

# RJ45 SINGLE PORT 100/1000/2.5G/5G BASE-T MAGNETICS



21.30 x 15.90 x 13.60mm  
21.30 x 15.90 x 13.80mm

MSL = 1

RoHS/RoHS II Compliant

ARJM11

## SERIES DESCRIPTION

The ARJM11 series of RJ45 jacks with internal magnetics supports a wide range of configurations in 10/100Base-T, 1000Base-T, 2.5GBase-T and 5GBase-T applications. This series offers the ability to mix and match physical orientation of the tab, pin layouts, EMI fingers, LED colors and plating options while providing PoE and PoE+ options for 10/100Base-T rates. All configurations in the product series support paste in hole (PIH), a technology that allows through-hole components to be compatible with surface mount reflow assembly processes. All devices are rated to 0°C to 70°C or -40°C to 85°C operating temperature range.

## FEATURES

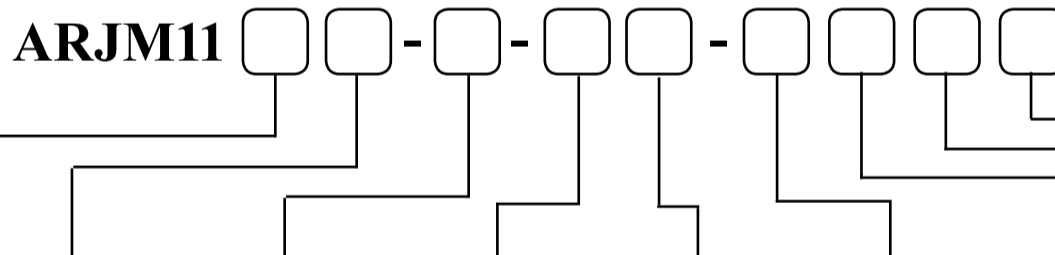
- 10/100Base-T, 1000Base-T, 2.5GBase-T or 5GBase-T
- Supports PoE and PoE+ (10/100Base-T)
- Compatible with surface mount with Paste in hole (PIH) technology
- -40°C to 85°C or 0°C to 70°C operating temperature range
- Combinations of green, yellow, orange, and red LED

## APPLICATIONS

- Internet of Things (Ethernet)
- IP cameras, surveillance, and phone
- Access points
- Industrial computers
- Network interface cards (NIC)
- Industrial process control
- Networking and communications
- Broadcast video
- Storage
- Set top box and video
- Power over Ethernet (PoE)
- Test and Measurement
- Multifunction Printers (MFP)

## OPTIONS AND PART IDENTIFICATION

\*NRE may apply to some configurations.



Mechanical	Pin Layout	Schematics	Left LED color	Right LED color	Operating Temperature	Soldering Method	Gold Plating	Packaging
A: Tab down, w/ EMI Finger	1: for A and B	<b>100 Base-T:</b> 009, 001, 007, 008, 010	N: No LED	N: No LED	C: 0 ~ 70 °C E: -40 ~ 85 °C	W: Wave R: Reflow	0: Gold Flash 1: 3u"	Blank: Bulk T: Tape&Reel
B: Tab down, w/o EMI Finger	3: for A and B		A: Green	A: Green				
C: Tab up, w/ EMI Finger	7: for C and D	<b>100 Base-T &amp; PoE:</b> 104, 114, 116, 130	B: Yellow	B: Yellow			2: 6u"	
D: Tab up, w/o EMI Finger			C: Red	C: Red				
		<b>1000 Base-T:</b> 502, 504, 516, 517, 559, 576, 577, 628, 634	D: Orange	D: Orange			4: 30u"	
			J: Green/Yellow	J: Green/Yellow				
		<b>2.5G Base-T:</b> 805, 809	K: Green/Orange	K: Green/Orange				
			L: Green/Red	L: Green/Red				
		<b>5G Base-T:</b> 811	M: Red/Yellow	M: Red/Yellow				

\*(Please See Mechanical Section)

\*(Please See Schematics Section)

### Example Configurations

<b>ARJM11 A1-001 -AB- C W 2</b>
(Tab down, w/ EMI, 100Base-T, w/LED G/Y, commercial grade, 6u" Gold, Tray Packaging)
<b>ARJM11 D7-502 -NN- E R 4 - T</b>
(Tab up, w/o EMI, 1000Base-T, no LED, industrial grade, reflow soldering, 30u" Gold, Tape & Reel)

REVISED: 04.23.2018



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## STANDARDS SPECIFICATIONS

Parameters	Minimum	Typical	Maximum	Units	Notes
Turn Ratio ( $\pm 3\%$ )	1CT:1CT				100kHz, 0.1V
Inductance	350			$\mu\text{H}$	100kHz, 0.1V, 8mADC
	200				For 2.5G Base-T only
	160				For 5G Base-T only
Leakage Inductance			0.5	$\mu\text{H}$	100kHz, 0.1V
			0.3		For 2.5G Base-T and 5G Base-T
DC Resistance			1.5	$\Omega$	
Hipot	2250			VDC	1mA Max Complies with IEEE 802.3
Operating Temperature	-40		+85	$^{\circ}\text{C}$	See options
Storage Temperature	-40		+85	$^{\circ}\text{C}$	
<b>100 Base-T</b>					
Insertion Loss	-1.1			dB	0.5-100MHz
Return Loss			-18	dB	0.5-30MHz
			$-18+20\log(f/30)^*$		30.1-60MHz
			-12		60.1-80MHz
Crosstalk			-35	dB	0.5-40MHz
			$-33+20\log(f/50)^*$		40.1-100MHz
CMRR			-30	dB	0.5-100MHz
<b>1000 Base-T</b>					
Insertion Loss	-1.1			dB	0.5-100MHz
Return Loss			-18	dB	0.5-40MHz
			$-12+20\log(f/80)^*$		40.1-100MHz
Crosstalk			-35	dB	0.5-40MHz
			$-33+20\log(f/50)^*$		40.1-100MHz
CMRR			-30	dB	0.5-100MHz
<b>2.5G Base-T</b>					
Insertion Loss	-0.5			dB	1-50MHz
	-1.0				50-125MHz
Return Loss			-20	dB	1-40MHz
			$-20+15\log(f/40)^*$		40-200MHz
Crosstalk			-30	dB	25-125MHz
<b>5G Base-T</b>					
Insertion Loss	-0.5			dB	1-50MHz
	-1.0				50-125MHz
	-2.0				125-250MHz
Return Loss			-20	dB	1-40MHz
			$-20+15\log(f/40)^*$		40-250MHz
Crosstalk			-30	dB	1-125MHz
			-25		125-250MHz
<b>POE</b>					
Balanced DC line current			350	mA	@57VDC continuous
			500		@57VDC for 200ms
<b>POE+</b>					
Balanced DC line current			600	mA	@57VDC continuous
			720		@57VDC for 200ms

# RJ45 SINGLE PORT 100/1000/2.5G/5G BASE-T MAGNETICS



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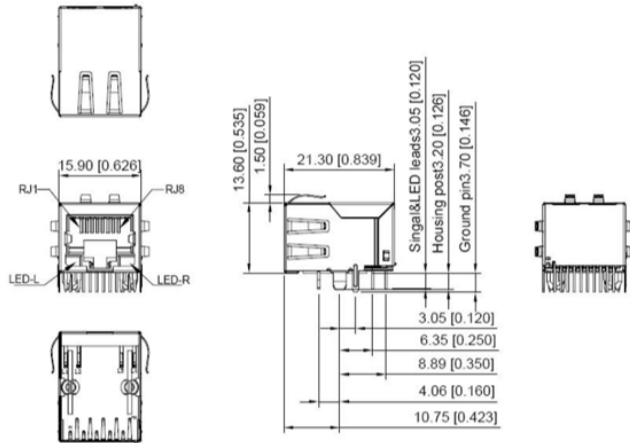
RoHS/RoHS II Compliant

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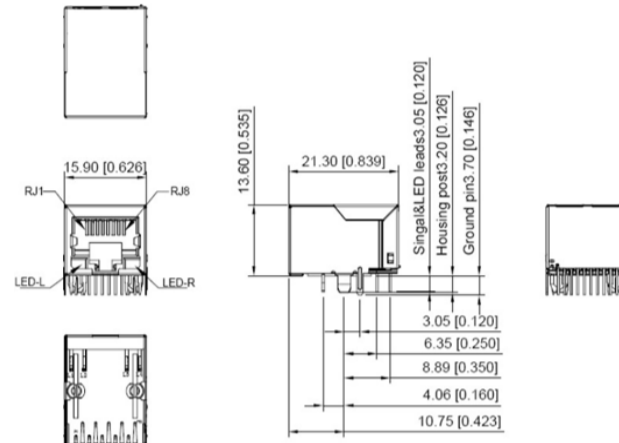
## MECHANICAL DIMENSIONS

See addendum for additional PCB layout.

A: Tab down, w/ EMI Fingers

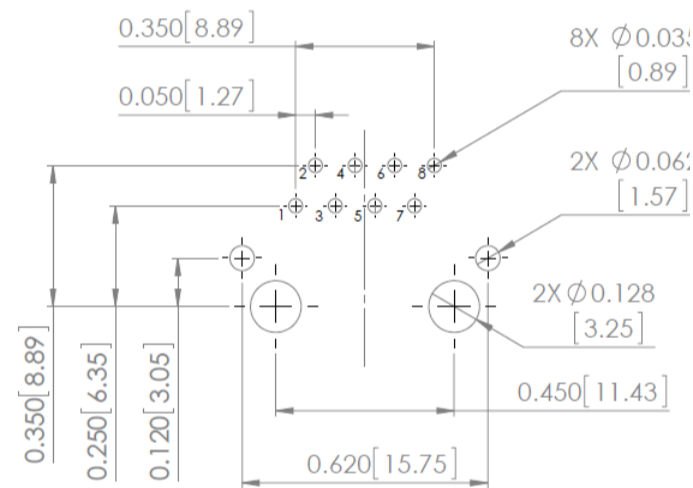


B: Tab down, w/o EMI Fingers

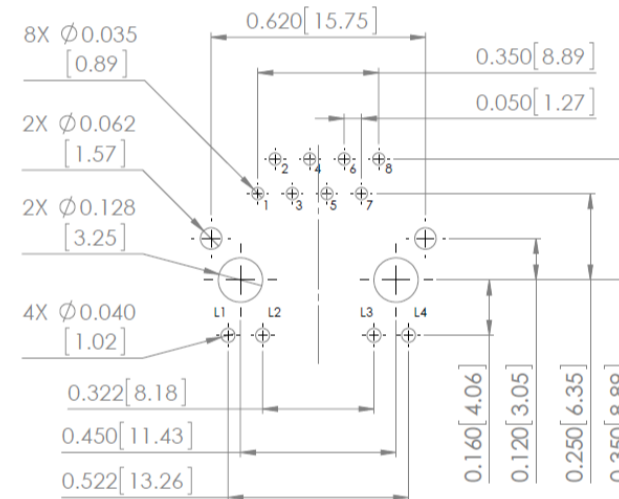


Pin Layout = 1 (Tab down, Mechanical = A or B)

8 pins, no LED  
For 100 Base-T

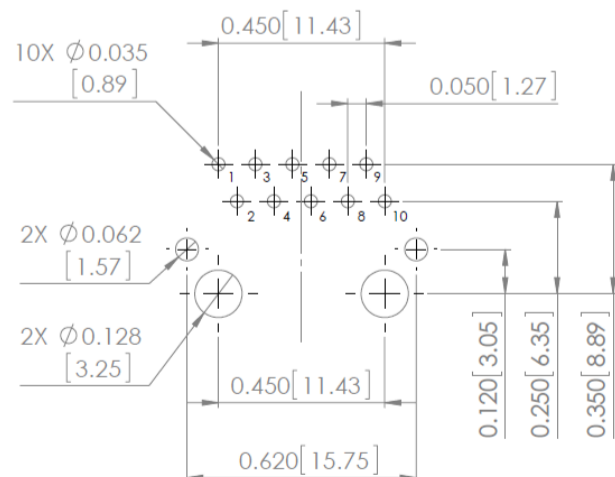


8 pins, with LED  
For 100 Base-T

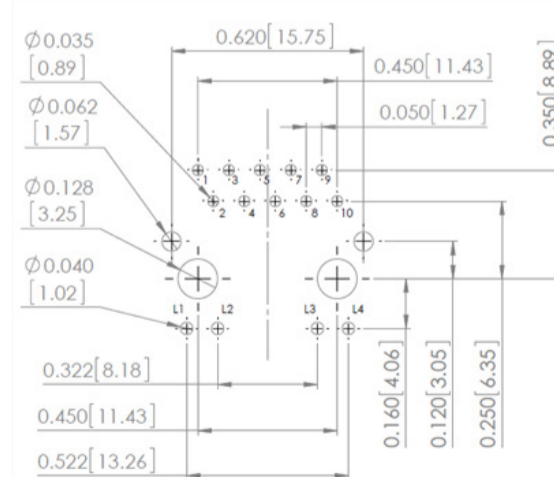


Pin Layout = 1 (Tab down, Mechanical = A or B) continued

10 pins, no LED  
For 100&PoE/1000/2.5G/5G Base-T



10 Pins, w/ LED  
For 100&PoE/1000/2.5G/5G Base-T



Contact Abracon for more custom configuration options.

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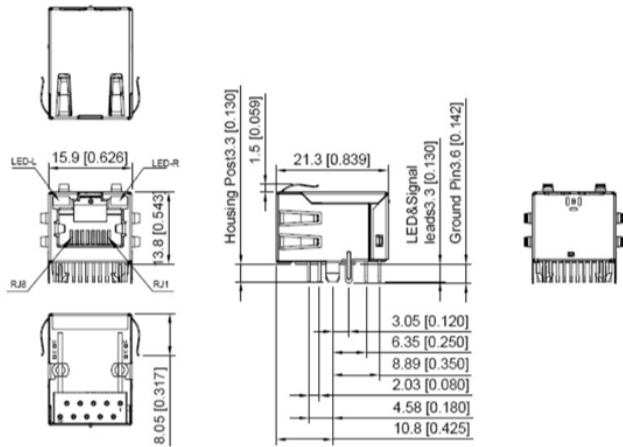
MSL = 1

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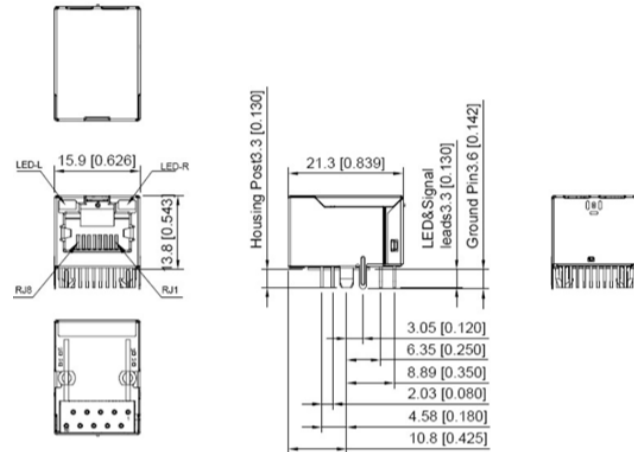
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## MECHANICAL DIMENSIONS

C: Tab up, w/ EMI Fingers

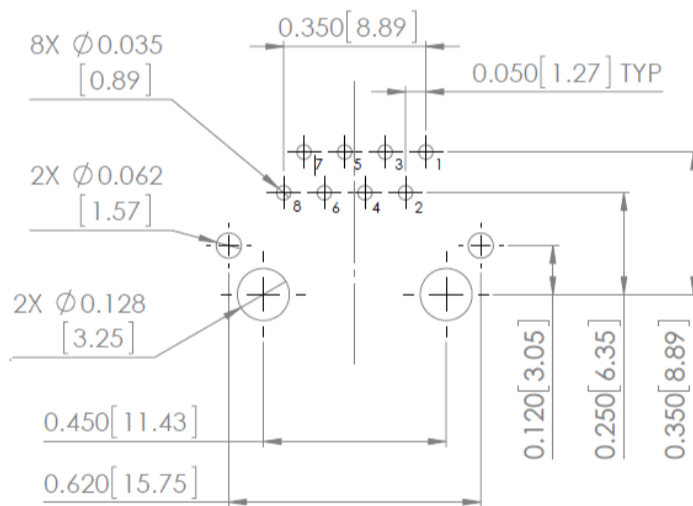


D: Tab up, w/o EMI Fingers

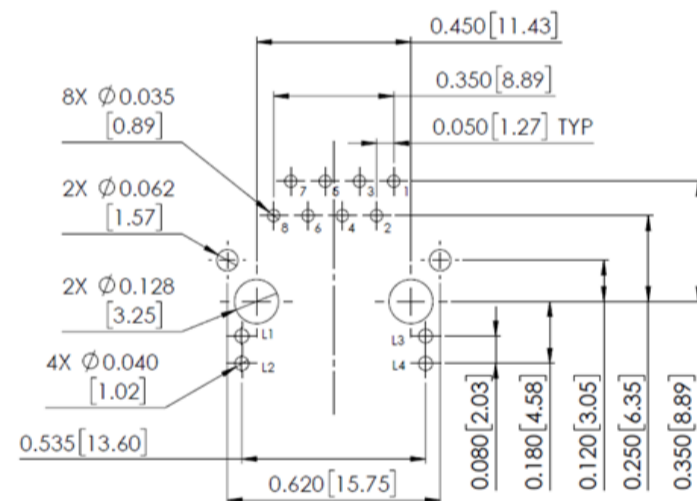


Pin Layout = 7 (Tab up, Mechanical = C or D)

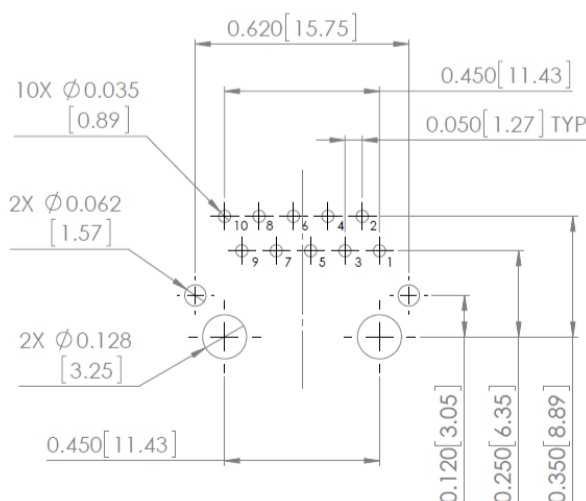
8 Pins, no LED  
For 100 Base-T



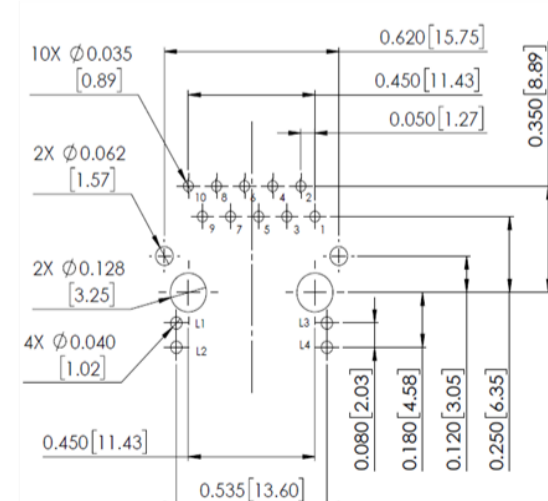
8 Pins, w/ LED  
For 100 Base-T



10 Pins, no LED  
For 100&PoE/1000/2.5G/5G Base-T



10 Pins, w/ LED  
For 100&PoE/1000/2.5G/5G Base-T



Dimensions: mm[inch] (Unless otherwise specified, all tolerances are ±0.25[0.010])

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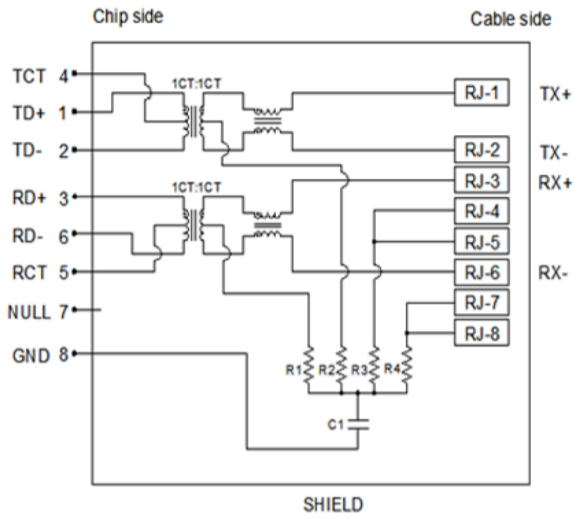
RoHS/RoHS II Compliant

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## SCHEMATICS

### 100 Base-T:

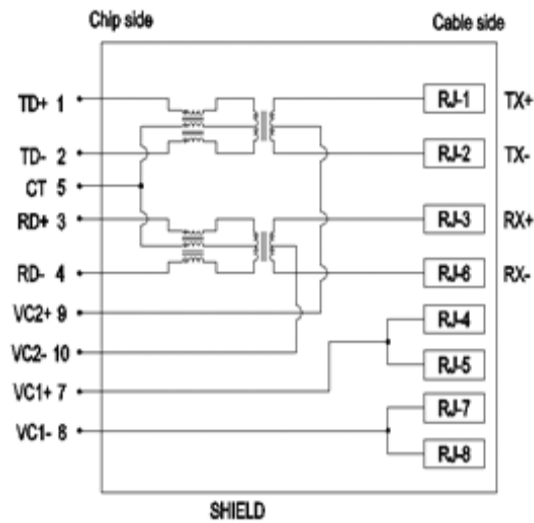
009 (100 Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.

### 100 Base-T & PoE+:

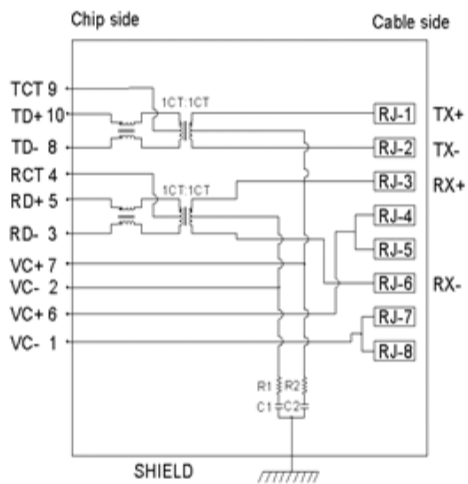
104 (100 Base-T & PoE+)



Note:  
Balanced DC line current:  
600 mA Max@57VDC Continuous  
720 mA Max@57VDC for 200 milliseconds

### 100 Base-T & PoE:

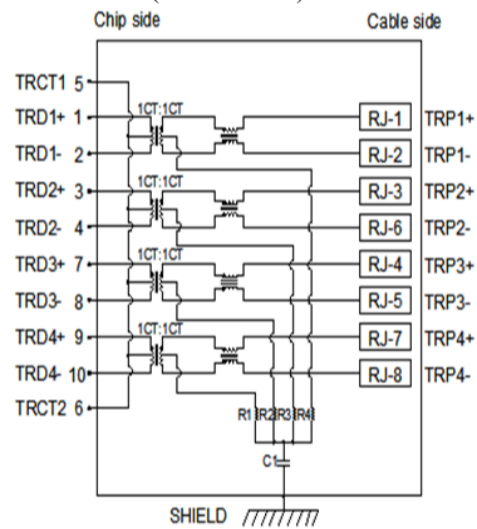
114 (100 Base-T & PoE)



Note:  
R1-R2=75 OHMS, Resistors.  
C1-C2=2KV 1000pF, Capacitor.  
Balanced DC line Current :  
350mA Max @57 VDC Continuous ;  
500mA Max @57 VDC for 200 Milliseconds

### 1000 Base-T:

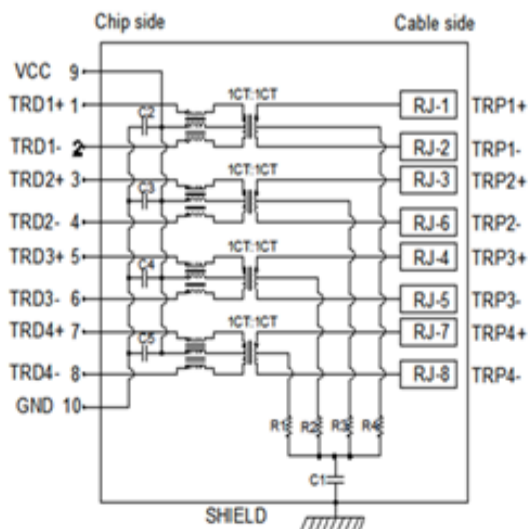
502 (1000 Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.

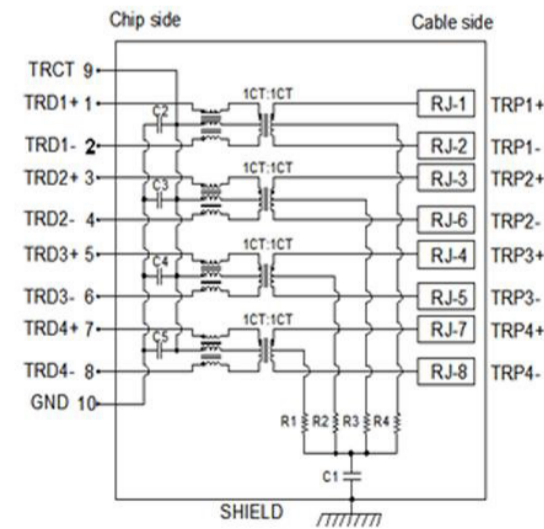
### 2.5G Base-T:

805 (2.5G Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.  
C2-C5=100V 100nF, Capacitor.

809 (2.5G Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=3KV 1000pF, Capacitor.  
C2-C5=100V 100nF, Capacitor.

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21.30 x 15.90 x 13.60mm  
21.30 x 15.90 x 13.80mm

MSL = 1

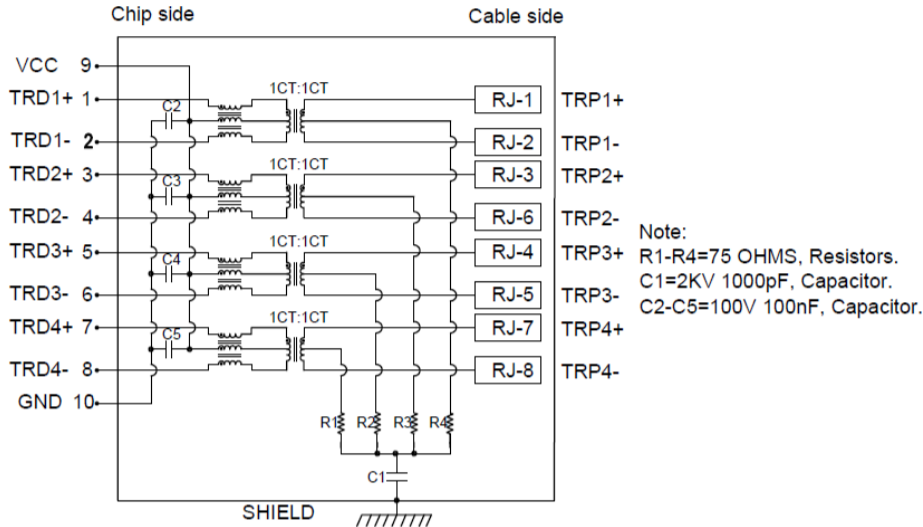
RoHS/RoHS II Compliant

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## SCHEMATICS

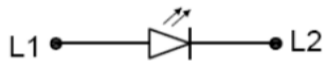
### 5G Base-T:

811 (5G Base-T)



Contact Abracon for more custom configuration options.

### LED-L



### LED-R



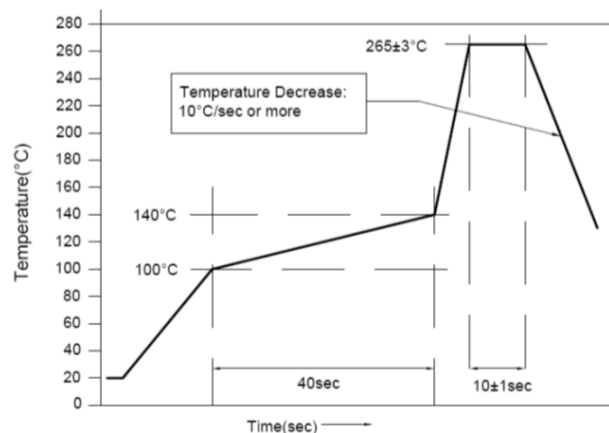
\*Note: If two LED colors are selected for left (right) side, for the first color, L1(L3) is anode and L2(L4) is cathode; for the second color, L1(L3) is cathode and L2(L4) is anode.

For example, if J (Green/Yellow) is selected for left LED, L1 to L2 is Green; L2 to L1 is Yellow.

### LED SPECIFICATION. @20mA Forward Current

Color	Green	Yellow	Orange	Red
Wavelength	565nm Typ	585nm Typ	605nm Typ	635nm Typ
Forward Voltage	2.2V Typ	2.1V Typ	2.1V Typ	1.8V Typ

## WAVE SOLDERING PROFILE



# RJ45 SINGLE PORT 100/1000/2.5G/5G BASE-T MAGNETICS



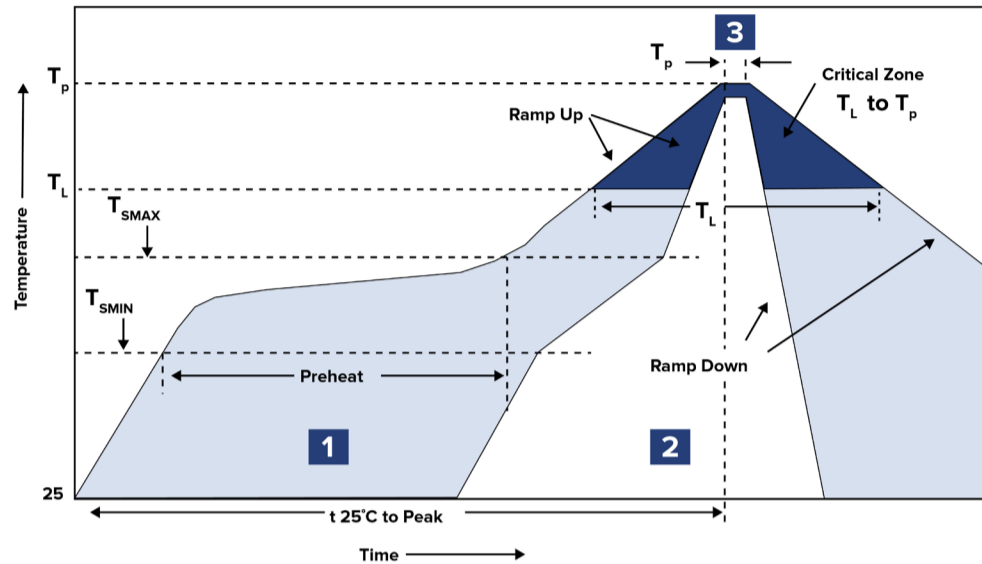
21.30 x 15.90 x 13.60mm  
21.30 x 15.90 x 13.80mm

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## REFLOWSOLDERINGPROFILE



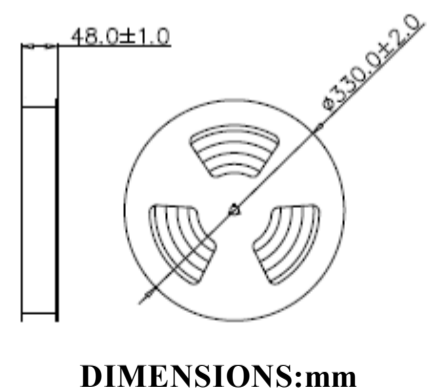
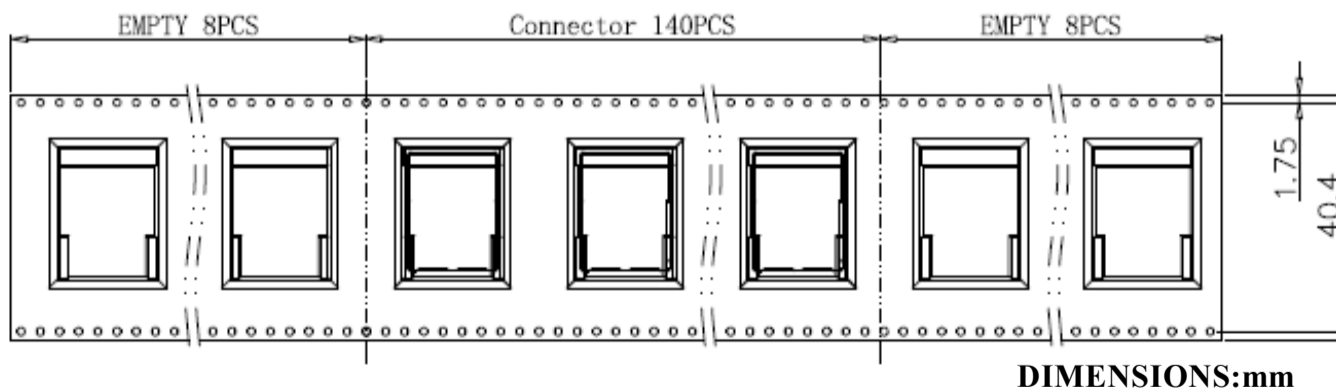
Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 150°C ~ 180°C	120 ~ 180 sec.
2	Reflow	$T_L$ 217°C	60 ~ 150 sec.
3	Peak heat	$T_P$ 245°C	5 sec. MAX

## PACKING: TRAY & TAPE AND REEL

Tray: 70pcs/reel, 700pcs/carton)

Tray Size: L315.0 x W200.0 mm, Transparent PET

Tape & Reel (70pcs/reel, 350pcs/carton)



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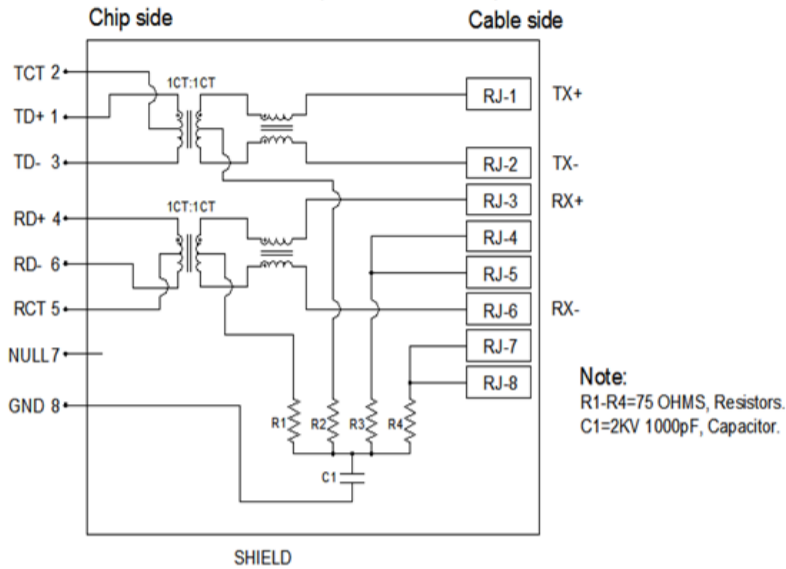
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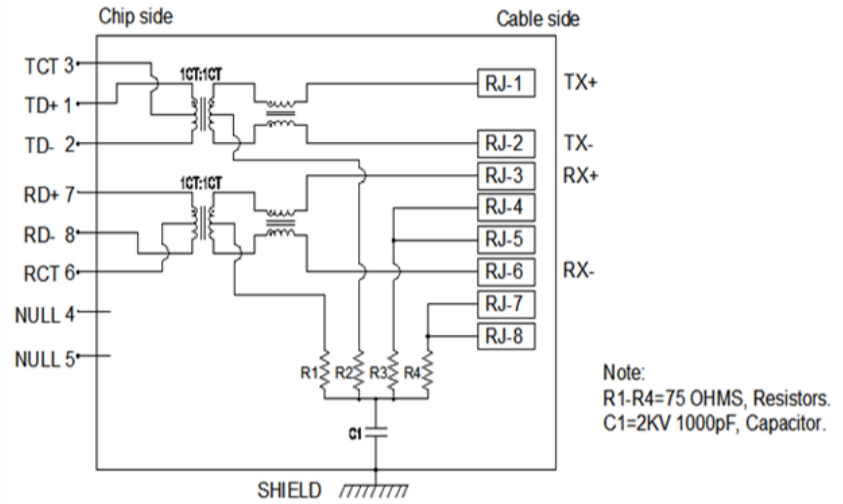
## ADDENDUM: ADDITIONAL SCHEMATICS

### 100 Base-T:

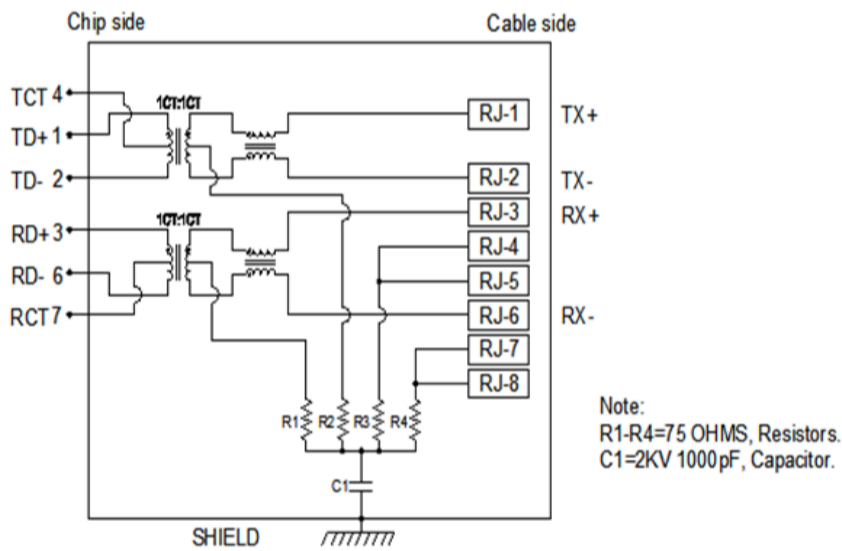
001 (100 Base-T)



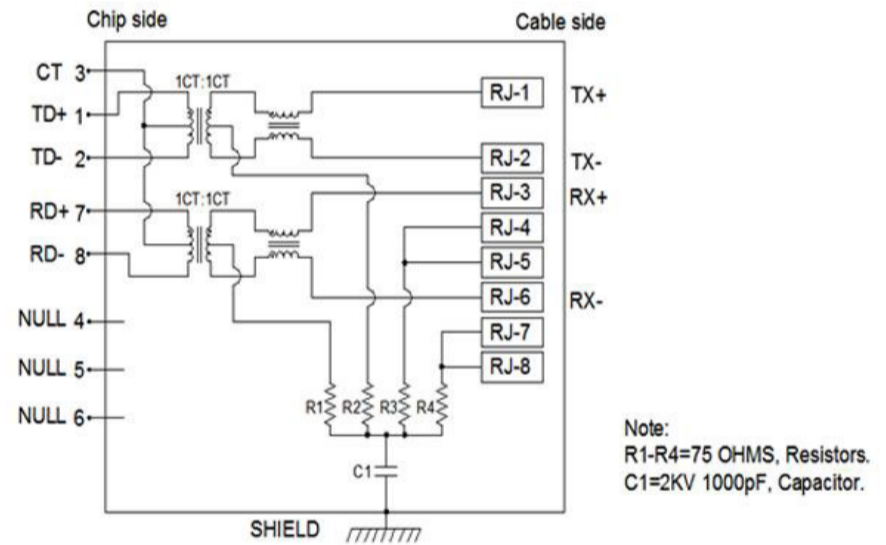
007 (100 Base-T)



008 (100 Base-T)

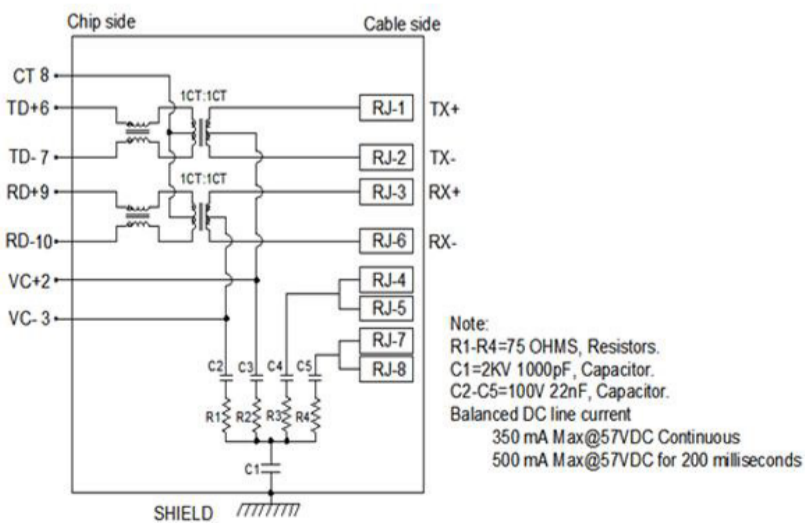


010 (100 Base-T)

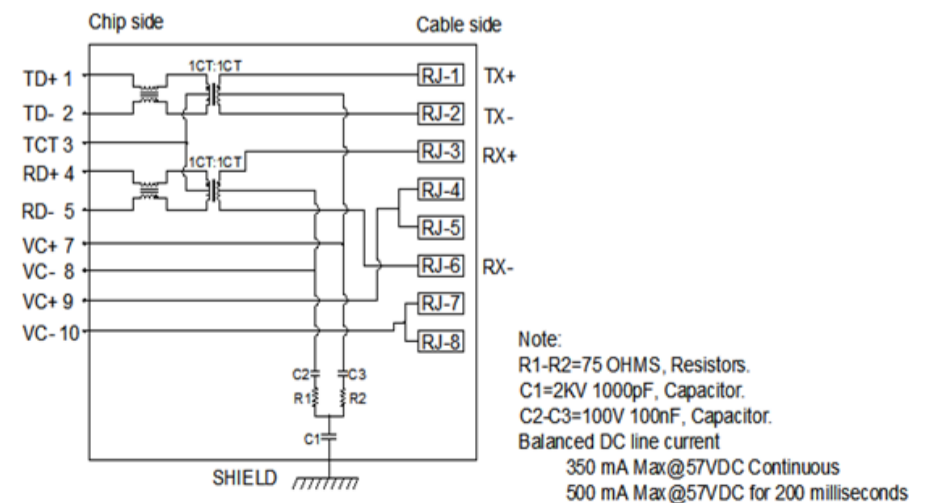


### 100 Base-T & PoE+:

116 (100 Base-T & PoE)



130 (100 Base-T & PoE)



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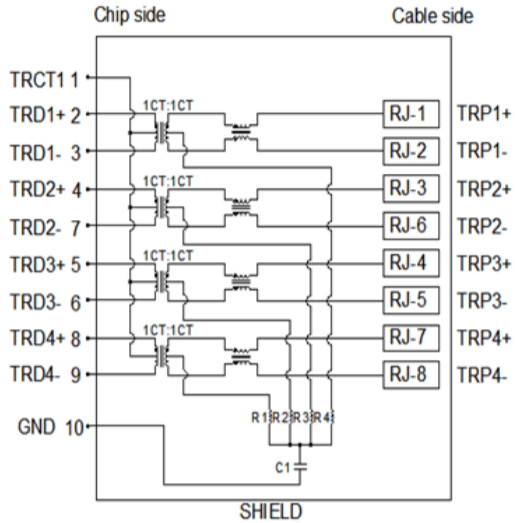
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## ADDENDUM: ADDITIONAL SCHEMATICS

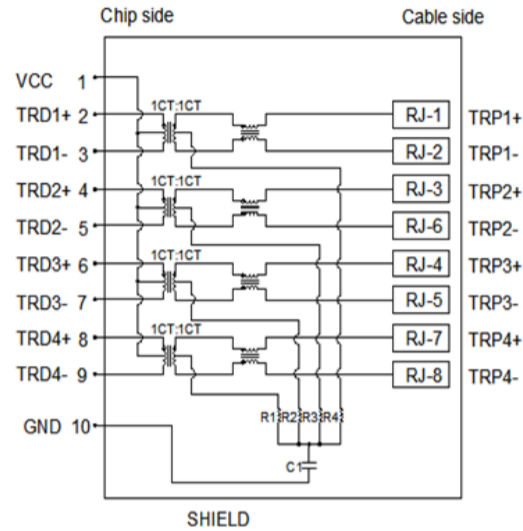
### 1000 Base-T:

504 (1000 Base-T)



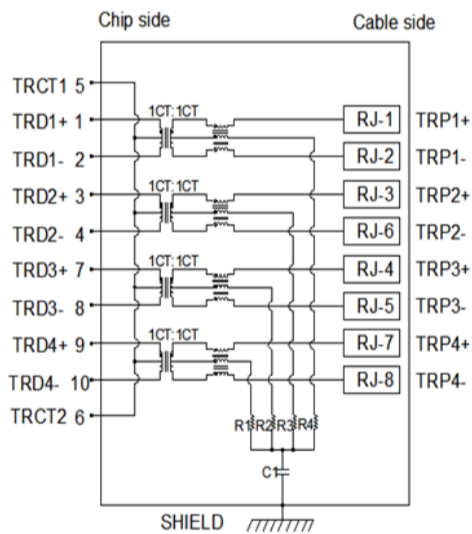
Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.

516 (1000 Base-T)



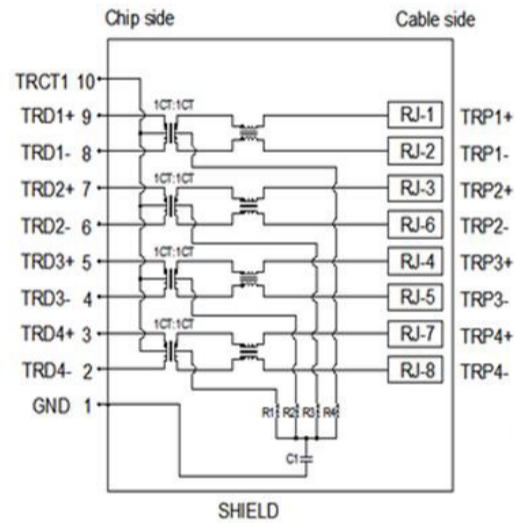
Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.

517 (1000 Base-T)



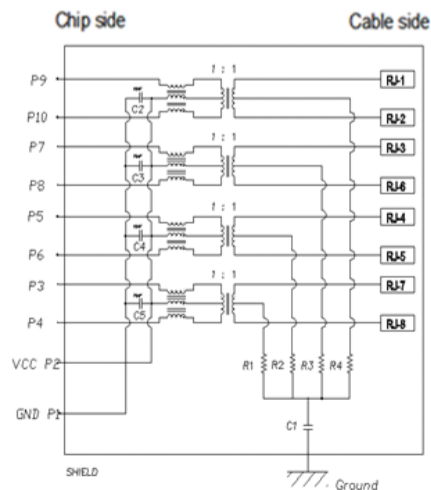
Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.

559 (1000 Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.

576 (1000 Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.  
C2-C5=50V 10nF, Capacitor.

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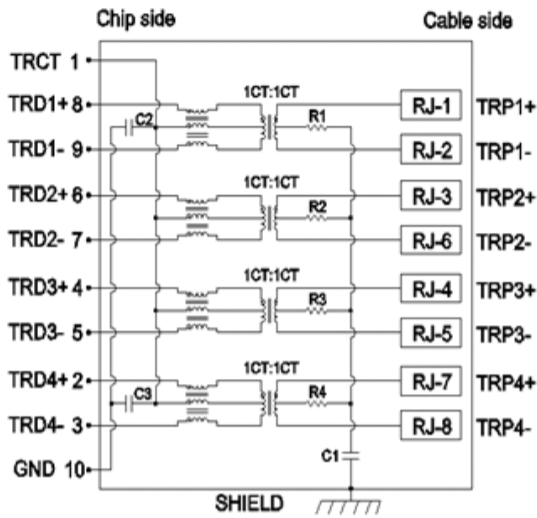
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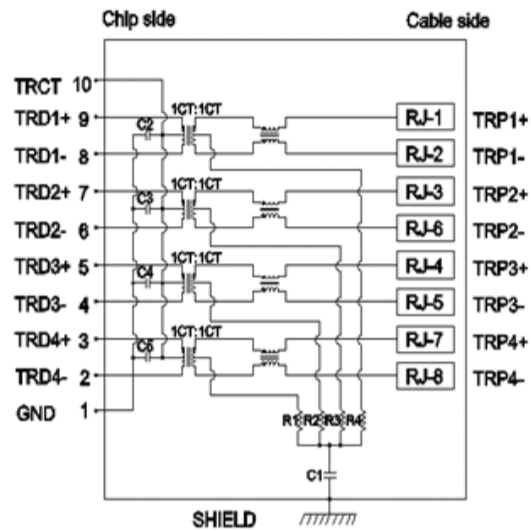
## ADDENDUM: ADDITIONAL SCHEMATICS

1000 Base-T (continued):  
577 (1000 Base-T)



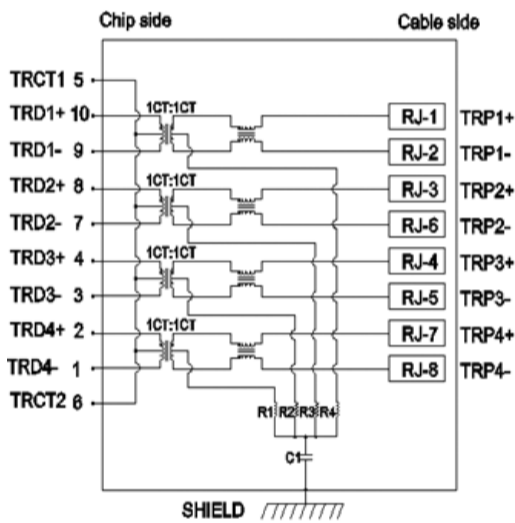
Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.  
C2-C3=50V 100nF, Capacitor.

628 (1000 Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.  
C2-C5=100V 100nF, Capacitor.

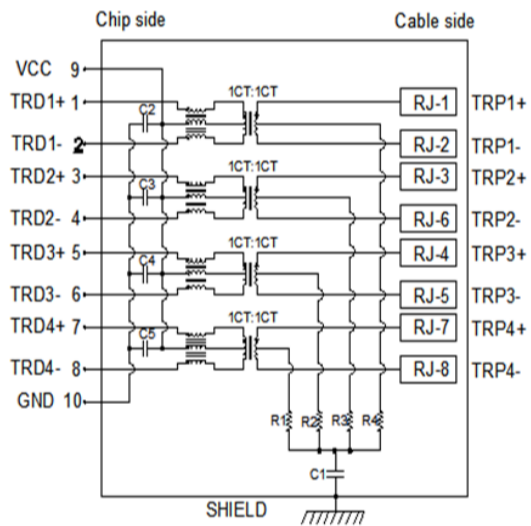
634 (1000 Base-T)



Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.

2.5G Base-T:

805 (2.5G Base-T)

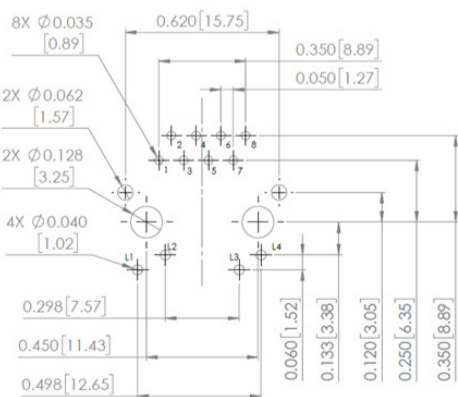


Note:  
R1-R4=75 OHMS, Resistors.  
C1=2KV 1000pF, Capacitor.  
C2-C5=100V 100nF, Capacitor.

## ADDENDUM: PCB LAYOUT

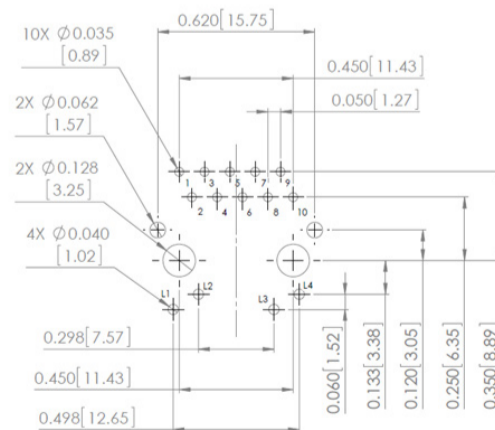
Pin Layout = 3 (Tab down, Mechanical = A or B)

8 Pins, w/ LED  
For 100 Base-T



10 Pins, w/ LED

For 100&PoE/1000/2.5G/5G Base-T



REVISED: 04.23.2018