COMMON MODE CHOKES

STANDARD RANGE OF COMMON MODE CHOKES
**Brief Company Profile**

**Parker Overseas**, established in 1995, is engaged in providing standard as well as customized Wound Magnetic Solutions. We are engaged in the Design, Manufacture and Supply of Thru-Hole (TH) & Surface Mount Type (SMT) Wound Magnetic Components like Transformers, Inductors, Chokes, Coils, Line Filters, Power Transformers, Current Transformers, Power Toroidal Transformers, Switching and SMPS Transformers and Modules for following applications:

<table>
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<th>Electronics</th>
<th>Telecom</th>
<th>Power</th>
<th>Solar</th>
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</thead>
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<tr>
<td>Automotive</td>
<td>Railway</td>
<td>Automation</td>
<td>EMC Filters</td>
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We have state of the art infrastructure operating on 61,000 sq. ft. area built on 3000 Sq. Mtrs. of Land. Total production utilizes over 400 employees that include operators and various qualified engineers. Parker overseas is established under 100% Export Oriented Zone. We have the facilities to wind copper wires of fine gauges as well as of thicker gauges: Ø0.04mm – Ø3mm.

Our in-house Design & Development lab, Prototype Development Lab, Mechanical Tooling Workshop and Plastic Molding facility enables us to provide customized solutions in quick time.
Systems and Compliances

- Fully implemented ERP System
- ISO 9001:2015
- IATF 16949:2016
- ISO 14001:2015
- UL – OBJY2 Class-F Insulation System File No. E491743*
- VDE*
- RoHS & REACH

* Available on request

Distinctive Facilities

- Network Analyser (upto 4GHz): Measurement of Impedance vs Frequency and Attenuation Losses
- Power Choke Tester (upto 1000A) : Measurement of Inductance under Current load
- HF Precision LCR (upto 30MHz)
- Measurement of Temperature rise in a Winded Coil under Specified Load Current
- Impulse Testing for Winding Insulation
- Automatic Measurement of Transformer Parameters (upto 1MHz)
- Very low DCR Measurement
- Environment Chamber
- Vacuum Impregnation
- Lab Autoclave for Testing under specified Air Pressure
- AC/DC Hipot with specified Leakage current
- In-house Mechanical Tooling Workshop & Plastic Molding
Quality Policy and Management Philosophy

**Quality Policy**
We shall constantly endeavor to meet the exacting quality demands of our customers while maintaining competitiveness through continuous improvements.

**Management Philosophy: The Q*P*T Principle**
A principle for optimally managing and further developing the resources and capabilities of our firm so as to maximize the value of the stakeholders of the firm. Under this principle all the activities will be coordinated so as to produce . . .

![Diagram](https://via.placeholder.com/150)

**HIGH QUALITY PRODUCT**

@

**LOWEST POSSIBLE COST**

in

**MINIMUM POSSIBLE LEAD TIME**

i.e. to achieve **Quality**, **Price** & **Time** both *simultaneously as well as consistently*.

**Customer Satisfaction = Q*P*T**
If either one is zero, the customer satisfaction is zero, irrespective of other two being even the best.

*At Parker, Customer satisfaction is being focused as the key competitive advantage for sustainable future growth.*
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**Electrical Characteristics**

**Rated Voltage - Ur**
The rated voltage is the max. value of DC or AC voltage, which can be operated by the component during the complete time.

**High Voltage Test - Ut**
The high voltage test depends on the relevant norm. It can be a DC or AC voltage test. The duration of the test voltage according to IEC 60938 or IEC 61558-1.

**Rated Current - Ir**
The rated current is the maximum DC or AC current during the component operation.

**Nominal Inductance - Lr**
Nominal Inductance of a Choke is described in unit Henry. Measured by frequency 10kHz/ 100kHz and test current of 0.1mA.

**DC-Resistance - R dc**
The DC-Resistance is measured with DC-Current on each terminal by the ambient temperature of 20°C.

**Isolation Class**
Standard Isolation Class for all components is Class B (130° Celsius). Components in Class F (155° Celsius) and Class H (180° Celsius) are available on request.
## MATERIAL CROSS REFERENCE SHEET

### COMMON MODE POWER LINE CHOKEs

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**Note:**
1. Insertion Loss graphical data also available.
2. Temperature rise data available on request.
**Common Mode Power Line Choke, Ferrite MnZn, Vertical Type**

**Technical Data:**

- **Voltage Rating - Ur:** 250 Vac
- **High Voltage Test - Ut:** 1500 Vac - 50Hz - 2Sec (Winding to Winding)
- **Current Rating - Ir:** At 50Hz and 70°C
- **Nomi. Inductance - Lr:** Measured at 20°C; According to IEC 60938
  - Test Current: 0.1mA
  - Test Frequency:
    - 100kHz for Lr ≤ 1mH
    - 10kHz for Lr > 1mH
- **DC Resistance - Rdc:** Measured at 20°C
- **Climate Class:** 40/125/21 According to IEC 60068-1
- **Design:**
  - Toroidal Ferrite Core in MnZn Material
  - Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
  - Windings Separated
  - Core insulated with UL recognised Epoxy coating
  - **Customisation can be checked on request**
- **Applications:**
  - Power Electronics
  - Power line input and output filter
  - For filtering of devices without stable ground connection
  - Radio interference suppression in motors
  - Suppression of common mode noise
- **Insertion loss Graphs:**
  - Test Setup

---

**Common Mode**

**Differential Mode**

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**Pg-06**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Drawing with Schematic:

Ordering Code and Electrical Data:

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<th>Order Code</th>
<th>Lr (mH)</th>
<th>Tolerance (%)</th>
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All Dimensions are in mm. Drawing is not to scale. Color shown in drawing may differ from actual. Drawing above is a rough pictorial representation of the actual component. There can be some shape changes in actual component but the physical dimensions indicated will match.
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV100201**

- **Attenuation (dB)** vs Frequency (MHz)
- **A (Comm)** vs Frequency (MHz)
- **A (Diff)** vs Frequency (MHz)

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV100240**

- **Attenuation (dB)** vs Frequency (MHz)
- **A (Comm)** vs Frequency (MHz)
- **A (Diff)** vs Frequency (MHz)
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV100150**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV100110**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV100120

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV100039
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec Winding to Winding

Current Rating - Ir: At 50Hz and 70°C

Nomi. Inductance - Lr: Measured at 20°C; According to IEC 60938
  Test Current: 0.1mA
  Test Frequency:
  - 100kHz for Lr ≤ 1mH
  - 10kHz for Lr > 1mH

DC Resistance - Rdc: Measured at 20°C

Climate Class: 40/125/21 According to IEC 60068-1

Design:
  - Toroidal Ferrite Core in MnZn Material
  - Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
  - Windings Separated
  - Core insulated with UL recognised Epoxy coating
  - **Customisation can be checked on request**

Applications:
  - Power Electronics
  - Power line input and output filter
  - For filtering of devices without stable ground connection
  - Radio interference suppression in motors
  - Suppression of common mode noise

Insertion loss Graphs:
  - Test Setup

[Diagram of Common Mode and Differential Mode]
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Drawing with Schematic:

Ordering Code and Electrical Data:

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<th>Order Code</th>
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<th>Tolerance (%)</th>
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All Dimensions are in mm. Drawing is not to scale. Color shown in drawing may differ from actual.

Drawing above is a rough pictorial representation of the actual component.

There can be some shape changes in actual component but the physical dimensions indicated will match.
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV110301**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV110222**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV110233

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV110110
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV110120

[Graph showing insertion loss characteristics with frequency (kHz) on the x-axis and attenuation (dB) on the y-axis.]
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec Winding to Winding

Current Rating - Ir: At 50Hz and 70°C

Nomi. Inductance - Lr: Measured at 20°C; According to IEC 60938
   Test Current: 0.1mA
   Test Frequency:
   - 100kHz for Lr ≤ 1mH
   - 10kHz for Lr > 1mH

DC Resistance - Rdc: Measured at 20°C

Climate Class: 40/125/21 According to IEC 60068-1

Design:
- Toroidal Ferrite Core in MnZn Material
- Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
- Windings Separated
- Core insulated with UL recognised Epoxy coating
  - Customisation can be checked on request

Applications:
- Power Electronics
- Power line input and output filter
- For filtering of devices without stable ground connection
- Radio interference suppression in motors
- Suppression of common mode noise

Insertion loss Graphs:
- Test Setup

---

Common Mode

Differential Mode
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Drawing with Schematic:

All Dimensions are in mm. Drawing is not to scale. Color shown in drawing may differ from actual. Drawing above is a rough pictorial representation of the actual component. There can be some shape changes in actual component but the physical dimensions indicated will match.

Ordering Code and Electrical Data:

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Lr (mH)</th>
<th>Tolerance (%)</th>
<th>Ir (A)</th>
<th>R dc max. (mΩ)</th>
<th>W (g)</th>
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<tbody>
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Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV120601**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV120422**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

**Typical Insertion Loss Characteristics for PCV120333**

- Attenuation (dB) vs Frequency (MHz)
- Lines:
  - Blue: A (Comm)
  - Red: A (Diff)

**Typical Insertion Loss Characteristics for PCV120305**

- Attenuation (dB) vs Frequency (MHz)
- Lines:
  - Blue: A (Comm)
  - Red: A (Diff)
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV120210

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV120220
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec  
Winding to Winding

Current Rating - Ir:  At 50Hz and 70°C

Nominal Inductance - Lr: Measured at 20°C;  
According to IEC 60938
Test Current: 0.1mA
Test Frequency:
− 100kHz for Lr \leq 1mH
− 10kHz for Lr > 1mH

DC Resistance - Rdc: Measured at 20°C

Climate Class: 40/125/21  
According to IEC 60068-1

Design:
− Toroidal Ferrite Core in MnZn Material
− Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
− Windings Separated
− Core insulated with UL recognised Epoxy coating
− **Customisation can be checked on request**

Applications:
− Power Electronics
− Power line input and output filter
− For filtering of devices without stable ground connection
− Radio interference suppression in motors
− Suppression of common mode noise

Insertion loss Graphs:  
− Test Setup

![Insertion loss Graphs](image)
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Drawing with Schematic:

Ordering Code and Electrical Data:

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<tr>
<th>Order Code</th>
<th>$L_r$ (mH)</th>
<th>Tolerance (%)</th>
<th>$I_r$ (A)</th>
<th>$R_{dc\ max.}$ (mΩ)</th>
<th>$W$ (g)</th>
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All Dimensions are in mm. Drawing is not to scale. Color shown in drawing may differ from actual. Drawing above is a rough pictorial representation of the actual component. There can be some shape changes in actual component but the physical dimensions indicated will match.
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

**Typical Insertion Loss Characteristics for PCV130101**

**Typical Insertion Loss Characteristics for PCV130310**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV130220
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec \(\text{Winding to Winding}\)

Current Rating - Ir: At 50Hz and 70°C

Nomi. Inductance - \(L_r\): Measured at 20°C; According to IEC 60938
  - Test Current: 0.1mA
  - Test Frequency:
    - 100kHz for \(L_r \leq 1\)mH
    - 10kHz for \(L_r > 1\)mH

DC Resistance - \(R_{dc}\): Measured at 20°C

Climate Class: 40/125/21 According to IEC 60068-1

Design:
  - Toroidal Ferrite Core in MnZn Material
  - Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
  - Windings Separated
  - Core insulated with UL recognised Epoxy coating
  - **Customisation can be checked on request**

Applications:
  - Power Electronics
  - Power line input and output filter
  - For filtering of devices without stable ground connection
  - Radio interference suppression in motors
  - Suppression of common mode noise

Insertion loss Graphs:
  - Test Setup

![Common Mode](image1)

![Differential Mode](image2)
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Drawing with Schematic:

Ordering Code and Electrical Data:

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Lr (mH)</th>
<th>Tolerance (%)</th>
<th>Ir (A)</th>
<th>R dc max. (mΩ)</th>
<th>W (g)</th>
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Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV140201**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV140022**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV140033**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV140605**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV140320

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV140433
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec  Winding to Winding

Current Rating - Ir: At 50Hz and 70°C

Nomi. Inductance - Lr: Measured at 20°C; According to IEC 60938
  Test Current: 0.1mA
  Test Frequency:
  - 100kHz for Lr ≤ 1mH
  - 10kHz for Lr > 1mH

DC Resistance - Rdc: Measured at 20°C

Climate Class: 40/125/21 According to IEC 60068-1

Design:
  - Toroidal Ferrite Core in MnZn Material
  - Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
  - Windings Separated
  - Core insulated with UL recognised Epoxy coating
  - Customisation can be checked on request

Applications:
  - Power Electronics
  - Power line input and output filter
  - For filtering of devices without stable ground connection
  - Radio interference suppression in motors
  - Suppression of common mode noise

Insertion loss Graphs:
  - Test Setup

---

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Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Ordering Code and Electrical Data:

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<th>Order Code</th>
<th>Lr  (mH)</th>
<th>Tolerance (%)</th>
<th>Ir  (A)</th>
<th>R dc max. (mΩ)</th>
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Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV150505**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV150510**
Common Mode Power Line Choke, Ferrite MnZn, Vertical Type

Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV150013

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV150418
Common Mode Power Line Choke, Ferrite MnZn, Horizontal Type

Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec Winding to Winding

Current Rating - Ir: At 50Hz and 70°C

Nomi. Inductance - Lr: Measured at 20°C; According to IEC 60938
Test Current: 0.1mA
Test Frequency:
− 100kHz for Lr ≤ 1mH
− 10kHz for Lr > 1mH

DC Resistance - Rdc: Measured at 20°C

Climate Class: 40/125/21 According to IEC 60068-1

Design:
− Toroidal Ferrite Core in MnZn Material
− Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
− Windings Separated
− Core insulated with UL recognised Epoxy coating
− Customisation can be checked on request

Applications:
− Power Electronics
− Power line input and output filter
− For filtering of devices without stable ground connection
− Radio interference suppression in motors
− Suppression of common mode noise

Insertion loss Graphs: − Test Setup
Common Mode Power Line Choke, Ferrite MnZn, Horizontal Type

Drawing with Schematic:

Ordering Code and Electrical Data:

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<th>Order Code</th>
<th>Lr (mH)</th>
<th>Tolerance (%)</th>
<th>Ir (A)</th>
<th>R dc max. (mΩ)</th>
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Common Mode Power Line Choke, Ferrite MnZn, Horizontal Type
Insertion Loss Graphs:
Common Mode Power Line Choke, Ferrite MnZn, Horizontal Type

Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCH160433**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCH160405**
Common Mode Power Line Choke, Ferrite MnZn, Horizontal Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCH160407

[Graph showing typical insertion loss characteristics for PCH160407]
Common Mode Power Line Choke, Ferrite MnZn+NiZn, Vertical Type

Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec  Winding to Winding

Current Rating - Ir: At 50Hz and 70°C

Nominal Inductance - Lr: Measured at 20°C; According to IEC 60938
  Test Current: 0.1mA
  Test Frequency:
  - 100kHz for Lr ≤ 1mH
  - 10kHz for Lr > 1mH

DC Resistance - Rdc: Measured at 20°C

Climate Class: 40/125/21 According to IEC 60068-1

Design:
  - Double Core - Toroidal Ferrite Core in MnZn and NiZn Material
  - Separation of noise in a broad range (100kHz to 100MHz)
  - Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
  - Combined noise and burst filter, increases electromagnetic immunity
    - Customisation can be checked on request

Applications:
  - Power Electronics
  - Mains line filter
  - EMC filter
  - Interference suppression in motors
  - Common mode filters

Insertion loss Graphs:
  - Test Setup
Common Mode Power Line Choke, Double Core, Vertical Type
Drawing with Schematic:

Ordering Code and Electrical Data:

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Lr (µH)</th>
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Common Mode Power Line Choke, Double Core, Vertical Type

Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV300470**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV300101**
Common Mode Power Line Choke, Double Core, Vertical Type

Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV300221**

- Frequency (MHz)
- Attenuation (dB)

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV300102**

- Frequency (MHz)
- Attenuation (dB)
Common Mode Power Line Choke, Nanocrystalline, Vertical Type
Technical Data:

Voltage Rating - Ur: 250 Vac

High Voltage Test - Ut: 1500 Vac - 50Hz - 2Sec Winding to Winding

Current Rating - Ir: At 50Hz and 70°C

Nomi. Inductance - Lr: Measured at 20°C; According to IEC 60938
Test Current: 0.1mA
Test Frequency:
− 100kHz for Lr ≤ 1mH
− 10kHz for Lr > 1mH

DC Resistance - Rdc: Measured at 20°C

Climate Class: 40/125/21 According to IEC 60068-1

Design:
− High permeability nanocrystalline core material
− Frequency range: 1kHz to 300MHz
− Plastic Base Plate made of PA or PET or Phenolic, UL 94 V-0
− Excellent isolation with plastic cap and winding spacer
− Customisation can be checked on request

Applications:
− Power Electronics
− Power line input and output filter
− Suppression of common mode noise
− Radio interference suppression in motors

Insertion loss Graphs:
− Test Setup
Common Mode Power Line Choke, Nanocrystalline, Vertical Type

### Drawing with Schematic:

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Lr (mH)</th>
<th>Tolerance (%)</th>
<th>Ir (A)</th>
<th>R dc max. (mΩ)</th>
<th>W (g)</th>
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<td>PCV4301012</td>
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</table>
Common Mode Power Line Choke, Nanocrystalline, Vertical Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV4303201

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV4302303
Common Mode Chokes - Series 430

Common Mode Power Line Choke, Nanocrystalline, Vertical Type
Insertion Loss Graphs:

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV4301804**

**TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV4301012**
Common Mode Power Line Choke, Nanocrystalline, Vertical Type
Insertion Loss Graphs:

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV4300530

TYPICAL INSERTION LOSS CHARACTERISTICS FOR PCV4300490
Common Mode Power Line Choke, Nanocrystalline, Vertical Type
Insertion Loss Graphs:

![Typical Insertion Loss Characteristics for PCV4300219](image-url)
THE GALAXY OF WOUND MAGNETIC COMPONENTS