Common Mode Filter Chip Inductors

FASTRON added size 1210 to its CMC product portfolio. Both the 1812CMF and the 1210CMF have two coupled windings wound, providing a symmetrical coil. The ferrite plate on top of the ferrite core closes the magnetic circuit and allows accurate pick and place assembly.

Applications

Main purpose of 1210CMF and 1812CMF is protecting differential signal paths from common mode disturbances. The Common Mode Choke is designed to provide highest quality for the most stringent applications e.g. automotive, industrial and automation. The part could be used in data-line filters, Ethernet networking, CAN-Bus, USB, wideband noise suppression and EMC circuit protection for incoming radiation and outgoing noise emission.

Technical Data

L – Value (rated inductance)	Measured with E4980AL Precision LCR Meter or equivalent at frequency $f_{L,}$ 25°C ambient
Impedance, |Z|	Measured with E4991B Impedance Analyzer or equivalent at frequency $f_{Z,}$ 25°C ambient
DCR (max)	Measured at 25°C ambient
Rated DC Current	Max permissible Current that causes a 20°C component temperature rise from 25°C ambient
Operating Temperature	-40°C to +150°C (Including component self-heating): CMF -40°C to +105°C (Including component self-heating): CMF/E
Surface Finishing	Flat top for perfect pick and place assembly
Pad Metallization	Gold flash for 1812 Tin as top layer for 1210
Wire Termination	Spot welding
Recommended Soldering Method	Reflow
Moisture Sensitivity Levels (MSL)	MSL Level 1, indicating unlimited floor life at ≤ 40°C /60% relative humidity
Solderability	Using lead free solder (Sn 96.5) at 245°C ± 5°C for 5 ± 0.5 seconds, min 90% solder coverage of metallization Standard: IEC 68-2-20 (Ta)
Resistance to Soldering Heat	Resistant to 260°C ± 5°C for 10 ± 1 seconds Standard: IEC 68-2-20 (Tb)
Resistance to Solvent	Resistant to isopropyl alcohol for 5 ± 0.5 minutes at 23°C ± 5°C Standard: IEC 68-2-45
Climatic Test	Defined by the following standards IEC 68-2-1 for cold test: -55°C for 96 hours IEC 68-2-2 for dry heat test: 150°C for 96 hours IEC 60068-2-78 for humidity test: 40°C at RH 95% for 4 days
Thermal Shock Test	Temperature cycle: -40°C to +150°C to -40°C Max/Min temperature duration: 15 minutes Temperature transition duration: 5 minutes Cycles: 25 Standard: MIL-STD-202G
Adhesion of Soldered Component (Shear Test)	Components withstand a pushing force of 10N for 10 ± 1 seconds Standard: IEC 60068-2-21, method Ue_3
Mechanical Shock	Mil-Std 202 Method 213, Condition C 3 axis, 6 times, total 18 shocks 100 G, 6 ms, half-sine
Vibration	Mil-Std 202 Method 204 20 mins at 5G 10 Hz to 2000 Hz 12 cycles each of 3 orientations

Technical Data & Packaging Specification

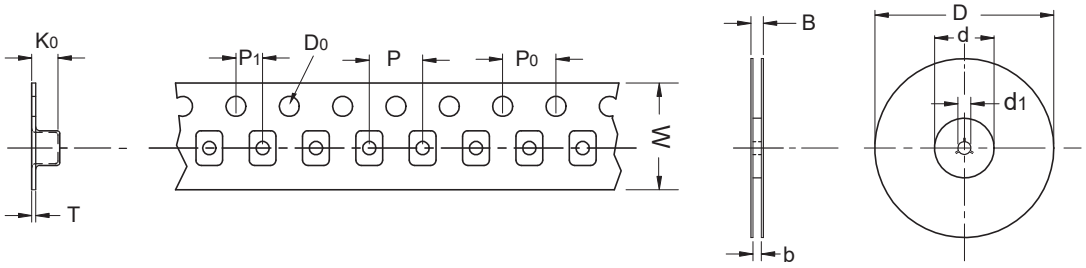
Ordering Code

Example: 1812CMF-101X-YY ➔ **1812CMF-101X-01**

Case Sizes - 1210, 1812
Tolerances - +30%/-10%, +50%/-30%
Packaging Code - 01, 04 (Taped / Reel)

1812	CMF	-	101	X	-	YY
(Case Size)	(Series name)		(Inductance Value)	(Tolerance)		(Packaging Code)

Packaging Specification Schematic



Type	Packaging Code	D	D0	d	d1	B	b	W	P	P0	P1	K0	T
1210	01	180	1.50	60	13	18.4	13.7	12	8	4	2	3.00	0.30
1210	04	330	1.50	100	13	18.4	12.4	12	8	4	2	3.00	0.30
1812	01	180	1.50	60	13	18.4	13.7	12	8	4	2	3.40	0.35
1812	04	330	1.50	100	13	18.4	12.4	12	8	4	2	3.40	0.35

FASTRON's Component Key Characteristics

Approved according to AEC-Q200

Approved according to AEC-Q200 with High Temperature

Suitable for High Temperature

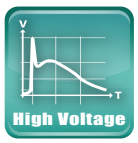
Part is RoHS conform and Halogen free

Mechanical Shock and Vibration Proof

Designed for High Q-values

Exceptionally High Q-values

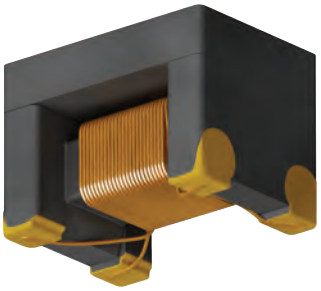
Optimized for High Currents

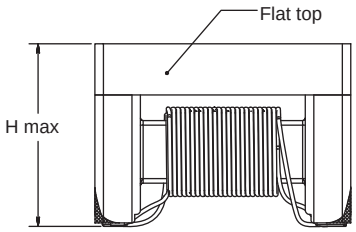


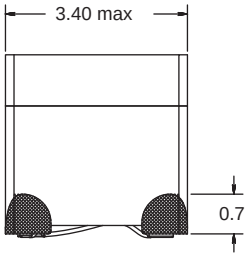
Optimized for High Voltages

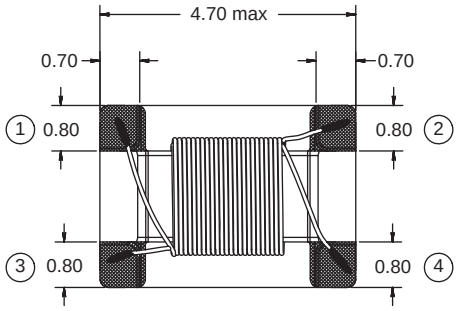
1812 CMF

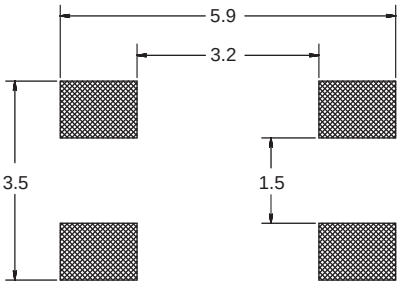
Common Mode Filter
CAN bus





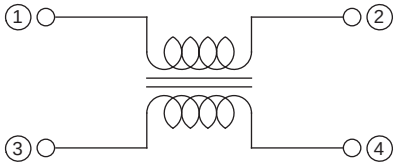






Recommended layout for solder pads

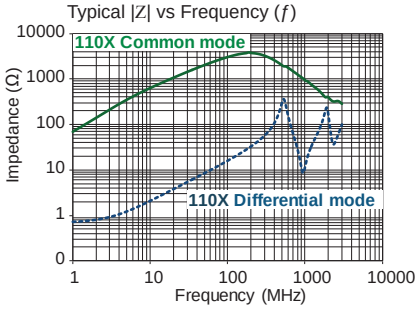
Schematic



No polarity

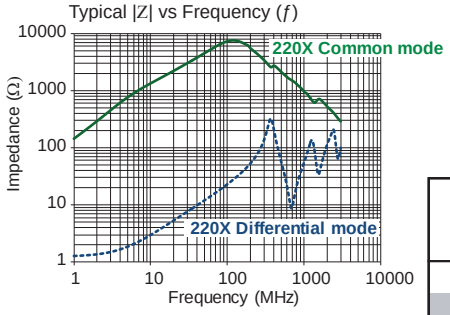
1812CMF-110X

Typical |Z| vs Frequency (*f*)



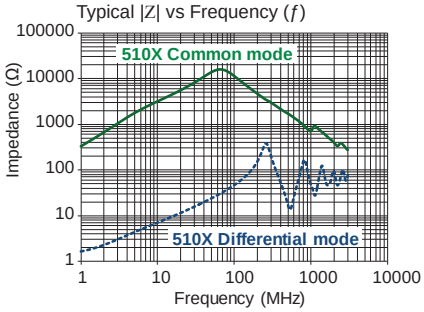
1812CMF-220X

Typical |Z| vs Frequency (*f*)



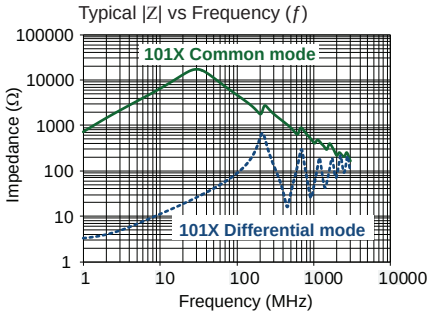
1812CMF-510X

Typical |Z| vs Frequency (*f*)



1812CMF-101X

Typical |Z| vs Frequency (*f*)



Part No	Impedance |Z| (Ω) min	typ	f_Z (MHz)	Inductance L (µH)	Tol ± (%)	f_L (kHz)	Leakage Inductance (µH) typ	DCR max (Ω)	Rated DC Current (mA)	Dimension H max
1812CMF-110X-YY	300	600	10	11	+50/-30	100	0.05	0.5	250	3.15
1812CMF-220X-YY	500	1200	10	22	+50/-30	100	0.08	0.7	200	3.15
1812CMF-510X-YY	1000	2800	10	51	+50/-30	100	0.15	0.9	200	3.15
⁎ 1812CMF-101X-YY	2000	5800	10	100	+50/-30	100	0.20	2.0	150	3.25

Core Material: Ferrite
Top Material: Magnetically shielded

Revision date: 25 May 2022

SPQ: Taped / Reel 600 [-01]
2200 [-04]

Remarks: - Unlisted inductance values available upon request.
- Rated Volt = 50 Vdc.
- Insulation Resistance = 10 MΩ min.
- ⁎ indicated approved according to IEC62228-3, Annex D and CiA 110.

● All dimensions in mm

Common Mode Filter Chip Inductors