

**Description**

The YCL LAN modular Jack has been specifically designed for implementation of fast Ethernet and Power over Ethernet (PoE) Application . With high voltage isolation, optimized rise time, wideband width and stable inductance, the transformer integrated in this module provide excellent performance as an analog interface. Common mode choke have been designed to significantly reduce common mode choke level which may contribute EMI emission. YCL LAN modular jack provide the system designer the opportunity of reducing pcb space.

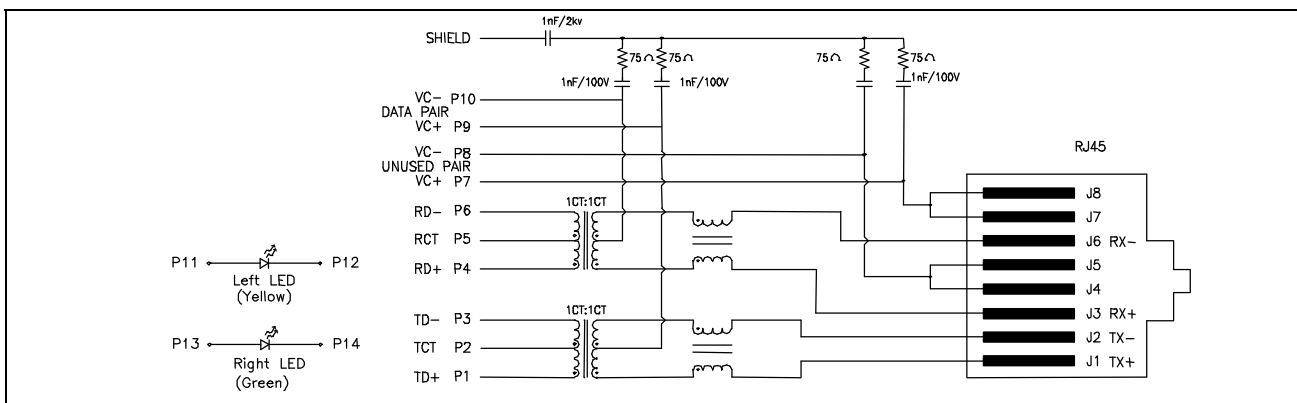
**Feature**

- ◆ RoHS Compliant
- ◆ Designed to meet IEEE802.3u / IEEE802.3af requirement.
- ◆ Designed for RoHS process.
- ◆ Primary center taps available for additional EMI reduction.
- ◆ Simplest magnetic component to place and route on PCB.
- ◆ Conserves minimizing PCB space.

**Specifications @ 25°C**

Parameter	Condition	Min.	Typ.	Max.	Unit
Turn Ratio	TX & RX		1CT : 1CT		
Inductance	@100KHz,100mV *Note 1	350			μH
Insertion Loss	@1-100MHz			-1.2	dB
Return Loss	@1-30MHz	-16			dB
	@40MHz	-14			dB
	@50MHz	-13			dB
	@60-80MHz	-12			dB
Differential to Common Mode Rejection	@30MHz	-43			dB
	@60MHz	-37			dB
	@100MHz	-33			dB
Cross Talk	@30MHz	-45			dB
	@60MHz	-40			dB
	@100MHz	-35			dB
Voltage Isolation		1500			Vrms
Operating temp.		0		70	°C

Note 1 : measured at 8mA<sub>dc</sub> over operating temperature 0-70°C

**Schematic**


**Test Requirements and Procedures**

No	Item	Requirement	Test or Inspection Method
1	Examination of product	Meet requirements of product drawing	Visual, dimensional and functional per applicable inspection plan.
2	Solderability	Max. 5% de-wetting, inspection with 10 times magnification.	Inspect surface of soldering legs visually, after soldering samples mounted on a printed circuit board. Steam:1hr Solderbath: 260°C Duration: 2 ± 0.5 seconds. Ref: Sony Technical Standards SS-00254-4
3	Resistance to soldering heat	No functional damage.	Inspect Jack visually after soldering samples on a printed circuit board. Solderbath: 260°C Duration: 5~6 seconds. Ref: Sony Technical Standards SS-00254-4
4	Contact resistance	contact resistance 10 milliohms max per initial contact resistance ( Δ R 30 milliohms max. For Tool-LESS)	Subject mated Plug and Jack to 20mV open circuit at 10 mA maximum. See fig. 3. Ref: IEC 512-2,test 2a.
5	Dielectric withstanding voltage	1500 Vac RMS dielectric withstanding voltage.	Subject adjacent contacts of mated plug and jack to the specified voltage . Ref: IEC 512-2,test 4a. method B.
6	Insulation Resistance	500 Megohms minimum.	Subject adjacent contacts of mated plug and jack to the specified voltage:500Vdc . Ref. IEC 512-2,test 3a. method B.

**Test Requirements and Procedures**

No	ITEM	Requirement	Test or inspection Method
7	Printed circuit board retention	Module Jack should not dislodge from p.c.b	Apply load of 20 LBS to modular Jack which is mounted on a printed circuit board of 1.6mm thickness, at a rate of 25mm per minute.
8	Plug retention in Jack	Plug shall not dislodge from Jack and shall maintain electrical continuity.	Apply axial Load of 20 LBS to modular plug which is mated to a modular Jack at a rate of 25mm per minute.
9	Vibration	No physical damage.	Random vibration / Overall : 1.15 g rms Freq. (Hz) : 1 → 4 → 100 → 200 PSD (g <sup>2</sup> /Hz) : 0.0001 → 0.01 → 0.01 → 0.001 Test Axis/ Time : Top / 30 mins Bottom / 10 mins X axis : 10 mins Y axis : 10 mins Ref :ISTA PROJECT 2A
10	Durability	Contact resistance ,plug Retention and pcb retention shall meet each specified requirement	Mate and unmate Plug and Jack For 500 cycles total at a maximum rate of 500 cycles/hour. Ref: IEC 512-5, test 9a.
11	Insertion force	Insertion force should Not exceed 5 pounds	Measure force necessary to mate Plug and Jack at a rate of 25mm per minute Ref:IEC512-7, test 13b.
12	Thermal shock	Contact resistance, Insulation resistance shall meet each specified requirement .	Subject mated Plug and Jack to 5 cycles between -40°C and 85°C. The duration at the extreme temperature is by weighing specimen to determine it. Ref:MIL-STD-202 method 107
13	Temperature-humidity exposure	Contact resistance, Insulation resistance shall meet each specified requirement .	Subject mated Plug and Jack adds bias 100 Vdc at 40°C /95%RH. Duration: 96hrs Ref:MIL-STD-202 method 103
14	High temperature exposure	Contact resistance Insulation resistance shall meet each specified requirement	Subject mated Plug and Jack adds bias 25 Vdc at 100°C Duration: 96hrs Ref:MIL-STD-202 method 108

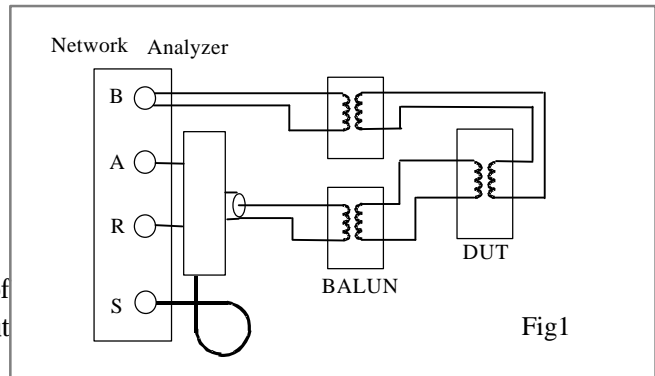
**Test Setup : Insertion Loss Measurement**

The insertion loss of a device connected into a given transmission system is defined as the ration of power (before and after insertion ) delivered to the output network beyond the point of insertion at a given frequency.

Fig1 illustrate the test circuit configuration for making insertion loss measurement. To perform the insertion loss test ,thru calibration must be done prior the measuring while the network Analyzer being selected in S21 mode.

A matching balun must be used to convert the 50ohms of output impedance of test instrument into the primary input impedance of the transformer under test.

Without this matching balun, impedance mismatch between the test instrument and the device causes measurement error.



**Return loss measurement**

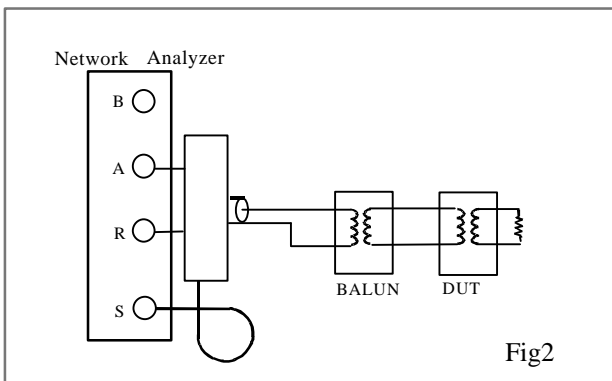
Return loss measure the amount of energy that is lost due to Reflection.

Reflected energy occur because of impedance mismatching these energy will reduce the overall system efficiency and emanate nuisance noise.

Fig2 illustrate the test configuration for return Loss measurement

To perform the return loss test ,open ,short,load calibration Must be done prior to measuring while the network Analyzer being selected in S11 mode.

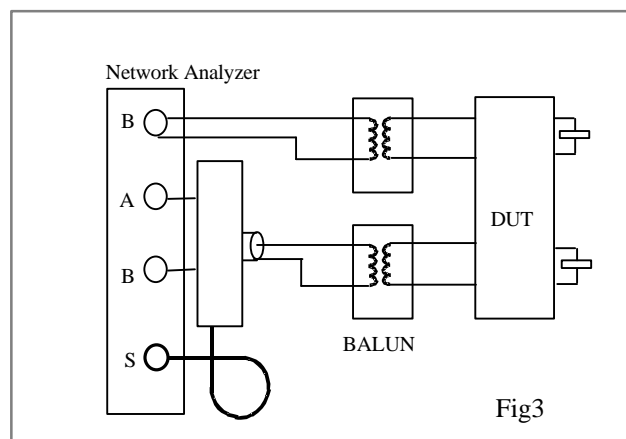
Two matching baluns with appropriate output impedance must be used to match the impedance of the transformer under test as shown in the figure 2

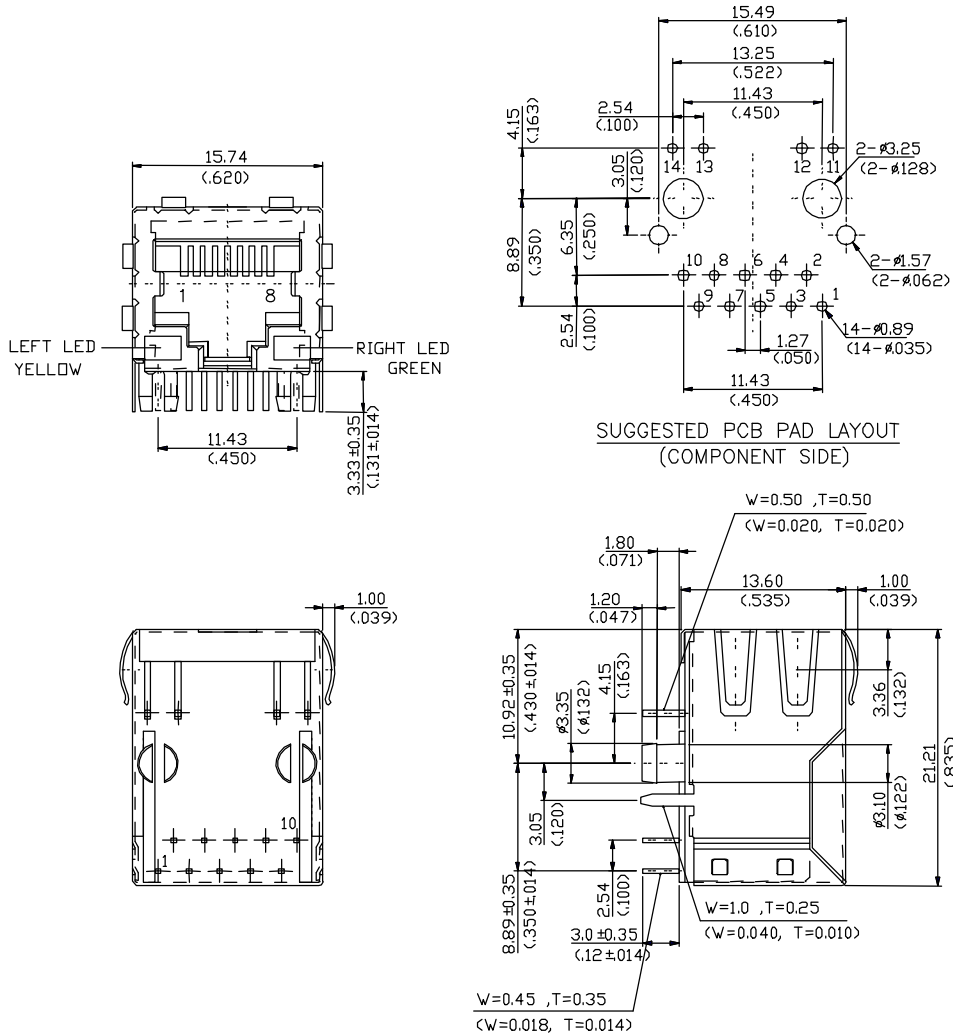


**Cross talk measurement**

Cross Talk can be measured with setup shown in Fig 3 by applying signal of identical information to the transmitter channel and detecting the coupling signal level at receiver channel.

Through calibration before measurement should be done Both of transmitter and receiver channel should be terminated with proper load while measuring.



**Dimension:**


Unless otherwise specified , all tolerances are mm(inch)  $\pm 0.25(0.01)$   
 pin hole tolerances are mm(inch)  $\pm 0.08(0.003)$

- ◆ Shield . . . . . 0.25mm Thickness Copper Alloy with Nickel Plated
- ◆ Housing . . . . . Standard Material Nylon , Glass Filled Polyester UL94V-0  
Standard Color Black
- ◆ Contact Pin . . . . . Plastic : Nylon , Glass Filled , UL94V-0 , Standard Color Black  
Pin : Phosphor Bronze Wire t0.35\*w0.38  
Plating : Gold Plating Over Nickel
- ◆ Connect Pin . . . . . Plastic : Nylon , Glass Filled , UL94V-0 , Standard Color Black  
Pin : t0.25\*w0.45 Brass Tin plated