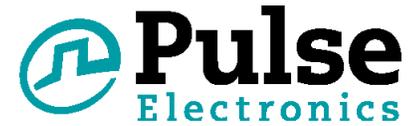


# PulseJack™ RJ45/Dual USB Combo



## Description:

RJ45/Dual USB Combo is a Through Hole (THT) Integrated Connector Module with a single RJ45 in combination with 2USB ports. The internal magnetics are designed to support 10/100/1000Base-TX applications such as LAN-on-Motherboard (LOM) and PC applications.



## Features and Benefits:

- RoHS peak wave solder temperature rating 260°C
- USB module complies with USB 2.0 standards
- RJ45 connection meets CAT3, 5e, & 6 Fast Ethernet performance standard

## Electrical Performance Summary:

- Meets IEEE 802.3 specification
- High performance for maximum EMI suppression
- Minimum 1500Vrms isolation per IEEE 802.3 requirement

Electrical Specifications @ 25°C — Operating Temperature 0°C to +70°C

| RoHS Compliant Part Number | Data Rate   | Turns Ratios |       | LEDs<br>L/R      | Insertion Loss<br>TX/RX<br>(dB MAX) | Return Loss<br>@ 100Ω ±15Ω<br>(dB TYP) |             |           |              | Cross talk<br>(dB MIN) |              |               | Common Mode<br>Rejection<br>(dB TYP) |               | Hipot<br>(Vrms)<br>(MIN) |
|----------------------------|-------------|--------------|-------|------------------|-------------------------------------|--|-------------|-----------|--------------|------------------------|--------------|---------------|--------------------------------------|---------------|--------------------------|
|                            |             | TX           | RX    |                  |                                     | 1-65<br>MHz                            | 1-10<br>MHz | 30<br>MHz | 60-80<br>MHz | 1-10<br>MHz            | 32-60<br>MHz | 60-100<br>MHz | 1-50<br>MHz                          | 50-130<br>MHz |                          |
| JW0-0009NL                 | 10/100      | 1CT:1        | 1CT:1 | G/Y <sup>2</sup> | -1.0                                | -20                                    | -16         | -12       | -40          | -35                    | -30          | -30           | -20                                  | 1500          |                          |
| JY0-0016NL                 | 10/100      | 1CT:1        | 1CT:1 | G-O/Y            | -1.0                                | -20                                    | -16         | -12       | -40          | -35                    | -30          | -30           | -20                                  | 1500          |                          |
| JW0-0006NL                 | 10/100/1000 | 1CT:1        | 1CT:1 | G/G-Y            | -1.0                                | -20                                    | -16         | -12       | -40          | -35                    | -30          | -30           | -20                                  | 1500          |                          |
| JW0-0013NL                 | 10/100/1000 | 1CT:1        | 1CT:1 | G-O/Y            | -1.0                                | -20                                    | -16         | -12       | -40          | -35                    | -30          | -30           | -20                                  | 1500          |                          |

## Notes:

- LEDs Left/Right: G = green; Y = yellow; O = Orange
- G = Green with 250Ω internal resistor; Y = Yellow with 250Ω internal resistor

RJ45 Durability Testing Rating

| Part Number  | Mating Force<br>(MAX) | Unmating Force<br>(MAX) | Durability     | Plug to Jack<br>Retention (MIN) |
|--------------|-----------------------|-------------------------|----------------|---------------------------------|
| JW/JY Series | 5lbs./2.268kgs.       | 5lbs./2.268kgs.         | 500 Insertions | 20lbs./9.072kgs.                |

RJ45 Material Specification

| Part Number  | Shield   |                                      | Contact         |   |   | Housing       |               | MSL <sup>2</sup><br>Rating |
|--------------|----------|--------------------------------------|-----------------|---|---|---------------|---------------|----------------------------|
|              | Material | Finish                               | Material        | Plating Area                              | Solder Area <sup>3</sup>                                | Material      | Specification |                            |
| JW/JY Series | Brass    | 20-40μinches thick nickel over brass | Phosphor Bronze | 15μ inches gold over 30-80μ inches nickel | 75-300μinches tin-lead over 75-300μinches bright nickel | Thermoplastic | UL 94 V-0     | 1                          |

NOTES: 1. Connector dimensions comply with FCC dimension requirements. 2. MSL = Moisture Sensitivity Level 3. NL parts are tin matte finish over nickel.

USA 858 674 8100

Germany 49 7032 7806 0

Singapore 65 6287 8998

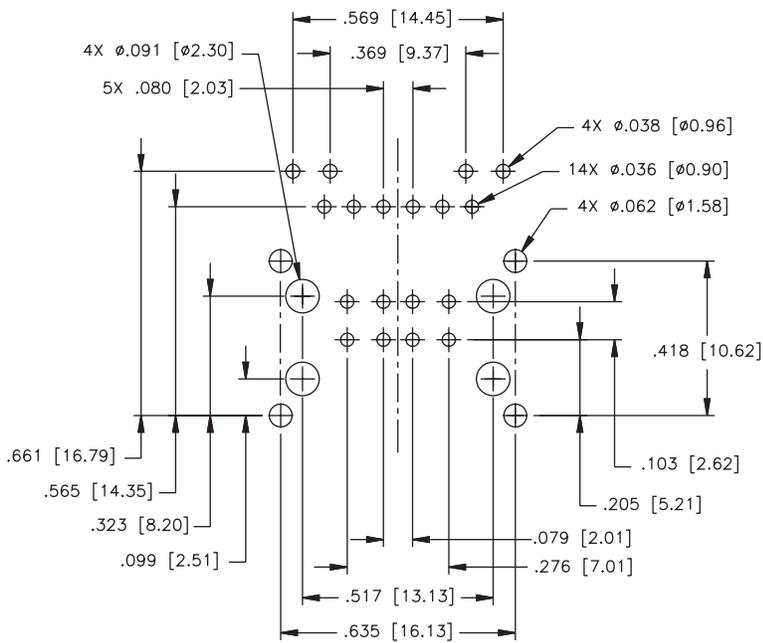
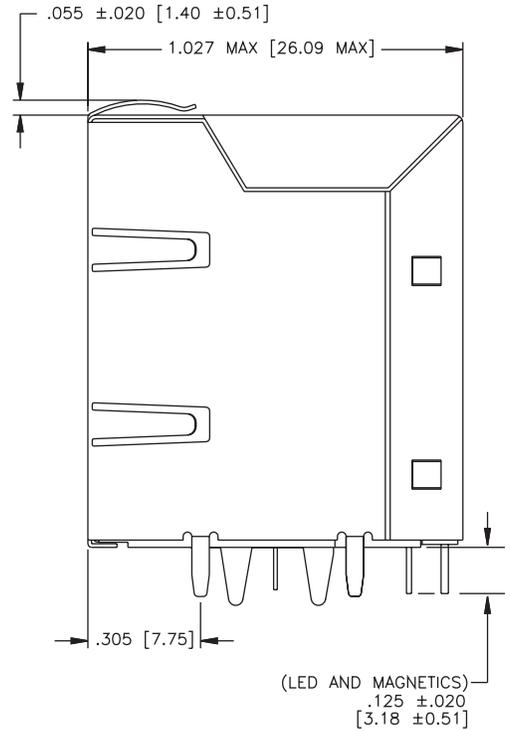
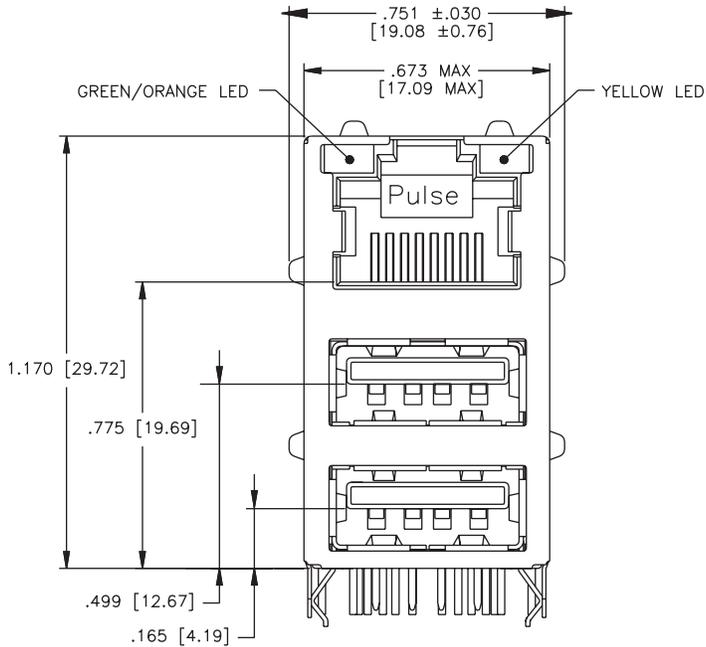
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China 86 755 33966678

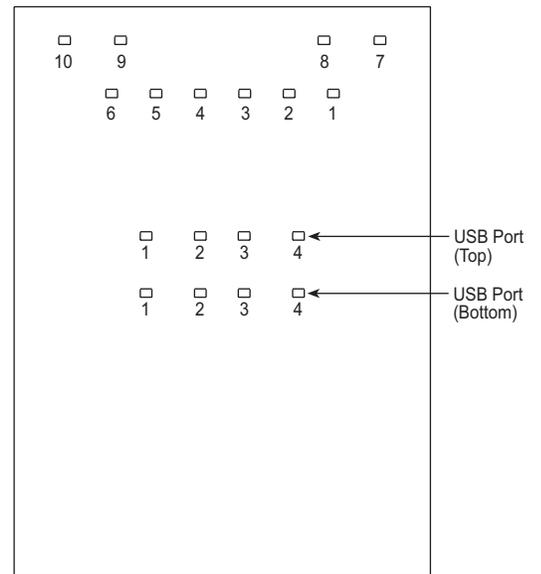
Taiwan 886 3 4356768

## Mechanicals

JY0-0016NL



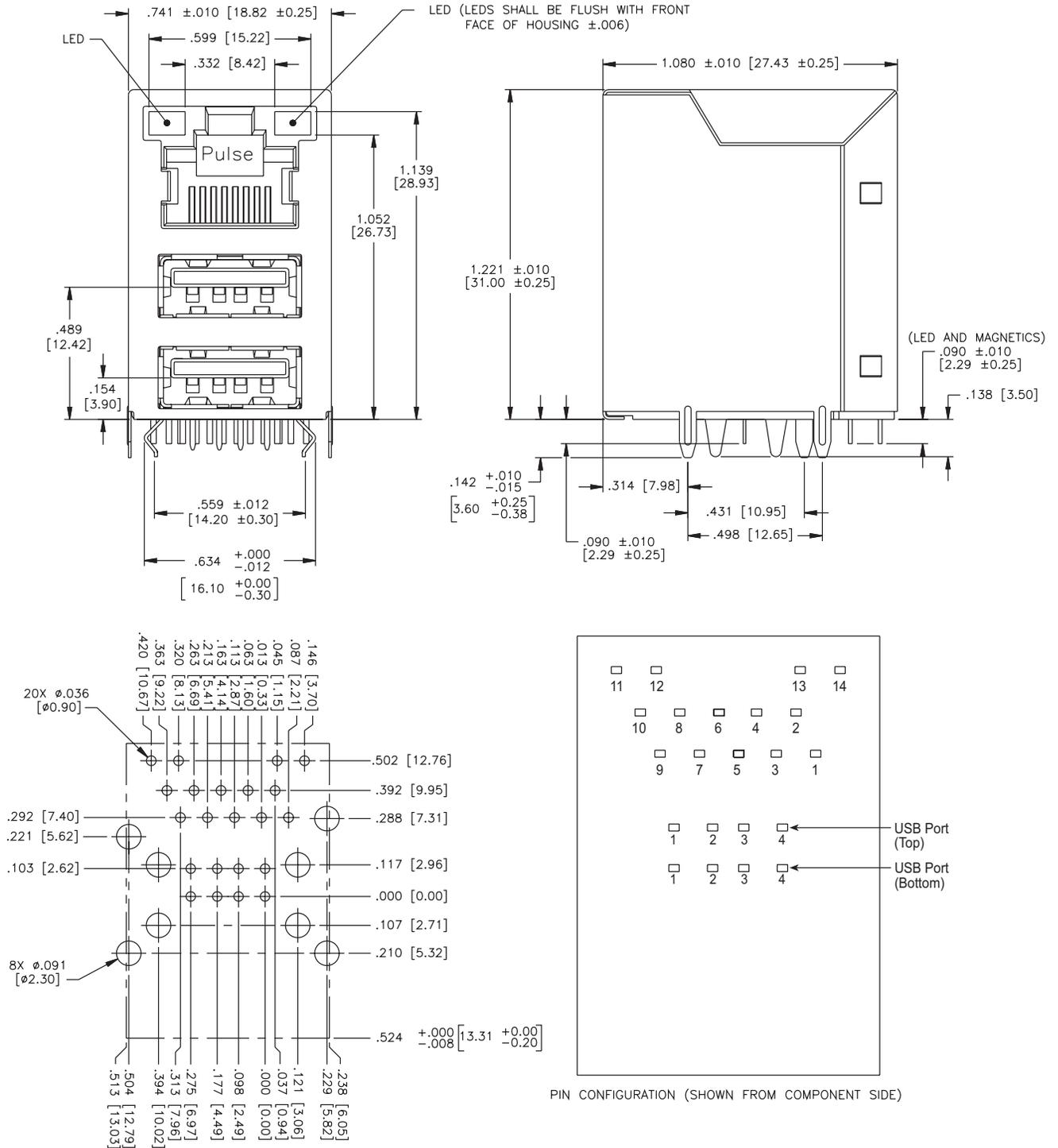
SUGGESTED FOOTPRINT (SHOWN FROM COMPONENT SIDE)  
DIMENSIONAL TOLERANCE: INCHES [METRIC]  
.XXX ±.003 [X.XX ±0.08]



PIN CONFIGURATION (SHOWN FROM COMPONENT SIDE)

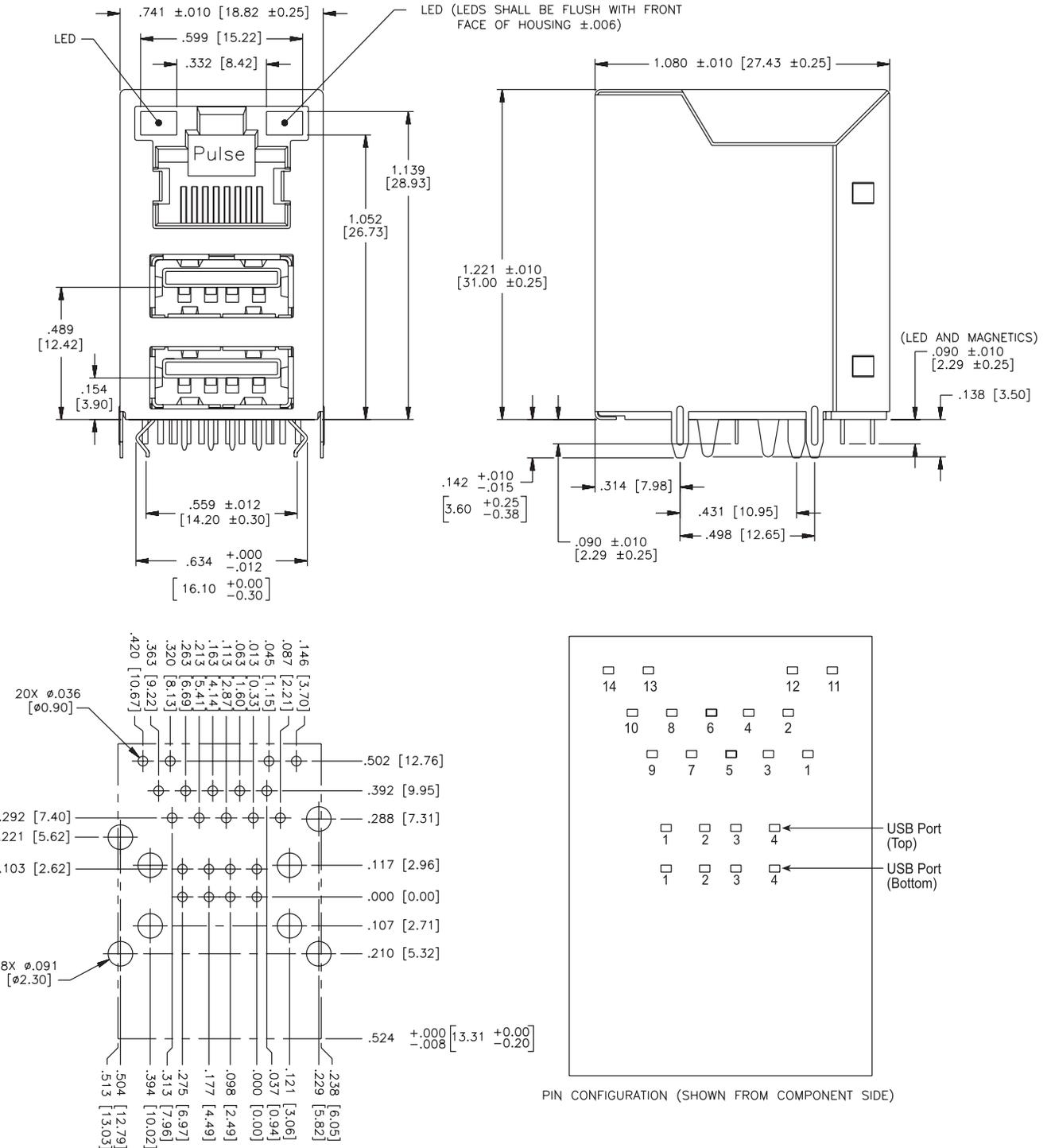
## Mechanicals

JW0-0006NL, JW0-0009NL



## Mechanicals

JWO-0013NL



SUGGESTED FOOTPRINT (SHOWN FROM COMPONENT SIDE)

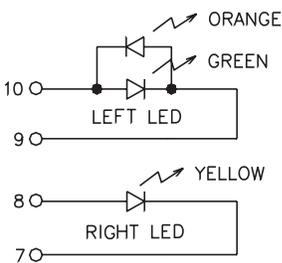
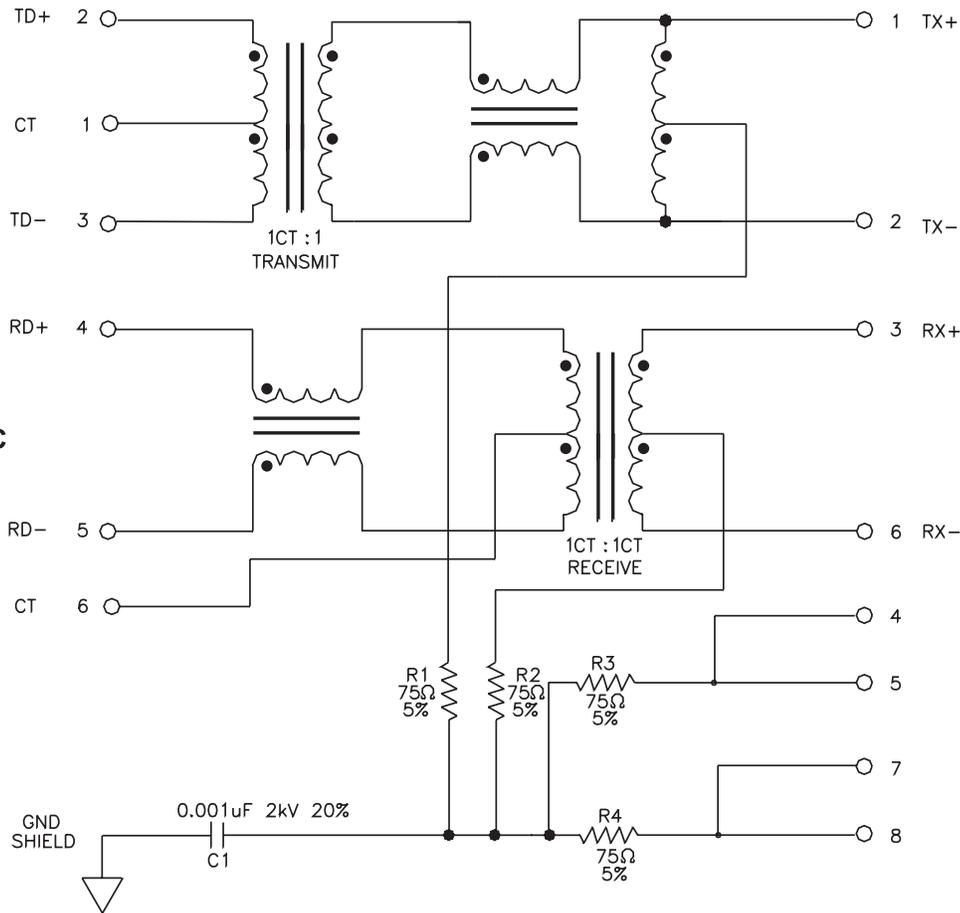
DIMENSIONAL TOLERANCE: INCHES [METRIC]  
.XXX ±0.003 [X.XX ±0.08]

Schematic

JY0-0016NL

PCB connections to the Physical Layer IC

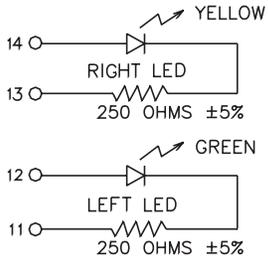
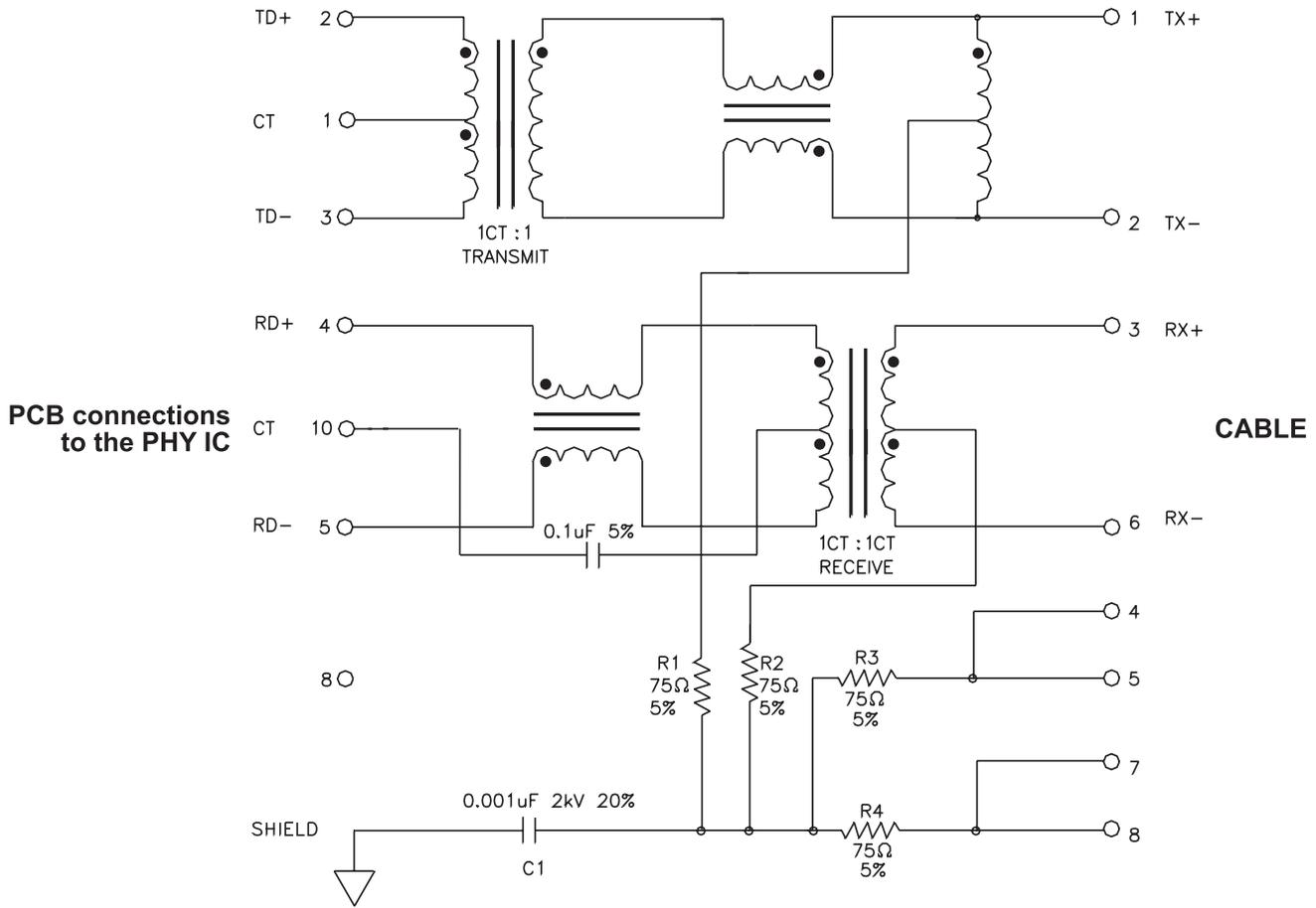
CABLE



| STANDARD LED | WAVE * LENGTH | V(MAX) | I <sub>F</sub> @5V |       |
|--------------|---------------|--------|--------------------|-------|
|              |               |        | (TYP)              | (MAX) |
| YELLOW       | 585 nm        | 5 V    | 10 mA              | 15 mA |
| GREEN/ORANGE | 568/610 nm    | 5 V    | 10 mA              | 15 mA |

Schematic

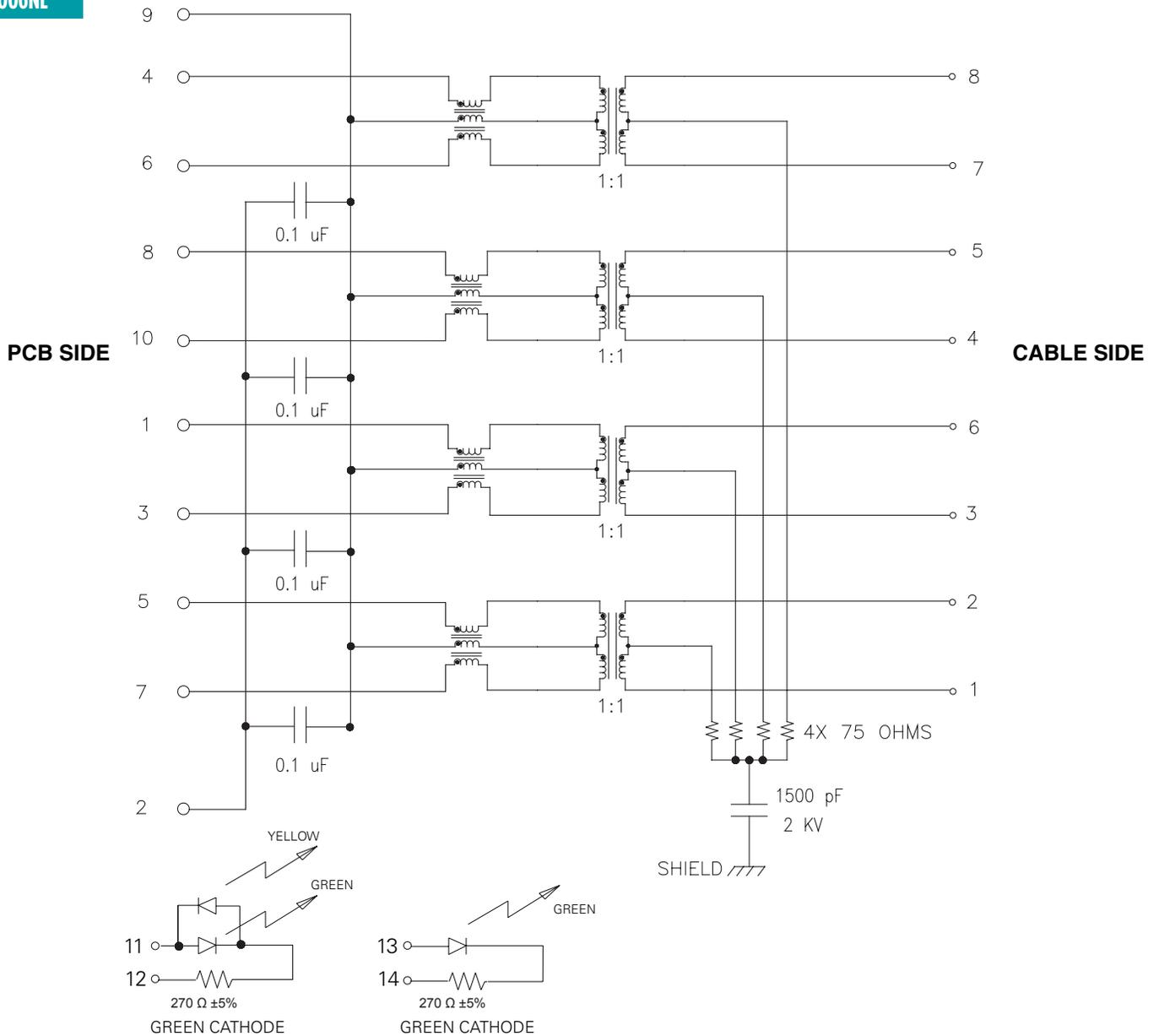
JW0-0009NL



| STANDARD LED | WAVE LENGTH* | V(MAX) | I <sub>F</sub> @5V<br>(TYP) (MAX) |       |
|--------------|--------------|--------|-----------------------------------|-------|
| YELLOW       | 585 nm       | 5 V    | 10 mA                             | 15 mA |
| GREEN        | 565 nm       | 5 V    | 10 mA                             | 15 mA |

Schematic

JW0-0006NL

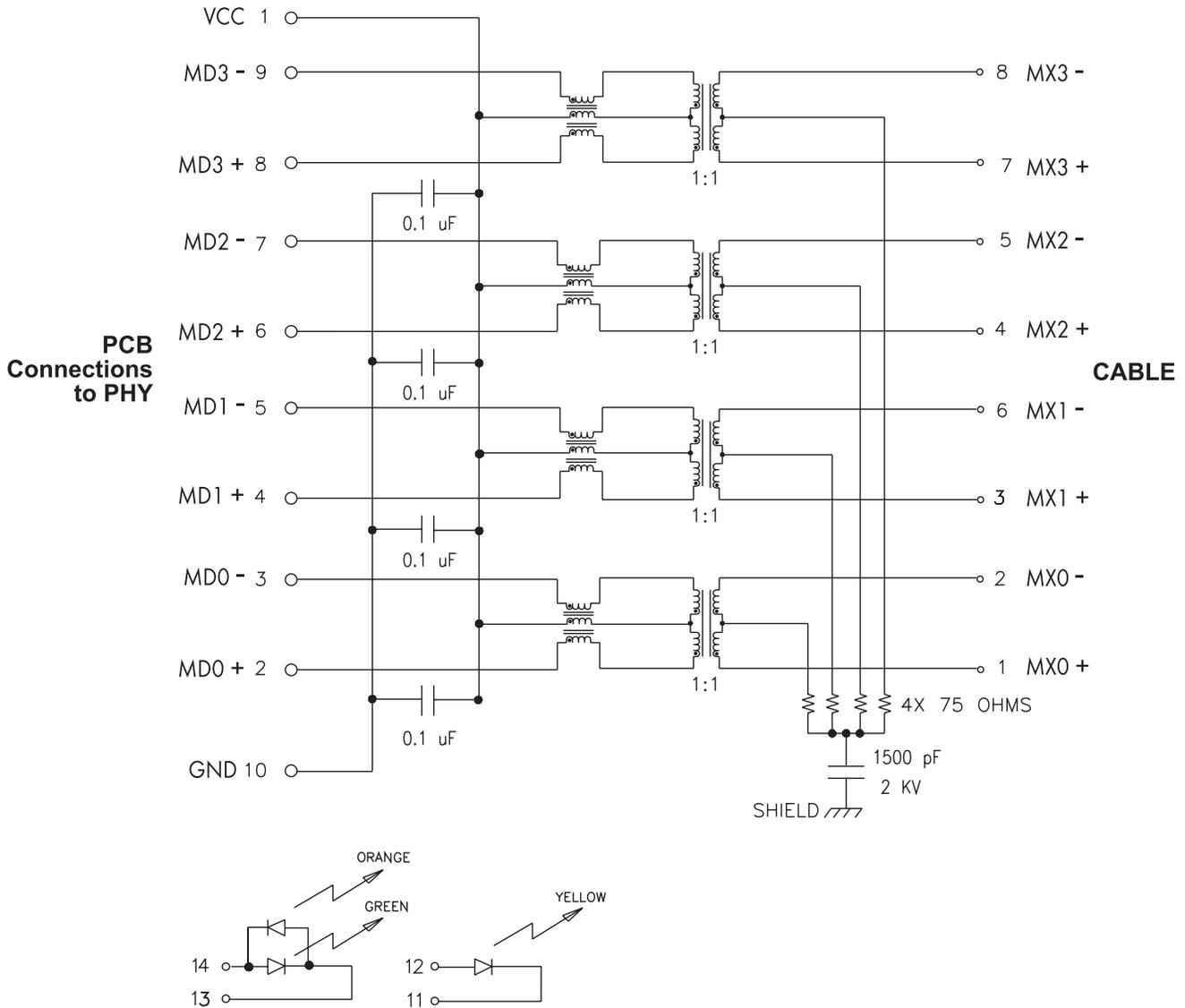


JW0-0006 NL LEDs

| STANDARD LED | WAVE LENGTH* | V(MAX) | I <sub>F</sub> @5V |       |
|--------------|--------------|--------|--------------------|-------|
|              |              |        | (TYP)              | (MAX) |
| GREEN/YELLOW | 568/590 nm   | 5 V    | 10 mA              | 15 mA |
| GREEN        | 565 nm       | 5 V    | 10 mA              | 15 mA |
| YELLOW       | 585 nm       | 5 V    | 10 mA              | 15 mA |
| GREEN/ORANGE | 568/610 nm   | 5 V    | 10 mA              | 15 mA |

Schematic

JW0-0013NL



JW0-0013NL LEDs

| STANDARD LED | WAVE * LENGTH | V(MAX) | I <sub>F</sub> @5V |       |
|--------------|---------------|--------|--------------------|-------|
|              |               |        | (TYP)              | (MAX) |
| GREEN/YELLOW | 568/590 nm    | 5 V    | 10 mA              | 15 mA |
| GREEN        | 565 nm        | 5 V    | 10 mA              | 15 mA |
| YELLOW       | 585 nm        | 5 V    | 10 mA              | 15 mA |
| GREEN/ORANGE | 568/610 nm    | 5 V    | 10 mA              | 15 mA |

# PulseJack™ RJ45/Dual USB Combo

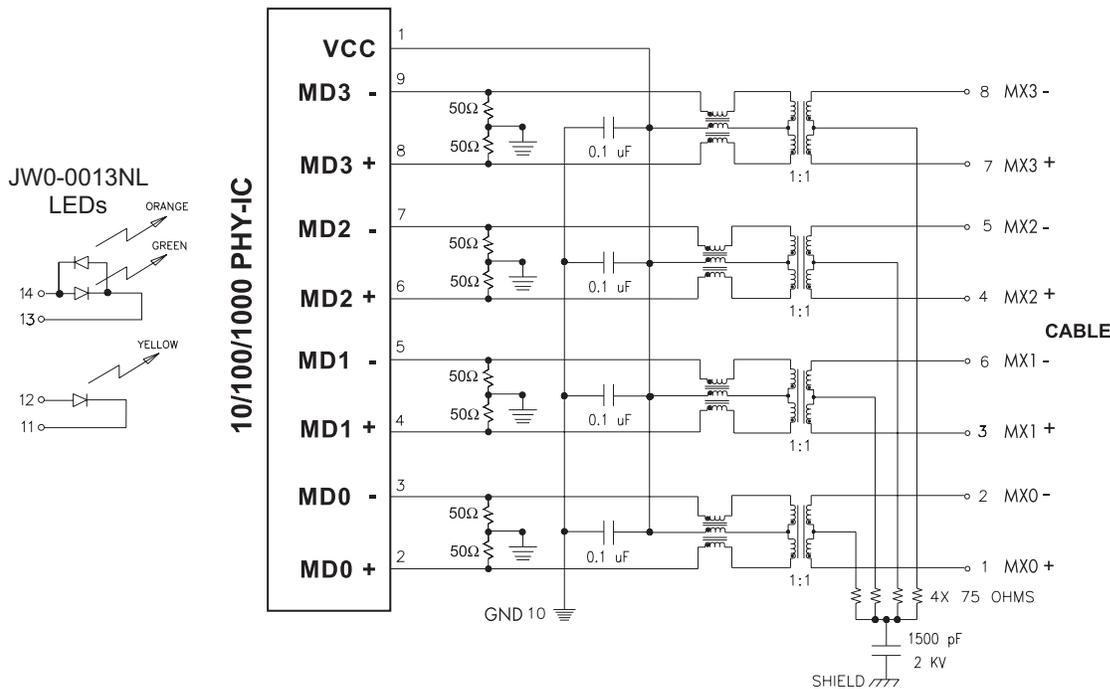
## USB/RJ45 Application Note

This line of Integrated Connector Modules are specifically designed for the implementation of a 10Base-T, 100Base-TX and 1000Base-TX transmission over data-grade unshielded twisted pair cable (UTP-3, 5/5e).

The connectors provide excellent EMI filtering and are suitable for Desktop PC, Embedded Systems and Multiport Applications. Pulse has worked closely with the leading IC manufacturers in

providing these 10/100/1000 solutions, thereby assuring compatibility with each transceiver.

JW0 and JY0 series meet the stringent open circuit inductance requirements of IEEE. When an 8mA DC current is applied across the transformer windings, the transformer will provide at least 350µH. The transformers used in each module also provide 1500Vrms minimum isolation, wide bandwidth with minimal attenuation and fast rise times to minimise system level jitter.



### PCB Layout Recommendations:

1. For maximum EMI suppression (electromagnetic interference) place the decoupling capacitors adjacent to Vcc and 50W connections.
2. Connections to ground should be as short as possible.
3. Connections between the 10/100/1000 IC and the connector should be direct (ideally no change in direction) and of minimum length.

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