

**LAN5VSOS24121C2 non-PoE 10G Base-T**

TITLE: LAN non-PoE Transformer / 10G BASE-T

**REV A**

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## **1 Product features and environmental data**

### **Product features**

- IEEE 802.3an compliant
- 1500 Vac isolation between primary and secondary
- Single port, non-PoE
- Toroid core winding, SMD, Open header
- Weight 1.65g
- Moisture Sensitivity Level (MSL): 1

### **Applications**

- Router
- Network switch
- RJ45 network adapter

### **Environmental data**

Storage temperature range: -40 °C to +125 °C  
Operating ambient temperature range: -40 °C to +85 °C  
Solder reflow temperature: J-STD-020 (latest revision) compliant  
RoHS  
REACH  
PFOS & PFOA  
Halogen free, Sb2O3 and Red Phosphorus

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## 2 Specification

### 2.1 Electrical parameters@25°C

Part Number	Port	Pins	Inductance (uH Min) <sup>1</sup>	Leakage Inductance (uH Max) <sup>1</sup>	DCR (Ω Max) <sup>2</sup>	CWW (pF Max) <sup>1</sup>	Turns Ratio <sup>3</sup>	Insertion Loss (dB Max) <sup>3</sup>	Return Loss (dB Min) <sup>3</sup>	Cross Talk (Between each Channel, dB Min)	CMRR (dB Min) <sup>3</sup>	DCMR (dB Min) <sup>3</sup>	Hi-Port (Vac) <sup>3</sup>
LAN5VSOS24121C2	Single	24	120	0.5	1.2	35	1CT:1CT, ±2%	-3 @100KHz -2 @1-400MHz -3 @400- 500MHz	18 @ 1-40MHz -16+10*log(f/40) @40-500MHz	-40 @ 1-100MHz -25 @200- 400MHz -20 @400- 500MHz	-30dB @1- 300MHz -20dB @300- 500MHz	-30 @ 1- 250MHz -22 @250- 500MHz	1500

1. Inductance (Transformer side), Leakage Inductance (Transformer side, short CMC side), CWW (Interwinding Capacitance, Pri to Sec): Test parameters: 100KHz, 0.2V
2. DCR: CMC side
3. Primary to secondary: Polarity pin 1 side in phase

4. Part Number Definition: LAN5VSOxxx121xx  
 LAN3VSOP= LAN Transformer 10G Base-T non-PoE, SMD Open Header  
 xxx: S24=Dual Port, 24pin  
 xx: C2=-40-85°C

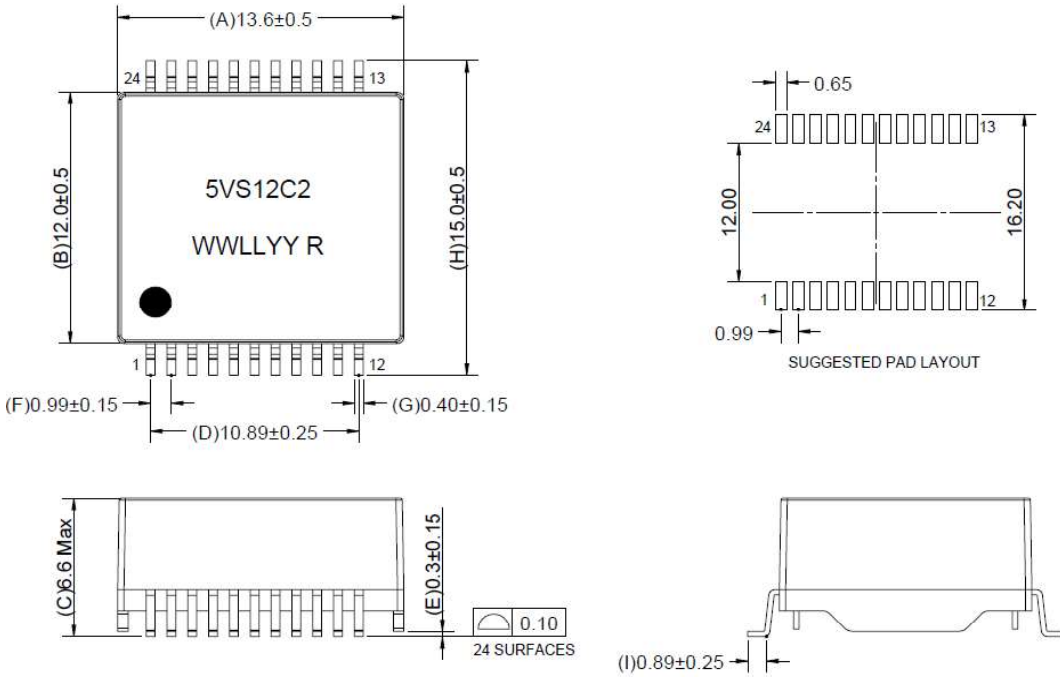
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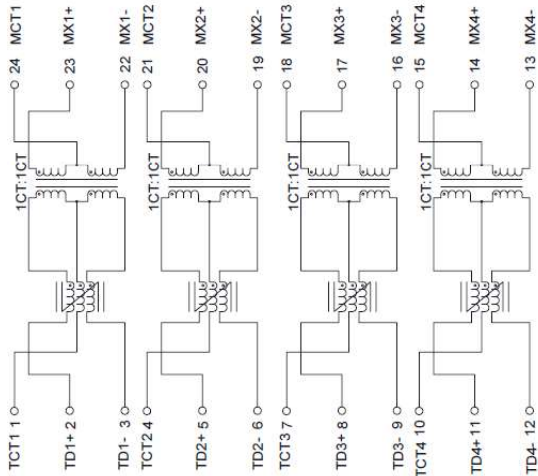
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**2.2 Mechanical parameters, schematic, pad layout- mm**

LAN5VSOS24121C2



**Schematic**



Marking: 5VS12C2= LAN5VSOS24121C2

WWLLYY R = (Date Code) (Revision)

● is Pin 1 orientation

Pin length don't include solder point

Silkscreen thickness: 0.1-0.15mm

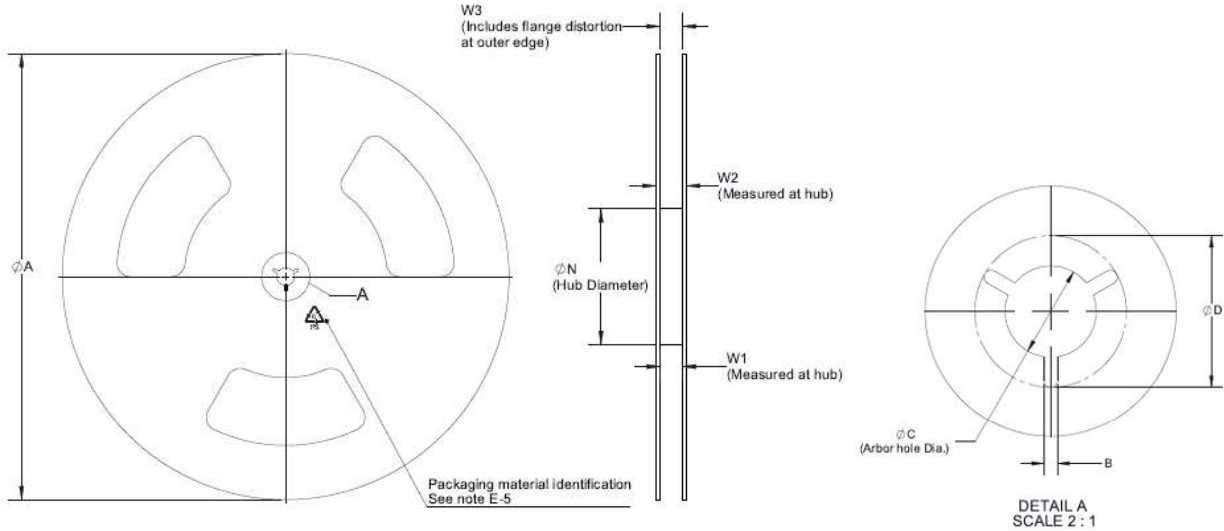
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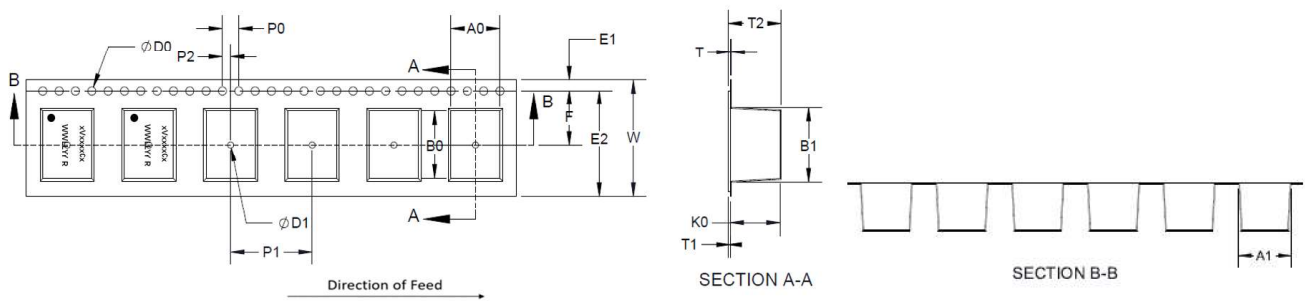
**3 Packaging information- mm**

Supplied in tape and reel packaging, 350 parts per 13" diameter reel, compliant to EIA-481



Reel Dimension(mm)

A	B	C	$\phi D$	N	W1	W2	W3
330±2	1.5min	13+0.5/-0.2	20.2min	100	24.4+2/-0	30.4max	N/A



Tape Dimension(mm)

Ao	Bo	Ko	T	W	F	E	E2	P0	P1	P2	$\phi D0$	D1
15.8±0.1	14.0±0.1	6.8±0.1	0.5±0.05	24±0.3	11.5±0.1	1.75±0.1	21.85min	4±0.1	24±0.1	2±0.1	1.5+0.1/-0	N/A

Packaging Quantity

Chip/Reel	Bag	Box	Carton
350	350	700	2800

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### 4 Reliability Summary

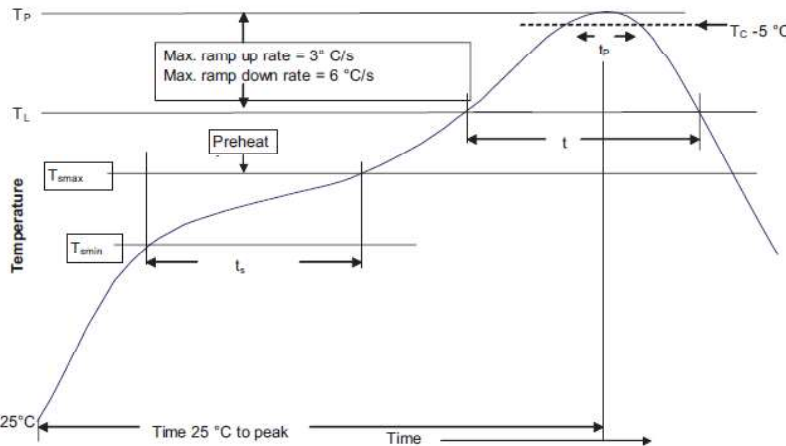
Test Item	According to	Test Specification	Acceptable Value/Range
External Visual	MIL-STD-883 Method 2009	Inspect device construction, marking and workmanship	Appearance meets the requirements
Pre- and Post-Stress Electrical Test	Product specifications.	Electrical parameters and meet specifications	Test all electrical parameters and meet specifications
Dimensional Measurement	Product specifications.	Dimensional measurement meet specifications.	All dimension meet spec
Solderability	J-STD-002	1. 8 hours steam age test 2. Dip & Look @245°C 5s	The wetting area of the electrode shall be at least 95% covered with new solder coating. (in magnification 50X)
Reflow	MIL-STD-202G	1. IR furnace:260°C ± 5°C, time:30s ± 5s 2. 1 time reflow.	1. No visual damaged. 2. Electrical parameters and meet specifications.
Resistance Soldering Heat	MIL-STD-202H, Method 210	1.Soldering temperature:260°C , 2.Soldering time:10s.	1. No visual damaged. 2. Electrical parameters and meet specifications.
Operational Life	MIL-STD-202, Method 108	1. Environment temperature: 85°C 2. Duration of load:1000h.	1. No visual damaged. 2. Electrical parameters and meet specifications.
Temperature Cycling	MIL-STD-202G	High temperature: 125°C, low temperature - 40°C, conversion time 15 minutes, conversion time 10s, 32 cycles.	1. No visual damaged. 2. Electrical parameters and meet specifications.
Biased Humidity	MIL-STD-202G	1.Temperature: 85°C, Relative Humidity: 85%RH, 2. Duration: 1000 hours.	1. Cumulative corrosion area <10% 2. Electrical parameters and meet specifications.
Vibration	MIL-STD-202, Method 204	1. PSD:10Hz~80Hz Increased at +3dB/octave, 80Hz~350Hz, 0.053g <sup>2</sup> /Hz, 350Hz~2000Hz Decrease at -3dB/octave 2. X, Y and Z vibrate for 15 minutes each.	1. No visual damaged. 2. Electrical parameters and meet specifications.
Mechanical Shock	MIL-STD-202, Method 213	1. Waveform: half sine. 2. Acceleration: 50g Pulse duration: 11ms 3. Shock time in each direction :3 times 4. Direction of shock: ±X、±Y、±Z.	1. No visual damaged. 2. Electrical parameters and meet specifications.
Terminal Strength	CBA203A-001	1. Standard: 4.5kg 2. Minimum: 60s	No visual damaged.

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**6 Solder reflow profile**



**Table 1 - Standard SnPb solder ( $T_C$ )**

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm)	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

**Table 2 - Lead (Pb) free solder ( $T_C$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

**Reference JDEC J-STD-020**

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. ( $T_{smin}$ )	100 °C	150 °C
• Temperature max. ( $T_{smax}$ )	150 °C	200 °C
• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60-120 seconds	60-120 seconds
Average ramp up rate $T_{smax}$ to $T_p$	3 °C/ second max.	3 °C/ second max.
Liquidous temperature ( $T_L$ )	183 °C	217 °C
Time at liquidous ( $t_L$ )	60-150 seconds	60-150 seconds
Peak package body temperature ( $T_p$ )*	Table 1	Table 2
Time ( $t_p$ )** within 5 °C of the specified classification temperature ( $T_C$ )	10 seconds**	10 seconds**
Average ramp-down rate ( $T_p$ to $T_{smax}$ )	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.  
 \*\* Tolerance for time at peak profile temperature ( $t_p$ ) is defined as a supplier minimum and a user maximum.