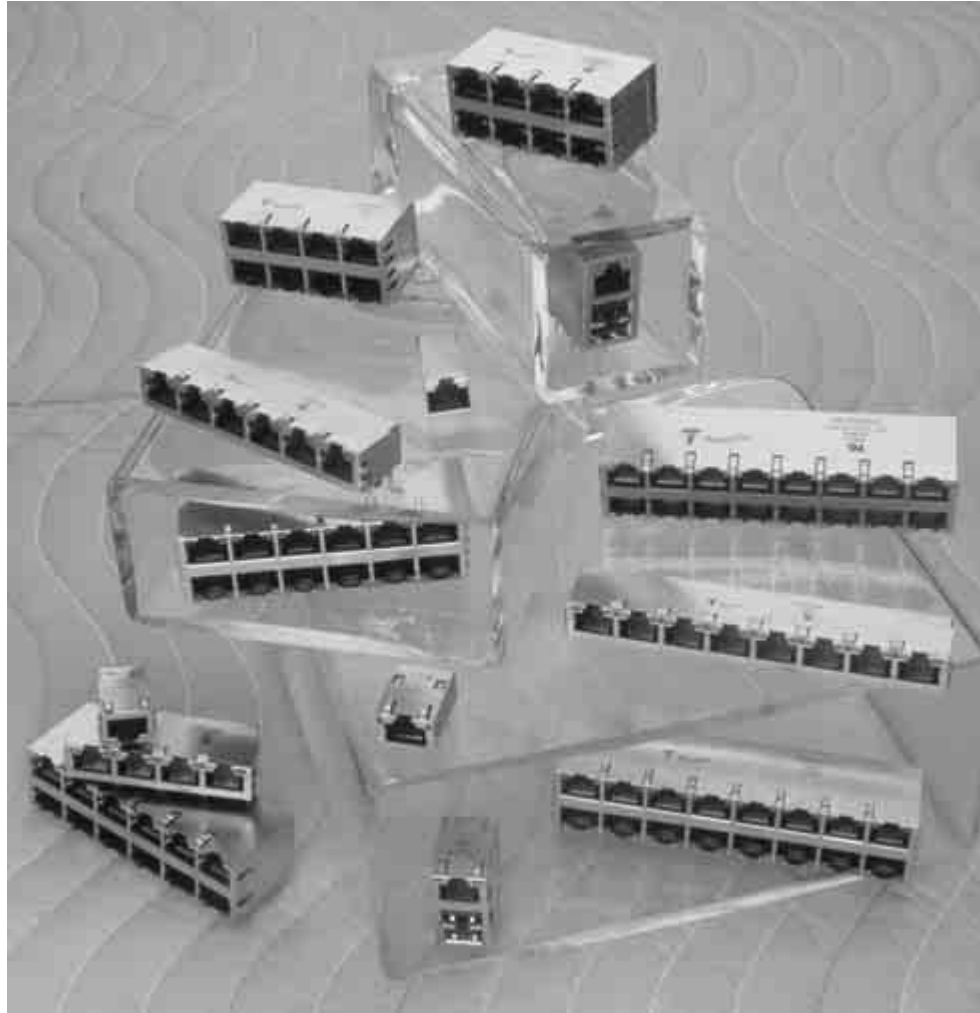# MAG45 Modular Jacks with Integrated Magnetics

Product Features

- ■ **PCB space savings**
- ■ **Improved reliability and EMI performance over discrete magnetics**
- ■ **Micro-welding of mag wire to PCB versus soldering**
- ■ **Meets or exceeds FCC Part 68, IEEE 802.3, and ANSI X3.263 requirements**
- ■ **Supports all appropriate and available PHY Chips and applications**
- ■ **Extended Temp -40C to +85C available**

Product Qualification

- ■ **501 and 108 Qualification Test and Product Specification Reports available**
- ■ **UL/CSA Recognized component**
- ■ **For assistance in part selection, please refer to the Tyco Electronics E-Catalog**
- ■ **Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist**

MAG45 Modular Jacks with Integrated Magnetics

The MAG45 product line offers a broad range of available RJ45 modular jacks with integrated magnetics for 10/100 Base-T, Gigabit and PoE Enabled applications. Multiple configurations are available to include single port, tab up or tab down; single port USB/RJ45; single port low profile; ganged multiport, 1xN; and stacked multiport, 2xN. All available with or without LEDs. There are multiple LED combinations and color options available.

Available soon RJ45 with Integrated Magnetics/ PoE controller and MRJ21 product.

Available in Spring 2005 Pb Free/RoHS Compliant MAG45 product.

Note: All part numbers are RoHS compliant.

MAG45 Modular Jacks with Integrated Magnetics (Continued)

Single Port 10/100 Base-T, Gigabit & PoE, Tab Down

Product Facts

- Single Port
- Through Hole, Tab Down
- Available with or without LEDs
- UL Recognized
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist

PCB Footprint
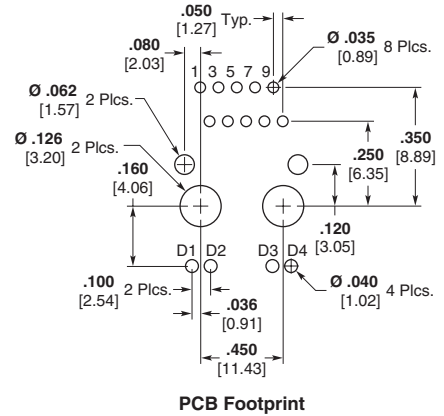
Single Port Tab Down*

	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
	✓	✓	✓	No

*multiple LED colors with and without resistors available.

10/100 Base-T	10/100 PoE	Gigabit
6605424-1	6605432-2	1-6605444-1
6-6605425-1	1-6605310-1	6605434-1
5-6605308-1	6-6605440-1	6605445-6

Single Port 10/100 Base-T, Gigabit & PoE, Tab Up

- Single Port
- Through Hole, Tab Up
- Available with or without LEDs
- UL Recognized Component
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist

PCB Footprint
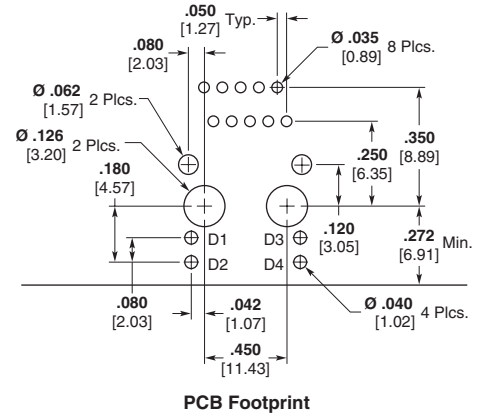
Single Port Tab Up*

	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
	✓	✓	✓	**

*multiple LED colors with and without resistors available.
**under development.

10/100 Base-T	10/100 PoE	Gigabit
6605759-1	1-6605832-1	5-6605809-1
5-6605763-6	6605818-1	6605814-5
5-6605758-9	1-6605834-1	6605852-2

Note: All part numbers are RoHS compliant.

MAG45 Modular Jacks with Integrated Magnetics (Continued)

Single Port Low Profile 10/100 Base-T & Gigabit, Tab Up

- **Height is .445" vs std .580"**
- **UL Recognized**
- **IEEE 802.3 & ANSI X3.263 Compliant**
- **With LEDs**
- **Supports all appropriate and available PHY Chips and applications**
- **For assistance in part selection, please refer to the Tyco Electronics E-Catalog**
- **Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist**

Low Profile*

PCB Footprint
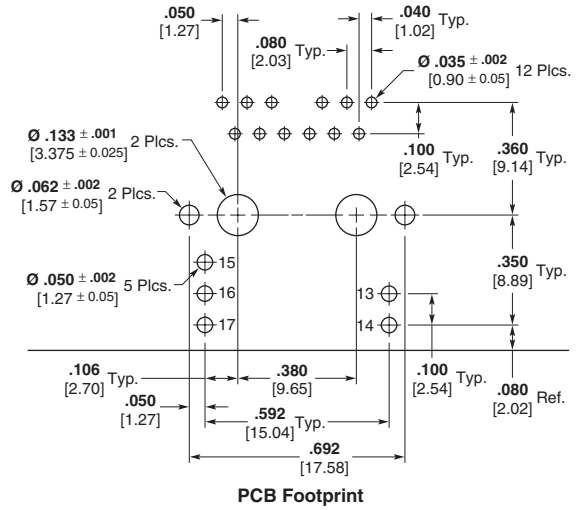
	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
	✓	No	✓	No

*multiple LED colors with and without resistors available.

	10/100 Base-T	Gigabit
Tab Up	1368458-1	1368398-1
Tab Down	1368590-1	1368589-1

Ganged 10/100 Base-T, Gigabit & PoE, Tab Up

- **Multi-Port Single Layer Connector**
- **Through Hole, Tab Up**
- **Available with or without LEDs**
- **UL Recognized Component**
- **IEEE 802.3 & ANSI X3.263 Compliant**
- **Numerous circuit options available**
- **Supports all appropriate and available PHY Chips and applications**
- **For assistance in part selection, please refer to the Tyco Electronics E-Catalog**
- **Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist**
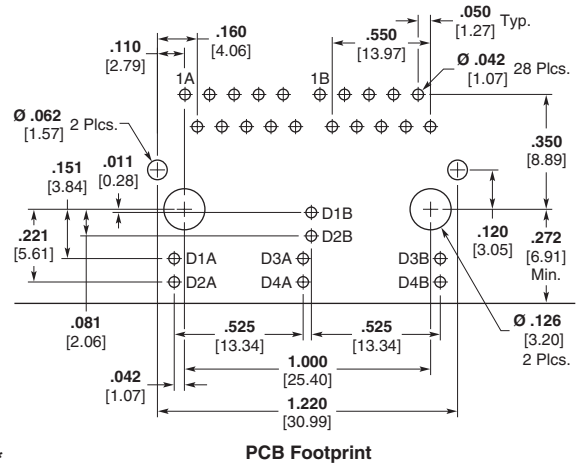
Ganged Multi-Port Tab Up (unless noted)*

PCB Footprint

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
1x2	✓	✓	✓	**
1x4	✓	✓	✓	✓
1x5	✓	✓	✓	**
1x6	✓	✓	✓	✓
1x8	✓	✓	✓	**

*multiple LED colors with and without resistors available.
** Under development.

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
1x2	5-6610000-1	1-6610128-1	1-6610209-1	No***
1x2 Tab Down	No***	No	1840516-6	No
1x4	5-6610049-1	1840500-1	6610068-6	1840514-1
1x4 Tab Down	6610211-1	No	6610204-1	No
1x4 Tab Down Low Profile	No***	No	1840515-1	No
1x4 Tab Up Low Profile	No***	No	1761889-1	No
1x5	6610078-2	6610182-2	1-6610132-1	No
1x6	1-6610084-1	5-6610168-8	6610157-1	6610199-1
1x8	6610112-1	1-6610122-1	6610160-6	No***

*** Contact product management about possibility of adding.

Note: All part numbers are RoHS compliant.

Catalog 82066
Revised 11-07

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

MAG45 Modular Jacks with Integrated Magnetics

MAG45 Modular Jacks with Integrated Magnetics (Continued)

**Stacked
USB/RJ45
(10/100 Base-T or Gigabit)**

- **USB/RJ45 with integrated magnetics**

- **10/100 or Gigabit applications**

- **Stacked USB type A included**

- **UL Recognized**

- **Available with LEDs**

- **IEEE 802.3 & ANSI X3.263 Compliant**

- **USB 2.0 Compliant**

- **Numerous circuit options available**

- **Supports all appropriate and available PHY Chips and applications**

- **For assistance in part selection, please refer to the Tyco Electronics E-Catalog**

- **Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist**
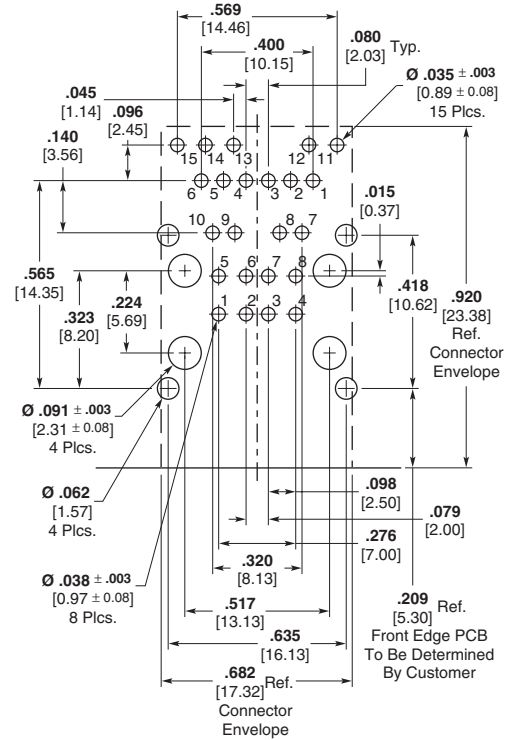
PCB Footprint

USB/RJ45*

	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
	✓	No	✓	No

*multiple LED colors with and without resistors available.

Port Configuration	10/100 Base-T	Gigabit
RJ45/Dual USB	6620004-1	6368472-1
	6620002-1	6620005-1
	6368532-1	6620009-1
RJ45/Single USB	No**	1840012-1

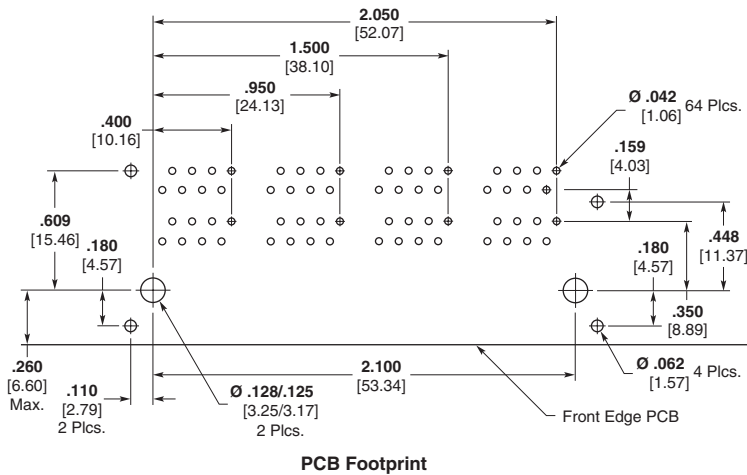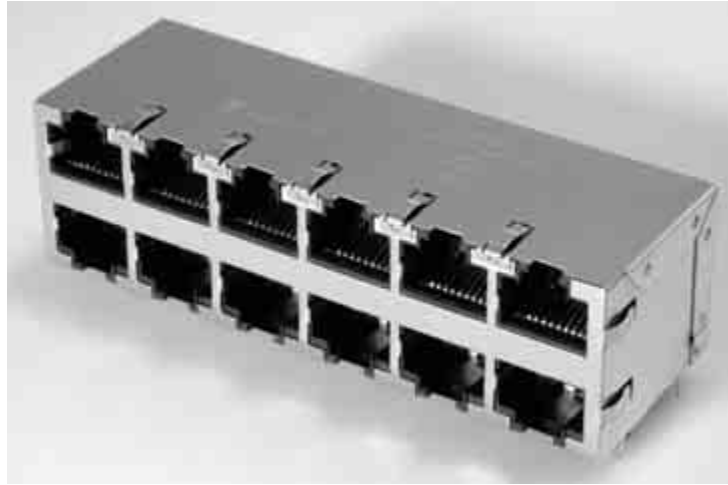** Contact product management about possibility of adding.
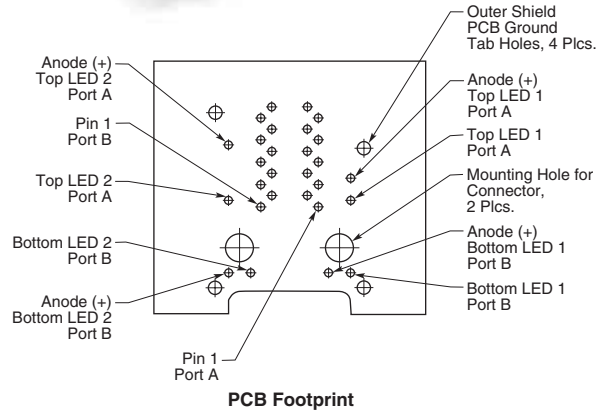
Note: All part numbers are RoHS compliant.

MAG45 Modular Jacks with Integrated Magnetics

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MAG45 Modular Jacks with Integrated Magnetics (Continued)

**Stacked
(10/100 Base-T)**

- **Stacked Connector**
- **UL Recognized**
- **Without LEDs**
- **IEEE 802.3 & ANSI X3.263 Compliant**
- **Numerous circuit options available**
- **Supports all appropriate and available PHY Chips and applications**
- **For assistance in part selection, please refer to the Tyco Electronics E-Catalog**
- **Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist**

PCB Footprint

Stacked

Port Configuration	10/100 Base-T	10/100 PoE
2x1	✓	✓
2x3	✓	✓
2x4	✓	✓
2x6	✓	✓
2x8	✓	✓

Port Configuration	10/100 Base-T
2x4	6615012-1
2x6	6368525-1
2x8	6368526-1

Note: All part numbers are RoHS compliant.

Tyco Electronics

MAG45 Modular Jacks with Integrated Magnetics (Continued)

**Stacked
(10/100 Base-T,
Gigabit & PoE)**

- Stacked, Through Hole, Vertical 10-Pin Footprint
- Available with or without LEDs
- UL Recognized
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist

PCB Footprint

Outer Shield PCB Ground Tab Holes, 4 Plcs.
Anode (+) Top LED 2 Port A
Pin 1 Port B
Top LED 2 Port A
Bottom LED 2 Port B
Anode (+) Bottom LED 2 Port B
Pin 1 Port A
Anode (+) Top LED 1 Port A
Top LED 1 Port A
Mounting Hole for Connector, 2 Plcs.
Anode (+) Bottom LED 1 Port B
Bottom LED 1 Port B

Stacked*

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
2x1	✓	✓	✓	✓
2x2	✓	✓	✓	✓
2x3	✓	✓	✓	✓
2x4	✓	✓	✓	✓
2x6	✓	✓	✓	✓
2x7	—	—	✓	—
2x8	✓	✓	✓	✓

*multiple LED colors with and without resistors available.

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
With LED's				
2x1	6368457-1	No**	6368513-1	No**
2x2	6368387-1	No**	6368511-1	No**
2x4	6368400-1	No**	6368507-1	No**
2x6	1840115-1	6615076-1	6368506-1	No**
2x8	6368536-1	No**	6368510-1	No**
Without LED's				
2x1	1840124-1	No**	1840003-1	No**
2x2	No**	No**	6368523-1	No**
2x4	No**	6615072-1	1840155-1	No**
2x6	No**	6615070-1	1840186-1	1840141-1
2x7	No**	No**	1840187-1	No**
2x8	No**	No**	1840188-1	1840142-1

Note: All part numbers are RoHS compliant.

** Contact product management about possibility of adding.

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MAG45 Modular Jacks with Integrated Magnetics (Continued)

MAG45 with PoE Controller

RJ45 + PoE Magnetics + Silicon Power Controller Chip

PoE Product Features

- **Integrated Silicon PoE 12-port controller**
  - **802.3af compliant**
  - **Auto and Enhanced mode capable**
- **Footprint**
  - **Press-fit configuration**
  - **Ease of routing on customer PCB**
- **Pin Assignments**
  - **Signal integrity benefits vs. standard footprint**
- **Three options in same footprint:**
  - **Integrated Magnetics Only**
  - **Integrated Magnetics, Enabled PoE**
  - **Integrated Magnetics, Integrated PoE**
- **2250Vdc / 1500Vac electrical isolation per 802.3 requirements**

Customer Benefits:

- **Simplify implementation of full PoE solution**
- **Board real estate savings**
- **Reduce board layout issues**
- **Integrate new and existing technologies into a single connector unit**

Why Integrate the PoE Circuitry into the RJ?

- **Single package (PoE, LED's, Magnetics, Heat Sink)**
- **Identical footprint for both Integrated PoE/Enabled and non-PoE**
- **Single design, single motherboard can be used for both PoE and non-PoE**
- **Same design can migrate between switches (including blades and fixed)**
- **Delivered fully tested and qualified, no need to bother with complicated PoE testing**


- **Reduced layer count/ Reduces cost of motherboard**
- **No PoE daughterboards**
- **Isolated PoE voltage provided directly from the power supply**
- **All per port components embedded in RJ**
- **Eliminates issues of voltage isolation on motherboard**
- **Reduces EMI risks**

PoE Controller Features

- **Power supplied over data contacts 1 & 2 and 3 & 6**
- **I2C Capability**
- **PoE chip provides power and command/control circuitry from motherboard power plane/bus**
- **Provides isolation between earth/building and signal ground**

- **Real time control of overload, underload, short circuits and under voltage states**
- **0.5A current carrying capacity**
- **Full AC disconnect and classification**
- **80V tolerant, surge protected system**
- **Registers for MIB 8 support and parameters adjustment**
- **Single voltage feeding (44 – 57VDC)**
- **Designed to support legacy capacitor detection**

How Does PoE RJ45 Work?

- **Embedded inside each RJ45 is the Silicon Power PD64012 chip**
- **Each RJ45 is a 12 port PoE system, communicating**

- **with each other to create a system of up to 48 ports**
- **The Host CPU controls the system via I2C**
- **Two main operating modes: Automatic/Enhanced Mode to match system customization requirements**

For assistance in part selection, please refer to the Tyco Electronics E-Catalog.

Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist.

Legacy vs. Press Fit PoE Footprint
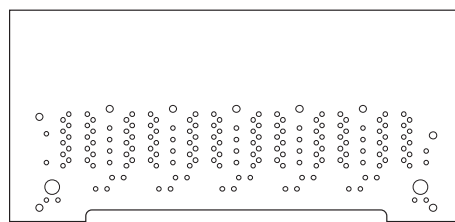
**Legacy Footprint
Solder Only**
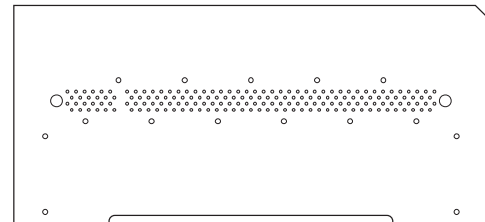
**Integrated/Enabled/Non PoE Footprint
Press Fit**

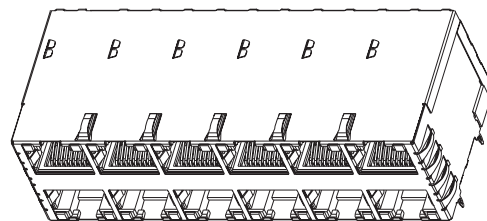## MAG45 Modular Jacks with Integrated Magnetics (Continued)

Part Number Matrix

Base Part Number	Integrated Magnetics	Power over Ethernet	PCB Attach Options	LED Options (2 per Port)	Description
1658821	10/100/1000	Integrated	Press Fit	With/Without Yellow/Green	PowerDsine Integrated Chip Set, 802.3af Compliant
1658822	10/100	Integrated	Press Fit	With/Without Yellow/Green	PowerDsine Integrated Chip Set, 802.3af Compliant
1658825	10/100/1000	Enabled	Press Fit	With/Without Yellow/Green	PoE Chip set on Motherboard, 802.3af Compliant
1658826	10/100	Enabled	Press Fit	With/Without Yellow/Green	PoE Chip set on Motherboard, 802.3af Compliant
1658827	10/100/1000	No	Press Fit	With/Without Yellow/Green	
1658828	10/100	No	Press Fit	With/Without Yellow/Green	

Same Mechanical Footprint, all versions.
Same Electrical Footprint, pins 25 – 170, all versions.

Pins 1 – 24
PoE Control Circuitry

Pins 25 – 170
Port Data Pairs and LEDs
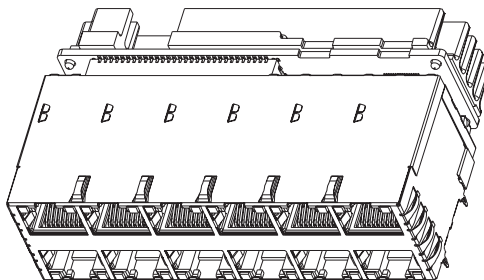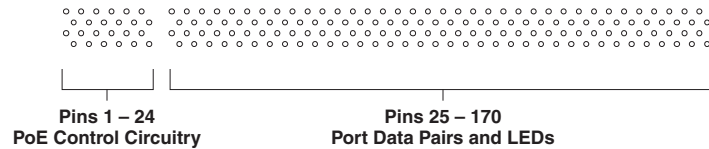
Part Number 1658821 – 1658822

Part Number 1658825 – 1658828

Note: All part numbers are RoHS compliant.