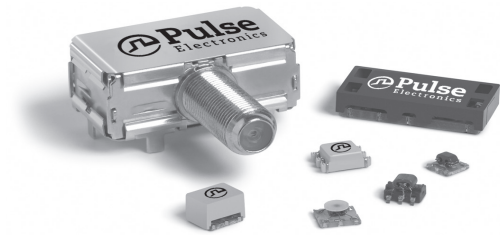
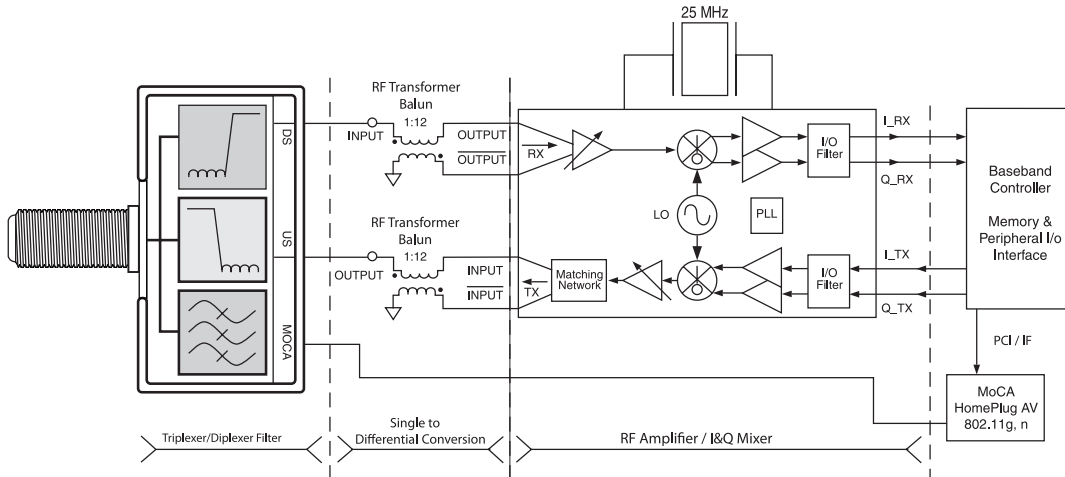


# RF COMPONENTS




Pulse offers a comprehensive line of RF magnetic components for use in CATV/ Hybrid Fiber Coax applications for set-top boxes and gateway devices, for TELCO TV in gateway devices, and FTTP ONT (optical network termination) units as well as emerging in-home networking products. RF components are also used in medical and industrial devices and equipment.

Platforms consist of filters that can also include integrated F-connectors, transformers/baluns, single-stage filters, directional couplers and RF splitter/combiners. Pulse provides both surface mount and through hole components that have minimal insertion loss and excellent return loss to ease the development and manufacturing of today's RF network equipment.



## RF, BROADBAND, CATV, TELCO TV APPLICATIONS

### DIPLEX FILTERS with Integrated F-Connectors

Part Number	Low Pass (MHz)	High Pass (MHz)	Data Sheet
<b>DOCSIS System</b>			
 C6036NL	10-55	90-770	C236
C6086NL	5-65	108-860	C236




### MoCA IC Cross Reference

IC House	RF Front End	Baseband Controller	Triplexer	Diplexer	RF Transformer Balun
Entropic	EN1010	EN2x10 EN2x11 EN3x30 EN3x11	C6113NL	C6058NL CX6155NL C6131SNL	CX2163LNL


Pulse has been a participating member



### DIPLEX FILTERS with Integrated F-Connectors

Part Number	Low Pass (MHz)	High Pass (MHz)	Data Sheet
<b>MoCA Application</b>			
 C6131SNL	5-1002	1125-1525	C250
 C6058NL	975-1025	1125-1525	C252
C6141NL	975-1025	1125-1525	C252
C6262NL	5-1002	1125-1675	C6262NL
 CX6155NL	5-870	975-1525	C253

### TRIPLEX FILTERS with Integrated F-Connectors

Part Number	Low Pass (MHz)	Band Pass (MHz)	High Pass (MHz)	Data Sheet
 C6113NL	5-42		1125-1675	C257
C6224NL	5-42		1125-1675	C6224NL

# RF COMPONENTS

## RF, BROADBAND, CATV, TELCO TV APPLICATIONS

### Diplexer Filters

Part Number	Frequency <sup>1</sup> (MHz)	Insertion Loss (dB)	Return Loss (dB)	Package Style	Data Sheet
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CX6020NL	5-42/54-864	1.5	14/9	SMT	C248
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### RF Splitter/Combiners: 2-Way, 0°

Part Number	Frequency (MHz)	Isolation (dB TYP)	Return Loss (TYP)	Insertion Loss (dB TYP)	Data Sheet
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C4036NL	5-1000	25	31	0.48	C241
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### RF Transformers/Baluns

Part Number	Impedance Ratio	Bandwidth (MHz TYP)			Data Sheet
		3 dB	2 dB	1 dB	



CX2163LNL	1:1	800-1900	—	900-1400	C203
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C2139NL	1:1	—	—	5-1000	C244
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### Directional Couplers

Part Data Number	Frequency (MHz)	Z (Ω)	Coupling Nom. (dB ±0.5)	Mainline Loss (dB TYP)
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A5807LNL A102	5-900	75	10.0	1.1
A5808LNL A102	5-900	75	7.5	1.6
A5809LNL A102	5-900	75	12.0	0.9
A5816LNL	5-900	75	16.0	0.8



C3027NL C207	5-900	75	16.0	0.6
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### Fibre Channel (SAN), Dual Serial Data Interface Transformers

Part Number	Turns Ratio	Style <sup>1</sup>	Package L/W/H (in.) *	Data Sheet
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A6801NL <sup>2</sup>	1CT:1CT	16-pin SOIC	.500/.295/.220	A100
A6802NL	1:1	16-pin SOIC	.500/.295/.220	A100
C2267NL	1:1	16-pin SOIC	.500/.270/.220	C2267NL
C2268NL	1:1	16-pin SOIC	.500/.270/.220	C2268NL

1. SOIC = 50 mil pitch lead spacing

2. NL = Lead-free

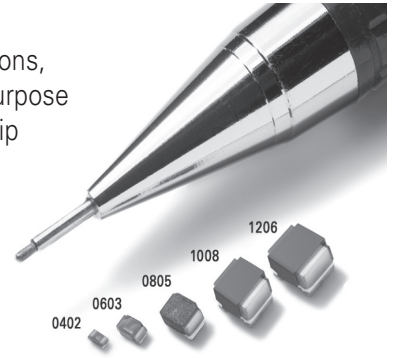


# RF Chip Inductors

## Miniature, Wirewound Components

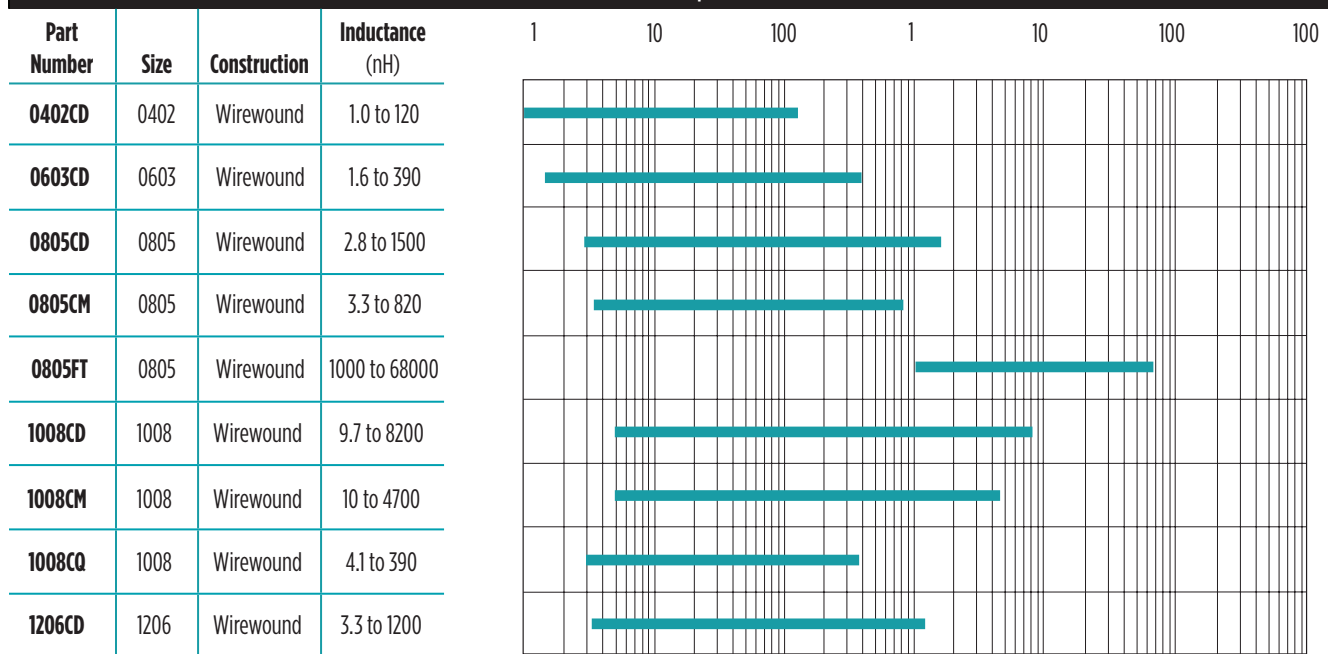
Pulse RF chip inductors provide high-quality filtering in mobile phones, wireless applications, digital cameras, disk drives and audio equipment. The inductors are also used in multi-purpose RF modules for telecom, automotive and consumer electronic applications. These RF chip inductors use wirewound technology with ceramic or ferrite cores in industry standard sizes and footprints.

From the ultra-small, low-profile 0402 series, which helps high-density layouts, to the 1206 series with up to 68  $\mu\text{H}$  inductance, Pulse is able to meet all your needs in a wide range of applications. These series are matched in performance to industry competition with full compatibility and operating frequency ranges.



### SELECTION GUIDE

Electrical Specifications



**CD Series:** Standard 100% compatible with other market leaders.

**CM Series:** Offers improved electrical performance or alternative inductance values to Pulse CD series.

**CQ Series:** Offers high Q and high Idc series.

**FT Series:** Ferrite core offers higher inductance values.



# Wire-Wound RF Chip Inductors

### PART NUMBER ORDERING GUIDE

**PE — 0805 CD      121 K T T\***

**PACKAGE STYLE**  
(0402, 0603, 0805, 1008, 1210 or 1206)

**CORE MATERIAL**  
**C** = Ceramic (Alumina)  
**CD** = Standard Range  
**CM** = High Side Metallization  
**CQ** = High Q  
**F** = Ferrite

**INDUCTANCE (nH)**  
Representative of the inductance value

**TOLERANCE**  
**G** = ±2%  
**J** = ±5%  
**K** = ±10%  
**M** = ±20%

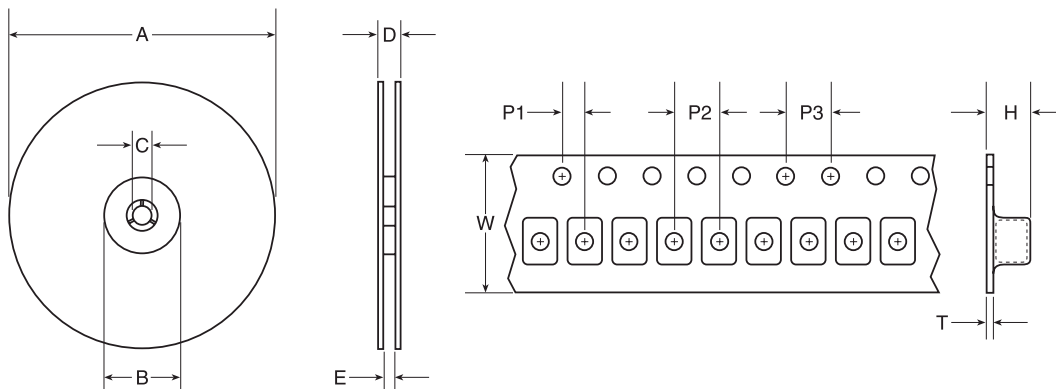
**\* TERMINATION**  
**T** = Tin or Gold Plating  
**G** = Gold plating only

**PACKAGING**  
T = Tape & Reel (7" or 13" reel)

Size	0402	0603	0805	1008	1206
PCs/Reel	3000	2000	2000	1600	3000

1. **To order directly from Pulse**, there are local Pulse addresses and telephone numbers listed on the web at <http://www.pulseelectronics.com/index.php?415>.
2. **Find** a Pulse authorized distributor or representative in your area on the Pulse website at: <http://www.pulseelectronics.com/index.php?415>.
3. **Part numbers shown in this section are RoHS compliant.** No additional suffix or identifier is required.

## Tape and Reel Specifications



**Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C**

Series	Parts per Reel	Reels Dimensions (mm)					Tape Dimensions (mm)					
		A	B	C	D	E	W	P1	P2	P3	H	T
<b>0402CD</b>	3000	178	50	13	14.4	8.4	8	2	4	4	1.1	0.3
<b>0603CD</b>	2000	178	50	13	14.4	8.4	8	2	4	4	1.7	0.3
<b>0805CD</b>	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
<b>0805CM</b>	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
<b>0805FT</b>	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
<b>1008CD</b>	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
<b>1008CM</b>	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
<b>1008CQ</b>	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
<b>1206CD</b>	3000	330	101	13	18.4	12.4	12	2	4	4	2.0	0.4

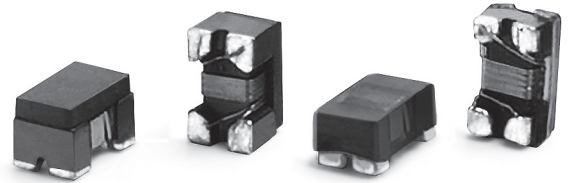
**Notes:** P1, P2 and P3 are same for all chip inductor series. Keeping the same dimensions for guide hole and pocket pitch (P1), pocket pitch (P2), guide hold pitch (P3) and tape width (8mm) for all series, enables the packaging machine to maintain the same settings while changing models. The only difference between the series are the parts per reel which contributes to a different length of tapes/reel per model.



## ChipChoke™ CCMC Series for USB and LVDS

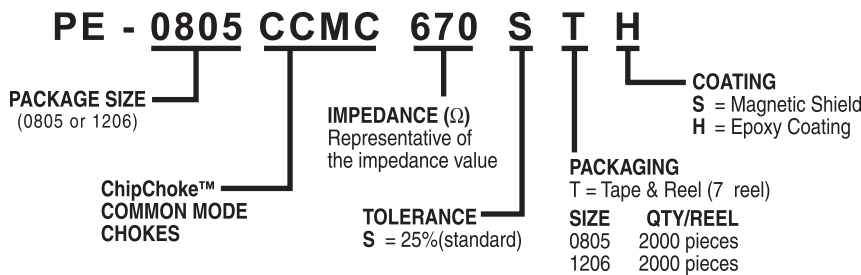
Pulse ChipChokes are designed to eliminate virtually all common mode noise in high-speed, differential mode signal transmission applications such as USB 2.0, IEEE1394 and LVDS (Low Voltage Differential Signaling).

These dual-wound ChipChokes have an industry standard footprint and low DC resistance. They are available in nine impedance values to meet your specific requirements.

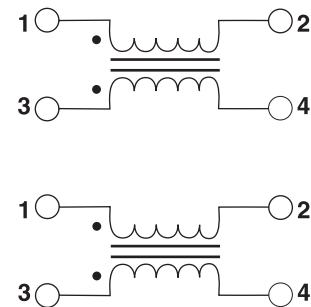


To select the appropriate common mode choke (ChipChokes) for your application, "2-Line Chip-type Common Mode Chokes" data sheet, W712, is available at <http://www.pulseelectronics.com/index.php?848>. Then choose the title "RF Inductors" and a list will appear below it. Locate the W712 link and the PDF will download.

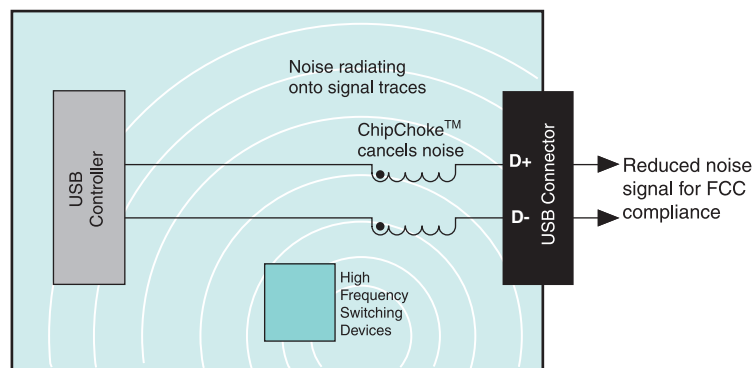
### Part Number Legend

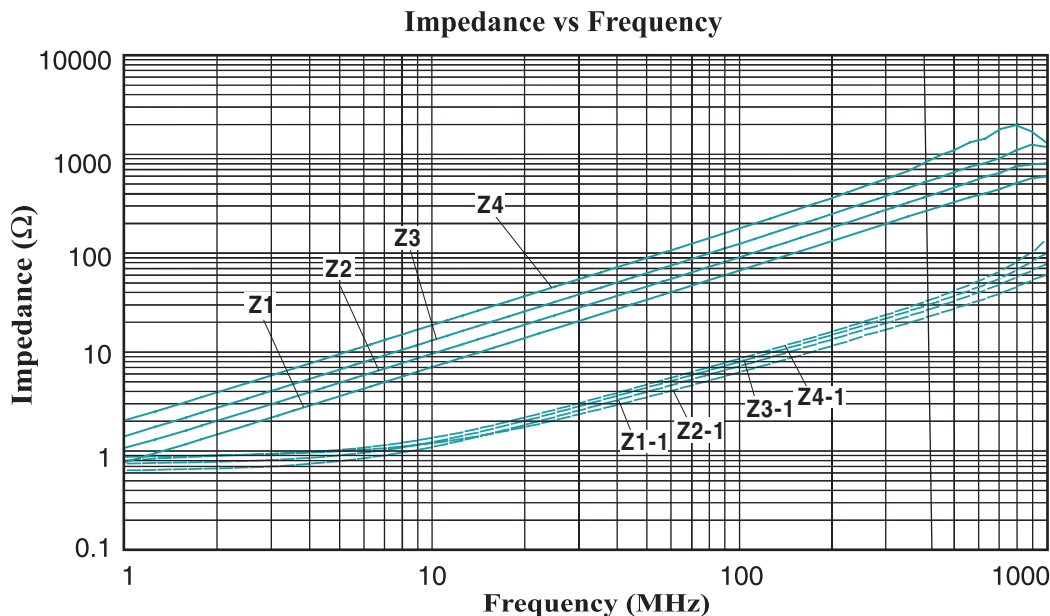


### Schematic



### Electronic Device





Common Mode	
ITEM	PART NUMBER
Z-1	PE-0805CCMC670STH
Z-2	PE-1206CCMC900STH
Z-3	PE-1206CCMC121STH
Z-4	PE-1206CCMC181STH

Differential Mode	
ITEM	PART NUMBER
Z-1-1	PE-0805CCMC670STH
Z-2-1	PE-1206CCMC900STH
Z-3-1	PE-1206CCMC121STH
Z-4-1	PE-1206CCMC181STH

### ChipChokes CCMC SERIES FOR USB and LVDS (Low Voltage Differential Signaling)

Part Number <sup>1,2</sup> Standard Tolerance (25%)	Common Mode Impedance @ 100 MHz (Ω)	DC Resistance (Ω MAX)	Rated Voltage (V <sub>DC</sub> )	Rated Current (mA MAX)	Withstanding (V <sub>DC</sub> )	Insulation Resistance (mΩ MIN)
<b>0805CCMCXXXSTH - Epoxy Coating - 0805 Size</b>						
PE-0805CCMC670STH	67	0.35	50	330	125	10
PE-0805CCMC900STH	90	0.40	50	300	125	10
PE-0805CCMC121STH	120	0.45	50	280	125	10
PE-0805CCMC181STH	180	0.50	50	250	125	10

1. All ChipChoke part numbers are RoHS compliant. No additional suffix or identifier is required.

2. These parts are found on data sheet W712 on the Pulse website: [www.pulseelectronics.com](http://www.pulseelectronics.com). Locate the data sheet link on the home page.

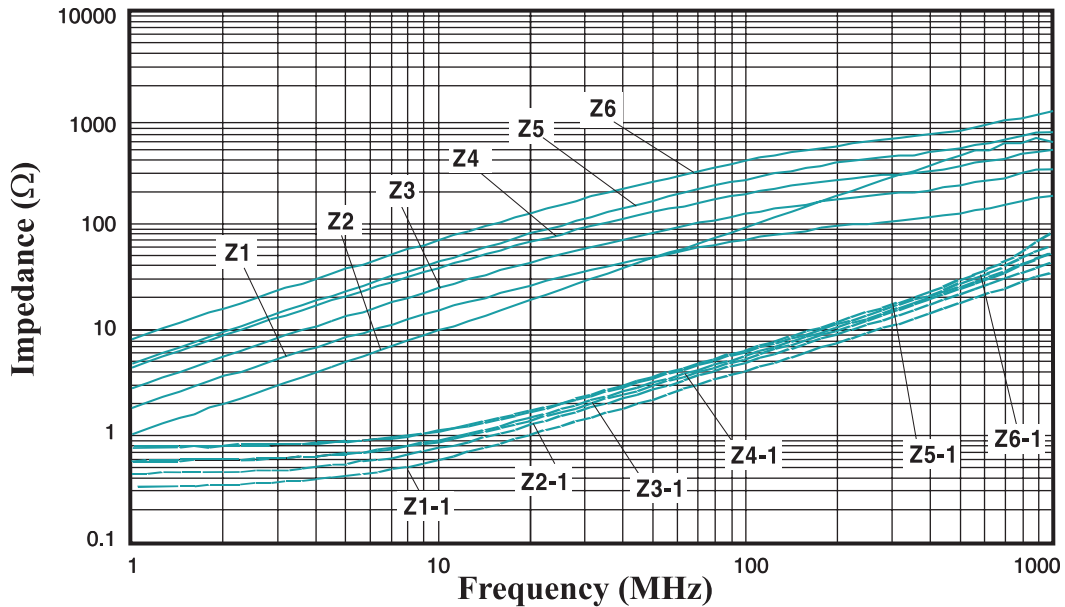
Surface Mount

\*NOTE: Referenced part is Standard Tolerance, 10% (K). To order parts with optional tolerances, see the Part Number Ordering Guide on the first page of this section.



## PE-0805CCMCXXXSTS

### Impedance vs Frequency



Common Mode	
ITEM	PART NUMBER
Z-1	PE-0805CCMC670STS
Z-2	<b>PE-0805CCMC900STS</b>
Z-3	PE-0805CCMC121STS
Z-4	PE-0805CCMC181STS
Z-5	PE-0805CCMC261STS
Z-6	PE-0805CCMC361STS

Differential Mode	
ITEM	PART NUMBER
Z-1-1	PE-0805CCMC670STS
Z-2-1	PE-0805CCMC900STS
Z-3-1	PE-0805CCMC121STS
Z-4-1	PE-0805CCMC181STS
Z-5-1	PE-0805CCMC261STS
Z-6-1	PE-0805CCMC361STS

### ChipChokes CCMC SERIES FOR USB and LVDS (Low Voltage Differential Signaling)

Part Number <sup>1,2</sup> Standard Tolerance (25%)	Common Mode Impedance @ 100 MHz (Ω)	DC Resistance (Ω MAX)	Rated Voltage (V <sub>DC</sub> )	Rated Current (mA MAX)	Withstanding Voltage (V <sub>DC</sub> )	Insulation Resistance (MΩ MIN)
<b>0805CCMCXXXSTS - Magnetic Shield - 0805 Size</b>						
PE-0805CCMC670STS	67	0.25	50	400	125	10
PE-0805CCMC900STS	90	0.35	50	330	125	10
PE-0805CCMC121STS	120	0.30	50	370	125	10
PE-0805CCMC181STS	180	0.35	50	330	125	10
PE-0805CCMC261STS	260	0.40	50	300	125	10
PE-0805CCMC361STS	360	0.45	50	280	125	10

1. ChipChoke part numbers are RoHS compliant. No additional suffix or identifier is required.

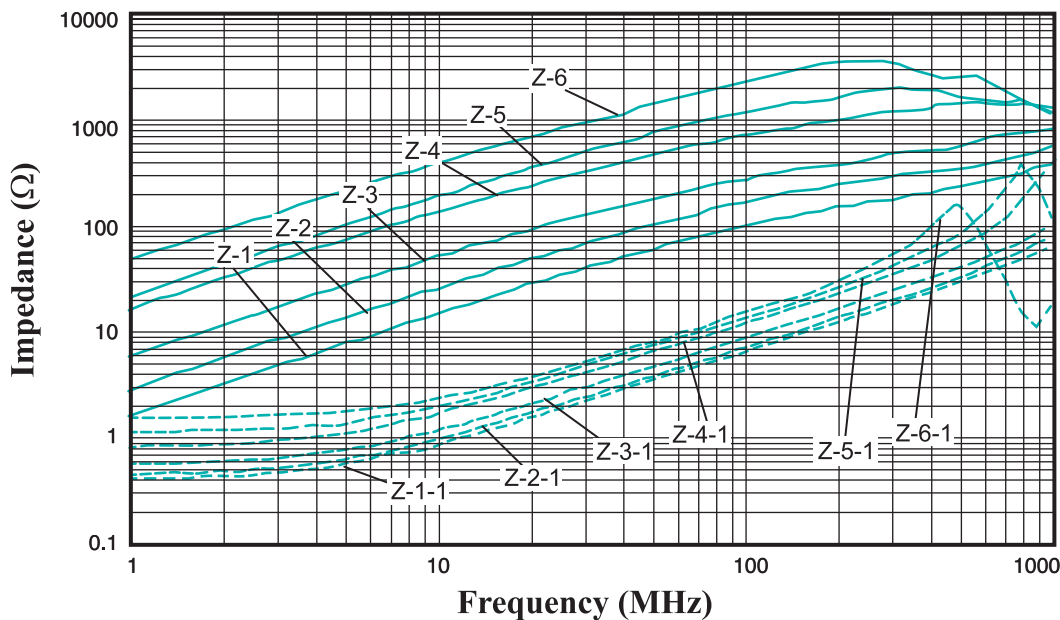
2. These parts are found on data sheet W712 on the Pulse website: [www.pulseelectronics.com](http://www.pulseelectronics.com). Locate the data sheet link on the home page.

Surface Mount

\*NOTE: Referenced part is Standard Tolerance, 10% (K). To order parts with optional tolerances, see the Part Number Ordering Guide on the first page of this section.



### Impedance vs Frequency



Common Mode	
ITEM	PART NUMBER
Z-1	PE-1206CCMC900STS
Z-2	PE-1206CCMC161STS
Z-3	PE-1206CCMC261STS
Z-4	PE-1206CCMC601STS
Z-5	PE-1206CCMC102STS
Z-6	PE-1206CCMC222STS

Differential Mode	
ITEM	PART NUMBER
Z-1-1	PE-1206CCMC900STS
Z-2-1	PE-1206CCMC161STS
Z-3-1	PE-1206CCMC261STS
Z-4-1	PE-1206CCMC601STS
Z-5-1	PE-1206CCMC102STS
Z-6-1	PE-1206CCMC222STS

### ChipChokes CCMC SERIES FOR USB and LVDS (Low Voltage Differential Signaling)

Part Number <sup>1, 2</sup> Standard Tolerance (25%)	Common Mode Impedance @ 100 MHz (Ω)	DC Resistance (Ω MAX)	Rated Voltage (V <sub>DC</sub> )	Rated Current (mA MAX)	Withstanding Voltage (V <sub>DC</sub> )	Insulation Resistance (MW MIN)
<b>1206CCMCXTS - Magnetic Shield - 1206 Size</b>						
PE-1206CCMC900STS	90	0.30	50	370	125	10
PE-1206CCMC161STS	160	0.40	50	340	125	10
PE-1206CCMC261STS	260	0.50	50	310	125	10
PE-1206CCMC601STS	600	0.80	50	260	125	10
PE-1206CCMC102STS	1000	1.00	50	230	125	10
PE-1206CCMC222STS	2200	1.20	50	200	125	10

1. All ChipChoke part numbers are RoHS compliant. No additional suffix or identifier is required.

2. These parts are found on data sheet W712 on the Pulse website: [www.pulseelectronics.com](http://www.pulseelectronics.com). Locate the data sheet link on the home page.

Surface Mount

\*NOTE: Referenced part is Standard Tolerance, 10% (K). To order parts with optional tolerances, see the Part Number Ordering Guide on the first page of this section.