



AUTOMOTIVE CHIP CHOKE AND PODL INDUCTORS FOR IN-VEHICLE NETWORKS



AUTOMOTIVE COMMUNICATION MAGNETICS

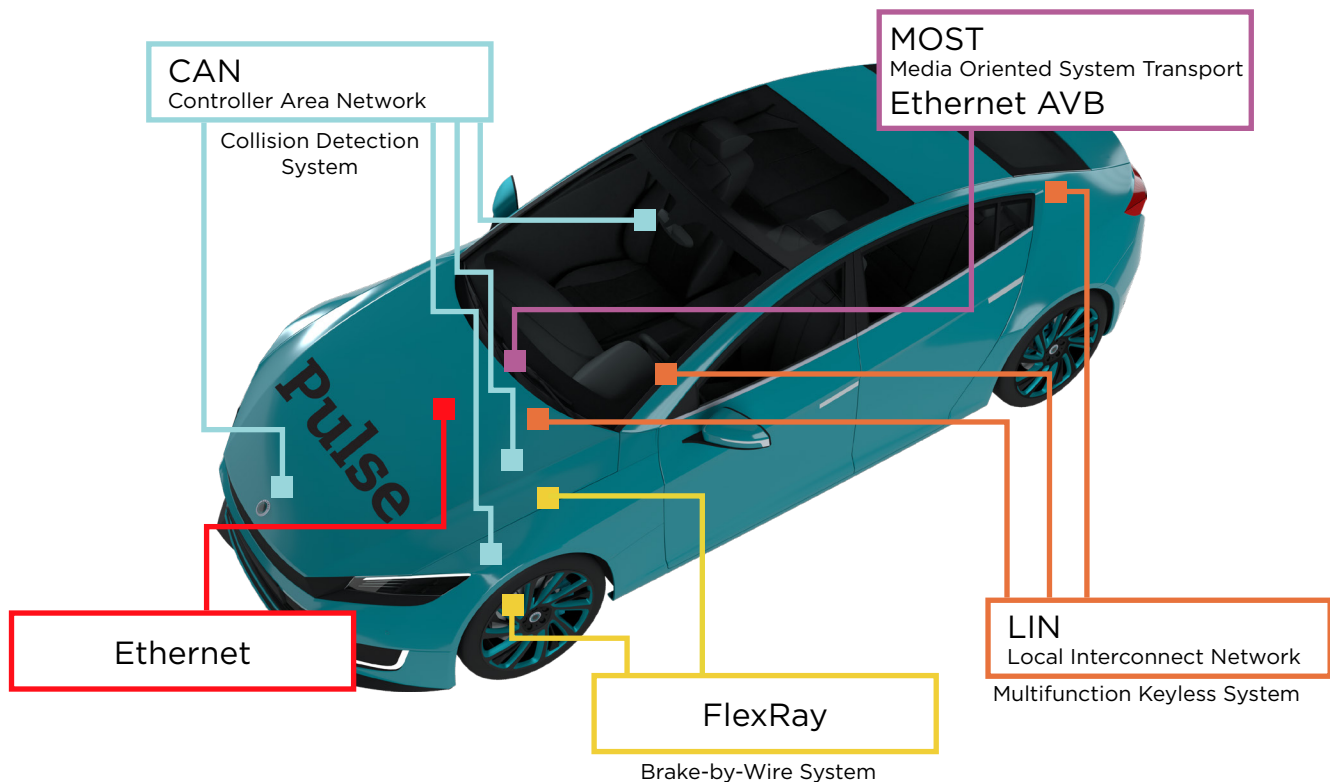
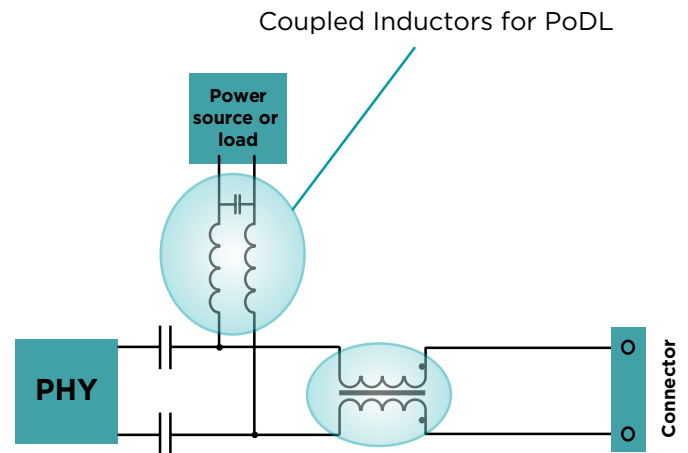
COMMON MODE CHOKE FOR AUTOMOTIVE ETHERNET AND COUPLED INDUCTORS FOR PODL

Common-mode chokes are filters which help to suppress common-mode noise on signal, power or audio lines. These two wire common mode chokes provide consistent common mode rejection performance at all frequencies, from lower kbps to higher Gbps. Automotive applications typically require much higher noise immunity due to the open environment that the systems are working within and the use of untwisted pair cables. The typical placement of a common mode choke is between the transceiver (PHY) and the cable interface (connector) to help to filter the common mode noise in both directions. As the common mode chokes do not stop DC voltages on the cable from getting to the Controller or Processor IC, they are paired with capacitors or Isolators and ESD diodes.

Additionally to the common mode choke for PoDL (Power over Dateline), there is a need for PoDL inductors which are balancing the power injection from the power source. The CMCs and the coupled inductors are designed in different current ratings to meet customers circuits.

Applications

- Data Control Module / Gateways
- ADAS / Body Control
- Lidar
- Backbone Diagnostics
- GPS
- Infotainment Head Unit
- Camera / Radar

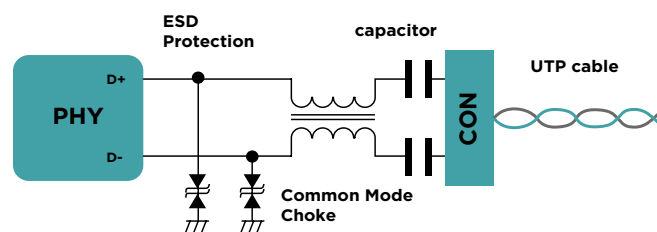


KEY ELEMENTS AND BENEFITS

Pulse offers a full line Common mode chokes for Automotive Ethernet applications. In addition to the CMCs designed for lower data rates, Pulse offers CMCs in different package sizes and higher speeds, as well. To meet such needs, IEEE802.3 has created standards for Ethernet over one twisted pair, with data rates from 10, 100, 1000Mbps and Multigig Ethernet for Automotive. Further standards such as the OpenAlliance enables the deployment of the existing IEEE 100BaseT1 and 1000BaseT1 specifications with complementing specifications for conformance and interoperability. Pulse is a technical member of the OpenAlliance and is an active participant in the technical working groups. In addition, the CiA (CAN in Automotive) standard has extended requirements from the IEC62228-3 and is required at major OEMs, as well as Tier1 customers. Pulse CMCs for CAN-FD meet these requirements.

Pulse Common Mode Choke for Automotive applications exhibit the following features and benefits:

- Designed to meet IEEE802.3bu/bw/bp, IEC62228-3, CiA110 and OpenAlliance TC1/TC3
- Qualified at major PHY vendor and OEMs
- Meets AEC-Q200 standard
- RoHS & REACH compliant
- PPAP level 3 capable
- IATF 16949:2016 certification
- Operating temperature from -40 to 125C



APPROVED COMMON MODE CHOKES

The Common Mode Chokes from Pulse are designed to meet the requirements from standards such as IEEE, IEC, OpenAlliance and CiA. For 3rd Parties, the CMCs meet all requirements in terms of the high Automotive quality, reliability, safety and performance measured by the S-parameter. Due the need of high-quality CMCs in a very stringent environment, Pulse works very closely with major PHY and OEM customers together to have these common mode chokes referenced on their PHY's and qualified at major OEMs.



COMMON MODE CHOKES FOR AUTOMOTIVE ETHERNET

Part Number	Speed	Inductance	APP	Package Size	Operating Temp	Standard	Production Status
AC1210-101-C	CAN-FD class 2	100uH	CAN-FD	1210	-40 to 125C	IEC6228-3/CiA110	Q1/2023
AC1210-101-D	CAN-FD class 3	100uH	CAN-FD	1210	-40 to 125C	IEC6228-3/CiA110	Q1/2023
AE2002	100Base-T1	160uH	Automotive Ethernet	1812	-40 to 125C	IEEE802.3bw	Released
AE5002	1000Base-T1	120uH	Automotive Ethernet	1812	-40 to 125C	IEEE802.3bp	Released
AE0100	100Base-T1	200uH	Automotive Ethernet	1210	-40 to 125C	IEEE802.3bw/OA TC1	Released
AE1210	1000Base-T1	60uH	Automotive Ethernet	1210	-40 to 125C	IEEE802.3bp/ OA TC3	Released
AE3003	100BaseT1 – 300mA current	100uH	Automotive Ethernet / PoDL	2518	-40 to 125C	IEEE802.3bw/bu	Released
AE3005	100BaseT1 – 350mA current	75uH	Automotive Ethernet / PoDL	2518	-40 to 125C	IEEE802.3bw/bu	Released
AE3006	100BaseT1 – 475mA current	40uH	Automotive Ethernet / PoDL	2518	-40 to 125C	IEEE802.3bw/bu	Released
AWCU4543	100BaseT1	200uH	Automotive Ethernet	1812	-40 to 125C	IEEE802.3bw	Released
AWCU3325	100BaseT1	200uH	Automotive Ethernet	1210	-40 to 125C	IEEE802.3bw	Released
AWCU...-TE series	A2B / C2B	100uH	A2B / C2B	1210	-40 to 125C	IEC62228-3	Released
PE-1812ACC110STS	CAN class I	11uH	CAN	1812	-40 to 125C	IEC62228-3	Released
PE-1812ACC220STS	CAN class I	22uH	CAN	1812	-40 to 125C	IEC62228-3	Released
PE-1812ACC510STS	CAN class I	51uH	CAN	1812	-40 to 125C	IEC62228-3	Released
PE-1812ACC101STS	CAN-FD class II	100uH	CAN-FD	1812	-40 to 125C	IEC62228-3	Released

Part Number	Speed	Inductance	APP	Package Size	Operating Temp	Standard	Production Status
AL0470B	100BaseT1 470mA current	80uH	Automotive Ethernet / PoDL	0606	-40 -125oC	n/a	Q1/2023
AL0750B	100BaseT1 750mA current	80uH	Automotive Ethernet / PoDL	EP7	-40 -125oC	n/a	Q2/2023
AL1360B	100BaseT1 1.36A current	80uH	Automotive Ethernet / PoDL	EP13	-40 -125oC	n/a	Q2/2023

COMMON MODE CHOKES

FEATURED PRODUCTS



AC1210-101-C

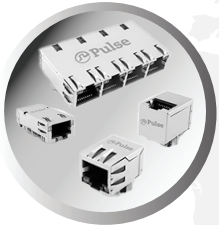
- CAN-FD CMC
- Meet IEC6228-3 class 2 standard
- Meet CiA 110 standard
- S-parameter measurements available



AC1210-101-D

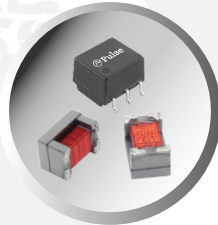
- Fast CAN-FD CMC
- Meet IEC6228-3 class 3 standard
- Meet CiA 110 standard
- S-parameter measurements available

Other Great Products from Pulse Electronics



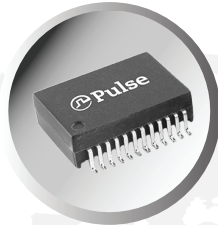
Integrated Connector Modules (ICMs)

- 100Base-T to 25GBase-T
- PoE, PoE+, 4 Pair PoE
- 1x1, 1xN, 2xN Packaging
- THT, SMT, Pin-in-Paste and Press Fit



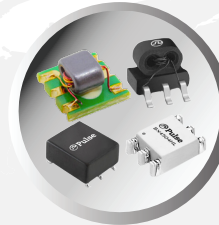
Automotive Network Magnetics

- BMS Modules & Xfrms Transformers (functional, basic, reinforced insulation)
- Automotive Ethernet (100Base-T to 10GBase-T)
- CMC (100Base-T, CAN)



Ethernet Transformer & Modules (LAN)

- 100Base-T to 25GBase-T
- PoE, PoE+, 4 Pair PoE
- Single, Dual, Quad, Octal
- THT, SMT, BGA & Pin-in-Paste



Telecom & Audio Magnetics (WAN)

- PLC Transformers
- ISDN, T1/E1, T3/E3, xDSL & G.Fast
- Multiple Port Options



Connectors & Cages

- Unfiltered Connectors (RJ45, RJxx, USBx)
- Optical Connectors & Cages (SFP, SFP+, QSFP)
- 1x1, 1xN, 2xN

Surface Mount and Through-hole Terminations • Catalog and Custom Solutions Available

See Other Great Products from Pulse Electronics at PulseElectronics.com