LAN1VSOP

100BASE-T LAN transformer, PoE

Photo is representative

Applications

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

Product features

- IEEE 802.3u, 802.3.af, 802.3.at compliant
- 1500 Vac isolation between primary and secondary
- Single port and quad port options
- Toroid core winding, open header, surface mount
- Weight 0.78 g - 2.8 g typical
- Moisture sensitivity level (MSL): 1

Environmental compliance and general specifications

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

Powering Business Worldwide

Product specifications (+25 °C)

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)	DCMR[3,5] (dB)
LAN1VSOPS16351C2*	Single	16	350 @ 8 mA DC Bias 120 @ 19 mA DC Bias	0.5	1.4	35	1CT:1CT, ±2%	-1 @ 1-100 MHz	-18 @ 1-30 MHz -14 @ 60 MHz -12 @ 80 MHz	-45 @ 30 MHz -40 @ 60 MHz -35 @ 100 MHz	-42 @ 30 MHz -37 @ 50 MHz -33 @ 100 MHz

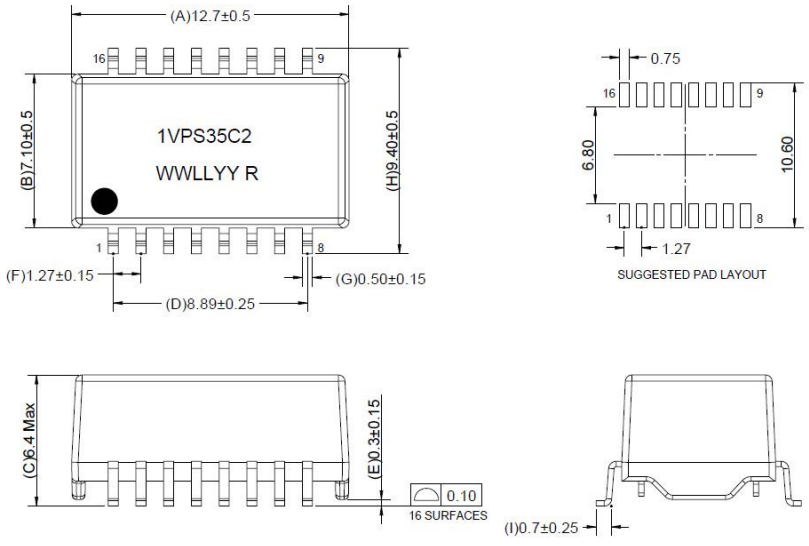
Part number[6]	Port	Pins	Inductance[1,5] (µH)	Leakage inductance[1,5] (µH)	DCR[2,5] (Ω)	CWW[1,5] (pF)	Turns ratio[3]	Insertion loss[3,5] (dB)	Return loss[3,5] (dB)	Cross talk[5] (dB) (between each channel)	CMRR[3,5] (dB)
LAN1VSOPQ48351C1**	Quad	48	350 @ 8 mA DC Bias	0.5	1.2	35	1CT:1CT, ±2%	-1 @ 0.5-100 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), 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, DCMR (Differential to common mode rejection) and CMRR (Common mode rejection ratio) Primary to secondary: Polarity pin 1 side in phase
4.Part number definition: LAN1VSOPxxx351xx
LAN1VSOP= Product code
xxx: S16 = Single port, 16 Pin; Q40 = Quad Port, 40 pin
xx: C1 = 0 to +70 °C, C2 = -40 to +85 °C
5. DCR, CWW, Leakage inductance and Insertion loss values are maximum; Inductance, Return loss, CMRR, DCMR and Cross talk values are minimum

*= Meets IEEE 802.3at standard, 720 mA current capability Per PoE port / two-pair. Hipot : 1500 Vac primary to secondary
Operating temperature: (temperature rise not included)
-40 °C to +85 °C, Temperature rise ≤ 20 °C

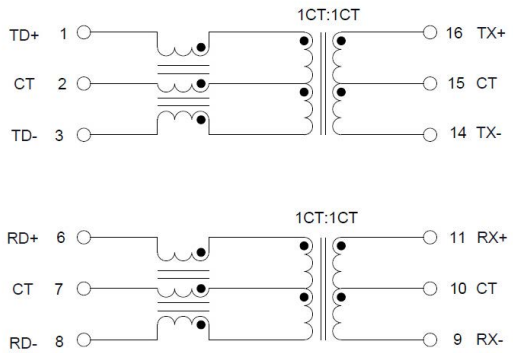
**= Meets IEEE 802.3af standard, 350 mA current capability Per PoE port / two-pair. Hipot: 1500 Vac primary to secondary
Operating temperature: (temperature rise not included)
0 °C to +70 °C, Temperature rise ≤ 15 °C

Mechanical parameters (mm)
LAN1VSOPS16351C2

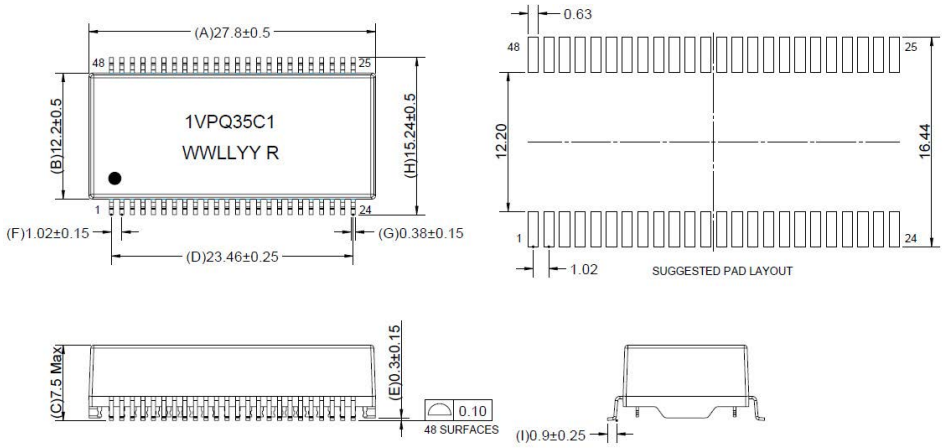


Marking: 1VPS35C2, WWLLYY R = Lot code, Dot indicates pin 1
Pin length does not include include solder point
Silkscreen thickness: 0.1 mm to 0.15 mm
Traces or vias underneath the transformer not recommended

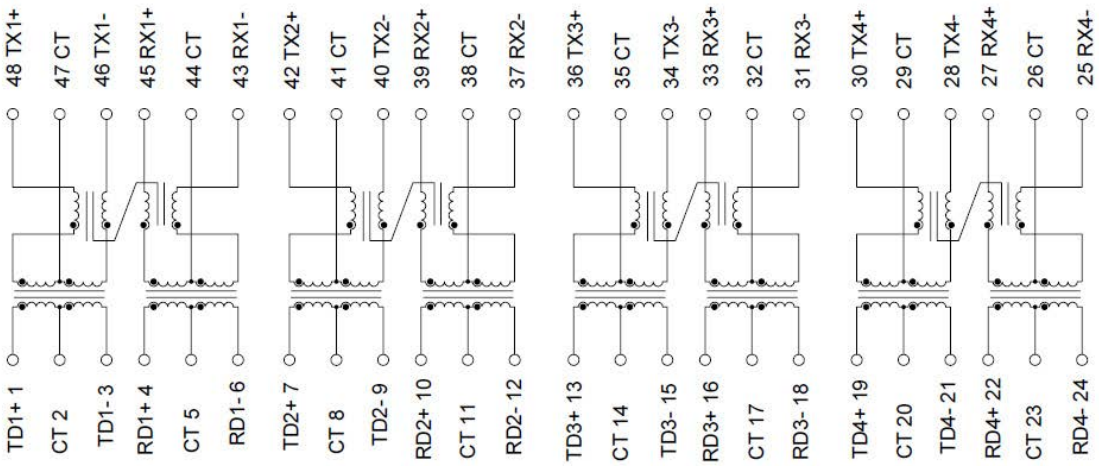
Schematic



Mechanical parameters (mm)
LAN1VSOPQ48351C1



Schematic



Marking: 1VPQ35C1, WWLLYY R = lot code, dot indicates pin 1

Pin length does not include solder point

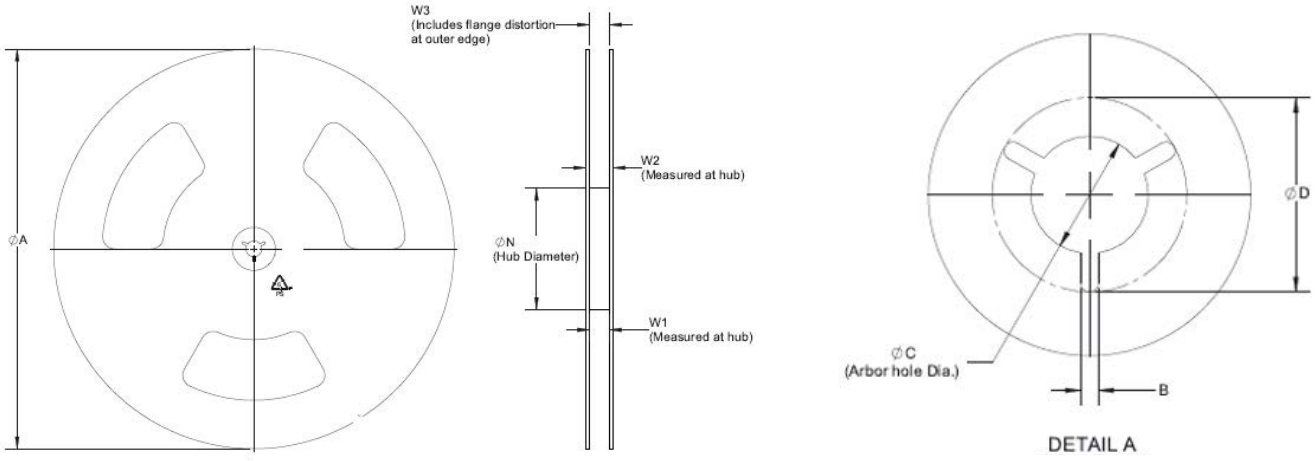
Silkscreen thickness: 0.1 mm to 0.15 mm

Traces or vias underneath the transformer not recommended

Packaging information (mm)

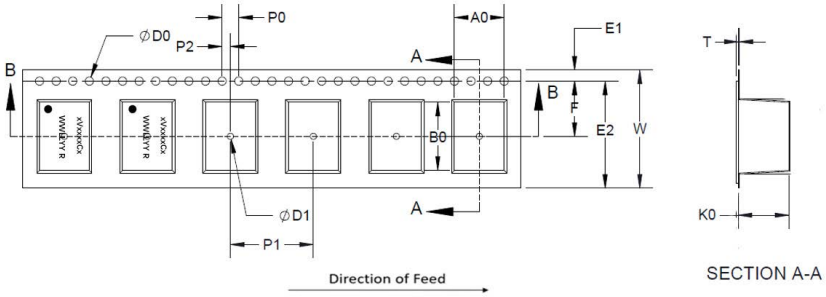
Drawing not to scale

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



Reel dimension (mm)

PN	ØA	B	ØC	ØD	ØN	W1	W2	W3
LAN1VSOPS16351C2	330 ± 2	330 ± 2	13 +0.5/-0.2	20.2 min	100	24.4 + 2 / -0	30.4 max	N/A
LAN1VSOPQ48351C1	1.5 minimum	1.5 minimum	13 +0.5/-0.2	20.2 min	100	24.4 + 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
LAN1VSOPS16351C2	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
LAN1VSOPQ48351C1	16 ± 0.15	28.2 ± 0.1	7.8 ± 0.1	0.5 ± 0.05	44 ± 0.3	20.2 ± 0.1	1.75 ± 0.1	41.85 min	4 ± 0.1	24 ± 0.1	2 ± 0.1	1.5 + 0.1 / -0	2 + 0.1 / -0

Packaging quantity

Part number	Reel	Bag	Box	Carton
LAN1VSOPS16351C2	600	600	1200	4800
LAN1VSOPQ48351C1	300	300	600	1200

General specifications

Solderability	J-STD-002.	8 hours steam age test, Solder: +245 °C ± 5 °C (5 s)
Reflow	MIL-STD-202G	+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, @ rated current: LAN1VSOPS16351C2 (720 mA), LAN1VSOPQ48351C1 350 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 method 204	PSD:10 Hz~ 80 Hz Increased at +3 dB/octave, 80 Hz~350 Hz, 0.053 g^2/Hz, 350 Hz~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 visable damage

Solder reflow profile

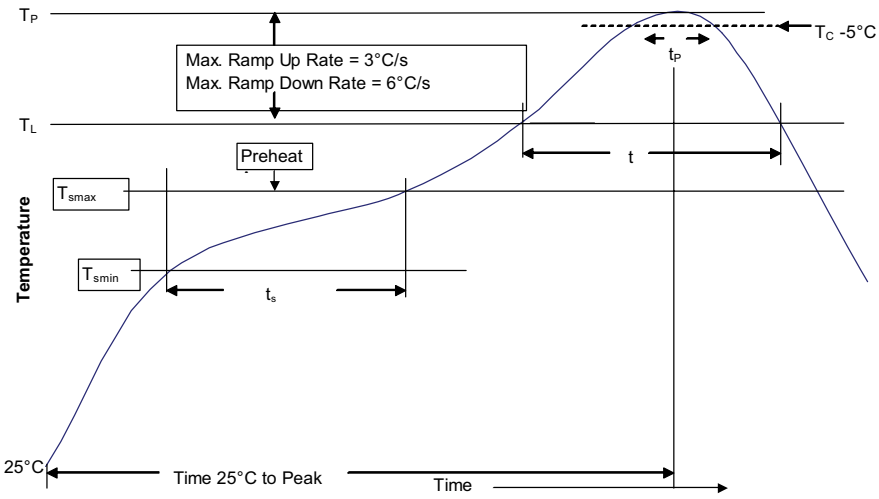


Table 1 - Standard SnPb solder (T_c)

Package thickness	Volume mm3 <350	Volume mm3 ≥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) Time (t_L) maintained above T_L		183 °C 60-150 seconds	217 °C 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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