

# 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-5 peak wave solder temperature rating 235°C
- Ⓜ RoHS-6 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-6 <sup>3</sup> Compliant Part No.	RoHS-5 <sup>4</sup> Compliant Part No.	Data Rate	Turns Ratios		LEDs <sup>1</sup> L/R	Insertion Loss TX/RX (dB MAX)	Return Loss @ 100Ω ±15Ω (dB TYP)				Crosstalk (dB MIN)			Common Mode Rejection (dB TYP)		Hipot (Vrms) (MIN)
			TX	RX			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	
JW0-0009NL	JW0-0009	10/100	1CT:1	1CT:1	G/Y <sup>2</sup>	-1.0	-20	-16	-12	-40	-35	-30	-30	-20	1500	
JY0-0016NL	JY0-0016	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	JW0-0013	10/100/1000	1CT:1	1CT:1	G-O/Y	-1.0	-20	-16	-12	-40	-35	-30	-30	-20	1500	

#### NOTES:

1. LEDs Left/Right: G = green; Y = yellow; O = Orange.
2. G = Green with 250Ω internal resistor; Y = Yellow with 250Ω internal resistor.
3. **RoHS-6** - Product does not contain 5 out of the 6 banned substances specified in the RoHS directive. Some internal connections may contain lead in high temperature solder (solder alloys containing more than 85% lead).
4. **RoHS-5** - Product does not contain 5 out of the 6 banned substances specified in the RoHS directive. Product contains lead in applications considered as solders.

### 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.

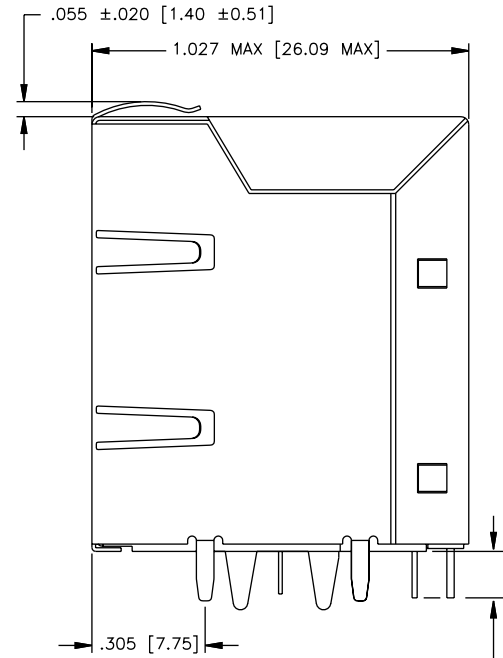
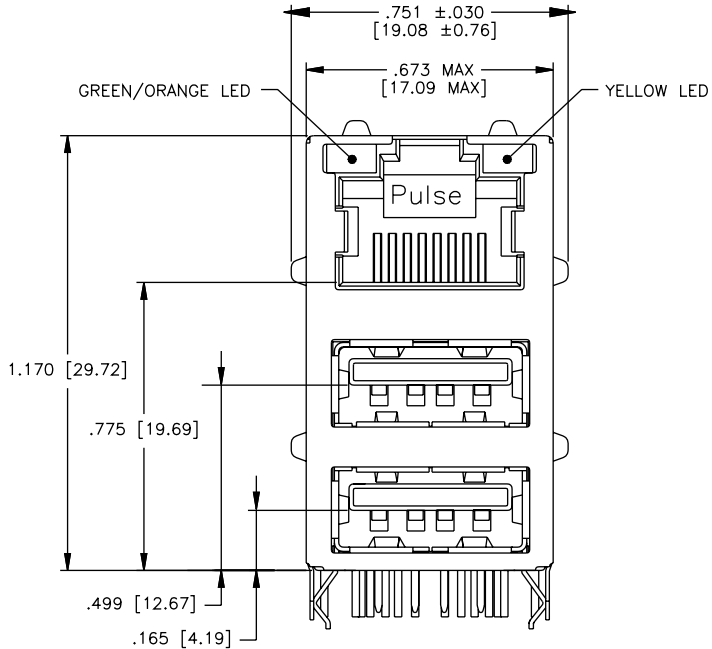
### RJ45 Material Specification

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

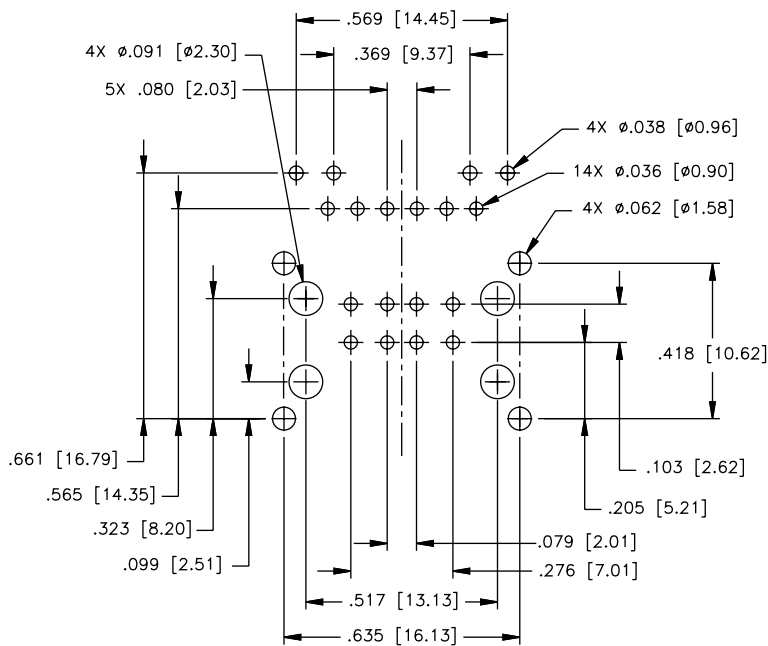
NOTES: 1. Connector dimensions comply with FCC dimension requirements. 2. MSL = Moisture Sensitivity Level 3. NL parts are tin matte finish over nickel.

### Mechanical

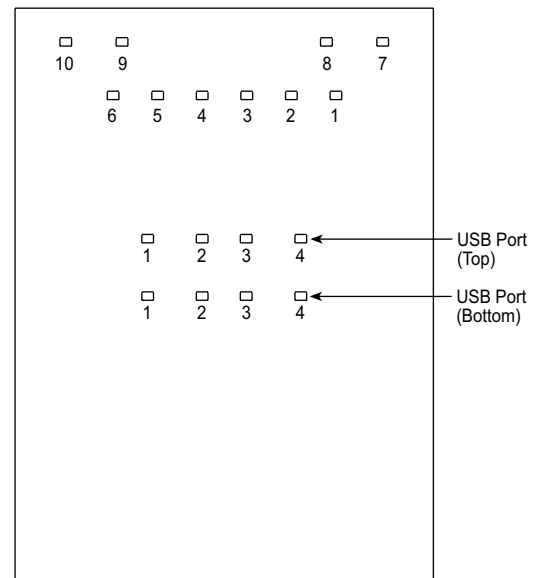
**JY0-0016**



(LED AND MAGNETICS)  
.125 ±0.020  
[3.18 ±0.51]



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

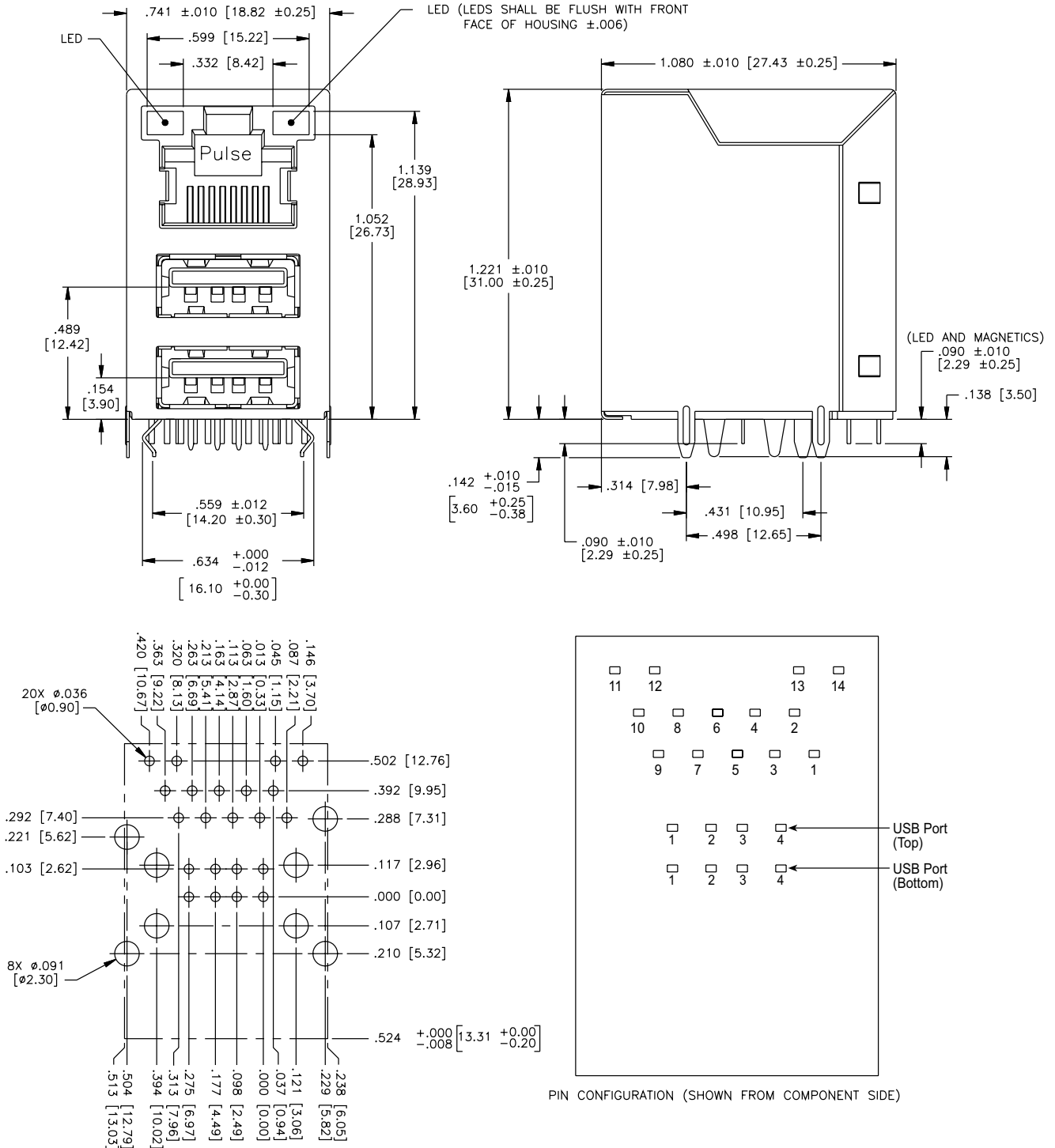


PIN CONFIGURATION (SHOWN FROM COMPONENT SIDE)

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

### Mechanical

#### JW0-0006, JW0-0009



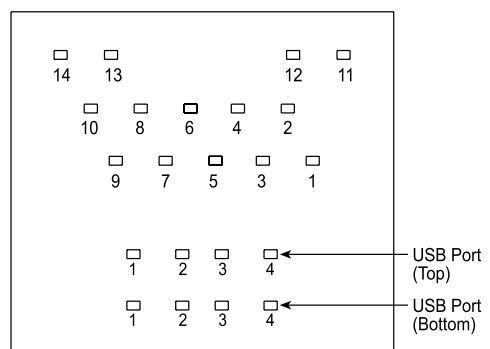
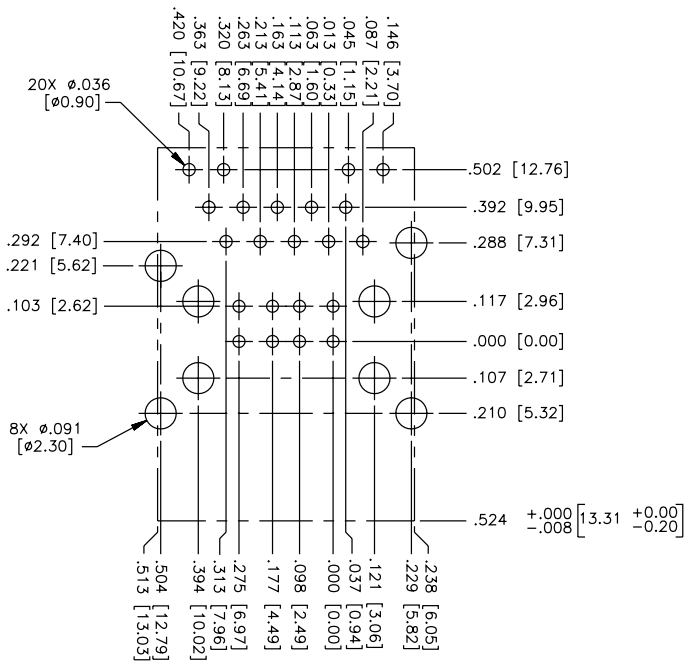
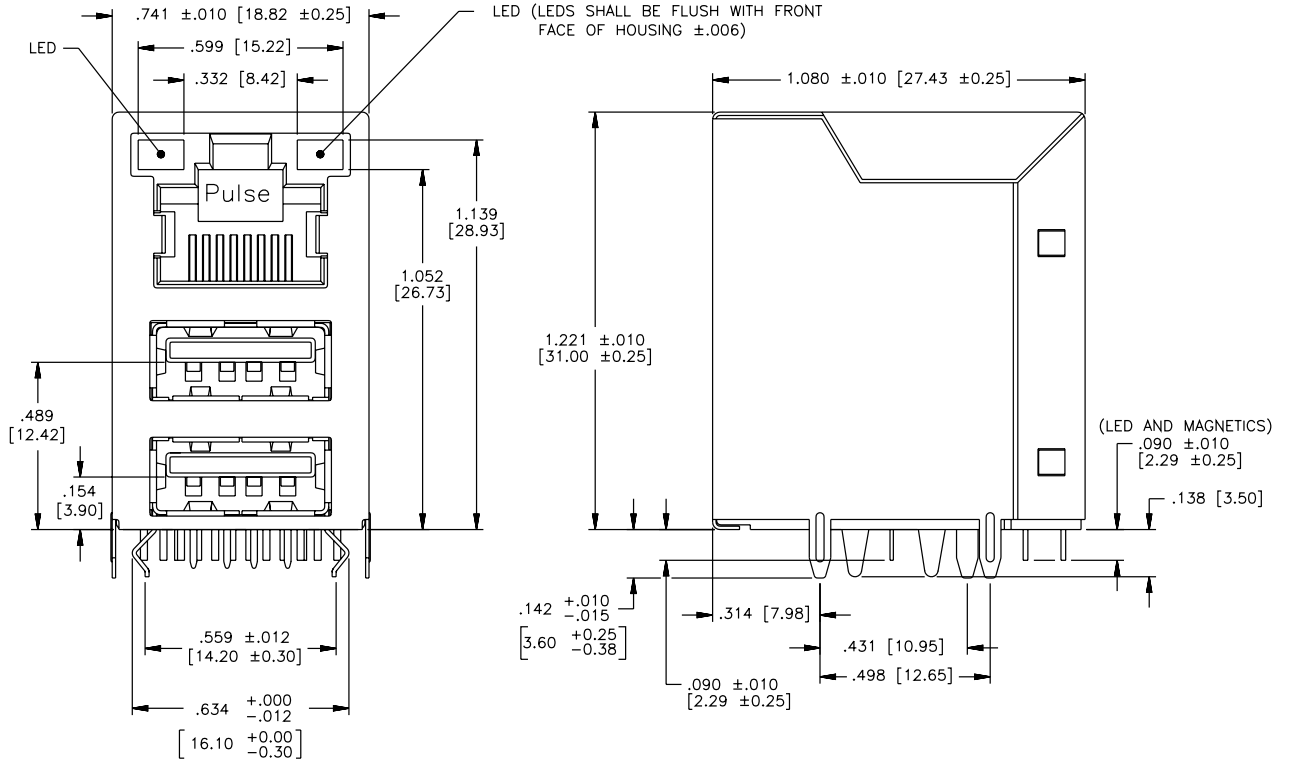
SUGGESTED FOOTPRINT (SHOWN FROM COMPONENT SIDE)

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

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

### Mechanical

**JW0-0013**



PIN CONFIGURATION (SHOWN FROM COMPONENT SIDE)

SUGGESTED FOOTPRINT (SHOWN FROM COMPONENT SIDE)

DIMENSIONAL TOLERANCE: INCHES [METRIC]

.XXX ±.003 [X.XX ±0.08]

Weight ..... 8.1 grams

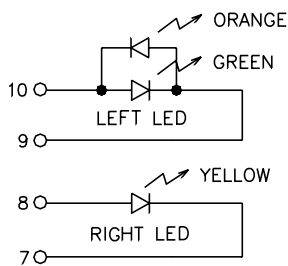
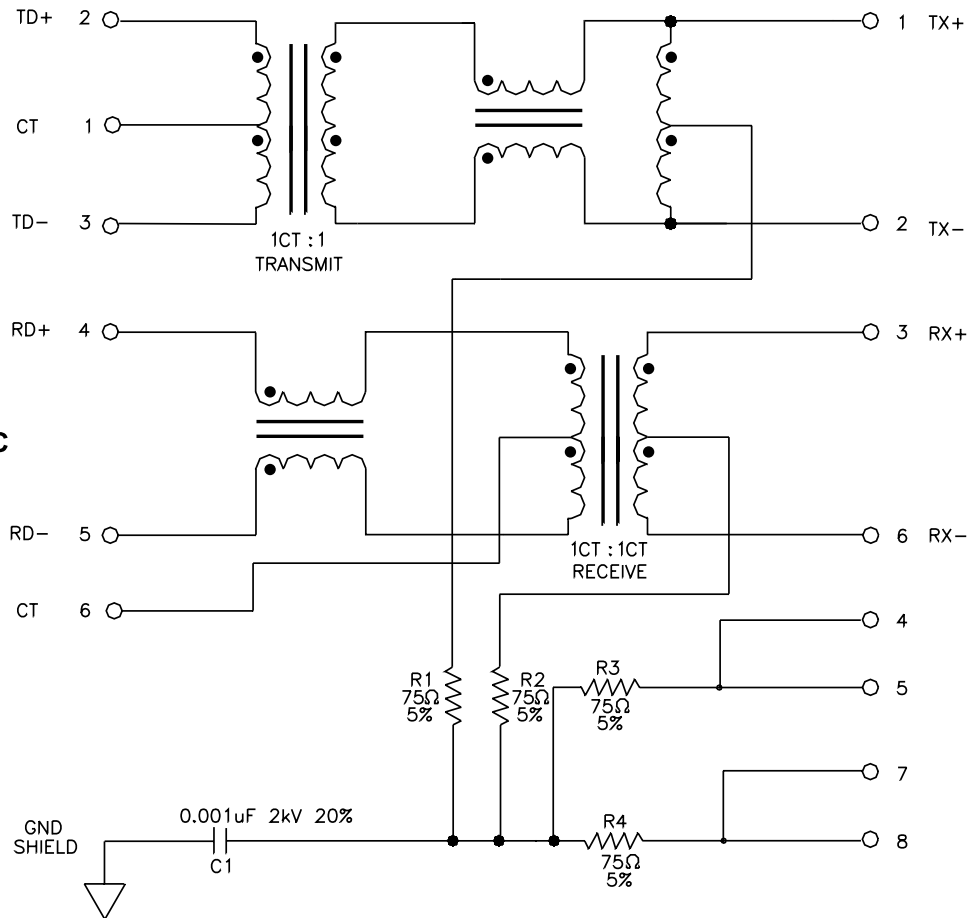
Tray ..... 25/tray

### Schematic

JY0-0016

PCB connections to the Physical Layer IC

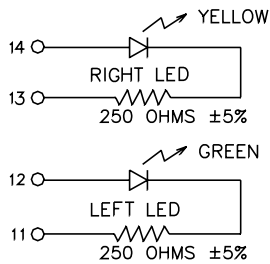
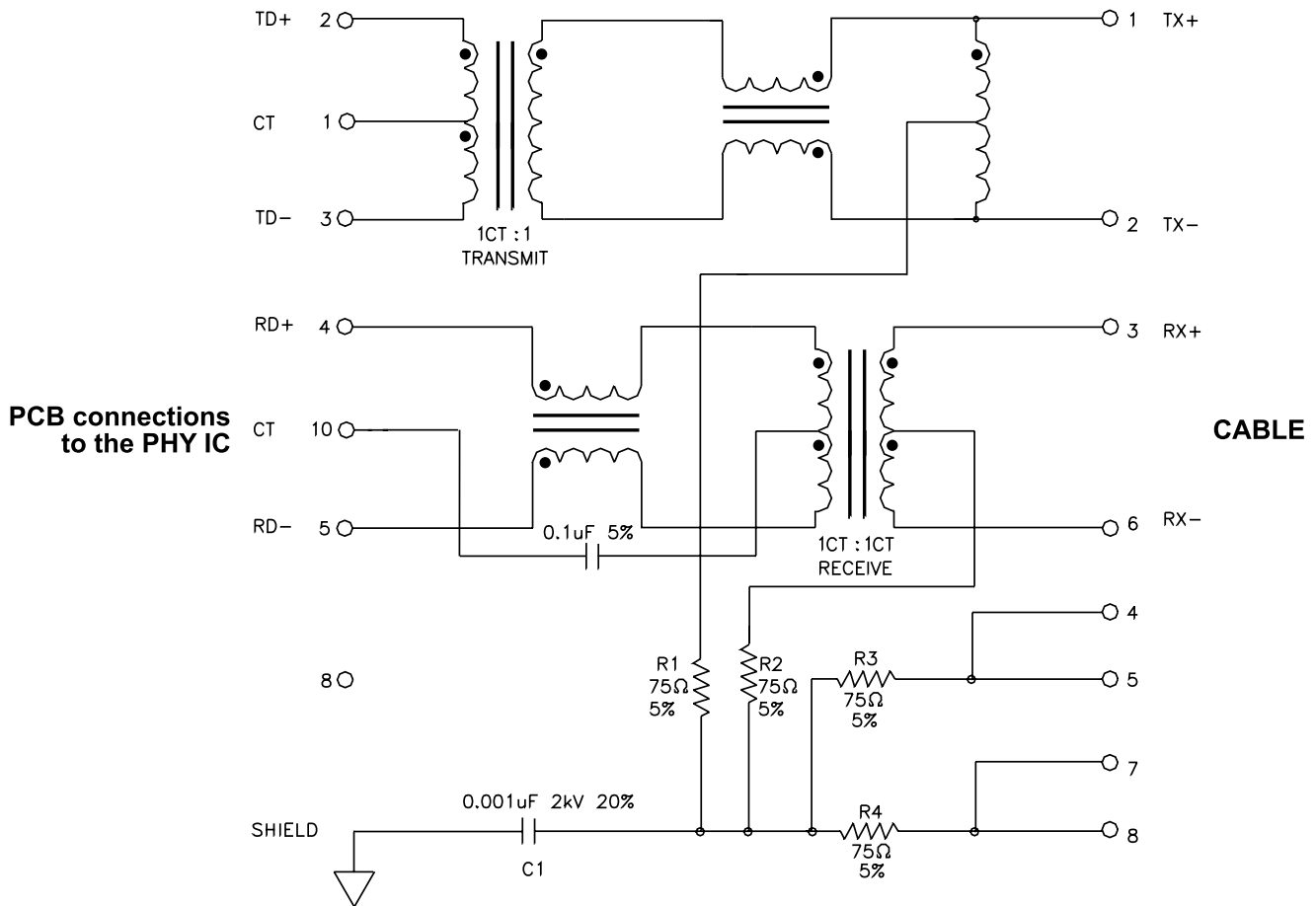
CABLE



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

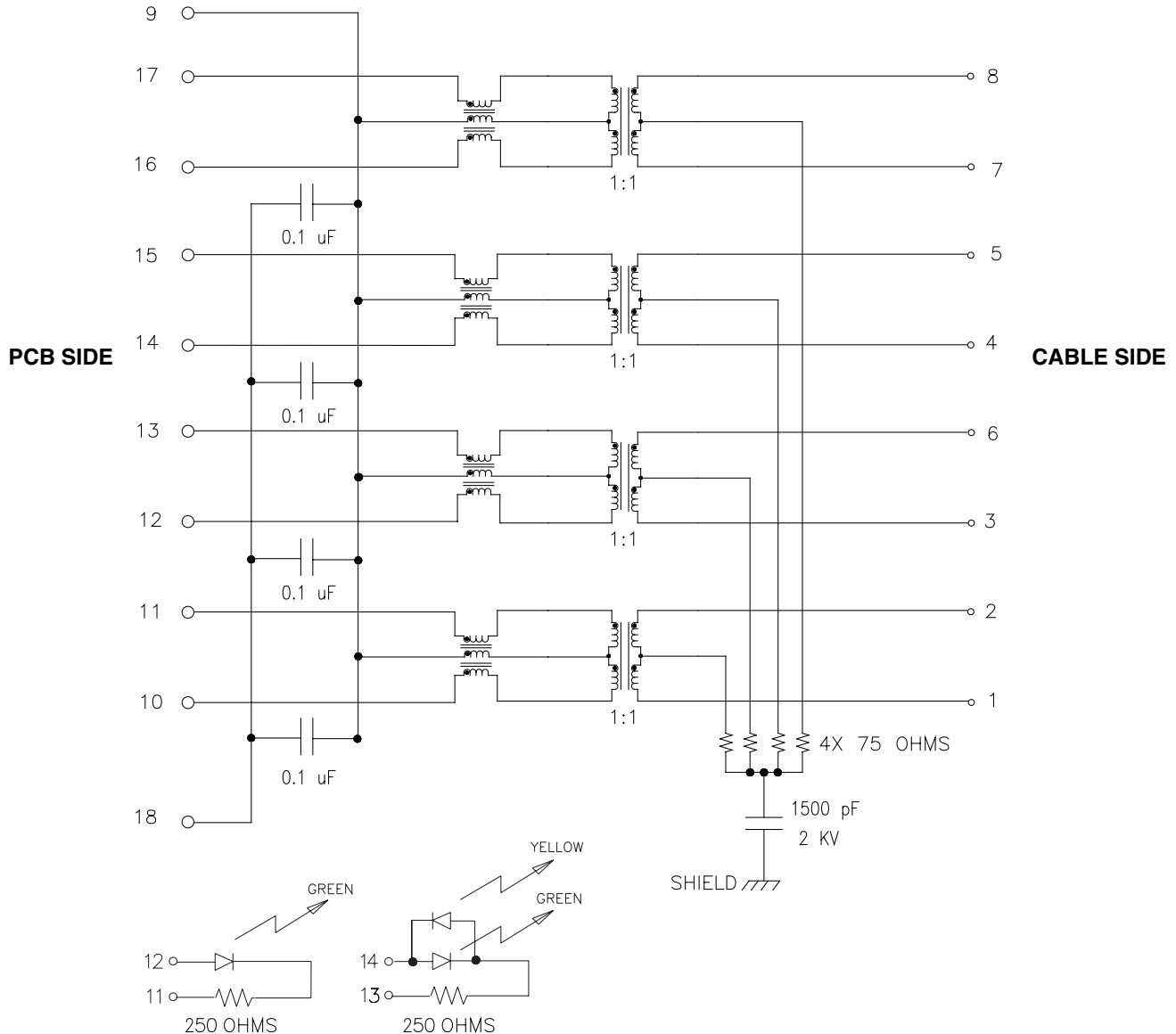
JW0-0009



STANDARD LED	WAVE * LENGTH	V(MAX)	$I_F @ 5V$ (TYP) (MAX)	
YELLOW	585 nm	5 V	10 mA	15 mA
GREEN	565 nm	5 V	10 mA	15 mA

### Schematic

**JW0-0006**

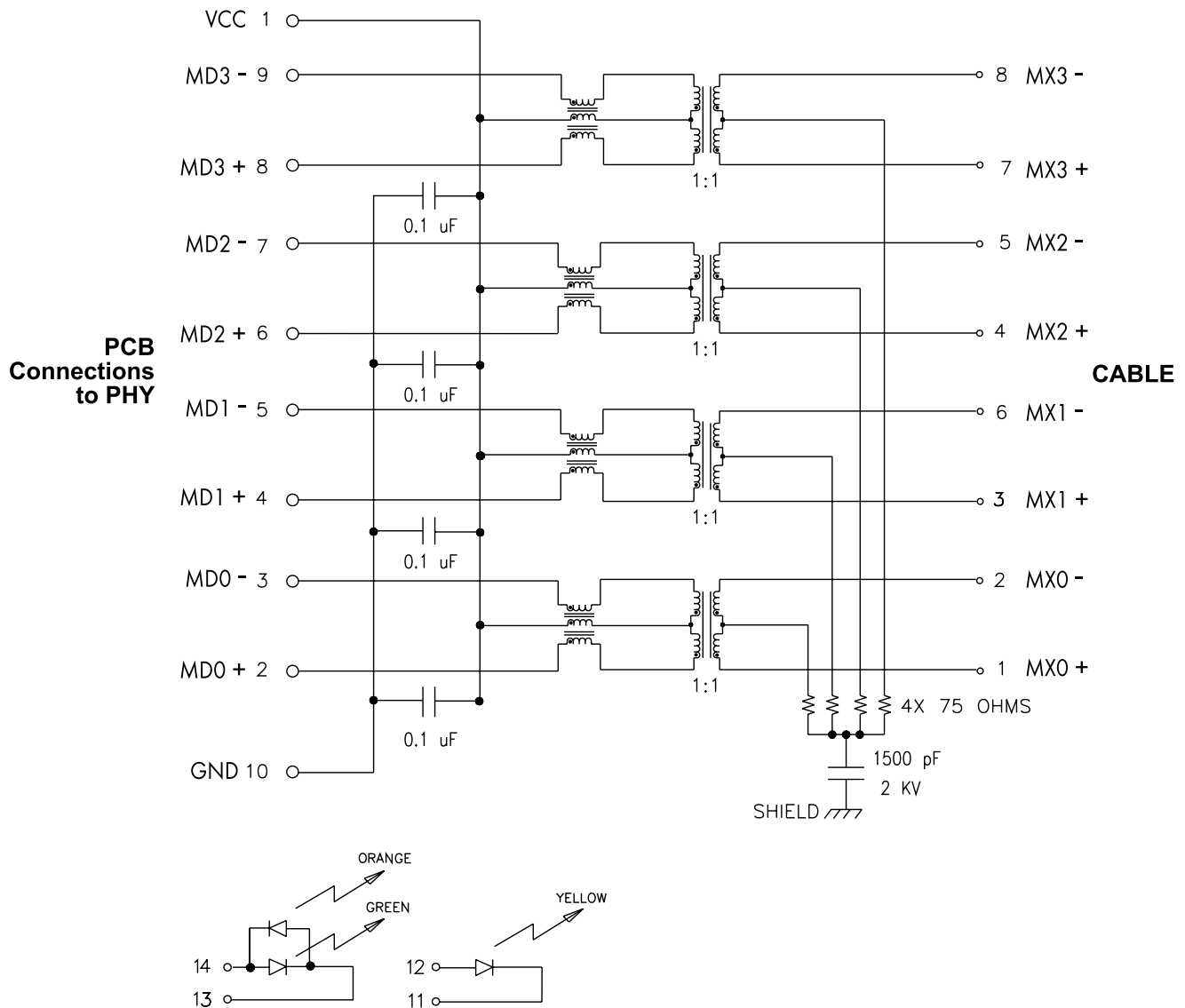


**JW0-0006 LEDs**

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

**JW0-0013**



### JW0-0013 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



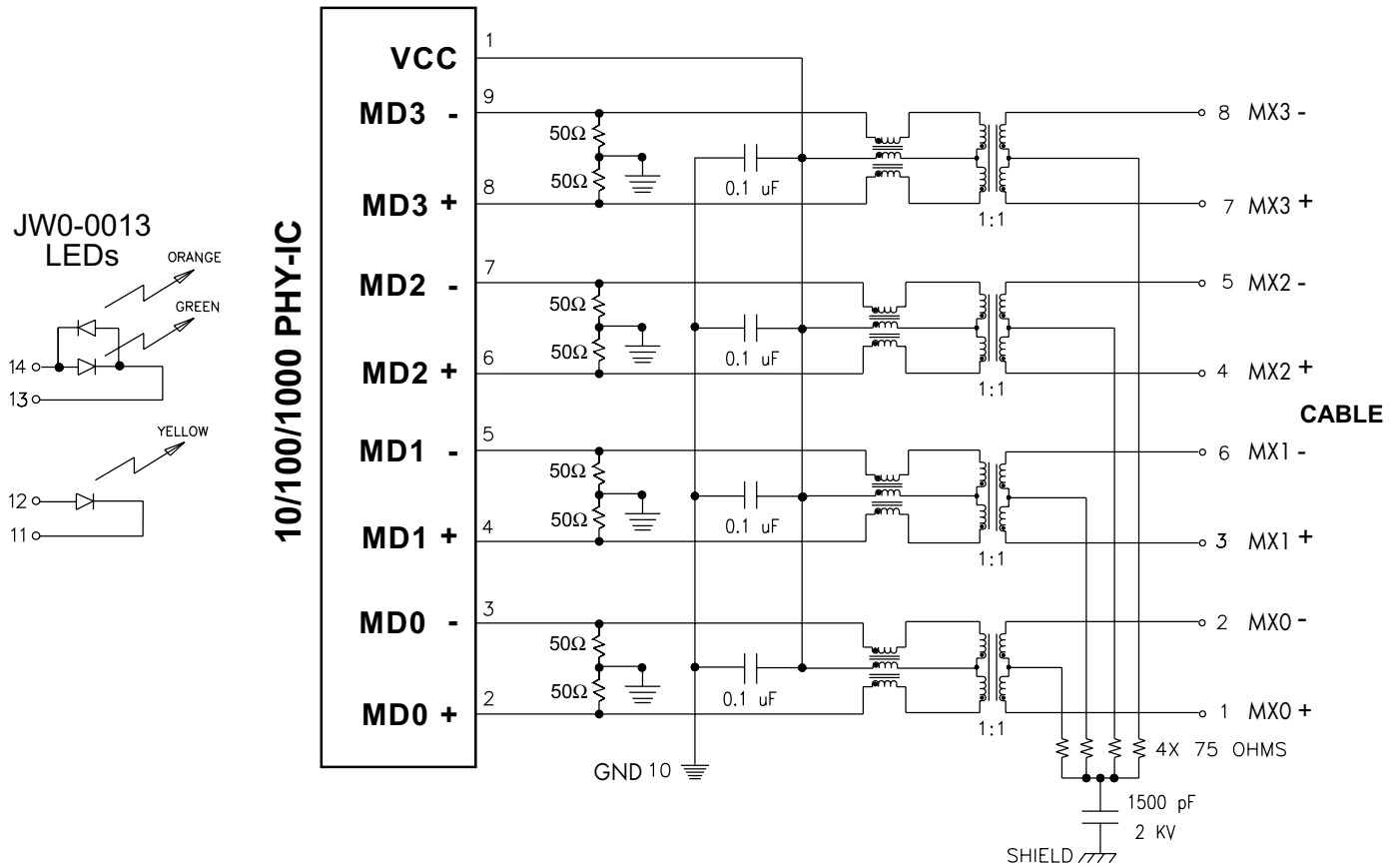
### USB/RJ45 Application Note

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:

- For maximum EMI suppression (electromagnetic interference) place the decoupling capacitors adjacent to Vcc and 50Ω connections.
- Connections to ground should be as short as possible.
- 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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