

### CONTENTS

| <b>SECTION</b> | <b>DESCRIPTION</b>   | <b>PAGE</b> |
|----------------|--|-------------|
| 1              | PRODUCT FEATURES AND ENVIRONMENTAL DATA.....               | 2           |
|                | PRODUCT FEATURES .....                                     | 2           |
|                | APPLICATIONS .....   | 2           |
|                | ENVIRONMENTAL DATA.....                                    | 2           |
| 2              | SPECIFICATION .....  | 3           |
|                | 2.1 ELECTRICAL PARAMETERS@25°C.....                        | 3           |
|                | 2.2 MECHANICAL PARAMETERS, SCHEMATIC, PAD LAYOUT- MM ..... | 4           |
| 3              | PACKAGING INFORMATION- MM .....                            | 6           |
| 4              | RELIABILITY SUMMARY .....                                  | 7           |
| 6              | SOLDER REFLOW PROFILE .....                                | 8           |

---

# 1 Product features and environmental data

## Product features

- IEEE 802.3ab, 802.3.at compliant
- 1500 Vac isolation between primary and secondary
- Multi option: Single port, Dual port
- Toroid core winding, SMD, Open header
- Weight 2.04g-3.30g
- Moisture Sensitivity Level (MSL): 1

## Applications

- IP telephones
- Wireless LAN access point APs
- Network cameras, etc.

## 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, Sb<sub>2</sub>O<sub>3</sub> and Red Phosphorus

## LAN2VSOP Series PoE 1000 Base-T

TITLE: LAN PoE Transformer /1000 BASE-T

REV A

## 2 Specification

### 2.1 Electrical parameters@25°C

Meets IEEE 802.3at Standards 720mA current capability Per PoE Port / Two-pair.

| 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> | Hi-Port (Vac) <sup>3</sup> |
|------------------|--------|------|----------------------------------|--|--------------------------|---------------------------|--------------------------|--------------------------------------|---|---|----------------------------|----------------------------|
| LAN2VSOPS24351C2 | Single | 24   | 350 @ 13mA DC Bias               | 0.5                                      | 1.4                      | 35                        | 1CT:1CT<br>, ±2%         | -1.1 @ 0.5-100MHz                    | -18 @ 0.5-40MHz<br>-12+20*log(f/80)<br>@40.1-100MHz | -35 @ 0.5-40MHz<br>-33+20*log(f/50)<br>@40.1-100MHz | -30 @ 0.5-100MHz           | 1500                       |
| LAN2VSOPD48351C2 | Dual   | 48   | 350 @10.8mA DC Bias              | 0.5                                      | 0.6                      | 35                        | 1CT:1CT<br>, ±2%         | -1.1 @ 0.5-100MHz                    | -18 @ 0.5-40MHz<br>-12+20*log(f/80)<br>@40.1-100MHz | -35 @ 0.5-40MHz<br>-33+20*log(f/50)<br>@40.1-100MHz | -30 @ 0.5-100MHz           | 1500                       |

- Inductance (Transformer side), Leakage Inductance (Transformer side, short CMC side), CWW (Interwinding Capacitance, Pri to Sec): Test parameters: 100KHz, 0.2V
- DCR: CMC side
- Primary to secondary: Polarity pin 1 side in phase
- Operating Temperature: Not include temperature rise  
 LAN2VSOPS24351C2: Temperature rise ≤ 15°C  
 LAN2VSOPD48351C2: Temperature rise ≤ 35°C, inductance will be 300 uH min @10.8mA DC Bias @120°C include temperature rise
- Part Number Definition: LAN2VSOPxxx351xx  
 LAN2VSOP= LAN Transformer 1000 Base-T PoE, SMD Open Header  
 xxx: S24=Single port, 24Pin, D48=Dual Port, 48pin  
 xx: C2=-40-85°C

# Engineering Product Specification

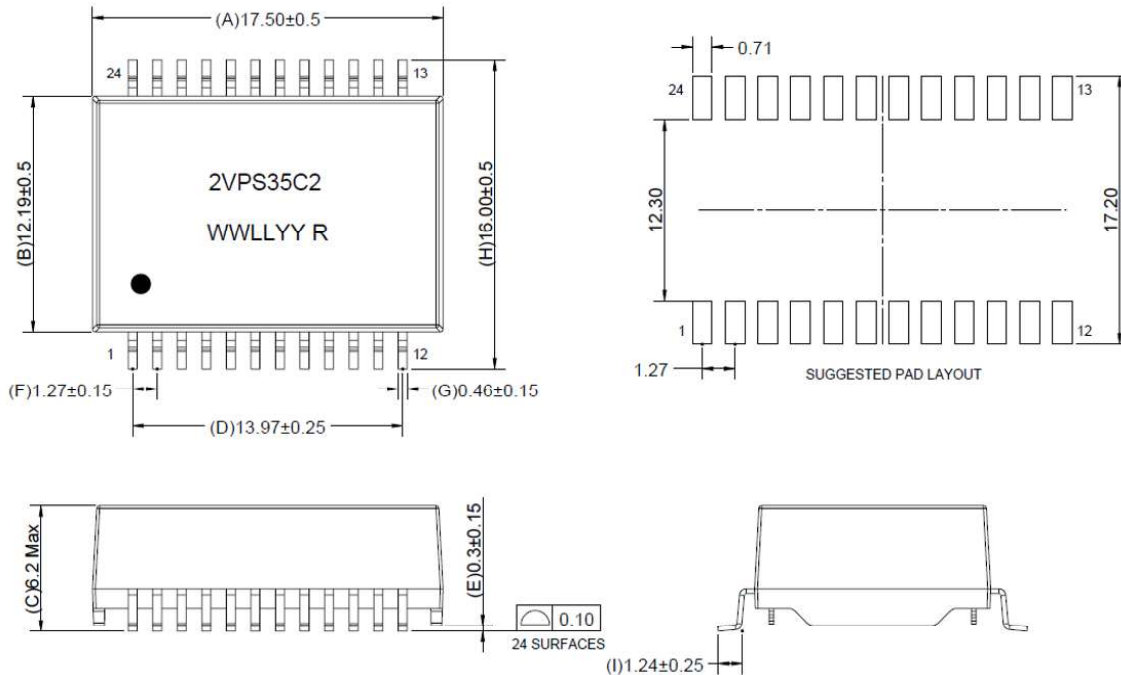
## LAN2VSOP Series PoE 1000 Base-T

TITLE: LAN PoE Transformer /1000 BASE-T

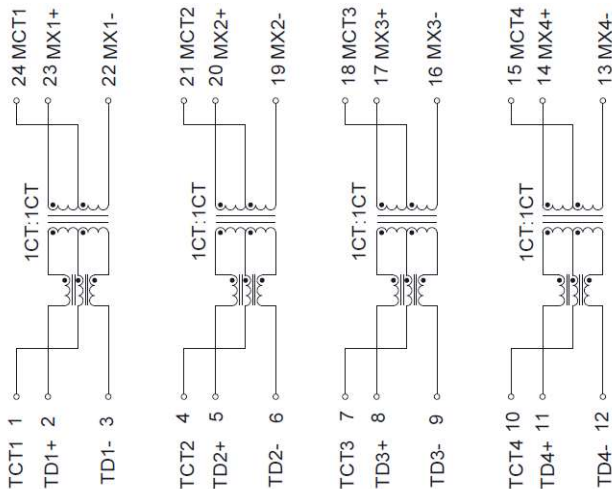
REV A

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

LAN2VSOPS24351C2



#### Schematic



Marking: 2VPS35C2 = LAN2VSOPS24351C2

WWLLYY R = (Date Code) (Revision)

● is Pin 1 orientation

Pin length don't include solder point

Silkscreen thickness: 0.1-0.15mm

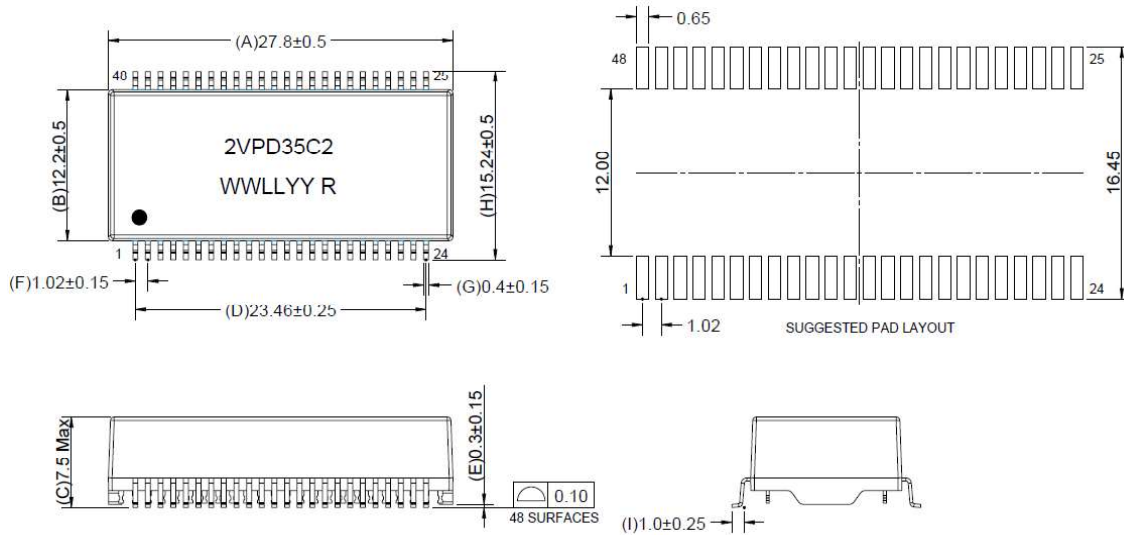
# Engineering Product Specification

## LAN2VSOP Series PoE 1000 Base-T

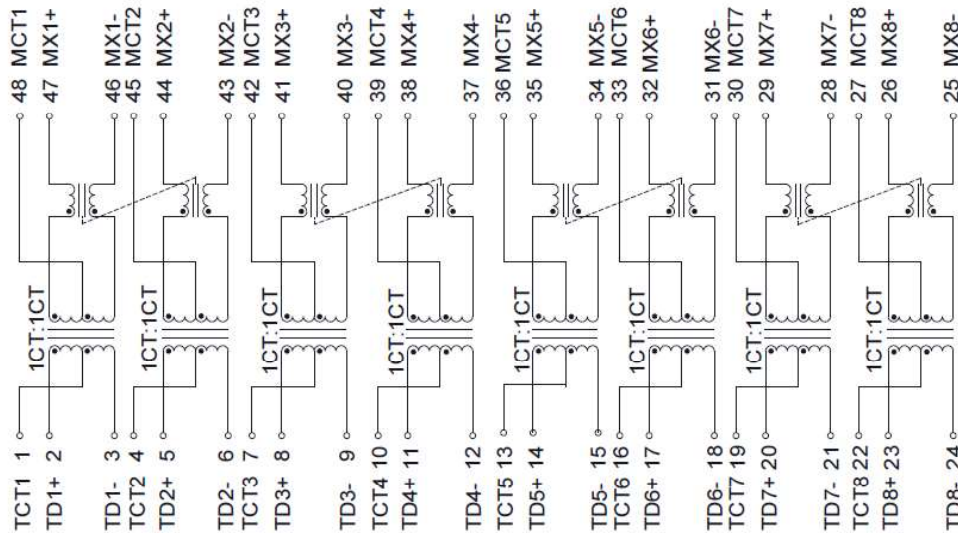
TITLE: LAN PoE Transformer /1000 BASE-T

REV A

### LAN2VSOPD48351C2



### Schematic



Marking: 2VPD35C2 = LAN2VSOPD48351C2

WWLLYY R = (Date Code) (Revision)

● is Pin 1 orientation

Pin length don't include solder point

Silkscreen thickness: 0.1-0.15mm

# Engineering Product Specification

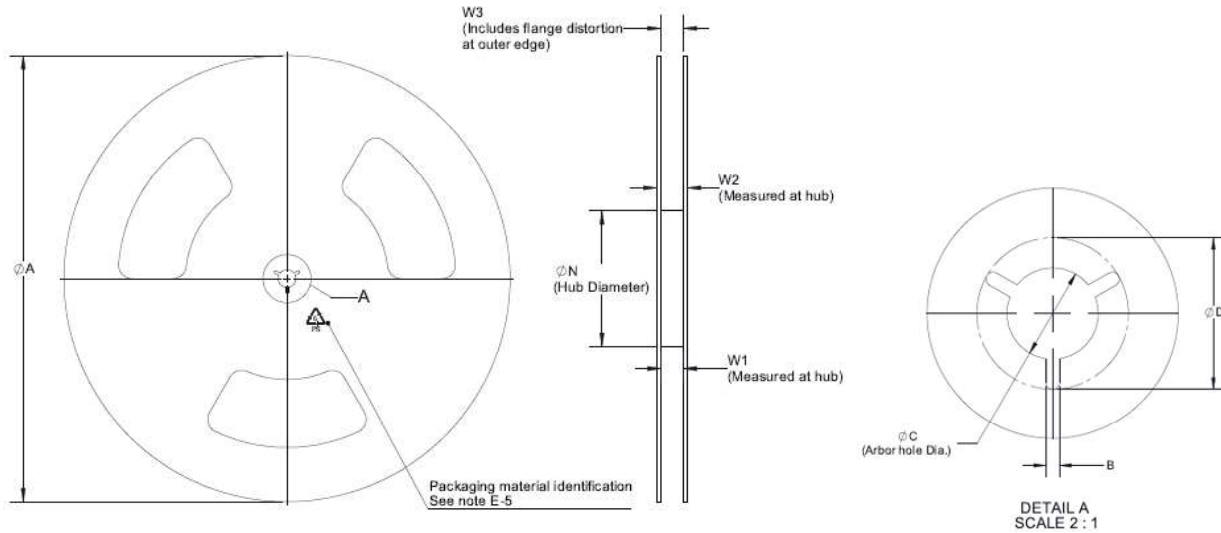
## LAN2VSOP Series PoE 1000 Base-T

TITLE: LAN PoE Transformer /1000 BASE-T

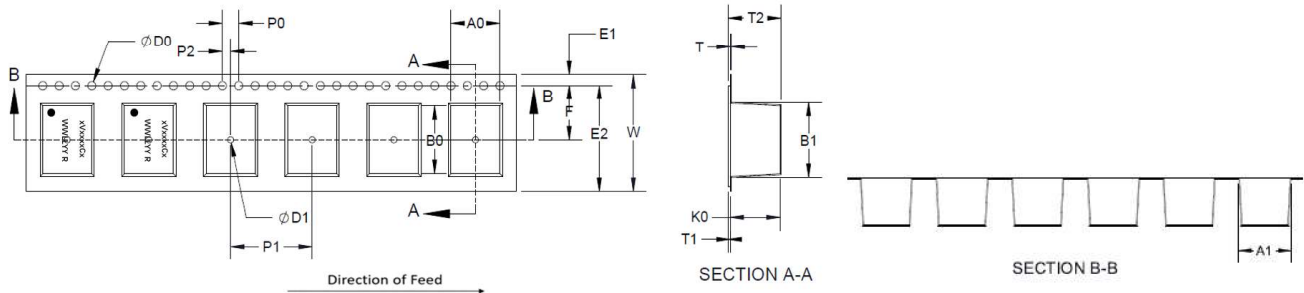
REV A

### 3 Packaging information- mm

Supplied in tape and reel packaging, 300/400 parts per 13" diameter reel, compliant to EIA-481



| PN               | A     | B      | C           | ΦD      | N   | W1        | W2      | W3  |
|------------------|-------|--------|-------------|---------|-----|-----------|---------|-----|
| LAN2VSOPS24351C2 | 330±2 | 1.5min | 13+0.5/-0.2 | 20.2min | 100 | 32.4+2/-0 | 38.4max | N/A |
| LAN2VSOPD48351C2 | 330±2 | 1.5min | 13+0.5/-0.2 | 20.2min | 100 | 44.4+2/-0 | 50.4max | N/A |



Tape Dimension(mm)

| PN               | Ao      | Bo       | Ko      | T        | W      | F        | E1       | E2       | P0    | P1     | P2     | ΦD0        | D1       |
|------------------|---------|----------|---------|----------|--------|----------|----------|----------|-------|--------|--------|------------|----------|
| LAN2VSOPS24351C2 | 17±0.1  | 17.9±0.1 | 7.2±0.1 | 0.5±0.05 | 32±0.3 | 14.2±0.1 | 1.75±0.1 | 29.85min | 4±0.1 | 20±0.1 | 2±0.15 | 1.5+0.1/-0 | 2.0min   |
| LAN2VSOPD48351C2 | 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 | 41.85min | 4±0.1 | 24±0.1 | 2±0.1  | 1.5+0.1/-0 | 2+0.1/-0 |

Packaging Quantity

| PN               | Chip/Reel | Bag | Box | Carton |
|------------------|-----------|-----|-----|--------|
| LAN2VSOPS24351C2 | 400       | 400 | 400 | 1600   |
| LAN2VSOPD48351C2 | 300       | 300 | 600 | 1200   |

# Engineering Product Specification

## LAN2VSOP Series PoE 1000 Base-T

TITLE: LAN PoE Transformer /1000 BASE-T

REV A

### 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<br>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<br>2. 1 time reflow.   | 1. No visual damaged.<br>2. Electrical parameters and meet specifications.                                      |
| Resistance Soldering Heat            | MIL-STD-202H, Method 210 | 1.Soldering temperature:260°C ,<br>2.Soldering time:10s.  | 1. No visual damaged.<br>2. Electrical parameters and meet specifications.                                      |
| Operational Life                     | MIL-STD-202, Method 108  | 1. Environment temperature: 85°C<br>2. Rated current: 720mA<br>3. Duration of load:1000h.   | 1. No visual damaged.<br>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.<br>2. Electrical parameters and meet specifications.                                      |
| Biased Humidity                      | MIL-STD-202G             | 1.Temperature: 85°C, Relative Humidity: 85%RH,<br>2. Duration: 1000 hours.  | 1. Cumulative corrosion area <10%<br>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<br>Decrease at -3dB/octave<br>2. X, Y and Z vibrate for 15 minutes each. | 1. No visual damaged.<br>2. Electrical parameters and meet specifications.                                      |
| Mechanical Shock                     | MIL-STD-202, Method 213  | 1. Waveform: half sine.<br>2. Acceleration: 50g<br>Pulse duration: 11ms<br>3. Shock time in each direction :3 times<br>4. Direction of shock: ±X、±Y、±Z.               | 1. No visual damaged.<br>2. Electrical parameters and meet specifications.                                      |
| Terminal Strength                    | CBA203A-001              | 1. Standard: 4.5kg<br>2. Minimum: 60s   | No visual damaged.  |

# Engineering Product Specification

## LAN2VSOP Series PoE 1000 Base-T

TITLE: LAN PoE Transformer /1000 BASE-T

REV A

### 6 Solder reflow profile

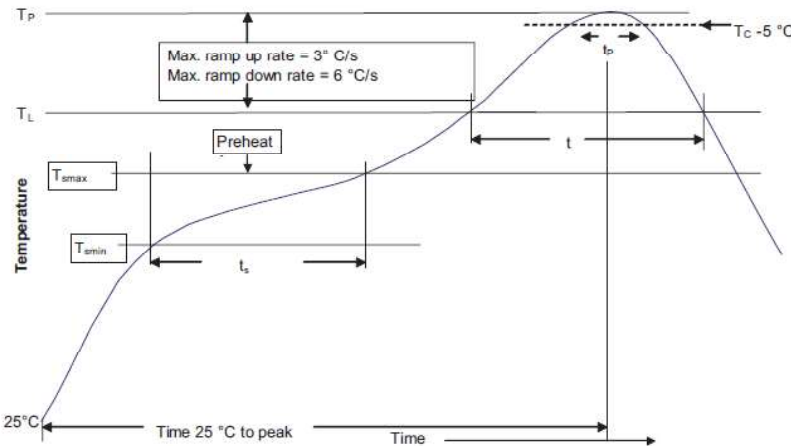


Table 1 - Standard SnPb solder (T<sub>C</sub>)

| 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<sub>C</sub>)

| 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 <sub>smin</sub> )  | 100 °C               | 150 °C                |
| • Temperature max. (T <sub>smax</sub> )  | 150 °C               | 200 °C                |
| • Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )                                 | 60-120 seconds       | 60-120 seconds        |
| Average ramp up rate T <sub>smax</sub> to T <sub>p</sub>   | 3 °C/ second max.    | 3 °C/ second max.     |
| Liquidous temperature (T <sub>l</sub> )  | 183 °C               | 217 °C                |
| Time at liquidous (t <sub>l</sub> )  | 60-150 seconds       | 60-150 seconds        |
| Peak package body temperature (T <sub>p</sub> )*   | Table 1              | Table 2               |
| Time (t <sub>p</sub> )** within 5 °C of the specified classification temperature (T <sub>C</sub> ) | 10 seconds**         | 10 seconds**          |
| Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )                                      | 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<sub>p</sub>) is defined as a supplier minimum and a user maximum.  
 \*\* Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as a supplier minimum and a user maximum.