LAN2VS

1000BASE-T LAN transformer, non-PoE

Photo is representative

Applications

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

Product features

- IEEE 802.3ab compliant
- 1500 Vac isolation between primary and secondary
- Multi option: single port, dual port
- Toroid core winding, open header/assembly header, surface mount
- Weight 0.65 g - 2.85 g typical
- Moisture sensitivity level (MSL): 1

Environmental compliance and general specifications

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

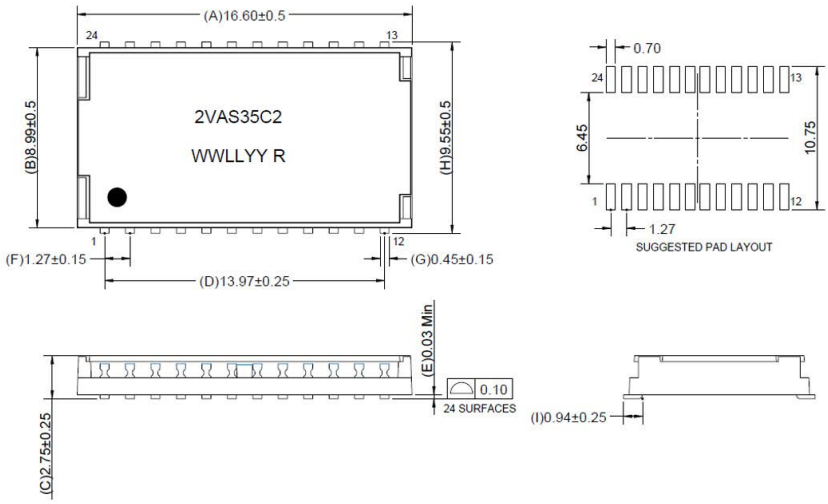
Powering Business Worldwide

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)	CMRR[3,5] (dB)
LAN2VSAS24351C2*	Single	24	350 @ 0 mA DC Bias	0.5	1.2	35	1CT:1CT, ±2%	-1.1 @ 0.5-100 MHz	-18 @ 0.5-40 MHz -12+20*log(f/80) @40.1-100 MHz	-35 @ 0.5-40 MHz -33+20*log(f/50) @ 40.1-100 MHz	-30 @ 0.5-100 MHz
LAN2VSOS24351C2*	Single	24	350 @ 8 mA DC Bias	0.5	1.2	35	1CT:1CT, ±2%	-1.1 @ 0.5-100 MHz	-18 @ 0.5-40 MHz -12+20*log(f/80) @40.1-100 MHz	-35 @ 0.5-40 MHz -33+20*log(f/50) @ 40.1-100 MHz	-30 @ 0.5-100 MHz
LAN2VSOD48351C2*	Dual	48	350 @ 8 mA DC Bias	0.5	1.2	35	1CT:1CT, ±2%	-1.1 @ 0.5-100 MHz	-18 @ 0.5-40 MHz -12+20*log(f/80) @40.1-100 MHz	-35 @ 0.5-40 MHz -33+20*log(f/50) @ 40.1-100 MHz	-30 @ 0.5-100 MHz

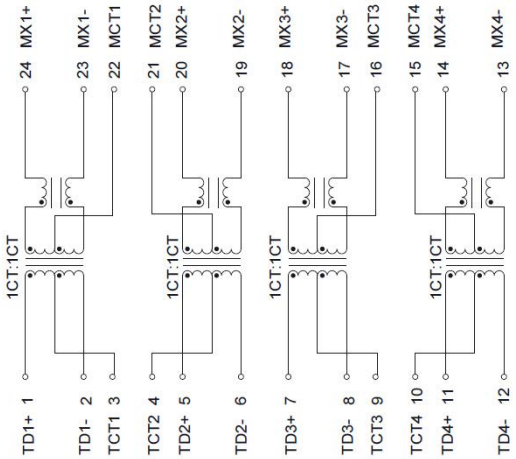
1.Inductance (Transformer side), Leakage Inductance (Transformer side, short CMC side), CWW (Interwinding Capacitance, Pri to Sec): Test parameters: 100 kHz, 0.2 V
2.DCR: CMC side
3.Turns ratio, Insertion loss, return loss and CMRR (Common mode rejection ratio): Primary to secondary: Polarity pin 1 side in phase
* Operating temperature: -40 °C to +85 °C; Hipot: 1500 Vac, primary to secondary
4.Part Number Definition: LAN2VSxxxx351xx
LAN2VS = Product code
xxxx: OS24 = Open header, Single port; 24 Pin; AS24 = Assembly header, Single port, 24 Pin; OD40= Open header, Dual port, 48 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)
LAN2VSAS24351C2

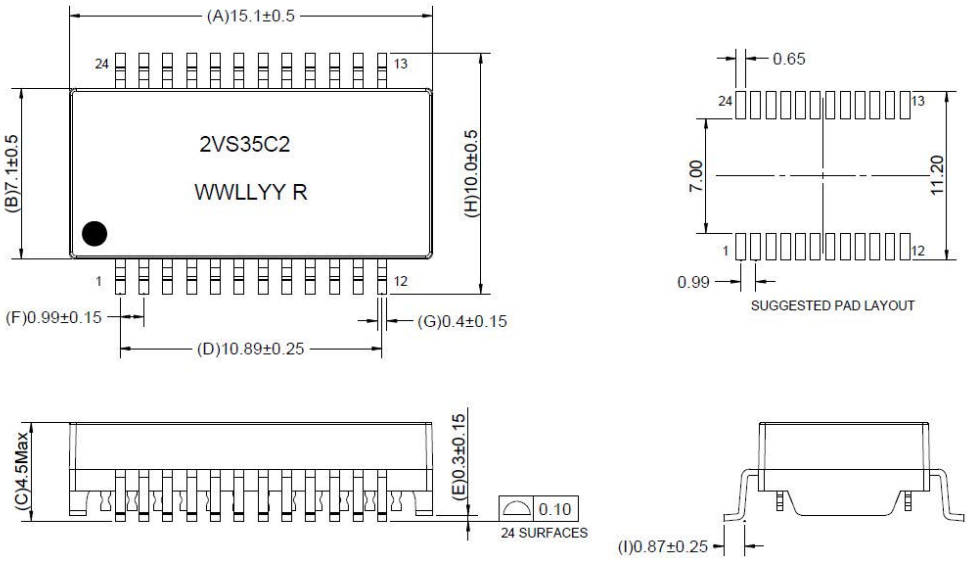


Part marking: 2VAS35C2, WWLLYY R= lot code, Dot indicates pin 1
Pin length does not include solder point
Silkscreen thickness: 0.1 mm to 0.15 mm
Traces or vias underneath the transformer not recommended

Schematic



Mechanical parameters (mm)
LAN2VSOS24351C2



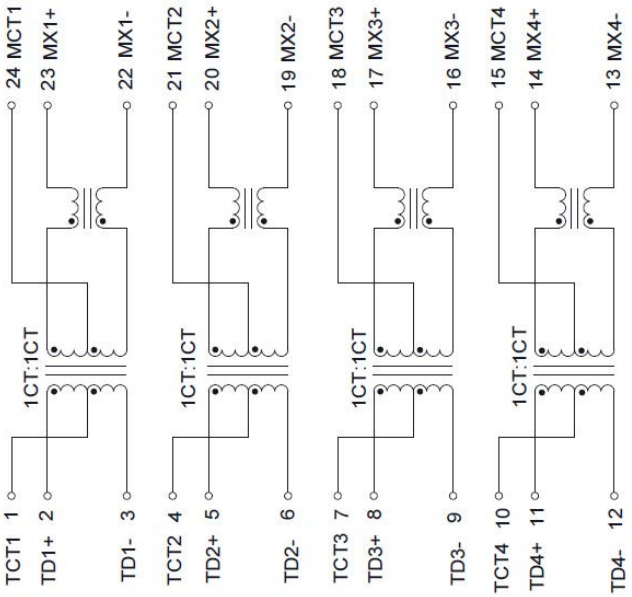
Part marking: 2VS35C2, WWLLYY R= lot code, Dot indicates pin 1

Pin length does not include solder point

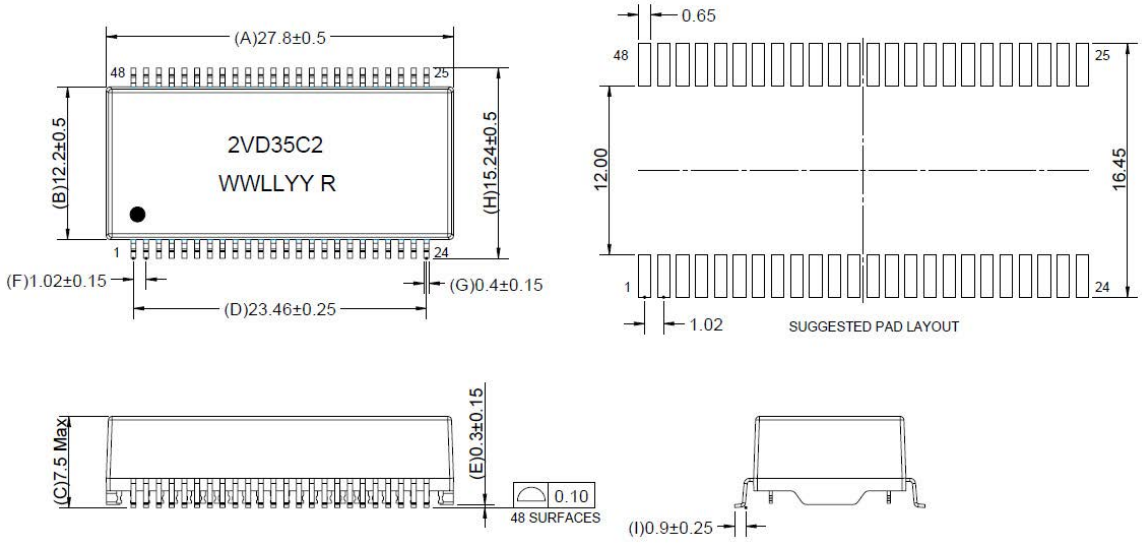
Silkscreen thickness: 0.1 mm to 0.15 mm

Traces or vias underneath the transformer not recommended

Schematic



Mechanical parameters (mm)
LAN2VSOD48351C2



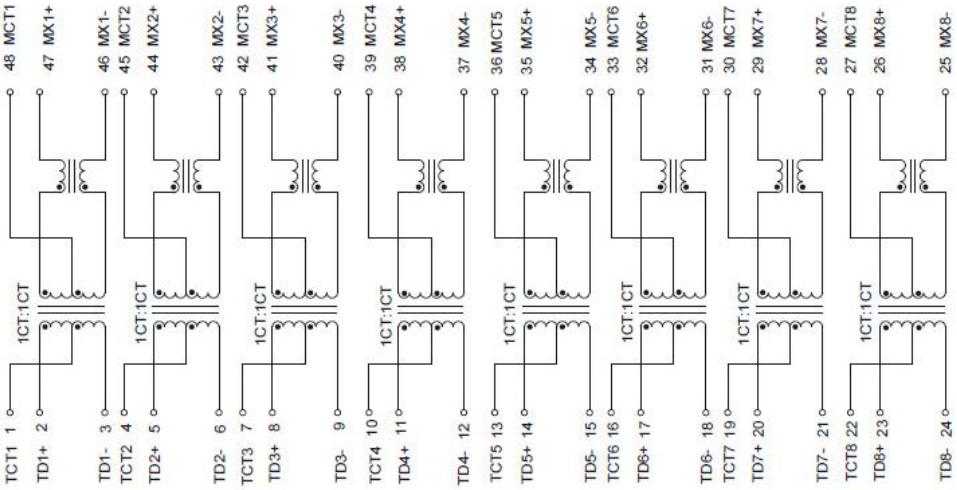
Part marking: 2VD35C2 , WWLLYY R= lot code, Dot indicates pin 1

Pin length does not include solder point

Silkscreen thickness: 0.1 mm to 0.15 mm

Traces or vias underneath the transformer not recommended

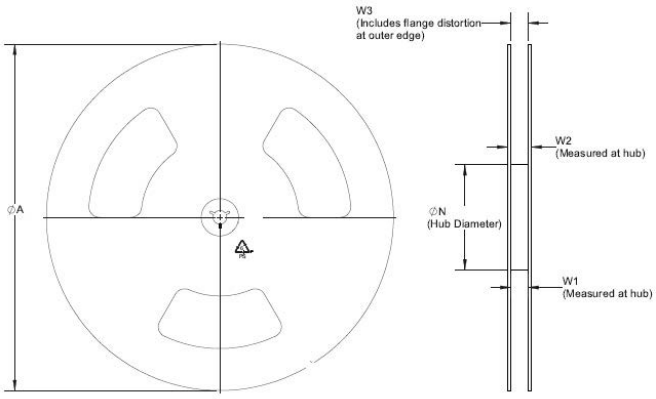
Schematic

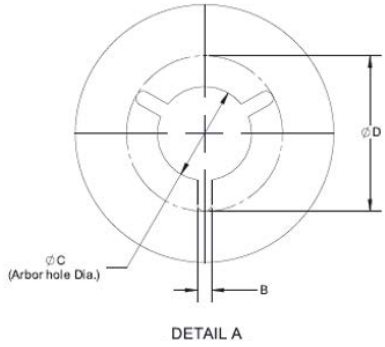


Packaging information (mm)

Drawing not to scale

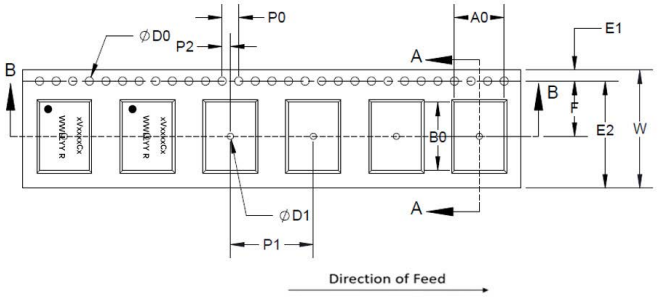
Supplied in tape and reel packaging on a 13" diameter reel, EIA-481 compliant

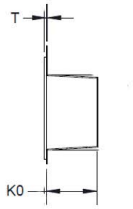




Reel dimension (mm)

Part number	ØA	B	ØC	ØD	ØN	W1	W2	W3
LAN2VSAS24351C2	330 ± 2	1.5 min	13 + 0.5 / -0.2	20.2 min	100	32.4 + 2 / -0	30.4 max	N/A
LAN2VSOS24351C2	330 ± 2	1.5 min	13 + 0.5 / -0.2	20.2 min	100	24.4 + 2 / -0	30.4 max	N/A
LAN2VSOD48351C2	330 ± 2	1.5 min	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
LAN2VSAS24351C2	10.1 ± 0.15	17.2 ± 0.15	3.4 ± 0.15	0.4 ± 0.05	32 ± 0.3	14.2 ± 0.15	1.75 ± 0.1	29.85 min	4 ± 0.1	16 ± 0.1	2 ± 0.1	1.5 + 0.1 / -0	1.5 + 0.1 / -0
LAN2VSOS24351C2	10.8 ± 0.15	15.7 ± 0.15	4.9 ± 0.1	0.4 ± 0.05	24 ± 0.3	11.5 ± 0.1	1.75 ± 0.1	21.85 min	4 ± 0.1	16 ± 0.1	2 ± 0.05	1.5 + 0.1 / -0	1.5 min
LAN2VSOD48351C2	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
LAN2VSAS24351C2	1100	1100	1100	4400
LAN2VSOS24351C2	850	850	1700	6800
LAN2VSOD48351C2	300	300	300	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
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

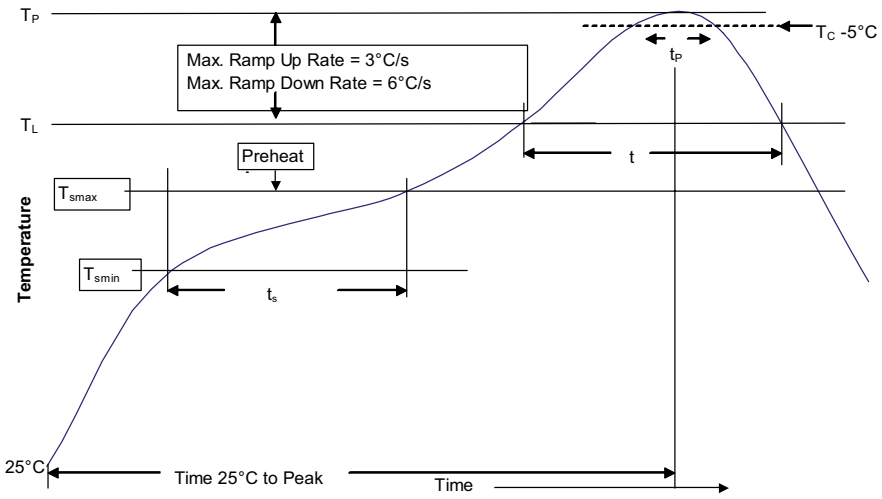


Table 1 - Standard SnPb solder (T_C)

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 mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com/electronics

Publication No. ELX1375 BU-ELX22243
October 2023