

LAN Transformer Module

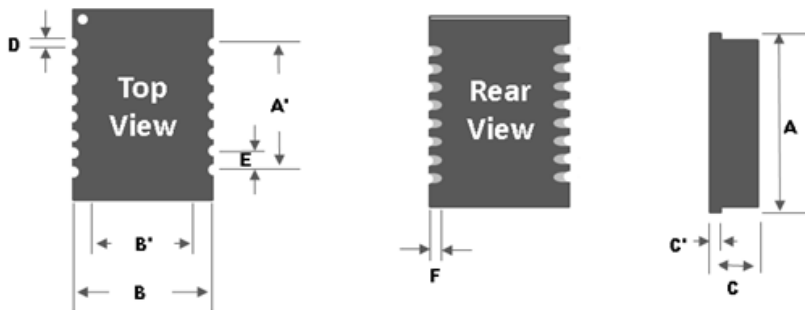
LAN-12M162C7A8

1. Features

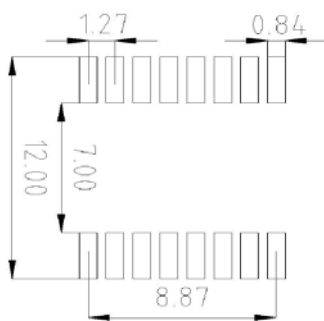
- ◆ 10/100 Ethernet application
- ◆ IEC 61000-4-5 10/700us 4KV (CM)
- ◆ IEC 61000-4-5 10/700us 1KV (DM)
- ◆ Small form factor
- ◆ Operating Temperature: 0°C~+85°C (Including self-temperature rise)

**2. Applications**

10/100 Base-T, Single Port, (16 Pin)

3. Dimensions

Series	A(mm)	A'(mm)	B(mm)	B'(mm)	C(mm)	C'(mm)	D(mm)	E(mm)	F(mm)
LAN-12M162C7A8	12.7±0.1	8.87±0.1	9.0±0.1	7.2±0.1	4.0±0.1	0.8±0.1	0.6±0.1	1.27±0.1	1.0±0.1

Recommend PC Board Pattern

Tolerance: +/-0.1(mm)

4. Part Numbering

LAN - 12 M 16 2 C 7 A8
 A B C D E F G H

A: Series C: Application E: Center tab G: Pitch
 B: Long D: Pin F: Design H: Special

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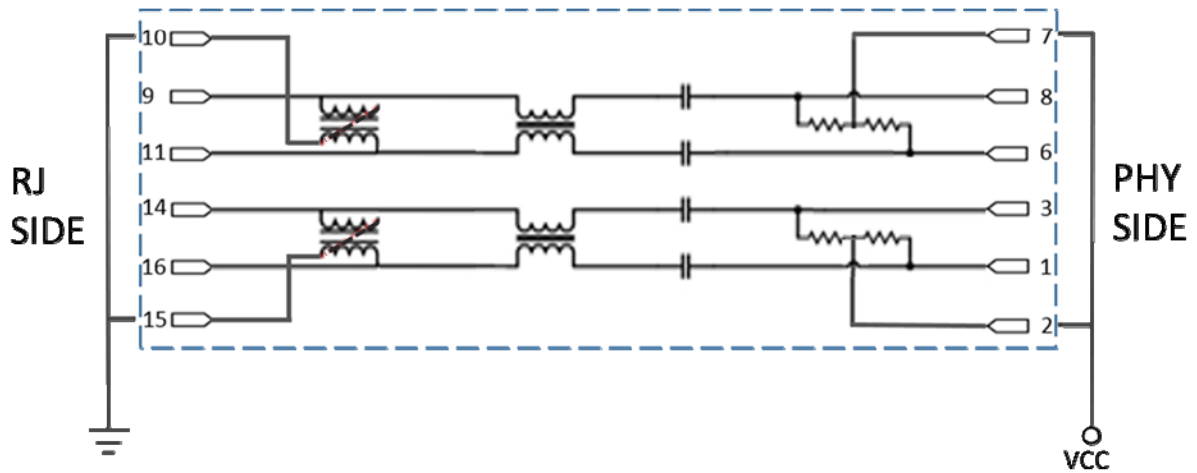
5. Specification

Part Number	Insertion Loss (dB Max)	Return Loss (dB min)			DCMR(dB Min)		
		30Mhz	60Mhz	100Mhz	30Mhz	60Mhz	100Mhz
LAN-12M162C7A8	-1	-20	-15	-10	-25	-25	-25

Note:

1. All test data referenced to 25°C ambient
2. Recommended the design modules be assembled on the second side.

6. Schematic



7. Pin Define

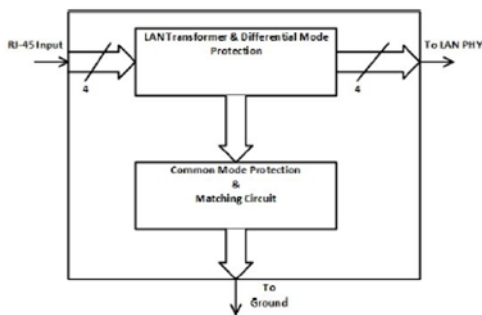


Fig.1 Block Diagram

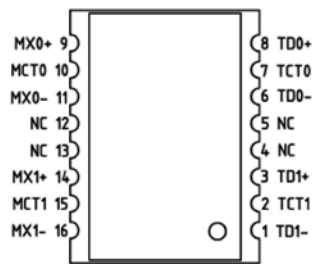
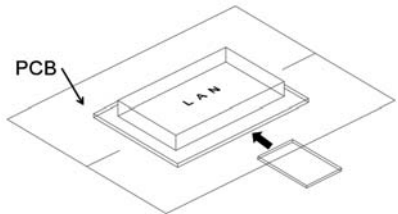


Fig.2 Pin Configuration

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8. Reliability and Test Condition

Item	Performance	Test Condition								
Insertion Loss	Refer to standard electrical characteristics list.	Agilent E5071C								
Return Loss										
Cross talk										
DCMR										
Operating Temperature	0°C~+85°C (Including self - temperature rise)									
Storage Temperature	0°C~+85°C (Product without taping)									
Life Test	Appearance : No damage. Insertion Loss : within spec. Return Loss : within spec.	<p><u>Preconditioning:Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles</u></p> <p>Temperature : 85±2°C</p> <p>Duration : 1000±12hrs</p> <p>Measured at room temperature after placing for 24±2 hrs</p>								
Humidity Resistance Test		<p><u>Preconditioning:Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles</u></p> <p>Humidity : 85±2% R.H,</p> <p>Temperature : 85°C±2°C</p> <p>Duration : 1000hrs Min.</p> <p>Measured at room temperature after placing for 24±2 hrs</p>								
Thermal shock Test	Appearance : No damage. Insertion Loss : within spec. Return Loss : within spec.	<p><u>Preconditioning:Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles</u></p> <p>Step1 : 0±2°C 30±5min</p> <p>Step2 : 25±2°C ≤0.5min</p> <p>Step3 : 85±2°C 30±5min</p> <p>Number of cycles : 500</p> <p>Measured at room temperature after placing for 24±2 hrs</p>								
Vibration Test		<p><u>Preconditioning:Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles</u></p> <p>Oscillation Frequency: 10Hz~2KHz~10Hz for 20 minutes</p> <p>Equipment : Vibration checker</p> <p>Total Amplitude:10g</p> <p>Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) ◦</p>								
Solderability Test	More than 95% of bottom terminal electrode should be covered with solder.	<p>Preheat: 150°C,60sec. ◦</p> <p>Solder:Sn96.5% Ag3% Cu0.5%</p> <p>Temperature: 245±5°C ◦</p> <p>Flux for lead free: Rosin. 9.5% ◦</p> <p>Dip time: 4±1sec ◦</p> <p>Depth: completely cover the termination</p>								
Resistance To Solder Heat Test	Appearance : No damage.	<table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Time (s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> <td>1</td> </tr> </tbody> </table> <p>Depth: completely cover bottom the termination</p>	Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1
Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate	Number of heat cycles							
260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1							
Terminal Strength Test	<table border="1"> <tbody> <tr> <td>Series No.</td> <td>2(Kg)</td> </tr> <tr> <td>LAN</td> <td>1.0(min.)</td> </tr> </tbody> </table>	Series No.	2(Kg)	LAN	1.0(min.)	<p>With the component mounted on a PCB with the device to be tested, apply a force to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.</p> 				
Series No.	2(Kg)									
LAN	1.0(min.)									

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9. Soldering and Mounting

9-1. Soldering

Mildly activated rosin fluxes are preferred. TAI-TECH terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

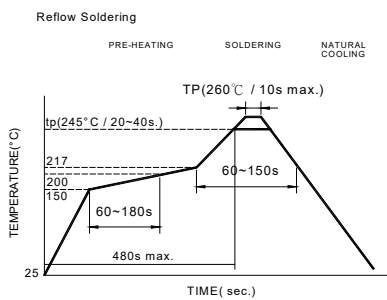
9-1.1 Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

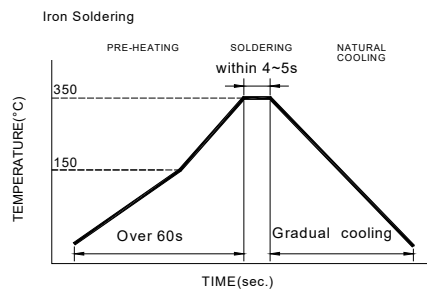
9-1.2 Soldering Iron(Figure 2):

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5 sec.



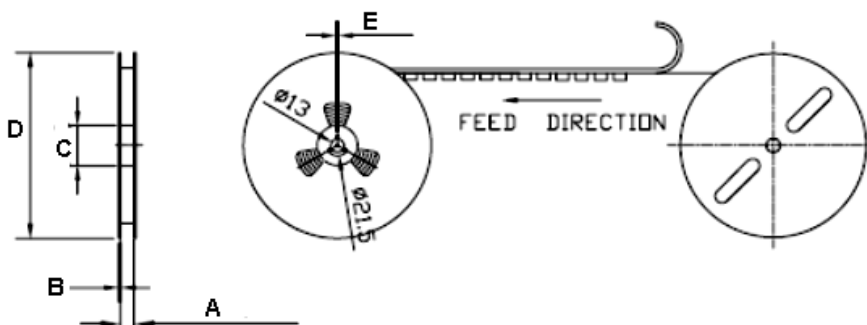
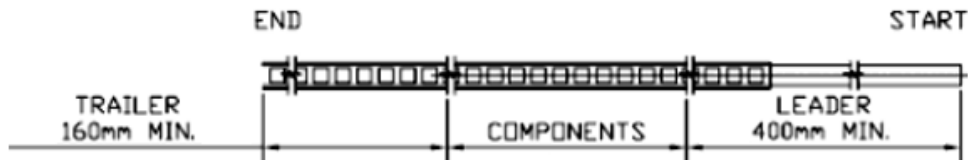
Reflow times: 3 times max
Fig.1



Iron Soldering times : 1 times max
Fig.2

10. Packaging Information

(1) Reel Dimension

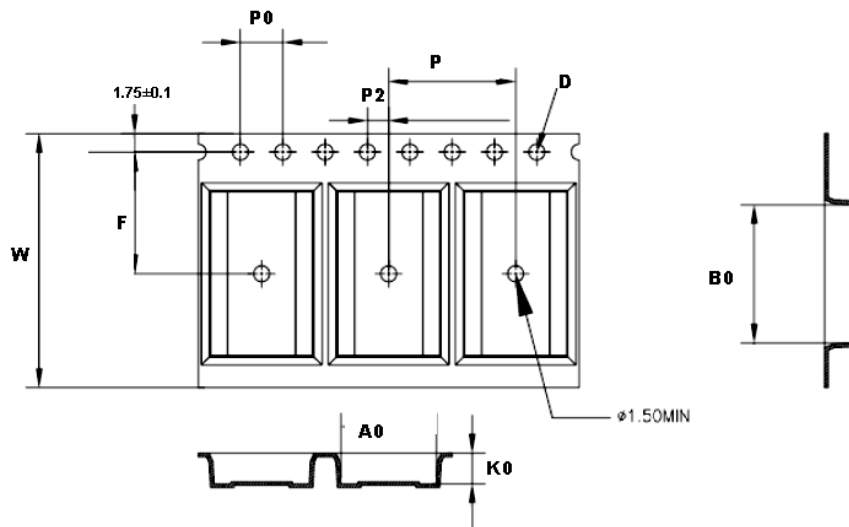


Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
LAN-12M162C7A8	24.4±2.0	2.1±0.15	φ 100	φ 330±2	2.5

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(2) Tape Dimension



Series	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	Po(mm)	P2(mm)	W(mm)	F(mm)	D(mm)
LAN-12M162C7A8	13.0±0.1	9.0±0.1	4.4±0.1	16.00±0.1	4.0±0.1	2.0±0.1	24±0.3	11.5±0.1	1.5±0.1

(3) Packaging Quantity

LAN	LAN-12M162C7A8
Chip / Reel	800

Application Notice

- Storage Conditions(component level)
To maintain the solderability of terminal electrodes:
 1. products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
 2. Temperature and humidity conditions: Less than 40°C and 60% RH.
 3. Recommended products should be used within 12 months form the time of delivery.
 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.