imall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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EMC Components ESD Components



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All products in this catalog comply with the RoHS Directive.

The RoHS Directive is "the Directive (2011/65/EU) on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment " and its revisions.

△ Safety Precautions (Common precautions for EMC Components and ESD Suppressor)

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.
- $\boldsymbol{\ast}$ Systems equipped with a protection circuit and a protection device

* Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault

(1) Precautions for use

- These products are designed and manufactured for general and standard use in general electronic equipment (e.g. AV equipment, home electric appliances, office equipment, information and communication equipment)
- These products are not intended for use in the following special conditions. Before using the products, carefully check the effects on their quality and performance, and determine whether or not they can be used.
 - 1. In liquid, such as water, oil, chemicals, or organic solvent
 - 2. In direct sunlight, outdoors, or in dust
 - 3. In salty air or air with a high concentration of corrosive gas, such as Cl₂, H₂S, NH₃, SO₂, or NO₂
 - 4. Electric Static Discharge (ESD) Environment (except ESD Suppressors) These components are sensitive to static electricity and can be damaged under static shock (ESD). Please take measures to avoid any of these environments. Smaller components are more sensitive to ESD environment.
 - 5. Electromagnetic Environment
 - Avoid any environment where strong electromagnetic waves exist.
 - 6. In an environment where these products cause dew condensation
 - 7. Sealing or coating of these products or a printed circuit board on which these products are mounted, with resin or other materials
- These products generate Joule heat when energized. Carefully position these products so that their heat will not affect the other components.
- Carefully position these products so that their temperatures will not exceed the category temperature range due to the effects of neighboring heat-generating components. Do not mount or place heat-generating components or inflammables, such as vinyl-coated wires, near these products.
- Note that non-cleaning solder, halogen-based highly active flux, or water-soluble flux may deteriorate the performance or reliability of the products.
- Carefully select a flux cleaning agent for use after soldering. An unsuitable agent may deteriorate the performance or reliability. In particular, when using water or a water-soluble cleaning agent, be careful not to leave water residues. Otherwise, the insulation performance may be deteriorated.

(2) Precautions for storage

- Do not store these products in the following conditions. Otherwise, their electrical performance and/or solderability may be deteriorated, and the packaging materials (e.g. taping materials) may be deformed or deteriorated, resulting in mounting failures.
 - 1. In salty air or in air with a high concentration of corrosive gas, such as CI_2 , H_2S , NH_3 , SO_2 , or NO_2
 - 2. In direct sunlight

<Package markings>

Package markings include the product number, quantity, and country of origin. In principle, the country of origin should be indicated in English.

Type: **EXCX4CZ**



Features

- Small and thin (L 0.65 mm×W 0.50 mm×H 0.30 mm)
- High-common mode attenuation at 2.4GHz, Suitable for noise suppression at Wi-Fi band
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Suppresses noise radiation to Wi-Fi Equipment





Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Common mode Noise Filters

Ratings	

i i a i i go				
Part Number	Impedance (Ω) at 100 MHz	Rated Voltage	Rated Current	DC Resistance
	Common Mode	(V DC)	(mA DC)	(Ω)max.
EXCX4CZ200X	20 Ω±30 %	10	100	3.0±30 %

• Category Temperature Range -40 °C to +85 °C

Impedance Characteristics (Typical)



Attenuation Characteristics (Typical)



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: **EXCX4CH**



Features

- Small and thin (L 0.65 mm×W 0.50 mm×H 0.30 mm)
- High common mode attenuation in high-speed differential transmission lines, Cut-off frequency is more than 8.5 GHz, and an influence to differential transmission signal quality is little
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Noise suppression of high-speed differential data lines such as USB, LVDS and HDMI



Construction Dimensions in mm (not to scale) Ferrite Ceramics Inner Conductor Dimensions (mm) Mass Electrode Part No (Weight) (inch size) А В С D Е F [mg/pc.] EXCX4CH 0.50±0.05 0.65±0.05 0.30±0.05 0.12±0.10 0.40±0.10 0.15±0.10 0 43 (0202)

Circuit Configuration (No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Common mode Noise Filters

Ratings

- Tatingo				
Part Number	Impedance (Ω) at 100 MHz	Rated Voltage	Rated Current	DC Resistance
	Common Mode	(V DC)	(mA DC)	(Ω) max.
EXCX4CH120X	12 Ω±5 Ω	5	100	2.0
EXCX4CH350X	35 Ω±30 %	5	100	2.7

Category Temperature Range –40 °C to +85 °C

Impedance Characteristics (Typical)



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: **EXCX4CE**



Features

- Small and thin (L 0.65 mm×W 0.50 mm×H 0.30 mm)
- Noise suppression of high-speed differential transmission lines with little influence of waveform rounding on signal transmission
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Noise suppression of high-speed differential data lines such as MIPI, USB and LVDS





Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Common mode Noise Filters

Ratings					
Port Number	Impedance	e (Ω) at 100 MHz	Rated Voltage	Rated Current	DC Resistance
Part Number	Common Mode	Differential Mode	(V DC)	(mA DC)	(Ω)max.
EXCX4CE600U	60 Ω±20 %	18 Ω max.	5	100	2.4±30 %
EXCX4CE900U	90 Ω±20 %	20 Ω max.	5	100	3.0±30 %

• Category Temperature Range -40 °C to +85 °C

Impedance Characteristics (Typical)



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: **EXCX4CT**



Features

- Small and thin (L 0.65 mm×W 0.50 mm×H 0.30 mm)
- High attenuation at common-mode for noise suppression of harmonic signal components and cellular frequency
- Cut-off frequency is more than 3 GHz, the insertion loss is low in differential transmission line
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Noise suppression of high-speed differential data lines such as MIPI, USB and LVDS





Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Common mode Noise Filters

Ratings	

riatingo					
Part Number	Impedance (Ω) at 100 MHz	Rated Voltage	Rated Current	DC Resistance	
	Common Mode	(V DC)	(mA DC)	(Ω)	
EXCX4CT650X	65 Ω±20 %	10	100	2.7 Ω±30 %	
EXCX4CT900X	90 Ω±20 %	10	100	3.0 Ω±30 %	

• Category Temperature Range -40 °C to +85 °C

Impedance Characteristics (Typical)





■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: **EXC14CH**



Features

- Small and thin (L 0.85 mm×W 0.65 mm×H 0.45 mm)
- High common mode attenuation in high-speed differential transmission lines, Cut-off frequency is more than 8.5 GHz, and an influence to differential transmission signal quality is little
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Noise suppression of high-speed differential data lines such as USB, LVDS and HDMI



Construction Dimensions in mm (not to scale) Ferrite Ceramics Inner Conductor Dimensions (mm) Mass Electrode Part No (Weight) (inch size) А В С D Е F [mg/pc.] EXC14CH 0.65±0.05 0.85±0.05 0.45±0.05 0.50±0.10 0.10 min. 0.27±0.10 1.0 (0302)

Circuit Configuration (No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Common mode Noise Filters

Part Number	Impedance (Ω) at 100 MHz		Rated Voltage	Rated Current	DC Resistance
	Common Mode	Differential Mode	(V DC)	(mA DC)	(Ω) max.
EXC14CH120U	12 Ω±25 %	10 Ω max.	5	100	1.0
EXC14CH350U	35 Ω±30 %	15 Ω max.	5	100	1.5

Category Temperature Range –40 °C to +85 °C

Impedance Characteristics (Typical)



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files



Features

- Small and thin (L 0.85 mm×W 0.65 mm×H 0.45 mm)
- Noise suppression of high-speed differential transmission lines with little influence of waveform rounding on signal transmission
- Low DC resistance and low insertion loss
- High-Q value and high impedance of GHz zone : EXC14CG type
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Noise suppression of high-speed differential data lines such as USB, LVDS and MHL



Part No

(inch size)

EXC14CG/CE

(0302)

Δ

 0.65 ± 0.05

R



Circuit Configuration(No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Dimensions in mm (not to scale)

F

Dimensions (mm)

С

0.85±0.05 0.45±0.05

R

F

0.50±0.10

0.10 min.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately. Mass

(Weight)

[mg/pc.]

1.4

F

0.27±0.10

Common mode Noise Filters

Ratings					
Part Number	Impedance Common Mode	e (Ω) at 100 MHz Differential Mode	Rated Voltage (V DC)	Rated Current (mA DC)	DC Resistance (Ω)max.
EXC14CG120U	12 Ω±30 %	10 Ω max.	5	130	2.0
EXC14CG350U	35 Ω±30 %	15 Ω max.	5	100	2.0
EXC14CG430U	43 Ω±25 %	15 Ω max.	5	100	2.7
EXC14CE650U	65 Ω±20 %	20 Ω max.	5	130	2.5
EXC14CE900U	90 Ω±20 %	20 Ω max.	5	130	2.5
EXC14CE121U	120 Ω±20 %	20 Ω max.	5	100	3.8

• Category Temperature Range -40 °C to +85 °C

Impedance Characteristics (Typical)



Common mode Noise Filters

Attenuation Characteristics (Typical)



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: EXC14CT



Features

- Small and thin (L 0.85 mm×W 0.65 mm×H 0.45 mm)
- High attenuation at common-mode for noise suppression of harmonic signal components and cellular frequency
- High cut-off frequency and capability of coping with high-speed signals (USB and HDMI)
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Noise suppression of high-speed differential data lines such as MIPI, USB and LVDS





Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Common mode Noise Filters

Ratings					
Port Number	Impedance	e (Ω) at 100 MHz	Rated Voltage	Rated Current	DC Resistance
Part Number	Common Mode	Differential Mode	(V DC)	(mA DC)	(Ω)max.
EXC14CT500U	50 Ω±25 %	17 Ω max.	5	100	2.3 Ω±30 %
EXC14CT900U	90 Ω±20 %	20 Ω max.	5	100	3.3 Ω±30 %

• Category Temperature Range -40 °C to +85 °C

Impedance Characteristics (Typical)



• Measurement Circuit







Attenuation Characteristics (Typical)



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: **EXC14CX**



Features

- Small and thin (L 0.85 mm×W 0.65 mm×H 0.45 mm)
- Effective noise suppression of smartphones by eliminating common mode noises and removing differential signal components
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- Smartphones, Tablet PCs and DSC
- Noise suppression of high-speed differential data lines such as MIPI, USB and LVDS





Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.

Common mode Noise Filters

Ratings		

Part Number	Impedance (Ω) at 100 MHz		Rated Voltage	Rated Current	DC Resistance
	Common Mode	Differential Mode	(V DC)	(mA DC)	(Ω) max.
EXC14CX280U	28 Ω±25 %	25 Ω max.	5	100	3.0
EXC14CX400U	40 Ω±25 %	30 Ω max.	5	100	4.0

● Category Temperature Range -40 °C to +85 °C

Impedance Characteristics (Typical)



Attenuation Characteristics (Typical)



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: EXC16CT



Features

- Corresponding to new high-speed differential interface (MIPI C-PHY) Corresponding to 3-line transmission, transmission rate up to 2.5 Gsps
- Unique plating fine coil process and ceramic multilayer process enable compact size (L 0.9.0 mm×W 0.68 mm×H 0.40 mm)
- around 40% reduction of mounting area (comparing with MIPI D-PHY)
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- High resolution camera and display equipped mobile devices (Smartphones, Tablet PCs and wearable)
- Noise suppression of high-speed differential data lines such as MIPI C-PHY



Ceramics Ferrite Inner Conductor

Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



Common mode Noise Filters

Part Number	Impedance (Ω) at 100 MHz	Rated Voltage	Rated Current	DC Resistance
	Common Mode (V DC)		(mA DC)	(Ω) max.
EXC16CT250U	25 Ω±25 %	5	100	3.0
EXC16CT350U	35 Ω±25 %	5	100	4.0

● Category Temperature Range -40 °C to +85 °C



■ As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: **EXC24CH**



Features

- Small and thin type, built-in filter circuit (L 1.25 mm×W 1.00 mm×H 0.50 mm)
- Suppression of high frequency noise with little influence of waveform rounding on signal transmission, achieved by setting high cut-off frequency between 6 and 10 GHz
- Strong multilayer/sintered structure, excellent reflow resistance and high mounting reliability
- Lead, halogen and antimony-free
- RoHS compliant

Recommended Applications

- AV equipment (LCD-TV, DVD/Blu-ray drives), Information equipment (PCs, HDD), Communications equipment (Mobile phones, Smartphones)
- Noise suppression of high-speed differential data lines such as USB 3.0, HDMI and Display Port







Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



Common mode Noise Filters

Ratings

rialingo						
Part Number	Impedance (Ω) at 100 MHz		Cutoff Frequency	Rated Voltage	Rated Current	DC Resistance
	Common Mode	Differential Mode	(GHz)	(V DC)	(mA DC)	(Ω)max.
EXC24CH500U	50 $\Omega\pm$ 25 %	13 Ω max.	10 Тур.	5	160	1.5
EXC24CH900U	90 Ω±20 %	15 Ω max.	6 Тур.	5	130	2.5

• Category Temperature Range -40 °C to +85 °C

Impedance Characteristics (Typical)



Insertion Loss (Typical)



As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions, Please see Data Files

Type: **EXC24CG**



Features

- Elimination of radiation noises from high-speed differential transmissions
- \bullet Prevention of reflection of transmission signals and noise radiation by controlling TDR characteristic impedance as 100 Ω
- Satisfaction of eye pattern standards of HDMI waveforms with capability to improve waveform fluctuations of skew and overshoot
- Simple multilayer structure, excellent mass productivity and high reliability
- Small and thin (L 1.25 mm×W 1.00 mm×H 0.50 mm)
- RoHS compliant

Recommended Applications

- AV equipment (LCD-TV, DVD/Blu-ray drives), Information equipment (PCs, HDD), Communications equipment (Mobile phones, Smartphones)
- Noise suppression of high-speed differential data lines such as HDMI, SATA and LAN



Construction



Dimensions in mm (not to scale)



Circuit Configuration (No Polarity)



• The pin numbers shown here are for reference purposes only. Confirm the actual pin number arrangement with the exchanged specification documents.