

# 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             | Insertion Loss TX/RX (dB MAX) | Return Loss @ 100Ω ±15Ω (dB TYP) |        |           |          | Cross talk (dB MIN) |            |          | Common Mode Rejection (dB TYP) |             | Hipot (Vrms) (MIN) |
|----------------------------|-------------|--------------|-------|------------------|-------------------------------|----------------------------------|--------|-----------|----------|---------------------|------------|----------|--------------------------------|-------------|--------------------|
|                            |             | TX           | RX    | L/R              | 1-65 MHz                      | 1-10 MHz                         | 30 MHz | 60-80 MHz | 1-10 MHz | 32-60 MHz           | 60-100 MHz | 1-50 MHz | 50-130 MHz                     | @60Hz 1 MIN |                    |
| 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 (MAX) | Unmating Force (MAX) | Durability     | Plug to Jack Retention (MIN) |
|--------------|--------------------|----------------------|----------------|------------------------------|
| JW/JY Series | 5lbs./2.268kgs.    | 5lbs./2.268kgs.      | 500 Insertions | 20lbs./9.072kgs.             |

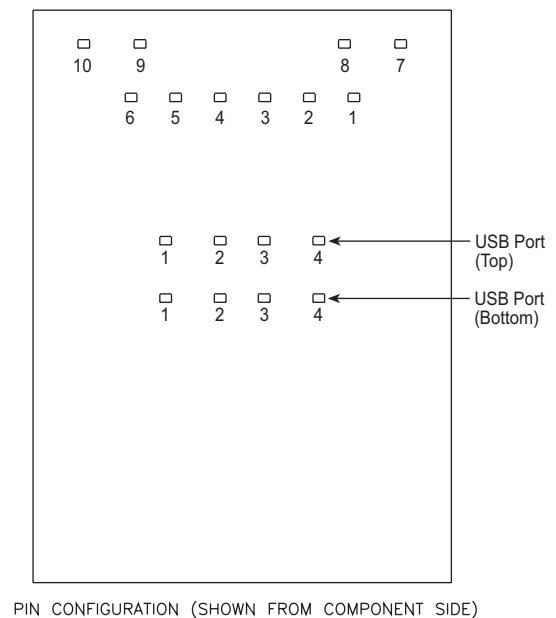
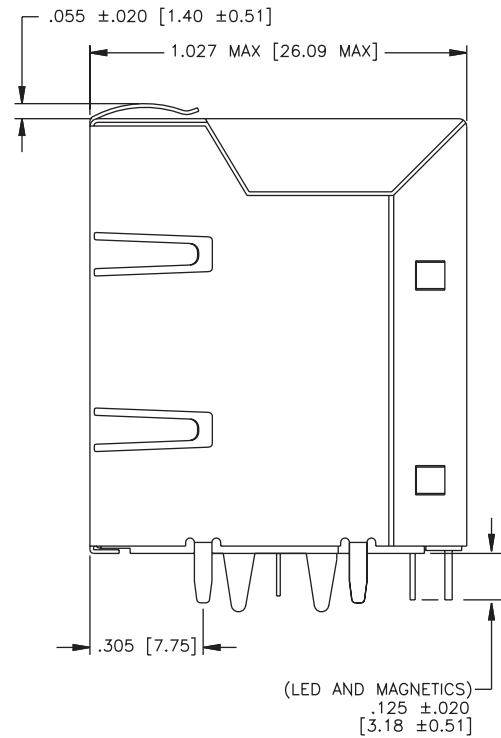
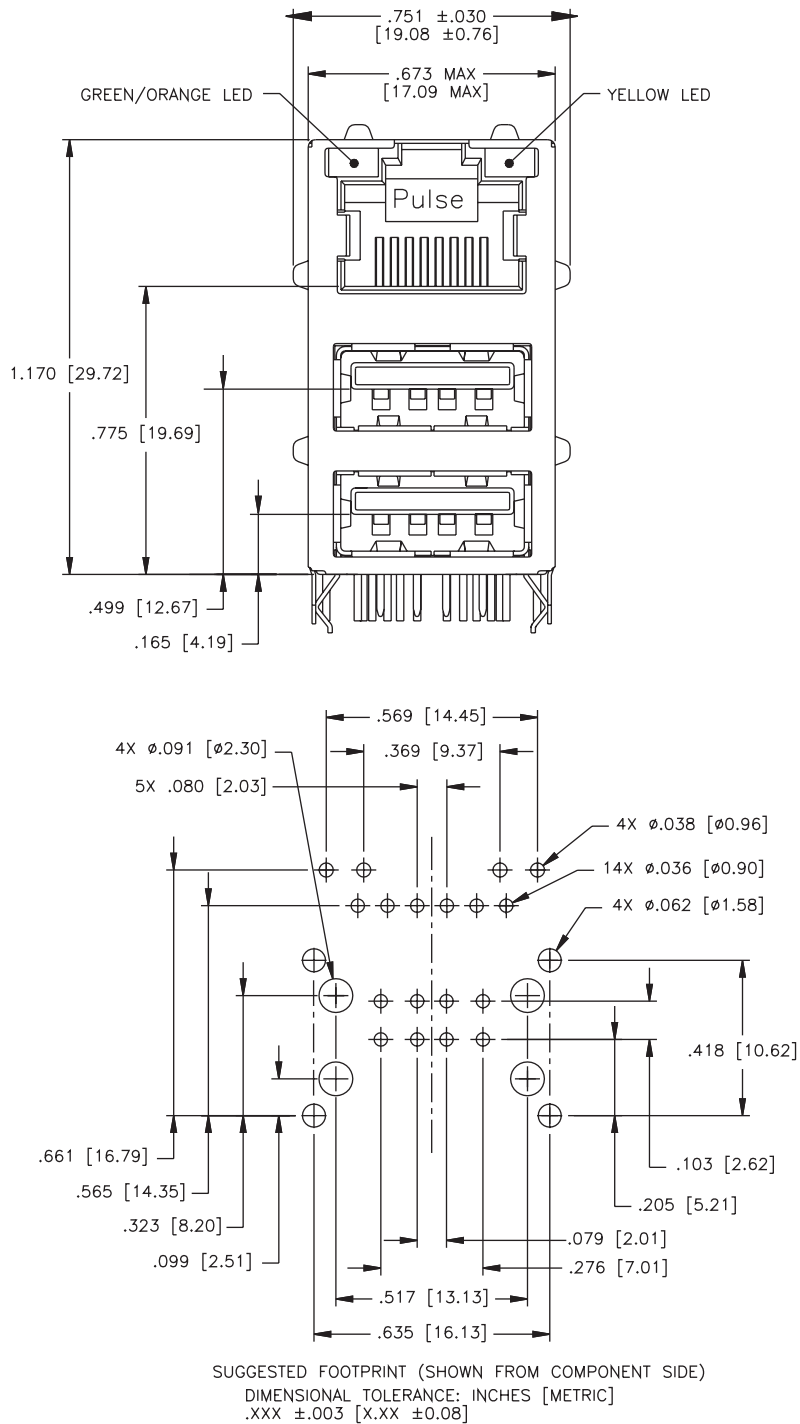
### RJ45 Material Specification

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

NOTES: 1. Connector dimensions comply with FCC dimension requirements. 2. MSL = Moisture Sensitivity Level

## Mechanical

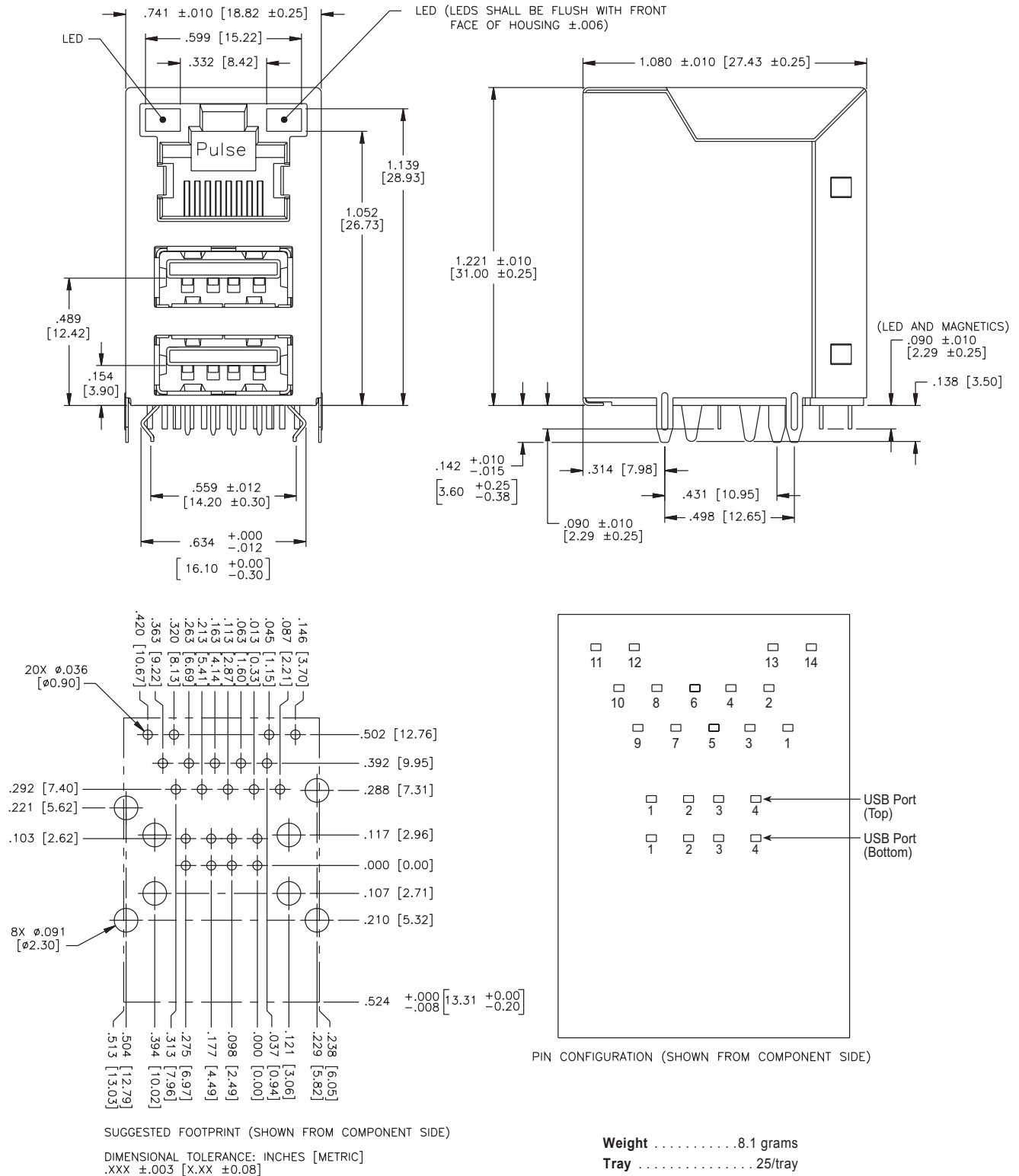
**JY0-0016NL**



**Weight** .....8.1 grams  
**Tray** ..... 25/tray

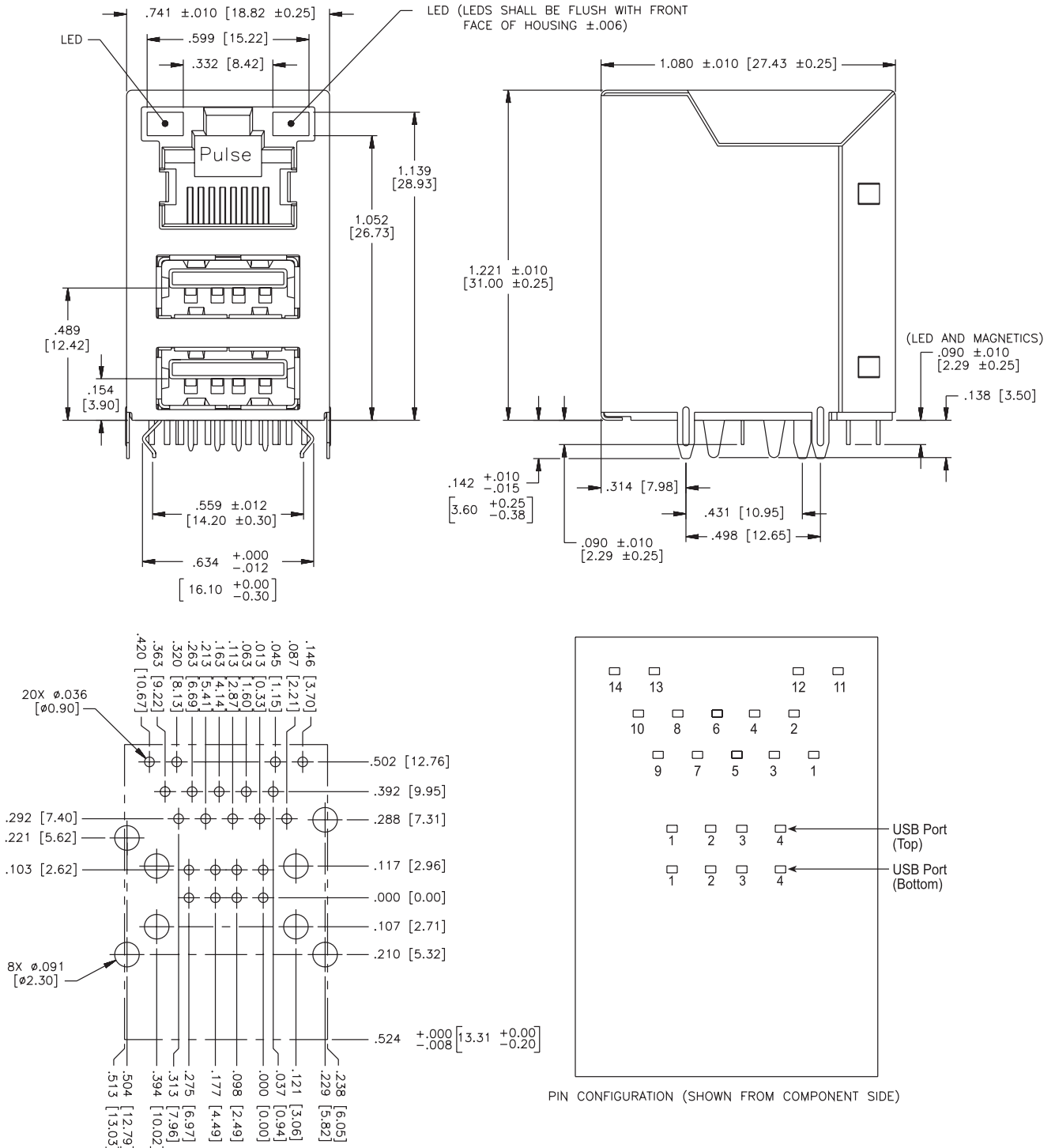
### Mechanical

#### JW0-0006NL, JW0-0009NL



### Mechanical

**JW0-0013NL**



SUGGESTED FOOTPRINT (SHOWN FROM COMPONENT SIDE)

DIMENSIONAL TOLERANCE: INCHES [METRIC]  
.XXX ±.003 [X.XX ±0.08]

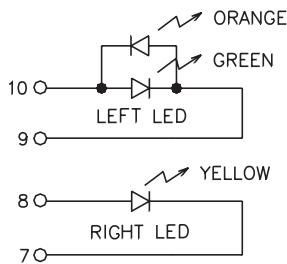
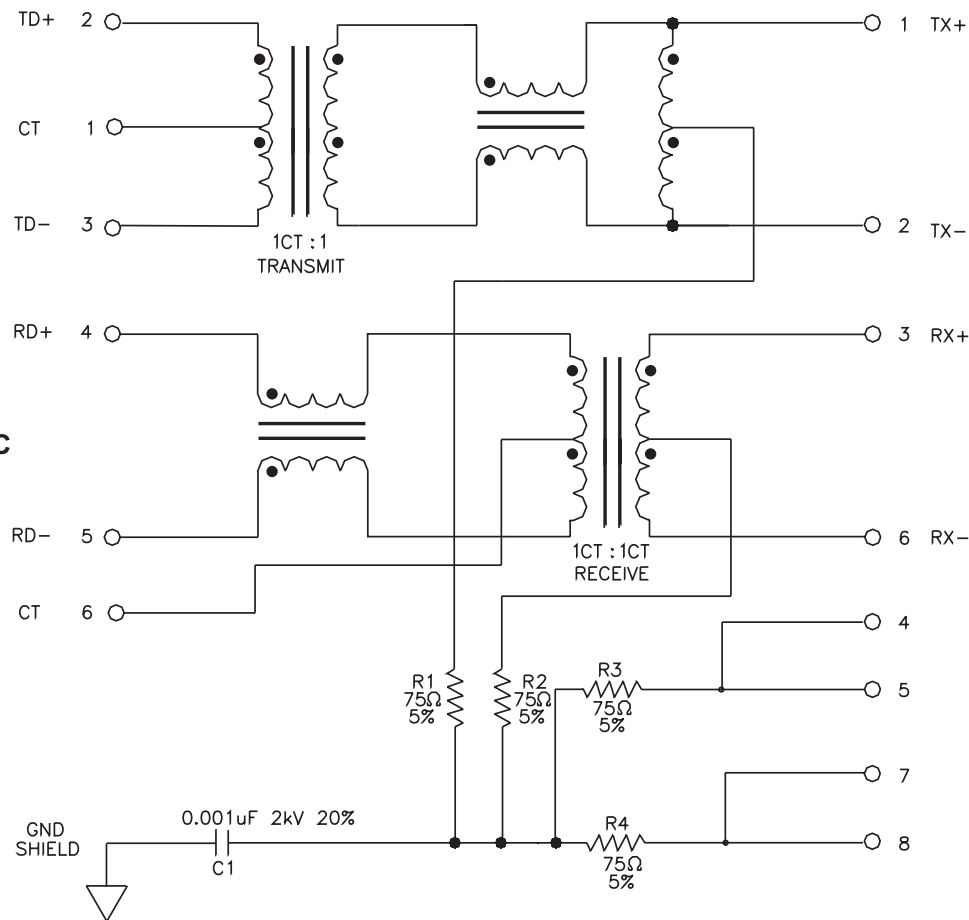
Weight ..... 8.1 grams  
Tray ..... 25/tray

Schematic

JY0-0016NL

PCB connections to  
the Physical Layer IC

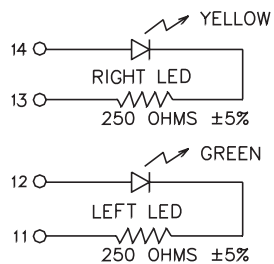
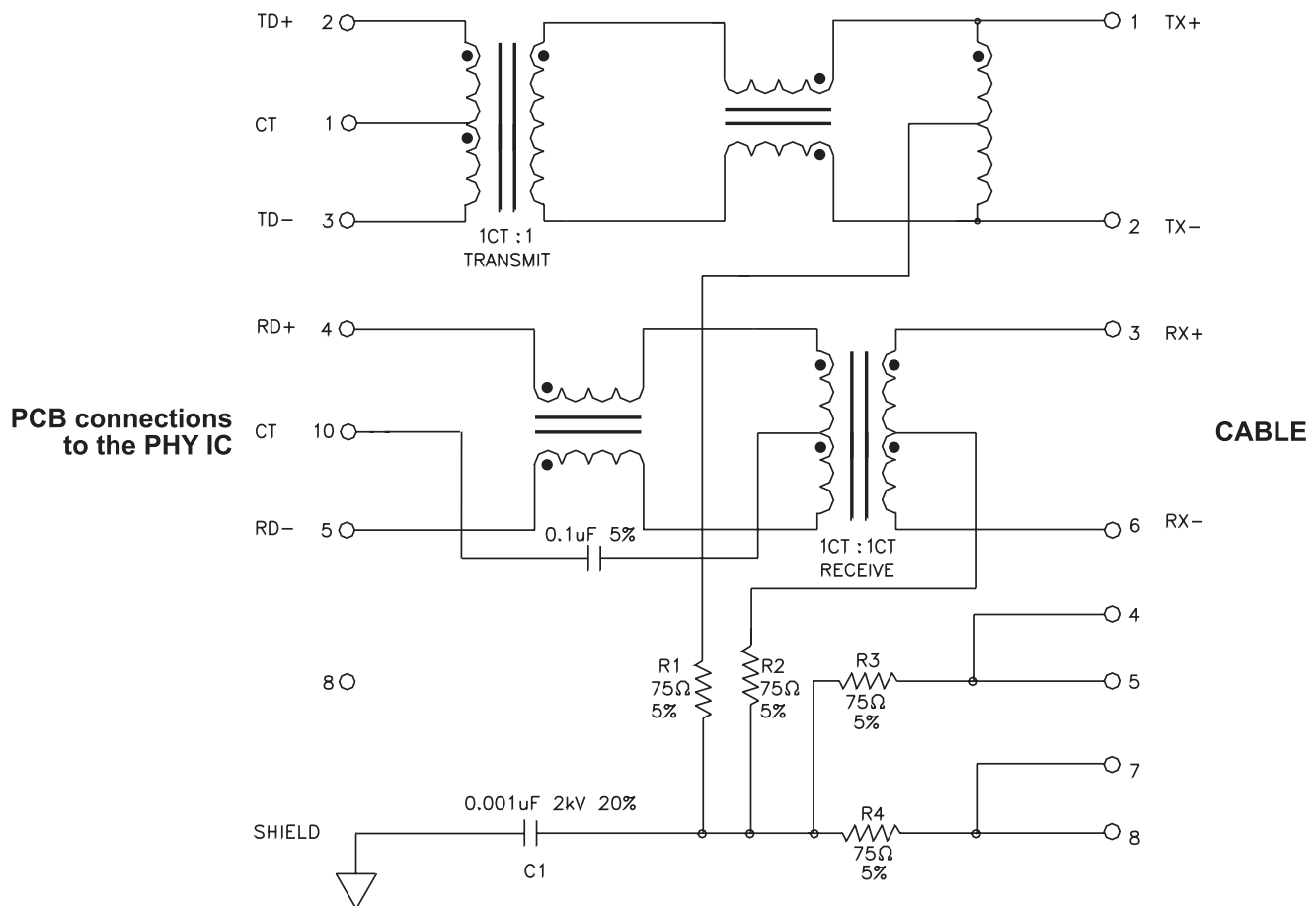
CABLE



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

### Schematic

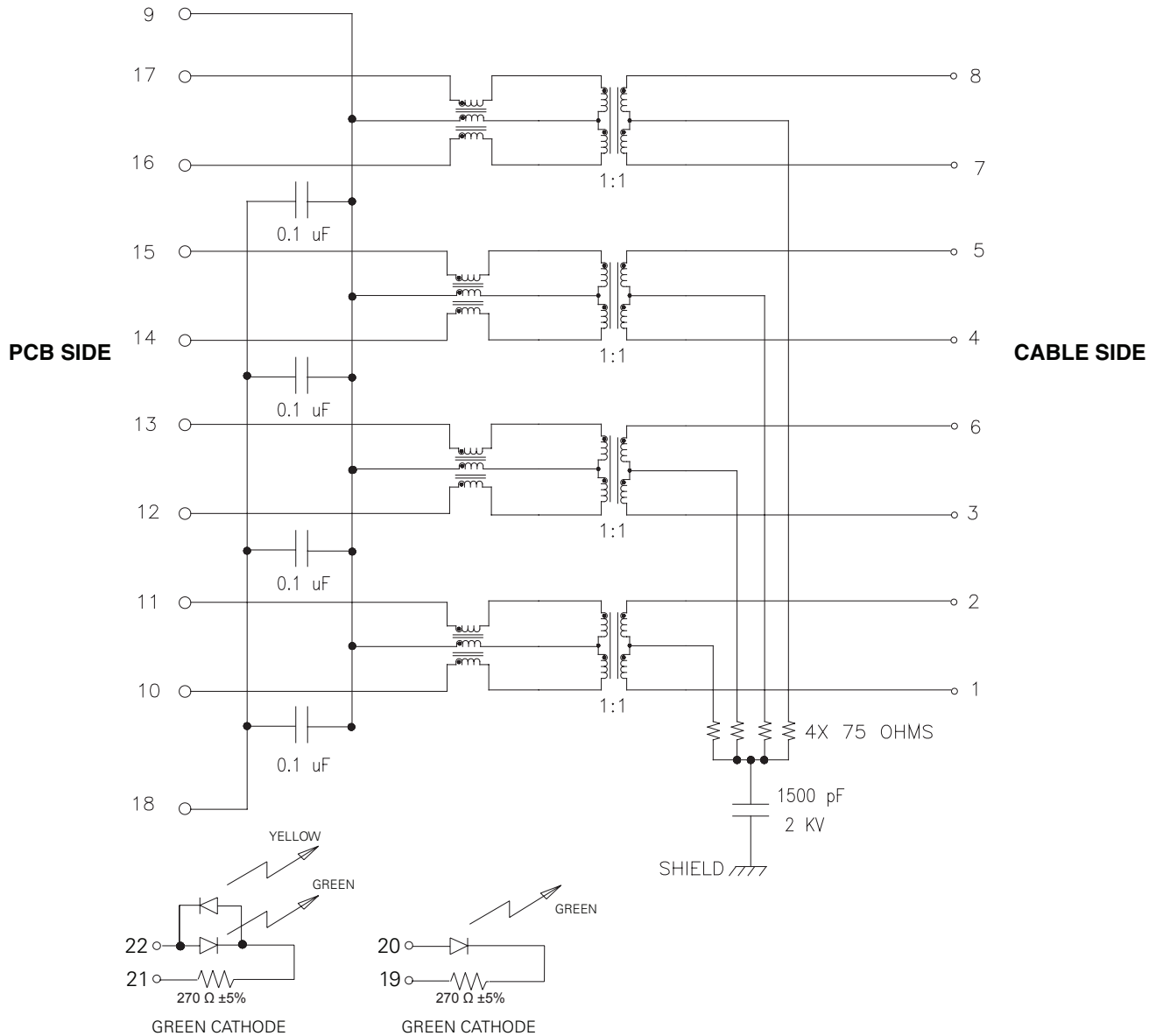
JW0-0009NL



| STANDARD LED | WAVE * LENGTH | V(MAX) | $I_F$ @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**

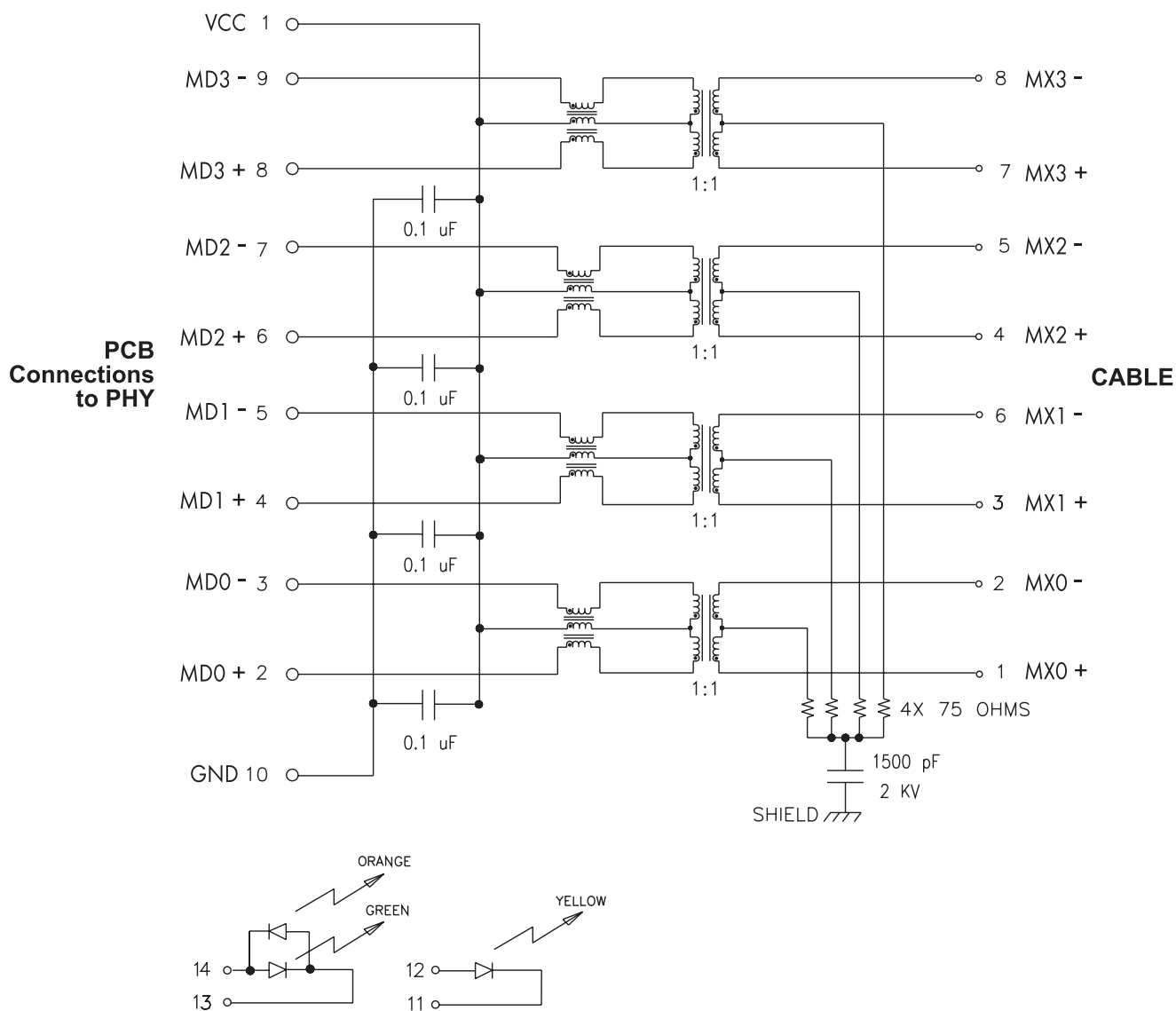


### JW0-0006 NL LEDs

| STANDARD LED | WAVE * LENGTH | V(MAX) | $I_F$ @5V<br>(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<br>(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 |

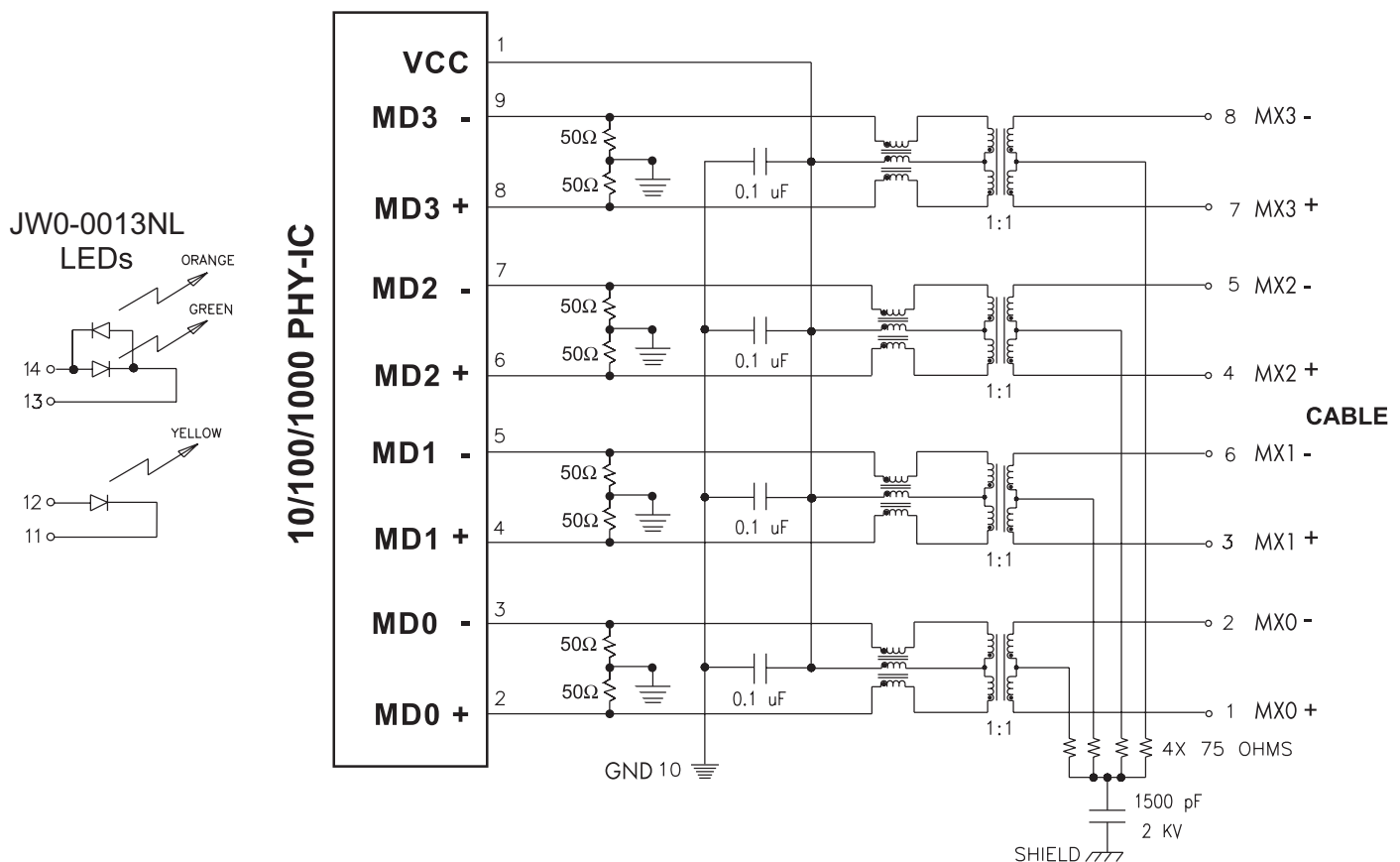
### USB/RJ45 Application Note

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 minimize system level jitter.



#### PCB Layout Recommendations:

1. For maximum EMI suppression (electromagnetic interference) place the decoupling capacitors adjacent to Vcc and 50Ω 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.

#### For More Information:

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