

LAN1VSO

100BASE-T LAN transformer, non-PoE



Photo is representative

Product features

- IEEE 802.3u compliant
- 1500 Vac isolation between primary and secondary
- Single port, dual port, and quad port options
- Toroid core winding, open header, surface mount
- Weight 0.71 g - 2.58 g typical
- Moisture sensitivity level (MSL): 1

Applications

- RJ45 network interface card
- Ethernet switch, router
- SELV/ELV equipment
- Smart TV
- Data centers
- Industrial automation

Environmental compliance and general specifications

- Operating ambient temperature range:
Single & dual port -40 °C to +85 °C
Quad port 0 °C to +70 °C
- Storage temperature (component):
-40 °C to +125 °C



Product specifications (+25 °C)

Part number ⁵	Port	Pins	Inductance ^{1,6} (μH)	Leakage inductance ^{2,6} (μH)	DCR ^{4,6} (Ω)	CWW ^{2,6} (pF)	Turns ratio ³	Insertion loss ^{3,6} (dB)	Return loss ^{3,6} (dB)	Cross talk ⁶ (dB) (between each channel)	CMRR ^{3,6} (dB)
LAN1VSOS16351C2*	Single	16	350	0.5	1.2	35	1CT:1CT, ±2%	-1.1 @ 0.5-100 MHz	-18 @ 0.5-30 MHz -18 + 20*log(f/30) @ 30.1-60 MHz -12 @ 60.1-80 MHz	-35 @ 0.5-40 MHz -33 + 20*log(f/50) @ 40.1-100 MHz	-30 @ 0.5-100 MHz
LAN1VSOD24351C2*	Dual	24	350	0.5	1.2	35	1CT:1CT, ±2%	-1.1 @ 0.5-100 MHz	-18 @ 0.5-30 MHz -12 + 20*log(f/80) @ 30.1-60 MHz -12 @ 60.1-80 MHz	-35 @ 0.5-40 MHz -33 + 20*log(f/50) @ 40.1-100 MHz	-30 @ 0.5-100 MHz
LAN1VSQ40351C1**	Quad	40	350	0.5	1.2	70	1CT:1CT, ±2%	-1.1 @ 0.5-100 MHz	-18 @ 0.5-30 MHz -12 + 20*log(f/80) @ 30.1-60 MHz -12 @ 60.1-80 MHz	-35 @ 0.5-40 MHz -33 + 20*log(f/50) @ 40.1-100 MHz	-30 @ 0.5-100 MHz

1. Inductance (Transformer side): Test parameters: 100 kHz, 0.2 V, 8 mA DC Bias,

2. Leakage Inductance (Transformer side, short CMC side), Test parameters: 100 kHz, 0.2 V

CWW (Interwinding capacitance), Pri to Sec: Test parameters: 100 kHz, 0.2 V,

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

4. DCR: CMC side,

* Operating temperature: -40 °C to +85 °C; Hipot: 1500 Vac, primary to secondary

** Operating temperature: 0 °C to +70 °C; Hipot: 1500 Vac, primary to secondary

5. Part number definition: LAN1VSOxxx351xx

LAN1VSO=Product code

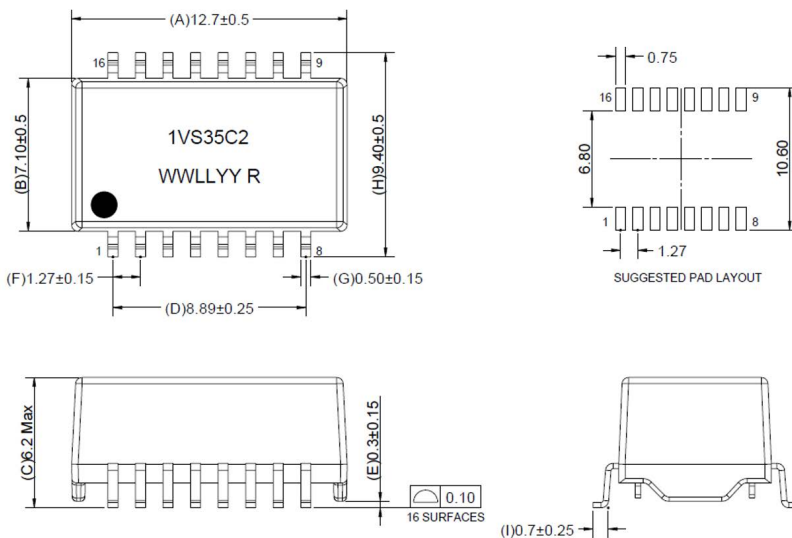
xxx: S16 =Single port, 16 Pin; D24 = Dual port, 24 Pin; Q40 = Quad port, 40 pin

xx: C1= 0 to +70 °C, C2 = -40 to +85 °C

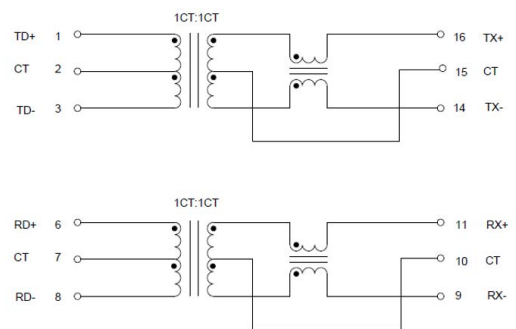
6. DCR, CWW, Leakage inductance and Insertion loss values are maximum; Inductance, Return loss, CMRR and Cross talk values are minimum

Mechanical parameters (mm)

LAN1VSOS16351C2



Schematic



Part marking: 1VS35C2, WWLLYY R = Lot code, Dot indicates pin 1

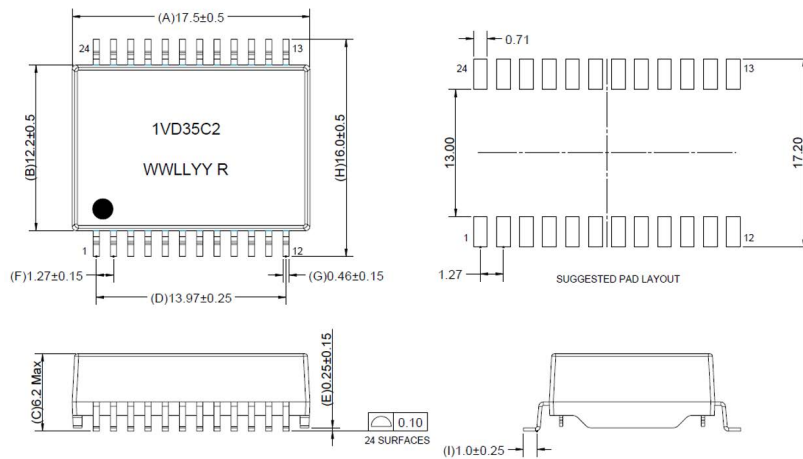
Pin length does not include include solder point

Silkscreen thickness: 0.1 mm to 0.15 mm

Traces or vias underneath the transformer is not recommended

Mechanical parameters (mm)

LAN1VSOD24351C2



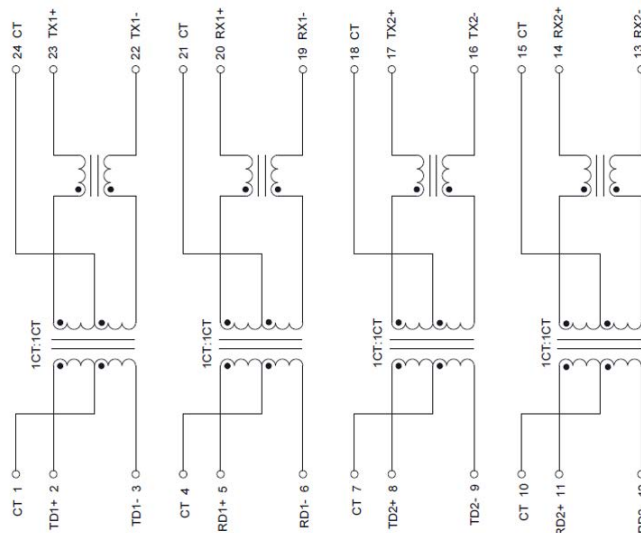
Part marking: 1VD35C2, WWLLYY R = Lot code, Dot indicates pin 1

Pin length does not include solder point

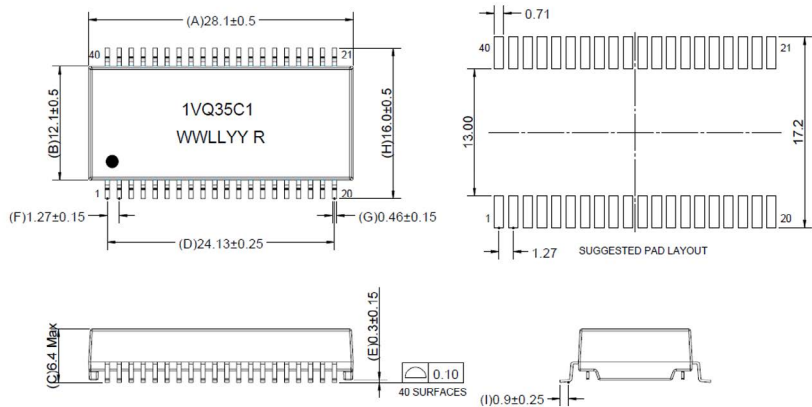
Silkscreen thickness: 0.1 mm to 0.15 mm

Traces or vias underneath the transformer is not recommended

Schematic

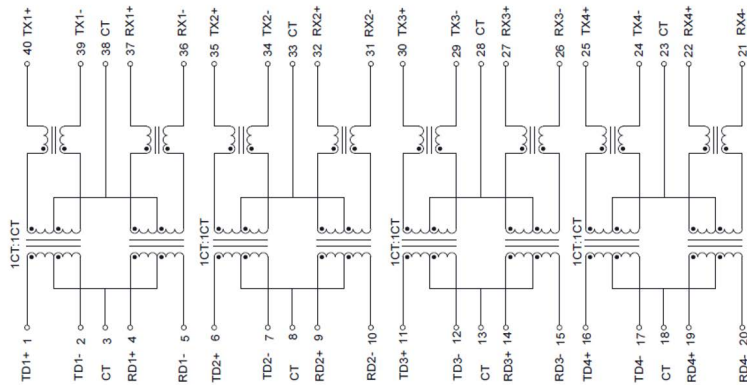


Mechanical parameters (mm)
LAN1VSOQ40351C1



Part marking: 1VQ35C1, WWLLYY R = Lot code, Dot indicates pin 1
Pin length does not include solder point
Silkscreen thickness: 0.1 mm to 0.15 mm
Traces or vias underneath the transformer is not recommended

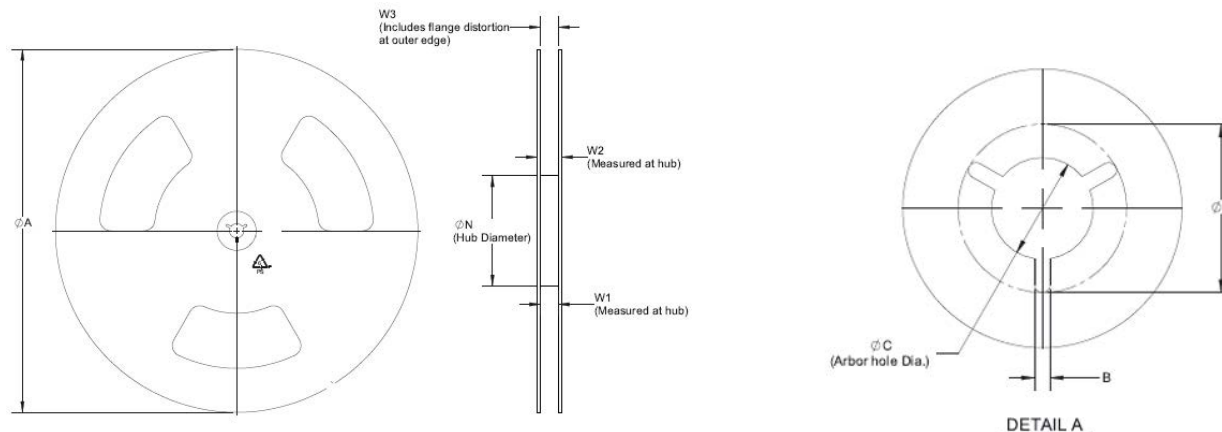
Schematic



Packaging information (mm)

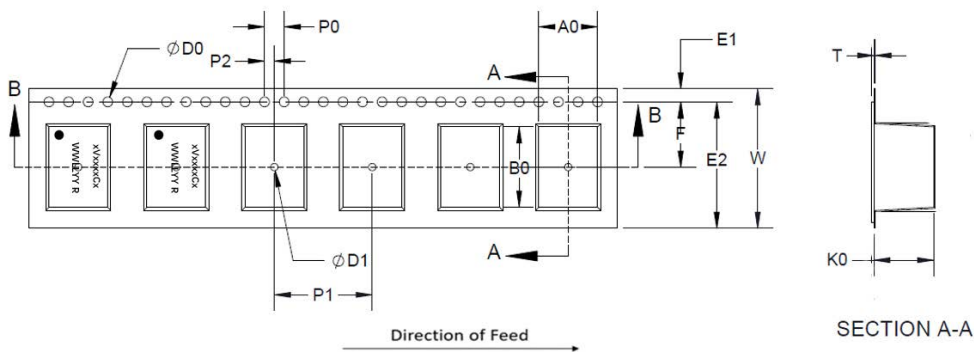
Drawing not to scale

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



Reel dimension (mm)

Part number	ØA	B	ØC	ØD	ØN	W1	W2	W3
LAN1VSOS16351C2	330 ± 2	1.5 minimum	13 + 0.5 / - 0.2	20.2 min	100	24.4 + 2 / - 0	30.4 max	N/A
LAN1VSOD24351C2	330 ± 2	1.5 minimum	13 + 0.5 / - 0.2	20.2 min	100	32.4 + 2 / - 0	38.4 max	N/A
LAN1VSOQ40351C1	330 ± 2	1.5 minimum	13 + 0.5 / - 0.2	20.2 min	100	44.4 + 2 / - 0	50.4 max	N/A



Tape dimension (mm)

Part number	Ao	Bo	Ko	T	W	F	E1	E2	P0	P1	P2	ØD0	ØD1
LAN1VSOS16351C2	10.8 ± 0.1	13 ± 0.1	6.75 ± 0.1	0.5 ± 0.05	24 ± 0.3	11.5 ± 0.1	1.75 ± 0.1	21.85 min	4 ± 0.1	16 ± 0.1	2 ± 0.1	1.5 + 0.1 / - 0	1.5 + 0.1 / - 0
LAN1VSOD24351C2	17 ± 0.15	18.4 ± 0.15	7.2 ± 0.15	0.5 ± 0.05	32 ± 0.3	14.2 ± 0.1	1.75 ± 0.1	29.85 min	4 ± 0.1	20 ± 0.1	2 ± 0.15	1.5 + 0.1 / - 0	2.0 min
LAN1VSOQ40351C1	16.6 ± 0.15	28.2 ± 0.15	6.3 ± 0.1	0.4 ± 0.05	44 ± 0.3	20.2 ± 0.15	1.75 ± 0.1	41.85 min	4 ± 0.1	24 ± 0.1	2 ± 0.1	1.5 + 0.1 / - 0	1.5 + 0.1 / - 0

Packaging quantity

Part number	Reel	Bag	Box	Carton
LAN1VSOS16351C2	600	600	1200	4800
LAN1VSOD24351C2	400	400	800	1600
LAN1VSOQ40351C1	400	400	800	1600

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
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

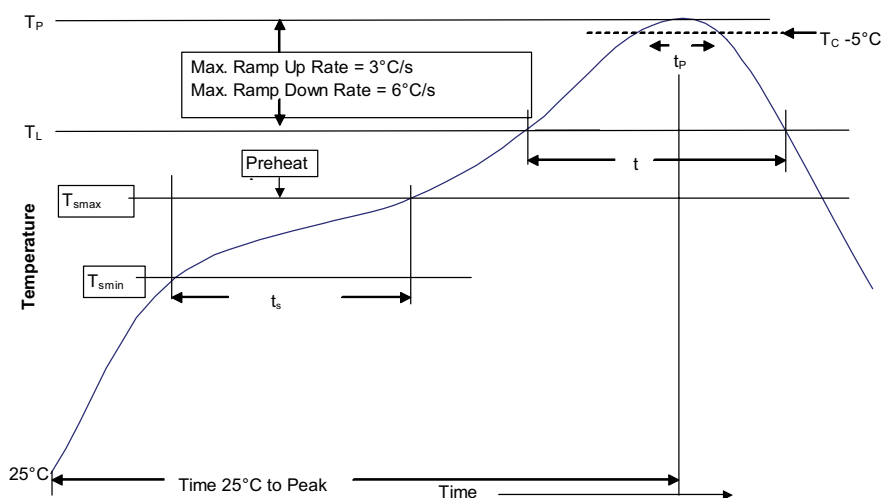


Table 1 - Standard SnPb solder (T_C)

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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