

Connecting people now
and in the future

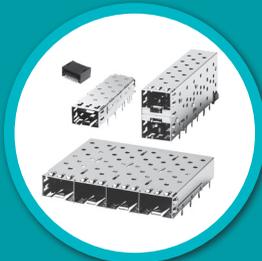
ETHERNET



TELECOMMUNICATIONS

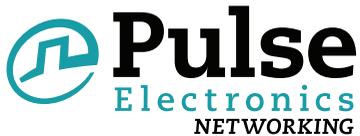


FIBER OPTICS



CONNECTORS





Network Division Mission Statement

Our goal is to be the preferred technology partner for copper connectivity interface solutions to leading suppliers of communication network equipment & devices.

Core Skills

- Demonstrated design/engineering and high volume expertise
- Strong relationships with leading electronic OEM's, CEM's & PHY companies
- Excellent value and outstanding quality products delivered from high-volume production facilities
- Geographic proximity to customers' design and production sites
- Worldwide distribution support

Resources

- Pulse Networking Website
 - » Buy Now
 - » Sample Portal
 - » Datasheets, RoHS CoC, 3d Models
 - » Application Guides
 - » Enhanced Product Finder
 - » New Product Releases
- Technical Support
 - » America's
Prodinfonetworkamericas@pulseelectronics.com
 - » Europe, Middle East, Africa:
Comms-Apps-Europe@pulseelectronics.com
 - » Asia, Australia (Pacific Rim), Korea
Prodinfonetworkapac@pulseelectronics.com

Table of Contents

Focus Markets.....	4
New Products.....	5-13
Battery Management Isolation Transformers.....	5
1X1 1G/2.5G/5G/10GBase-T 4P PoE Top Entry Series.....	6
2.5GBase-T Ethernet Transformers.....	7
140W 4P PoE Ethernet Transformers and Ethernet Connectors.....	8
1X2 10GBase-T Offset Ethernet Connectors.....	9
1X2 and 1X4 10GBase-T Offset Ethernet Connectors.....	10
Industrial 1x1 JXD6 SMT Ethernet Connectors.....	11
Industrial 1x2 and 1x4 Tab Down Ethernet Connectors.....	12
AEC-Q200 Automotive Magnetics.....	13
Product Offering	14-18
Ethernet & Telecommunications Transformers.....	14
Ethernet Connector Modules.....	14
RJ45Connectors.....	15
Fiber Optic Connectors, Cages & Transceivers.....	15
IO Connectors.....	16
RFFilters.....	16
FilterComponents.....	17
MSANFilters.....	17
Broadband Filters.....	18
Pulse Authorized Distributors.....	19

Focus Markets & Applications

Pulse Electronics is developing the next generation of networking components to support the future expansion of the following markets and applications. Pulse has full line of network products which include Ethernet Transformers, Ethernet Connector Modules, Connectors, RF Inductors, Common Mode Chokes, and Telecom Magnetics and Filters.

Industrial Market



Applications

- Automation
- Process Controls
- Communications
- Robot controls
- Security Displays
- Smart Grid

Transportation



Applications

- Infotainment
- Body Controls
- ADAS
- Cameras
- Battery Management Systems

Communications



Applications

- Switches
- Routers
- Gateways
- Access points
- Basestations

Consumer



Applications

- ONT
- Femtocell
- Gateway/Router
- Security
- Home Automation
- Displays/TV's

Medical

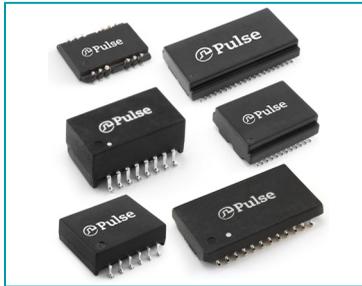


Applications

- In Fusion Pumps
- Imaging
- Ventilators
- Diagnostics
- Monitors

New Products

Battery Management Isolation Transformers



BMS Isolation transformers and common mode chokes

Pulse Electronics offers a full line of isolation transformers and common mode chokes for small to large battery systems for serial port safety isolation and EMI noise rejection application. In large battery pack applications that have Daisy Chain connection, the number of cells connected in series is very high, and the large voltage differences demand component-to-component isolation. The serial communication links between boards need to be isolated by transformer coupling circuits instead of capacitor coupling.

■ Features and Benefits

- Support serial Daisy Chain isoSPI, SPI and other signal isolation
- Meets AEC-Q200 requirements
- Operating temp. -40°C up to +125°C
- Multiple options for working voltages and voltage isolation

■ Applications

- Electric Vehicle
- Energy Storage System
- Data Center UPS
- Solar energy storage
- Green – Renewable
- Marine

Part Number	No of Chan.	Working Voltage	HI-POT Isolation	Creepage Distance	Center Tap	Common Choke	Operation Temp	Supported IC
HX1188NL	2	100Vdc	1500Vrms	-	Yes	Yes	-40-85°C	Linear Tech
HM1188NL	2	100Vdc	1500Vrms	-	Yes	Yes	-40-125°C	Linear Tech
HM1190NL	1	600Vdc	2500Vrms	-	Yes	Yes	-40-125°C	Linear Tech
HM1331NL	2	1000Vdc	4000Vrms	-	Yes	Yes	-40-85°C	Linear Tech
HM2100NL	2	1000Vdc	4300Vdc	>10mm	No	Yes	-40-125°C	Linear Tech
HM2101NL	1	1000Vdc	4300Vdc	>5mm	No	Yes	-40-125°C	NXP
HM2102NL	2	1000Vdc	4300Vdc	>8mm	Yes	Yes	-40-125°C	Linear Tech/NXP
HM2103NL	1	1000Vdc	4300Vdc	>5mm	Yes	Yes	-40-125°C	Linear Tech/NXP
HM2106NL	1	1000Vdc	4300Vdc	>11mm	Yes	No	-40-125°C	Linear Tech/NXP
HM2108NL	1	1000Vdc	4300Vdc	>11mm	Yes	Yes	-40-125°C	Linear Tech/NXP
HM1236NL	1	600Vdc	3200VDC	>7mm	Yes	Yes	-40-125°C	MAX17823/11068
HM1237NL	2	600Vdc	2500Vac	-	Yes	Yes	-40-125°C	MAX17823/11068
HM1238NL	1	1000Vdc	4300Vdc	-	Yes	Yes	-40-150°C	MAX17823

Note: Other solutions available upon request including HMU2102NL and HMU2103NL.

New Products

1X1 1G/2.5G/5G/10GBase-T 4P PoE Top Entry Series



Pulse Electronics introduces the JIV-2 series of 1x1 Top Entry 1000Base-T to 10GBASE-T 4P PoE Ethernet Connector Modules. These parts have options for LED's and 4 and 5 channel magnetics for 10GBase-T. The package is ideal for applications requiring higher bandwidth and higher power such as Base Stations, IPTV, Gateways, Video Displays, and Thin Clients

1x1 Top Entry 1000BASE-T, 2.5GBASE-T, 5GBASE-T, 10GBASE-T 4P POE Ethernet Connector Modules

■ Features and Benefits

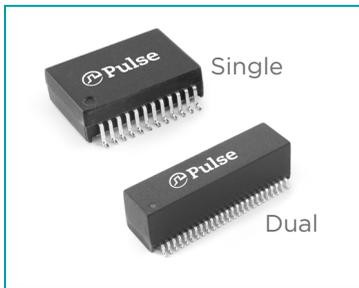
- 1x1 Top Entry
- 1000Base-T, 2.5GBase-T, 5GBase-T, 10GBase-T performance
- 4P PoE up to 90W
- 4 & 5 Channel available
- RoHS 6/6 capable
- Compatible with all major PHY's
- In Volume Production

■ Applications

- Base Stations
- IPTV
- Video Displays
- Gateways
- Thin Clients

Part Number	Description	Speed	IEEE Specification	PoE Watts
J1V-U2100NL	1x1 Top Entry	1000Base-T	802.3ab	75W
J1V-U2500NL	1x1 Top Entry	2.5GBase-T	802.3bz	100W
J1V-U5000NL	1x1 Top Entry	5GBase-T	802.3bz	72W
J1V-U7000NL	1x1 Top Entry	10GBase-T	802.3an	60W

2.5GBASE-T Ethernet Transformers



2.5GBASE-T Single and Dual Ethernet Transformers

Pulse electronics offers full line of 2.5GBASE-T Ethernet magnetics supporting 4P PoE connections for multiple Ethernet applications. The parts are compatible with all major 2.5GBASE-T PHY suppliers. Multiple package options and extended temperature solutions are available. The parts are ideal for applications requiring higher bandwidth and PoE function such as base stations, 802.11ac access points, routers, switches and video displays.

■ Features and Benefits

- Designed to meet IEEE802.3bz for 2.5GBASE-T
- Compatible with all Major PHYs
- 4P PoE 60W, expanding to +90W
- Available in -40°C to +85°C operating temperature
- Multiple package options available
- Industry Standard Footprints
- 5GBASE-T coming soon

■ Application

- Access Points
- Switches
- Base Stations
- Gateways
- Video & Displays

Part Number	Ports	PoE	PHY Compatability
HU4102NL	Dual	No	Aquantia-Broadcom-Marvell
HU4103NL	Dual	60W	Aquantia-Broadcom-Marvell
HU4006NL	Single	60W	Aquantia-Broadcom-Marvell
HU4009NL	Single	60W	Aquantia-Broadcom-Marvell
HU4108NL	Single	60W	Aquantia-Broadcom-Marvell

New Products

140W 4P PoE Ethernet Transformers and Ethernet Connector Modules



Ethernet Discrete and Connector Modules that operate up to 140W of maximum power

Pulse has designed our 1000BASE-T PoE parts to allow for maximum power of 140W. Pulse has both Ethernet magnetics and Ethernet connector modules that accommodate the higher power. The parts are compatible with all major PHY's 1000BASE-T PHY's. The parts are ideal for applications requiring higher power like Notebooks, Base stations, Access points, Video Displays, and Gateways.

■ Features and Benefits

- 140W max. power
- Multiple package options
- Compatible with all major PHY's
- In Volume Production
- Industry Standard Footprint

■ Applications

- Base Stations
- Access Points
- Notebooks
- Video Displays
- Gateways

Part Number	# of Ports	Max. Power	Speed
HX6098NL	Single	140W	1000BASE-T
JKO-0229NL	1X1	140W	1000BASE-T
JOB-3563NL	2X6	140W	1000BASE-T

1X2 10GBASE-T Offset Ethernet Connectors



1x2 10GBASE-T Offset ICM

The Pulse JTL product is a 1x2 10GBASE-T Offset Ethernet Connector Module that has options for 4 and 5 channel magnetics and with or without LED's. The parts are compatible with all major 10GBASE-T PHY's. The package is ideal for applications requiring higher bandwidth and lower height such as Blade servers, Media servers, Base stations, Access points.

Features and Benefits

- 1x2 Offset 10GBASE-T
- Meets IEEE802.3an specification
- Offset for lower overall height
- 4 & 5 Channel available
- RoHS 6/6 capable
- Compatible with all major PHY's
- In Volume Production
- Industry Standard Footprint

Applications

- Servers
- Base Stations
- Access Points
- Routers
- Switches
- Gateways

Part Number	Description	# of Channels	PHY Compatibility
JTL-U1001NL	RJ45, 1x2, 10G, 4P PoE	4	Intel/Aquantia
JTL-U1002NL	RJ45, 1x2, 10G, 4P PoE	4	Broadcom
JTL-U1003NL	RJ45, 1x2, 10G, 4P PoE	4	Marvell

New Products

1X2 and 1X4 10GBASE-T Offset Ethernet Connectors



1x2 and 1x4 10GBASE-T Ethernet Connector Modules

The Pulse JT8 1x2 and 1x4 10GBASE-T Ethernet Connector Modules has options for 4 and 5 channel magnetics and with or without LED's. The parts are compatible with all major 10GBASE-T PHY's. The package is ideal for applications requiring higher bandwidth and lower height such as Servers, Routers, Base stations, Access points, Gateways and Video Displays.

■ Features and Benefits

- 1x2 and 1x4 10GBASE-T Offset
- Meets IEEE802.3an specification
- 4 & 5 Channel available
- RoHS 6/6 capable
- Halogen Free
- Compatible with all major PHY's
- In Volume Production

■ Applications

- Servers
- Base Stations
- Access Points
- Routers
- Video Displays
- Gateways

Part Number	Description	# Channels	PHY Compatibility
JT8-2000HL	1x2, RJ45, 10G	5	Intel/Aquantia
JT8-4000HL	1x4, RJ45, 10G	5	Intel/Aquantia

Industrial 1x1 JXD6 SMT Ethernet Connectors



Pulse's latest range of 1x1 100BASE-TX SMT Ethernet Connector Modules are designed to provide isolation and noise reduction in a single solution, operating with a wide range of industrial protocols. The SMT allows for processing these components using a standard IR Reflow profile which can save on overall cost for manufacturing.

1X1 Surface Mount Tab Up and Tab Down Ethernet Connector Modules

■ Features and Benefits

- Designed to meet IEEE802.3u (100BASE-TX)
- -40C to +85C operating temperature
- Suitable for CAT 3, CAT 5 UTP
- UL File Listing E216177
- SMT pins allow for Reflow Soldering
- Compact form factor optimizing board space
- Supports all major PHY manufactures

■ Applications

- Industrial Automation
- Process or Remote Control and Monitoring
- Campus
- Factory or Rugged Communication Networks
- Power over Ethernet
- Touch Screen Display & Panels
- Security & Image processing
- Access Control

Part Number	Tab Location	Ports	EMI TABS	BST	LED Left/Right (pin style)	PoE	Contact plating
JXD6-0001NL	UP	1X1	NO	YES	Green/Yellow (rear)	NO	6uinch
JXD6-0002NL	UP	1X1	NO	YES	Green/Green (rear)	NO	15uinch
JXD6-1100NL	DOWN	1X1	NO	YES	NONE	NO	15uinch

New Products

Industrial 1x2 and 1x4 Tab Down Ethernet Connector Modules



1X2 and 1X4 Tab Down Ethernet Connector Modules

Pulse's latest "JXD0-2" and "JXD0-4" Tab down series of 1x2 and 1x4 Ethernet Connector Modules are designed to provide isolation and noise reduction in a single solution, operate with a wide range of industrial protocols. These 1xN Tab Down are compact and make it easy on designers to layout their PCB's.

■ Features and Benefits

- Designed to meet IEEE802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards
- -40C to +85C operating temperature
- Suitable for CAT 3, CAT 5 UTP or higher
- UL File Listing E216177
- Compact form factor optimizing board space
- Supports all major PHY manufactures

■ Applications

- Industrial Automation
- Process or Remote Control and Monitoring
- Campus
- Factory or Rugged Communication Networks
- Power over Ethernet
- Touch Screen Display & Panels
- Security & Image processing
- Access Control

Part Number	Tab Location	Ports	EMI TABS	BST	LED Left/Right	PoE	Contact plating
JXD0-2005NL	DOWN	1X2	YES	YES	Green/Yellow	NO	15uinch
JXD0-4005NL	DOWN	1X4	YES	YES	Green/Green	NO	15uinch

AEC - Q200 Automotive Magnetics



AEC - Q200 Magnetics Operating From -40°C up to +125°C

Pulse products support multiple technology's used in the Automobile including MOST, CAN Bus, FlexRay, Ethernet Audio Video Bridging (AVB), 100Base-T1, 1000Base-T1, and Power over Data Lines (PoDL). Pulse's parts are designed to operate from -40°C up to +125°C, have high reliability, high volume manufacturing, long term manufacturing support, and meet AEC-Q200 automotive quality requirements.

■ Features and Benefits

- Designed to meet 100BASE-TX/T1 and 1000BASE-TX/T1 IEEE802.3 standards
- Supports all major PHY manufacturers
- Multiple packages and configurations available
- Meets AEC-Q200 requirements
- Designed to operate from -40°C up to +125°C
- TS-16949 and PPAP capable

■ Application

- Infotainment
- Advanced Driver Assist Systems (ADAS) Body Control
- Camera/Radar
- Battery Management
- Backbone Diagnostics

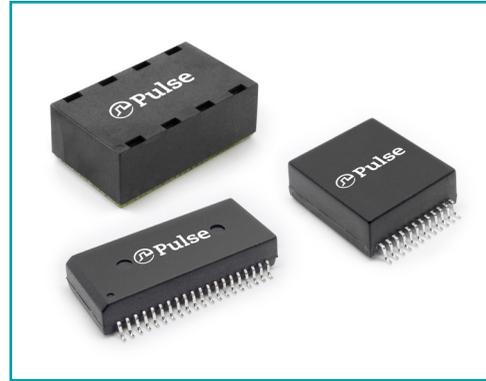
Part Number	Part Description	Technology
HM0068ANL	Single, Low Profile, 100Base-TX	Ethernet AVB, MOST
HM1188NL	Single, 100Base-TX	Ethernet AVB, MOST
HM1234FNL	Dual, 100Base-TX	Ethernet AVB, MOST
HM1225NL	Single, 100Base-TX	MOST
HM5004EFNL	Single, 1000Base-T	Ethernet AVB
HM5149NL	Single, 1000Base-T	Ethernet AVB
HM6098FNL	Single, 1000Base-T, PoE+	Ethernet AVB
AE2002	100Base-T1	Single Pair Ethernet
AE3003	100Base-T1 PoDL	PoDL
AE5002	1000Base-T1	Single Pair Ethernet

Product Overview

Ethernet & Telecommunication Transformers

■ Specifications

- Ethernet, T1/E1, ISDN, VDSL2, G.Fast
- HDBaseT Compliant
- High Isolation up to 7kV
- IEEE 802.3 compliant to 10G
- Higher reliability (Carrier class & AEC-Q200)
- Single, Dual, Quad packages
- SMT & BGA options
- Extended Temperature -40°C to +85°C
- PoE++ Capable



Ethernet Connector Modules



■ Specifications

- IEEE 802.3 compliant to 10G
- Thru Hole, Press Fit, Pin-In-Paste, SMT options
- Multiple platforms - 1x1, 1xN, 2xN Tab up, Tab down, Side entry, Top entry, Low Profile, Offset
- Higher isolation (TVSS, surge)
- With and without LED's
- Extended temperature -40°C to +85°C
- PoE++ Capable

RJ45 Connectors



Specifications

- Multiple Platforms - 1x1, 1xN, 2xN, Side entry, Top entry, Offset, Low profile
- CAT3 to CAT5e connectors available
- With & without LED's
- With & without shields



Fiber Optic Connectors, Cages & Transceivers

Specifications

SFP/SFP+ Connectors & Cages

- 1G & 10G performance
- 1XN & 2XN Platforms
- Standard industry footprints
- EMI shielding options
- Signal integrity simulations

Transceivers

- Hot Pluggable SFP and SFP+ footprints
- Compliant to Ethernet and Fiber Channel standards
- Standard reaches from very short to long haul
- SFF-8472 compliant Diagnostic Monitoring Interface
- Support up to 11.1Gbps



Product Overview

IO Connectors

■ Specifications

- USB 3.1 Type C, USB 3.0, Thunderbolt
- High Speed (5G/s ~ 10G/s performance)
- Right Angle/Vertical, THT/SMT options



RF Filters



■ Specifications

- Multi band modules (SMT,TH)
- High rejection, low loss
- Excellent return loss
- Compliant to Dccsis & MoCA
- Balun Transformers

Filter Components



■ Specifications

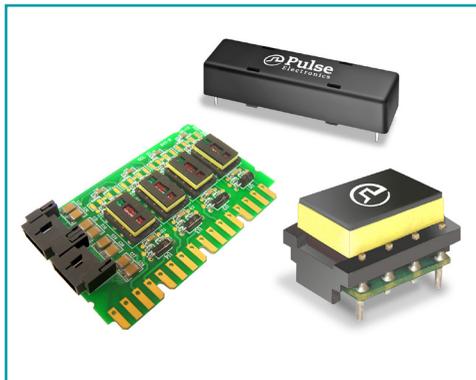
- RF Chip Inductors
- EMI Suppression Ferrite Beads
- Chip Chokes
- Array type beads



MSAN Filters

■ Specifications

- VDSL2 up to 30 MHz
- Extended temperature options
- Low profile options
- Dual & SMT Modules



Product Overview

Broadband Filters



CPE VDSL2 Splitters



CPE Filters: Z-300 Series

■ Specifications

- VDSL2 up to 30MHz
- Video grade
- ANSI & ETSI spec. compliance



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