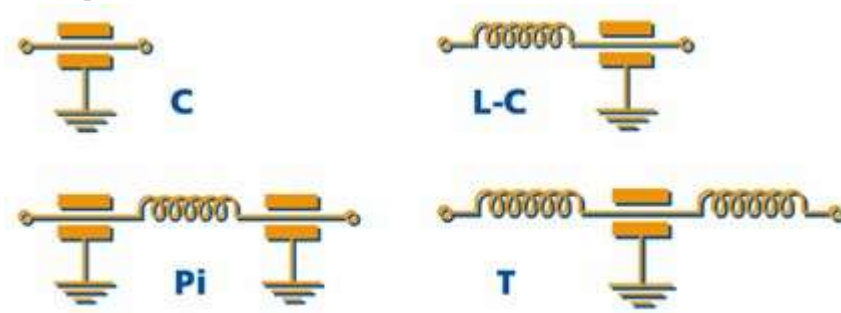
This is an EMI filter with an inductance element in combination with a capacitor.It is commonly used in a circuit with a low impedance source and a high impedance load(or vice versa).

Pi Filter

This is an EMI filter with 2 capacitors and an inductive element between them.Ideally,it should be used where both source and load impedances are high.

T Filter

This is an EMI filter with 2 series inductive elements separated by one feedthrough capacitor.It is suitable for use where both source and load impedances are low.



Different Order ways of kinds of EMI filters:

Source and load impedances

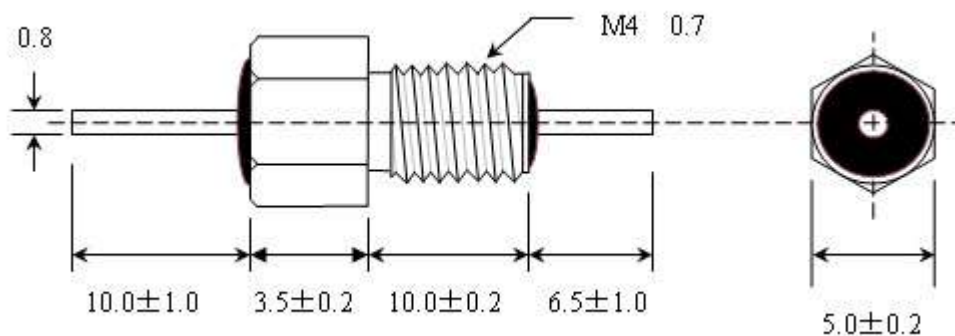
Insertion loss figures are normally publishes for a 50 Ohms source and 50 Ohms load circuit.In practice the impedance values will probably be very different,which could result in either an increase or decrease in insertion loss.The electrical configuration of the filter(the capacitor/inductor combination) should be chosen to optimize the filter performance for that particular source/load impedance situation.An estimate of insertion loss for source and load impendence other than 50 Ohms can be supplied.Please contact our Sales Office.

Bolt-in EMI filters

Bolt Mount EMI Filters provide increased filtering in HF through MICROWAVE frequency spectrums from 100KHz through 10 GHz.The larger hex size means that much higher values of capacitance are available and that a 125 VAC/400 Hz rating is available in certain values.Also designed for mounting in a tapped bulkhead to with the standard nut and lock washer provided,it is optimum in medium to low impedance cricuits where significant amounts of capacitance to ground can be tolerated.In the “L”and “Pi” section versions an internal ferrite bead element provide both inductance and series resistance(lossy characteristic) which improves the insertion loss rolloff to 40dB and 60dB per decade respectively.

Note:

1. Pi design offers steeper insertion loss rolloff.
2. Features rugged monolithic discoidal capacitor construction.
3. Epoxy seal on both ends.



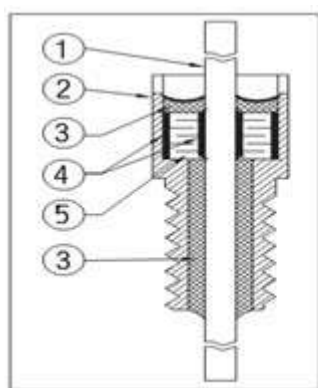
e.g.: XWLPi5040-13508X-100VDC-332Z

1. Rated Voltage: 100VDC
2. Rated Current: 10A
3. Capacitance and Tolerance: 3300PF +80%,-20%
4. Insulation Resistor: >10000M Ohms
5. Dissipate Factor: <3.5%
6. Withstand Voltage: 200VDC, one minute No Short Circuit, No Failure.
7. Temperature Feature: -55 °C to +125 °C
8. Circuit Type: Pi Type
9. Dimension Tolerance: L±0.5mm, W±0.2mm, M / d±0.1mm

The thread stocks we have as follows:

Spec	Thread Dimension(M/M)						Voltage (DC)	Circuit Type	Inductance
	W	M	L1	L2	d	Cap Range			
XWLC3325-6608	3.3	2.5	3.0	3.6	0.6-0.8	1pF-3300pF	50V-500V	C	
XWLC4030-6008	4.0	3.0	3.0	3.0	0.6-0.8	1PF-.0033uF	50V-1000V	C	
XWLC4030-7008	4.0	3.0	3.0	4.0	0.6-0.8	1PF-.0033uF	50V-1000V	C	
XWLC5040-5408	5.0	4.0	1.4	4.0	0.8-1.0	1PF-0.01uF	50V-1000V	C,Pi	0.3uH
XWLC5040-82	5.0	4.0	3.2	5.0	0.8-1.0	1PF-0.01uF	50V-1000V	C,Pi,L	0.3uH
XWLC5040-12008	5.0	4.0	3.8	8.2	0.8-1.0	1PF-0.01uF	50V-1000V	C,L	0.5uH
XWLC5040-13508	5.0	4.0	3.5	10.0	0.8-1.0	1PF-0.01uF	50V-1000V	C,Pi,L	0.5uH
XWLC6040-6510	6.0	4.0	2.5	4.0	0.8-1.2	1PF-.01uF	50V-1000V	C	
XWLC6040-7510	6.0	4.0	3.5	4.0	0.8-1.2	1PF-.1uF	50V-1000V	C	
XWLC6040-8510	6.0	4.0	2.5	6.0	0.8-1.2	1PF-0.01uF	50V-1000V	C	
XWLC6040-110	6.0	4.0	4.0	7.0	0.8-1.2	1PF-.1uF	50V-1000V	C	
XWLC6050-70	6.0	5.0	3.0	4.0	0.8-1.0	1PF-0.01uF	50V-1000V	C,Pi,L	0.3uH
XWLC6050-10008	6.0	5.0	4.0	6.0	0.8-1.2	1PF-.1uF	50V-1000V	C,Pi,L	0.5uH
XWLC8050-10010	8.0	5.0	5.0	5.0	0.8-1.2	1PF-.1uF	50V-3000V	C,L	0.5uH
XWLC8050-11510	8.0	5.0	6.5	5.0	0.8-1.2	1PF-.1uF	50V-3000V	C,L	0.5uH-50uH
XWLC8060-8515	8.0	6.0	3.5	5.0	0.8-1.5	1PF-.1uF	50V-5000V	C,L	0.5uH
XWLC10080-14515	10.0	8.0	6.5	8.0	0.8-1.5	1PF-.1uF	50V-5000V	C,Pi,L	0.5uH-50uH
XWLC9040-17010	D=9.0	4.0	12.0	5.0	0.5-1.5	1PF-.1uF	50V-5000V	C,Pi,L,T	0.5uH-200uH
1/4-28 UNF -2A	9.77	UNF	3.2	4.7	1.0	1pF-1.5uF	50V-1000V	C,Pi,L	0.5uH

1. Just the dimension above the chart, it is our stocks in our house, and if you have your own dimension request, you can email us that we will open the new models for you, sure, as long as you have the large quantity, we will open the free one for you, if you have order a little, you have to pay some model fee.
2. Voltage: And the above chart, it is only marks the DC, In fact, we also can produce the AC for you as long as your appliance need it.
3. Planting number on the surface, please show your word details.



- ① LEAD
② CASE
③ EPOXY
④ SOLDER
⑤ CAPACITOR

Capacitance: measured @ 1KHz and .1 to 1 VRMS, 25 °C

Dissipation factor: 3.5% max.

Insulation Resistance: 10,000 Mohms min. @ 25 °C, WVDC; 1000 Mohms min. @ 125 °C WVDC

Dielectric withstanding voltage: 200% of WVDC min.

Solder-in EMI Filters

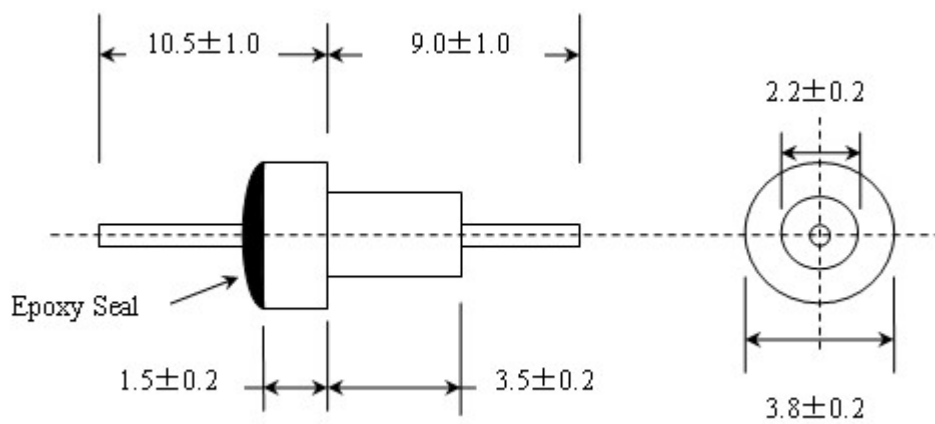
Solder Mount EMI Filter is intended for use as a high reliability alternative a commonly available commercial filter type. Due to its smaller body diameter, capacitance is limited. It does provide effective filtering in the MICROWAVE frequency spectrum from 100MHz through 10GHz. Designed to be soldered into a package, bracket or bulkhead (and maintain hermeticity), it is ideal for high impedance circuits where large capacitance values are not practical.

Alternate lead lengths or special capacitance values are available upon request.

Custom package to bracket assemblies utilizing this feedthru can be furnished to your specifications.

Note:

1. Epoxy seal on both ends.



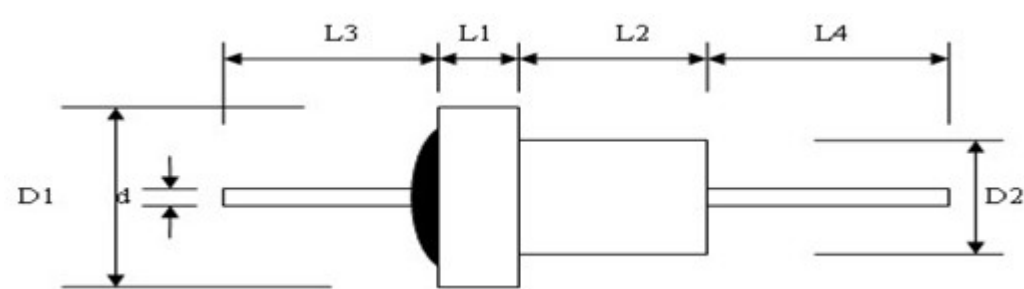
E.g.: XWHC3822-5008X-100VDC -102Z

Technical parameter:

1. Rated Voltage: 100VDC
2. Rated Current: 7A
3. Capacitance and Tolerance: 1000PF +80%,-20%
4. Insulation Resistor: >3000M Ohms
5. Dissipation Factor: <3.5%
6. Withstand Voltage: 200VDC, one minute No Short Circuit, No Failure.
7. Temperature Feature: -55 °C to +125 °C
8. Circuit Type: C Type
9. Dimension Tolerance: L \pm 0.5mm, D \pm 0.2mm, d \pm 0.1mm

The soldering stocks we have as follows:

Solder Dimension(mm)						Voltage (WVDC)	Circuit Type	Cap Range Min to Max
Spec	D1	D2	L1	L2	d			
XWHC1717-2710	1.7	1.7	2.7	0	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC2424-5008	2.4	2.4	5.0	0	0.6~0.8	100V-1000V	C	100PF~4700PF
XWHC2618-4008	2.6	1.8	1.0	3.0	0.6~0.8	100V-1000V	C	100PF~4700PF
XWHC2828-3210	2.8	2.8	3.2	0	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC3030-16016	3.0	3.0	16.0	0	0.8~1.5	100V-1000V	C	100PF~4700PF
XWHC3822-5008	3.8	2.2	1.5	3.5	0.6~0.8	100V-1000V	C	100PF~4700PF
XWHC4022-6508A	4.0	2.2	2.0	4.5	0.6~0.8	100V-1000V	C	100PF~4700PF
XWHC4022-6508B	4.0	2.2	2.0	4.5	0.6~0.8	100V-1000V	C	100PF~4700PF
XWHC4023-4111	4.0	2.3	1.5	2.6	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC4033-2828	4.0	3.3	0.5	2.3	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC4224-3510	4.2	2.4	1.0	2.5	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC4330-2711	4.3	3.0	1.2	1.5	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC4444-8035	4.4	4.4	8.0	0	1.2~3.5	100V-1000V	C	100PF~4700PF
XWHC4532-6507	4.5	3.2	2.1	4.4	0.7	100V-1000V	C	100PF~4700PF
XWHC4545-3027	4.5	4.5	3.0	0	1.2~2.5	100V-1000V	C	100PF~4700PF
XWHC4722-3208A	4.7	2.2	1.0	2.2	0.6~0.8	100V-1000V	C	100PF~4700PF
XWHC4722-3208B	4.7	2.2	1.0	2.2	0.6~0.8	100V-1000V	C	100PF~4700PF
XWHC4724-3210	4.7	2.4	1.0	2.2	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC4747-5032	4.7	4.7	5.0	0	1.2~3.0	100V-1000V	C	100PF~4700PF
XWHP5030-10008	5.0	3.0	6.5	4.2	0.8~1.0	100V-1000V	C, Pi	100PF-4700PF
XWHC5122-5010A	5.1	2.2	1.5	3.5	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC5122-5010B	5.1	2.2	1.5	3.5	0.8~1.0	100V-1000V	C	100PF~4700PF
XWHC5124-6014	5.1	2.4	1.5	4.5	0.8~1.2	100V-1000V	C	100PF~4700PF
XWHC5232-6216	5.2	3.2	2.5	3.7	1.0~1.5	100V-1000V	C	100PF~4700PF
XWHC5454-8043	5.4	5.4	8.0	0	1.5~4.0	100V-1000V	C	100PF~4700PF
XWHC9362-5015	9.3	6.2	5.0	0	1.2~1.5	100V-1000V	C	100PF~4700PF

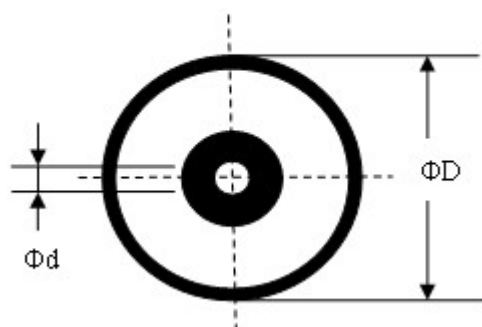


1. Just the dimension above the last chart, it is our stock in our house;
2. Voltage: The above chart, it is only marks the DC, In fact, we also can produce the AC for you as long as your appliance need it;
3. About the plant number on the surface, you can told us what can we plant, we will do it according to your details;
4. If you only accept the Inch unit, we will do it for you too.

Multilayer EMI Filter Chips

1. Small volume, large capacitance, small capacitance change;
2. Used to manufacture kinds of EMI Filter and related components;
3. Used to prevent RF interference of by pass and filter, have some features of different rated voltage、kinds of temperature feature and outdrawing dimensions, so it fit for aerospace equipment, consumer electronic devices;
4. Temperature Feature: -55°C to $+125^{\circ}\text{C}$.

● Shape and Dimension



Electrical Properties

Item	Dimension		W.V.Cap Range	Cap.Tol	I.R.	D.F.	Temp Coef/Feat
	Φd	ΦD	100VDC				
CC52- $\Phi 2.5$	2.5 ± 0.2	0.9 ± 0.10	3R3~103	M	$R_j \geq 10^4 \text{M}\Omega$	$\leq 15 \times 10^{-4}$	BC Feature: (0 ± 30) $\times 10^{-6}/^{\circ}\text{C}$
CC52- $\Phi 4.3$	4.3 ± 0.2	1.2 ± 0.15	4R7~103				
CC52- $\Phi 4.8$	4.8 ± 0.2	1.2 ± 0.15	4R7~103				
CT52- $\Phi 2.5$	2.5 ± 0.2	0.9 ± 0.10	102~223	M	$C_R \leq 25\text{nF}$: $R_i \geq 5 \times 10^4 \text{M}\Omega$ $C_R \geq 25\text{nF}$: $R_i \cdot C_R \geq 100\text{s}$	≤ 0.035	2X1 Feature: $\leq \pm 15\%$
CT52- $\Phi 4.3$	4.3 ± 0.2	1.2 ± 0.15	102~513				
CT52- $\Phi 4.8$	4.8 ± 0.2	1.2 ± 0.15	102~753				
CT52- $\Phi 6.5$	6.5 ± 0.2	1.9 ± 0.20	103~184				
CT52- $\Phi 8.2$	8.2 ± 0.2	1.6 ± 0.20	104~684				
CT52- $\Phi 9.0$	9.0 ± 0.2	1.9 ± 0.20	104~824				

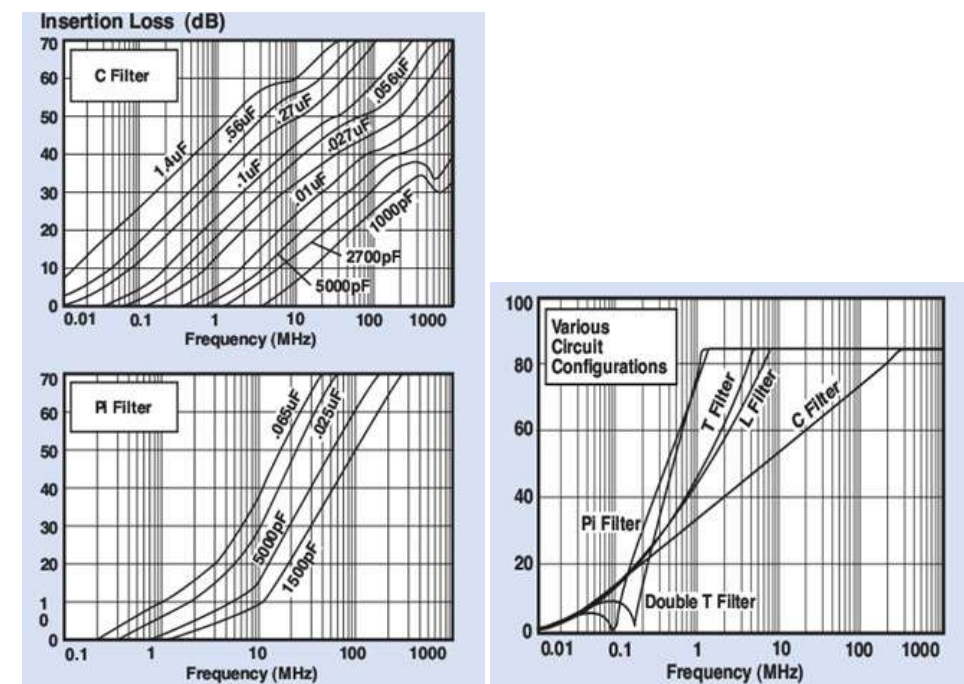
- a. W.V.Cap Range: Working Voltage Capacitance Range;
- b. Cap.Tol: Capacitance Tolerance (M = $\pm 20\%$);
- c. I.R.: Insulation Resistance;
- d. D.F.: Dissipation Factor;
- e. Temp Coef/Feat: Temperature Coefficient/Feature.

Order samples:

CT52-Φ2.5-2X1-100VDC-223-M

① ② ③ ④ ⑤ ⑥

①Item ②Dimension Part ③Temperature Coefficient/Feature
④Rated Voltage(W.V.:Working Voltage) ⑤Capacitance ⑥Cap Tolerance



Insertion Loss Measurement

Insertion Loss(IL) is a measure of the effectiveness of a filter.it is defined as the ratio of the voltage(E1) across the circuit load without the filter and the voltage(E2) across the load with the filter.Since insertion loss is dependent on the source and load impedance in which the filter is to be used,IL measurement are defined for a matched 50ohms system.The insertion loss is measure in decibels(dB) and defined as follows:

$$IL(dB) = 20 \log [E1 / E2]$$

Circuit Impedance VS. Insertion loss

In practical circuit applications the source and load impedances may be quite different from 50ohms.If these impedance are known,Xiangwei Engineering can provide information on the expected Insertion Loss or an estimate can be made using the following formula:

$$IL(dB)=20\log[1+Z_sZ_l / Z_t (Z_s+ Z_l)]$$

Where Z_s =Source impedance in ohms, Z_l =Load impedance in ohms, Z_t =Transfer impedance in 50ohms.

Example:

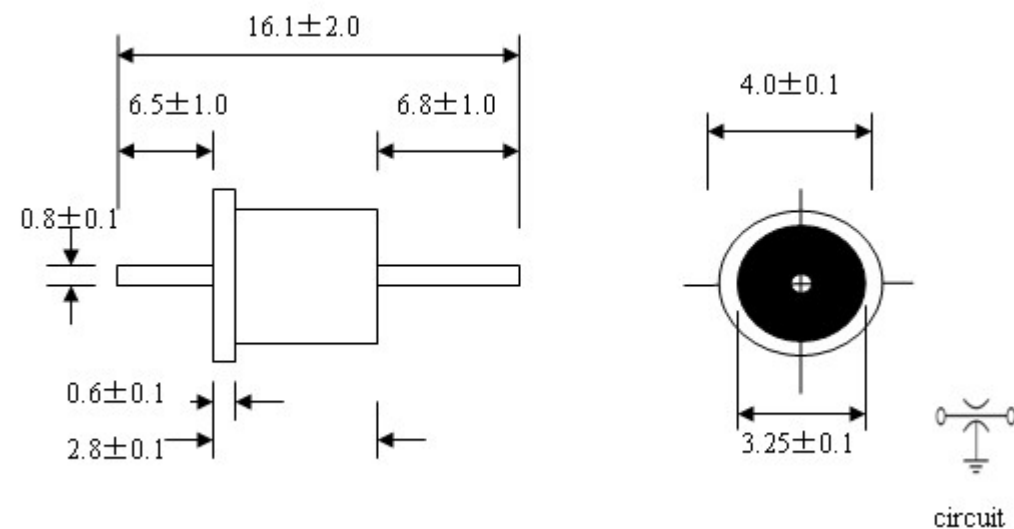
1. System source and load impedance are 100ohms and 600ohms respectively.
2. Selected filter has insertion loss of 50dB at 100 MHz in a 50ohms system.
3. From the IL VS Transfer Impedance curve(right) the transfer impedance is 0.08ohmz.
4. $IL = 20\log[1+100*600 / 0.08*(100+600)] = 20 \log 1072 = 61dB$

LCA Micronics

Tel: 86-591-83636011 Fax: 86-591-83668200 www.lcamic.com lotus.lca@0591xw.com

Miniature EMI Filter

XWHC4033-2808S-100VDC-101M



Technical parameter:

1. Rated Voltage: 100VDC
2. Rated Current: 5A
3. Capacitance and Tolerance: 100PF $\pm 20\%$
4. Insulation Resistor: $>3000M$ Ohms
5. Dissipate Factor: $<3\%$
6. Withstand Voltage: 200VDC, one minute No Short Circuit, No Failure.
7. Temperature Feature: -55°C to $+125^{\circ}\text{C}$
8. Circuit Type: C Type

The capacitance will be arranged from 10PF to 1uF, the high capacitance only has low rated voltage, and the different materials (SL, NPO, X7R, Y5U, Y5V, Y5P...) depend on the capacitors electric feature.

PRODUCT INSTALLATION RECOMMENDATIONS:

The components in this catalog are manufactured with ceramic dielectrics. To minimize possible damage to the components, during installation, the recommendations below should be followed. For information concerning other installation requirements or component modifications, please consult LCA customer service at 86-591-83636011.

General Recommendations

Handling:	Excessive force or direct impact to the component may result in breakage. Lead bending or cutting, if necessary, should be done with a support for the lead to prevent mechanical stress to the component. Components with required lead modifications are available from LCA.
Lead Soldering:	Use a temperature controlled soldering iron with SN60 or SN63 RMA Flux core wire. Maximum soldering temperature to be 500°F(260°C) with a dwell time of 3 seconds maximum. The use of a heat sink between the component body and the solder joint is highly recommended.
Flux Removal:	Optimum flux removal can be achieved by vapor degreasing the components immediately after the soldering operation. Total immersion of the components is not recommended.

1) Bushing Mount Recommendations

Rotating force of installation--- When install the filter on the septum or faceplate, should used the recommended rotating force. This is very important, or the filter would be damaged due to the changed shell. When install it in to the threaded hole, the maximum Install torque should be 50% of which recommended to the nut.

Installation tool--- Hexagonal filter should be installed with a fit drive pipe. The round should use the following method (should not be installed with pinchers, in case the filter should be damaged).

Round filter with slotting on the top should be presses in threaded hole use a simple special tool.

Ground connection---In order to ensure the filter proper functioning, the shell of the filter should be long enough to be connected to the ground, so that provide the effective way for the interference. Using adhesive locking is not recommended, in that case, it should be used after the filter has been installed.

The minimum thickness of plating---The user should note that there is tool withdrawal groove between the thread and the shell.

When the thickness which is pressed into the board less than the tool withdrawal groove, there should be a problem exist. So, if possible, the thickness of the board should over the length of the tool withdrawal groove.

The maximum thickness of plating---This index is used to insure conditions include using washer; nut can completely match the tooth.

All EMI/RFI Filters are supplied complete with mounting hardware if you request.

Maximun recommend mounting torque must be applied to the nut only and observed as outlined in the table below. Exceeding recommended mounting torque may result in damage of the capacitor within the filter.

Avoid bending or flexing terminals at the same point of exit from the glass or epoxy seal to preserve the integrity of seal and /or ceramic capacitor.

MAX Mounting Torque:

M3	M4	M5	M6	M8
5kgf.cm	6kgf.cm	7kgf.cm	8kgf.cm	9kgf.cm
4 lb.in	5 lb.in	6 lb.in	7 lb.in	8 lb.in

2) Solder Mount Recommendations

It should be controlled and prevented the filter not affected by the break heat shock result in the ceramic damaged inside the filter during soldering.

The speed should be control at 2°C/sec when preheating temperature. In fact, there is also successful examples that use 1.5 ~ 4°C/sec on different boards and components. Welding materials can be SN60, SN62 or similar ones.

When soldering these devices in place, care should be taken to minimize the thermal shock to the capacitors. Do not plunge the filter directly into a solder pot without preheating. If pretinning the filter in a solder pot, Do not put directly into cleaning solutions without allowing it to cool down first.

A controlled temperature profile not exceeding 6°F (3°C) per second is recommended when soldering filters. Although EMI/RFI Filters can withstand temperature extremes, rapid heat-up or cool-down can crack the internal ceramic capacitor. Preheating of the filter prior to soldering should be performed wherever possible at 250/300°F (120/150°C).

When soldering to terminal of the filter, a heat sink should be always be used adjacent to the body of the filter. 60-40 solder is recommended for filter installation into chassis as well as soldering to terminals. When soldering to terminals using an iron, use a temperature controlled soldering iron (15-20 Watts) with tip temperature of 550°F (300°C) maximum. The dwell on the solder joint should be less than 5 seconds. If a filter style without an eyelet is being soldered into a chassis, iron processes should be avoided and the recommended solder alloy is 60-38-2.

Machine/oven soldering should be at 385-415°F (195-210°C) using a dwell and cycle time fast enough to reflow the solder and ramped to maintain less than 6°F (3°C) per second of rise change.

When iron soldering to filter body, preheat component at 250-300°F (120-150°C), solder iron is recommended to be set at 490-520°F (250-280°C). The dwell on the solder joint should be less than 5 seconds. The time is dependent on the heat sinking provided by the chassis so a longer preheat may be required.

3) Solder terminal block

No matter thread type or welding directly type, please focus on the followings:

The temperature of soldering iron should not over 300°C, and the longest time is 3 ~ 5 sec, try best to reduce the risk of damaging the filter by the heat shock.

Welding materials can be SN60, SN62 or similar ones.

Using radiator between the soldering point and the shell if possible, especially important when welding time is longer.

How to trim and curve block

It should be held up while it is trimmed and not be curved within 4mm closed to the epoxy sealed.

EIA Material		COG (NP0)	X7R	Z5U	Y5V
		Very stable	stable	General purpose	
operating temperature range		-55℃ ~ +125℃	-55℃ ~+125℃	-10℃ ~ +85℃	-30℃ ~ +85℃
Max. Temperature change rate of cap.		0±30ppm/℃	±15%	-22% ~ +56%	-22% ~ +82%
Insulated resistance		≥10000MΩ	Cr ≤ 25nF Ri ≤ 4000MΩ Cr ≤ 25nF Ri * ≤ 100S		
Dissipation factor (tanδ)		Cr>50pF≤0. 015 Cr≤50pF≤ 0. 015 (15/Cr+0. 7)	<0. 025	<0. 030	0. 050
Material strength	W.V 200V 500V >1KV	Times of imposing working voltage (Pressure time 5 sec., Charge current 50max)			
		X2. 5	X2. 5	X2. 5	X2. 5
		X1. 5	X1. 5	X1. 5	—
		X1. 5	X125	—	—
The aging rate of 10 in logarithmic time		0	1 %	6 %	6 %

Thread Dimensions between home and abroad:

Thread	Maximum Mounting Torque		Mounting Hole Dia.		Drill Size	
	in-lbs	Nm	(in)	(mm)	English	Metric (mm)
Size						
4-40	1.5	0.17	0.12	3.05	# 31	3.1
6-40	3	0.339	0.147	3.73	# 26	3.75
6-32	3	0.339	0.147	3.73	# 26	3.75
8-32	4	0.452	0.173	4.39	# 17	4.4
10-32	4	0.452	0.19	4.83	# 8	5.1
12-28	6	0.678	0.228	5.79	# 1	5.8
12-32	6	0.678	0.228	5.79	# 1	5.8
1/4-28	7	0.791	0.261	6.63	# G	6.7
5/16-24	7	0.791	0.323	8.2	# P	8.25
5/16-32	7	0.791	0.323	8.2	# P	8.25
3/8-32	9	1.017	0.386	9.8	# W	9.9

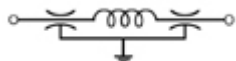
Capacitance and Dissipation Factor in some common circuit:

Circuit	Capacitance	Dissipation Factor: dB Frequency: MHz							
		0.01	0.1	1	10	100	300	1G	10G
C	10	—	—	—	—	—	3	6	20
	100	—	—	—	—	3	10	20	28
	470	—	—	—	3	15	18	35	40
	1000	—	—	—	6	25	30	36	45
	2000	—	—	—	8	26	32	44	51
	3300	—	—	—	13	28	34	43	52
	4700	—	—	5	15	30	38	47	52
	6800	—	—	7	17	33	40	50	55
	0.01uF	—	—	10	21	35	45	52	60
	0.047uF	—	3	18	35	45	50	60	60
	0.1uF	—	5	20	40	70	70	60	60
	0.2uF	3	7	24	42	50	55	65	68
	0.47uF	5	15	32	40	80	80	70	68
	1uF	10	25	40	50	80	80	70	68
	1.5uF	16	25	33	44	60	80	70	68
L\T	100	—	—	—	—	9	19	27	34
	470	—	—	—	2	21	28	38	45
	1000	—	—	—	7	26	30	42	49
	2000	—	—	—	12	27	34	44	50
	3300	—	—	—	14	30	36	45	52
	4700	—	—	3	15	30	38	45	55
	6800	—	—	3	18	35	40	50	60
	0.1uF	—	10	25	65	90	90	90	80
	0.47uF	6	22	30	70	90	90	90	80
	1uF	15	30	50	70	90	90	90	80
	4.7uF	20	40	80	90	90	90	90	80
Pi	100x2	—	—	—	—	7	18	29	32
	470x2	—	—	—	5	35	55	70	70
	1000x2	—	—	—	12	50	60	70	70
	3300x2	—	—	2	18	70	75	80	80
	6800x2	—	—	5	21	70	75	80	80
	0.1uF	—	10	25	65	90	90	90	80
	0.47uF	6	22	30	70	90	90	90	80
	1uF	15	30	50	70	90	90	90	80
	1.5uF	20	40	80	90	90	90	90	80

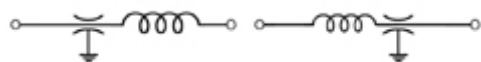
Type of Circuit:



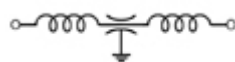
C type: One capacitor structure.



Pi Type: Connection of 2 capacitors with 1 inductor.

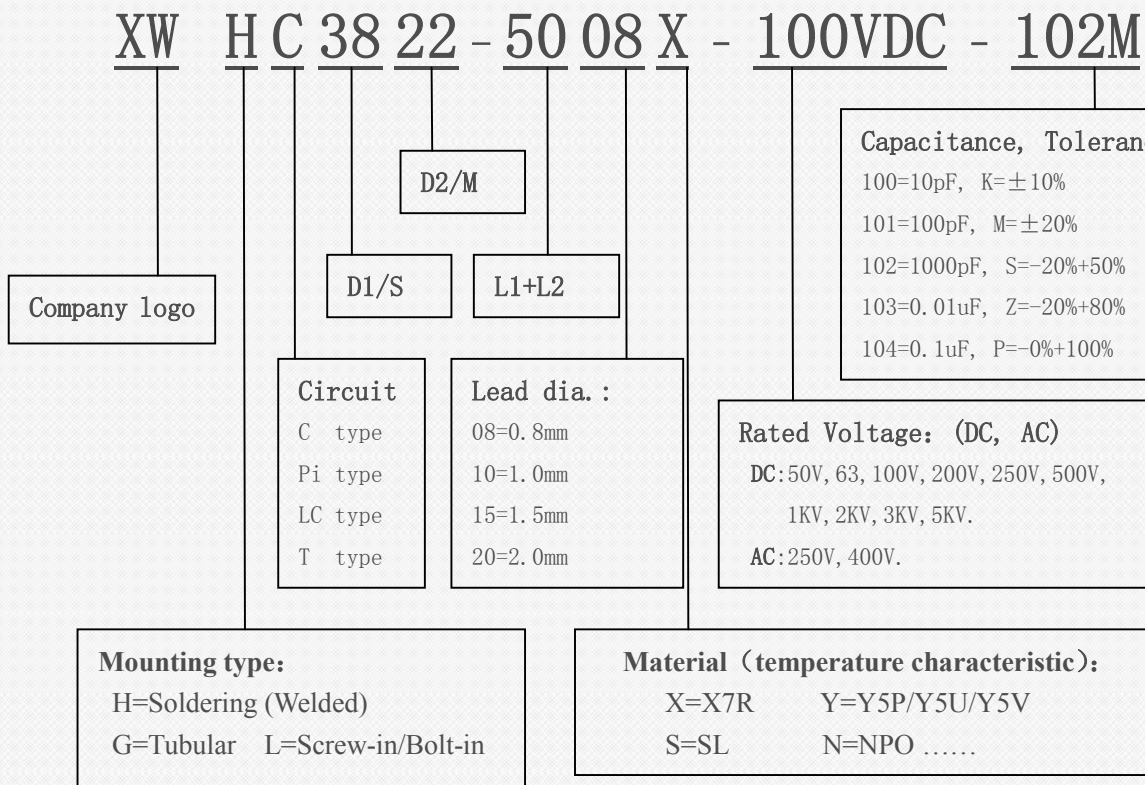
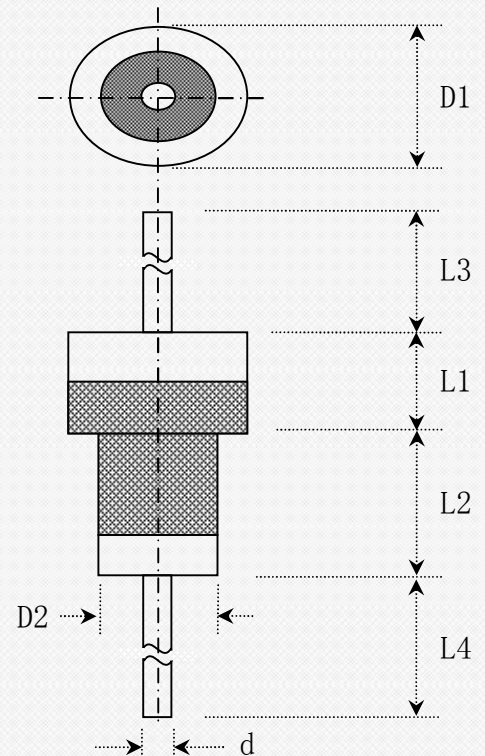
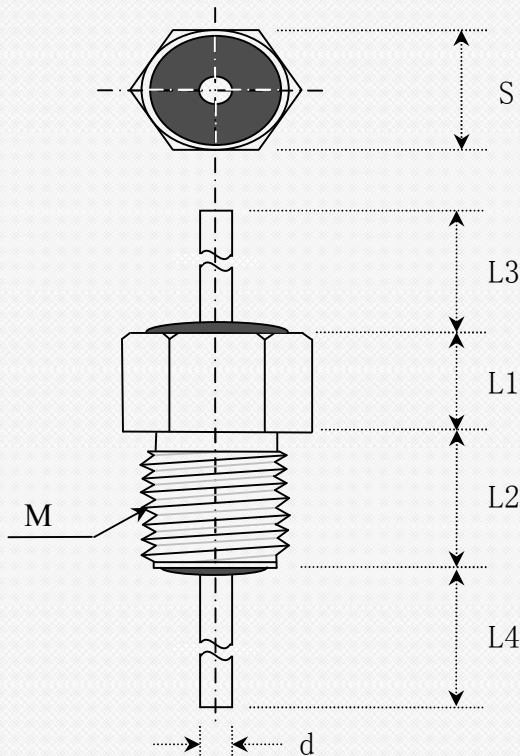


LC Type: Connection of capacitor with inductor.



T Type: Connection of 2 inductors with 1 capacitor.

How to order



e.g: XWHC3822-5008X-100VDC-102M is soldering type feedthru capacitor, C circuit, large dia is 3.8mm, small dia is 2.2mm, Body width is 5.0mm, lead dia is 0.8mm, rated voltage is DC 100V, capacitance is 1000pF, tolerance is M(+/-20%).

Notes:

1. Show us the part number and order quantity, and we will finish the remaining things.
2. We accept the Custom Design of clients special request.
3. Free samples are offered. (except the special ones).

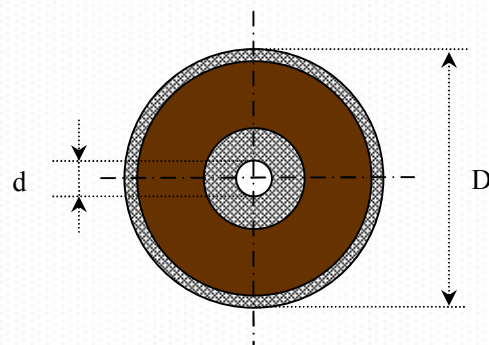
Selection of multilayer feed-through ring capacitor

Features:

1. Small sized, big capacitance, small variation of capacitance tolerance.
2. Various voltage, temperature characteristic and dimensions.
3. Temperature range: -55°C to +125°C

Applications:

1. Used for manufacturing various EMI filters and other related components.
2. Used in bypass and filter to prevent radial interference.



Part No.	Dimensions (mm)		R. V 100vdc	C. T	I. R.	D. F	T. C
	D	d	Cap.				
CC52- Ø 2.5	2.5±0.2	0.9±0.10	3R3~103	M	$R_j \geq 10^4 M\Omega$	$\leq 15 \times 10^{-4}$	BC : (0±30) $\times 10^{-6}/^\circ C$
CC52- Ø 4.3	4.3±0.2	1.2±0.15	4R7~103				
CC52- Ø 4.8	4.8±0.2	1.2±0.15	4R7~103				
CT52- Ø 2.5	2.5±0.2	0.9±0.10	102~223	M	$C_R \leq 25nF$: $R_i \geq 5 \times 10^4 M\Omega$ $C_R \geq 25nF$: $R_i \times C_R \geq 100s$	≤ 0.035	2X1 : $\leq \pm 15\%$
CT52- Ø 4.3	4.3±0.2	1.2±0.15	102~513				
CT52- Ø 4.8	4.8±0.2	1.2±0.15	102~753				
CT52- Ø 6.5	6.5±0.2	1.9±0.20	103~184				
CT52- Ø 8.2	8.2±0.2	1.6±0.20	104~684				
CT52- Ø 9.0	9.0±0.2	1.9±0.20	104~824				

Ordering example:

CT52- Ø2.5-2X1-100VDC-223-M

① ② ③ ④ ⑤ ⑥

①Model ②Size code ③Temperature characteristics / coefficient codes
④Rated voltage ⑤Nominal capacity ⑥Capacitance tolerance codes

Custom design is available.



Selection of Ring Capacitor

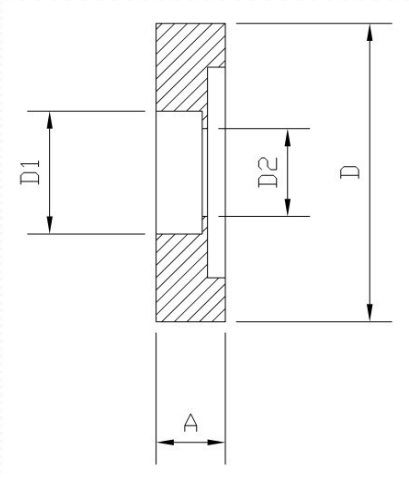
Patent No.: ZL201120513576X
Authorization proclamation No: CN202339823U

Features:

- 1. High frequency response
- 2. Low leakage of transmission signal
- 3. High voltage AC resistance
- 4. Small size

Applications:

Used widely for cable television electromagnetic interference suppression equipments



Specifications and dimensions:

Part No.	Cap.	Test Withstand Vol	Cap.Tol	D.F	Material	I.R.	Dimensions (mm)			
							D±0.2	D1±0.1	D2±0.1	A±0.2
HX12-001	4700PF	AC2KV	-20%~+80%	<3%	Y5V	3000MΩ	20	7	5	5.2
HX12-002	6800PF	AC2KV	-20%~+80%	<3%	Y5V	3000MΩ	20	7	5	4.3
HX12-003	4700PF	AC2KV	-20%~+80%	<3%	Y5V	3000MΩ	17	7	5	3.9
HX12-004	4700PF	AC2KV	-20%~+80%	<3%	Y5V	3000MΩ	14.5	7	5	3.9



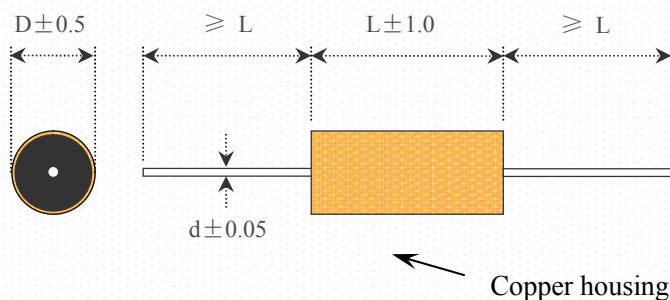
Selection of copper audio capacitor

Features:

1. Good filter capacity
2. Good anti-interference performance

Applications:

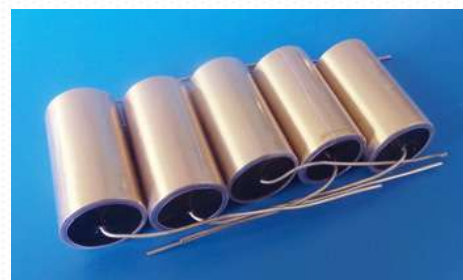
Used widely for audio equipments, especially for Hi-Fi audio circuits, completely meets requirements of Hi-Fi audio towards equipments filter capacity.



Cap.	250VDC		630VDC	
uF	D(mm)	L(mm)	D(mm)	L(mm)
0.047			15	20
0.1			15	20
0.15			15	30
0.22			15	30
0.33			15	30
0.47			20	30
0.68			20	30
1.0			20	30
1.5			20	40
2.2			20	40
3.3			30	55
4.7			30	55
6.8			30	55
10			30	55
15	30	55		
22	45	65		
33	45	65		
47	45	65		

Specifications	GB/T 14004-92 IEC384-6	
Operating temperature	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$	
Capacitance range	10nF ~ 47uF	
Capacitance tolerance	J($\pm 5\%$)	
Rated voltage	250V , 630V	
Withstand voltage	1.4Ur 2S	
Dissipation factor	$C < 0.1\mu\text{F}$	≤ 0.0015
	$0.1\mu\text{F} \leq C \leq 1\mu\text{F}$	≤ 0.0025
	$C > 1\mu\text{F}$	≤ 0.0015
Insulation resistance	Ur>100VDC	
	$C \leq 0.33\mu\text{F}$	$\geq 30000\text{M}\Omega$
	$C > 0.33\mu\text{F}$	$\geq 10000\text{M}\Omega$
Weather category	40/100/21 , 55/100/21	
Endure weld head	Max 2S at 270°C	
Lead diameter	d=1.0mm	

Custom design is available.



A World of Solutions

The products listed in this brochure are only a few of the thousands of variations that LCA produces. For custom component design, please contact sales email direct.

