

LAN4VSOP

5G BASE-T LAN transformer, PoE



Photo is representative

Product features

- IEEE 802.3bz, 802.3.af compliant
- 1500 Vac isolation between primary and secondary
- Single port, PoE
- Toroid core winding, open header, surface mount
- Weight 1.53 g typical
- Moisture sensitivity level (MSL): 1

Applications

- SELV/ELV equipment
- IP telephones
- Wireless LAN access point
- IoT, Remote monitoring
- Smart TV
- Network camera
- Data centers

Environmental compliance and general specifications

- Operating ambient temperature range: -40 °C to +85 °C
- Storage temperature range (component): -40 °C to +125 °C



Product specifications (+25 °C)

Meets IEEE 802.3af Standards 360 mA current capability Per PoE Port /Two-pair.

Part number ⁴	Port	Pins	Inductance ^{1,5} (μH)	Leakage inductance ^{1,5} (μH)	DCR ^{2,5} (Ω)	CWW ^{1,5} (pF)	Turns ratio ³	Insertion loss ^{3,5} (dB)	Return loss ^{3,5} (dB)	Cross talk ⁵ (dB) (between each channel)	CMRR ^{3,5} (dB)
LAN4VSOPS24151C2*	Single	24	180 @ 0 mA DC Bias 150 @ 10.8 mA DC Bias	0.5	1.2	35	1CT:1CT, ±2%	-0.5 @ 1-50 MHz -1 @ 50-125 MHz -1.5 @ 125-250 MHz	-20 @ 1-40 MHz -20+12.5*log(f/40) @ 40-250 MHz	-30 @ 1-150 MHz -20 @ 150-250 MHz	-20 @ 30-400 MHz

1. Inductance (Transformer side), Leakage Inductance (Transformer side, short CMC side), CWW (Interwinding capacitance, Pri to Sec): Test parameters: 100 kHz, 0.2 V

2. DCR: CMC side

3. Turns ratio, Insertion loss, return loss and CMRR (Common mode rejection ratio): Primary to secondary: Polarity pin 1 side in phase

* Operating temperature: -40 °C to +85 °C, (temperature rise not included,)

LAN4VSOPS24151C2: Temperature rise ≤ 10 °C, Hipot: 1500 Vac, primary to secondary

4. Part Number definition: LAN4VSOPxxx151xx

LAN4VSOP= Product code

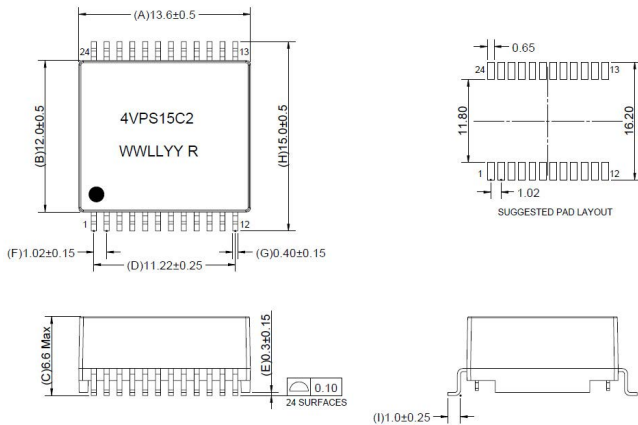
xxx: S24 = Single Port, 24 pin

xx: C2 = -40 to +85 °C

5. DCR, CWW, Leakage inductance and Insertion loss values are maximum; Inductance, Return loss, CMRR and Cross talk values are minimum

Mechanical parameters (mm)

LAN4VSOPS24151C22



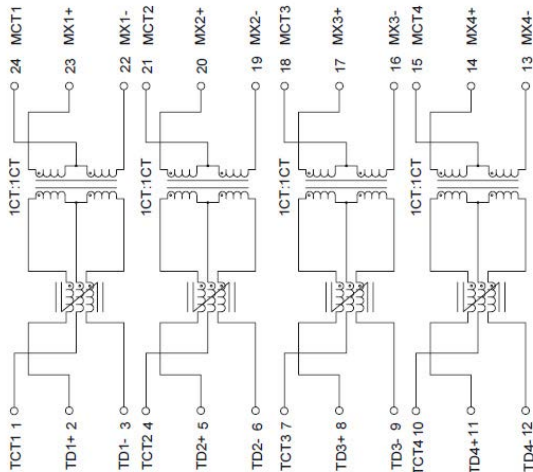
Part marking: 4VPS15C2, WWLLYY R = Lot code, Dot indicates pin 1

Pin length does not include include solder point

Silkscreen thickness: 0.1 mm to 0.15 mm

Traces or vias underneath the transformer is not recommended

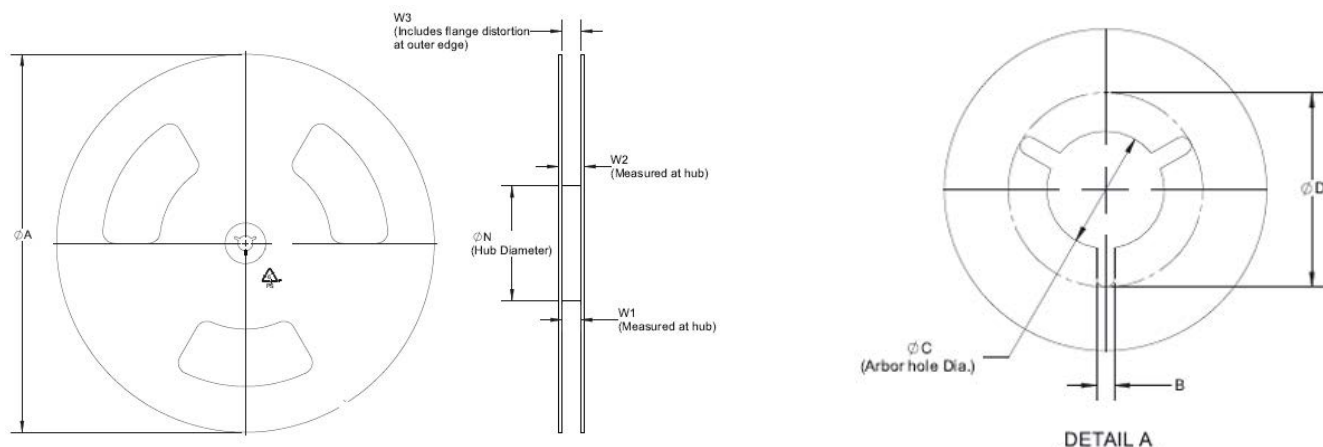
Schematic



Packaging information (mm)

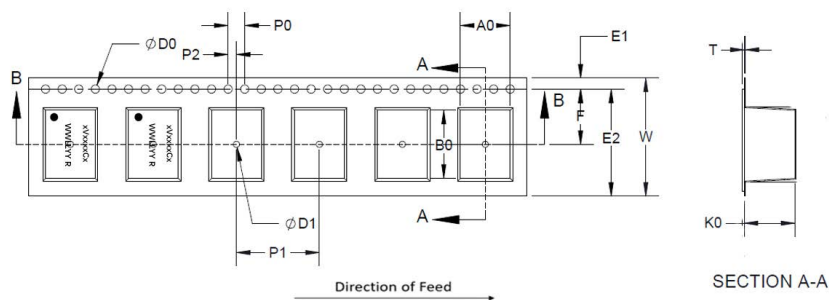
Drawing not to scale

Supplied in tape and reel packaging on a 13" diameter reel, EIA-481 compliant



Reel dimension (mm)

Part number	ϕA	B	ϕC	ϕD	ϕN	W1	W2	W3
LAN4VSOPS24151C2	330 ± 2	1.5 min	$13 + 0.5 / -0.2$	20.2 min	100	$24.4 + 2 / -0$	30.4 max	N/A



Tape dimension (mm)

Part number	Ao	Bo	Ko	T	W	F	E	E2	P0	P1	P2	$\phi D0$	$\phi D1$
LAN4VSOPS24151C2	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	21.85 min	4 ± 0.1	24 ± 0.1	2 ± 0.1	$1.5 + 0.1 / -0$	N/A

Packaging quantity

Part number	Reel	Bag	Box	Carton
LAN4VSOPS24151C2	350	350	700	2800

General specifications

Solderability	J-STD-002.	8 hours steam age test, Solder: +245 °C ± 5 °C (5 s)
Reflow	MIL-STD-202G Condition J	+260 °C ± 5 °C, 30 s ± 5 s, 1 times reflow
Resistance soldering heat	MIL-STD-202H, Method 210	+260 °C , 10 s
Operational life	MIL-STD-202, Method 108	1000 hours, +85 °C @ 360 mA
Temperature cycling	MIL-STD-202G	High temperature= +125 °C, low temperature -40 °C, conversion time 15 minutes, 32 cycles
Biased humidity	MIL-STD-202G	+85 °C, 85% RH, Duration= 1000 hours
Vibration	MIL-STD-202	10 Hz to 80 Hz, Increased at +3 dB/octave, 80 Hz to 350 Hz, 0.053 g ² /Hz, 350 Hz to 2000 Hz, Decrease at -3 dB/octave, X, Y and Z vibrate for 15 minutes each.
Mechanical shock	MIL-STD-202, Method 213	Half-sine shock pulse, peak=50 g's, 11 ms, total 18 shocks
Terminal strength	CBA203A-001	Standard: 4.5 kg, Minimum: 60 s, no visible damage

Solder reflow profile



Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥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 ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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 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
Ramp up rate T_L to T_p	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L)	183 °C	217 °C
Time (t_L) maintained above 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)	20 seconds*	30 seconds*
Ramp-down rate (T_p to T_L)	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.

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