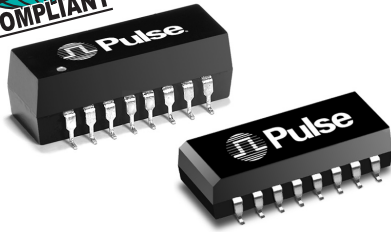


10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios



- RoHS-5 peak reflow temperature rating: 235°C
- RoHS-6 peak reflow temperature rating: 245°C
- Compatible with Broadcom, Intel, Micrel, National Semiconductor, ICS, and TDK Transceivers
- Meets IEEE 802.3 specification

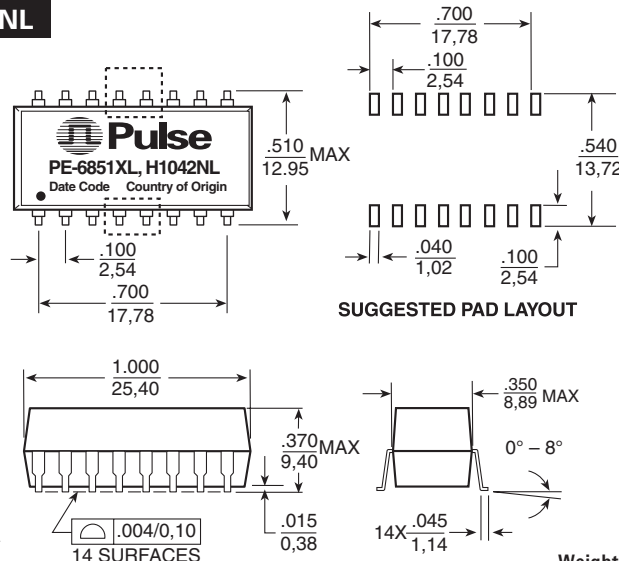
Electrical Specifications @ 25°C — Operating Temperature 0°C to 70°C

RoHS ⁶ Compliant Part Number	RoHS ⁵ Compliant Part Number	Insertion Loss (dB MAX)	Return Loss (dB MIN @ 100 Ω)				Differential to Common Mode Rejection (dB MIN)			Crosstalk (dB TYP)			Hipot (Vrms MIN)
			0.1-100 MHz	1-30 MHz	40 MHz	50 MHz	60-80 MHz	30 MHz	60 MHz	100 MHz	30 MHz	60 MHz	
H1012NL ^{4d}	H1012	-1.0	-20	-20	-18	-14	-42	-36	-33	-50	-40	-40	1500
H1019NL ^{4c}	H1019	-1.0	-20	-18	-18	-14	-45	-40	-35	-45	-40	-35	1500
H1042NL ^{4c}	—	-1.0	-16	-13.5	-11.5	-10	-45	-40	-35	-40	-38	-35	1500
H1086NL ^{4c}	H1086 ¹	-1.0	-22	-20	-18	-12	-45	-40	-35	-50	-40	-40	1500
H1089NL ^{4c}	H1089	-1.0	-22	-20	-18	-12	-42	-38	-32	-50	-40	-40	1500
H1117NL ^{4d}	H1117	-1.0	-22	-20	-18	-12	-45	-40	-35	-50	-40	-40	1500
H1138NL ^{4a}	H1138	-0.8	-18	-16	-14	-12	42	-37	-33	-50	-40	-40	1500
HX1148NL ^{2, 4d}	HX1148 ²	-1.5	-18	-13.5	-11.5	-10	-42	-37	-33	-50	-40	-40	1500
HX1178NL ^{2, 4d}	HX1178 ²	-1.5	-18	-13.5	-11.5	-10	-42	-37	-33	-50	-40	-40	1500
PE-68515LNL ^{4d}	PE-68515L	-1.0	-18	-18	-16	-12	-50	-45	-40	-55	-50	-50	1500
PE-68517LNL ^{4d}	PE-68517L	-1.0	-18	-16	-15	-12	-45	-40	-35	-50	-40	-40	1500
H1338NL ^{4a}	H1338	-1.1	-18	-16	-14	-12	-42	-37	-35	-40	-40	-35	1800

- Rise time optimized for National's DP83843.
- Operating temperature: -40°+ 85°C.
- When ordering Tape & Reel packaging, add a "T" suffix to the end of the part number, e.g. H1012T
- MSL = Moisture Sensitivity Level: a = 1, b = 2, c = 3, d = 4.
- RoHS-5: Product does not contain 5 out of the 6 banned substances specified in the RoHS directive (product contains lead in applications considered solder).
- RoHS-6: Product does not contain 5 out of the 6 banned substances specified in the RoHS directive. Some internal connections may contain lead in high-temperature solder (solder alloys containing more than 85% lead).

Mechanicals

PE-68515L, PE-68517L, H1042NL



NOTE: The PE-68515L pins 4 and 13 are removed.
The PE-68517L pins 5 and 12 are removed.

Dimensions: $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified, all tolerances are $\pm \frac{.010}{0.25}$

Weight 3.5 grams
Tube 20/tube
Tape & Reel 160/reel

10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

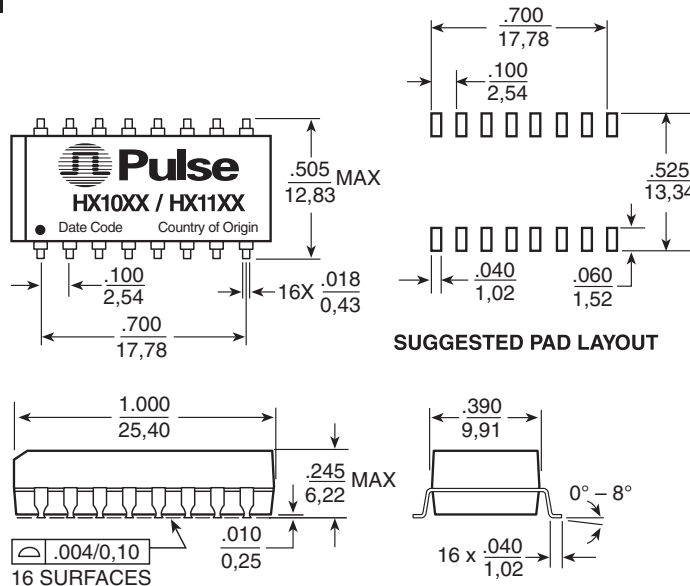
With 1:1 Transmit Turns Ratios



Mechanicals (continued)

H1012, H1019, H1086, H1089, H1117,

H1138, HX1148, HX1178

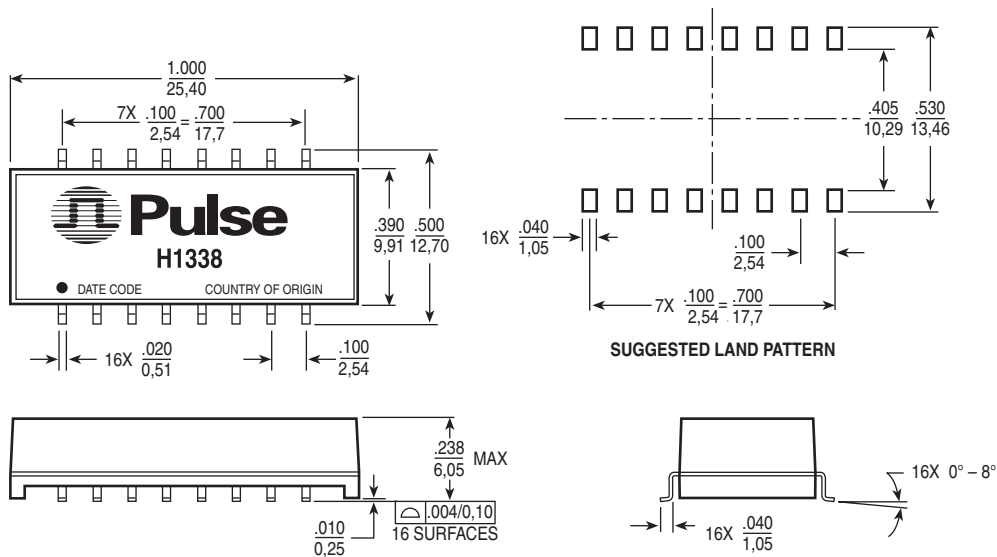


SUGGESTED PAD LAYOUT

Dimensions: $\frac{\text{Inches}}{\text{mm}}$ Unless otherwise specified, all tolerances are $\pm \frac{.010}{0,25}$

Weight 3.0 grams
 Tube 20/tube
 Tape & Reel 300/reel

H1338



SUGGESTED LAND PATTERN

Dimensions: $\frac{\text{Inches}}{\text{mm}}$ Unless otherwise specified, all tolerances are $\pm \frac{.010}{0,25}$

Weight 3.0 grams
 Tube 20/tube
 Tape & Reel 300/reel

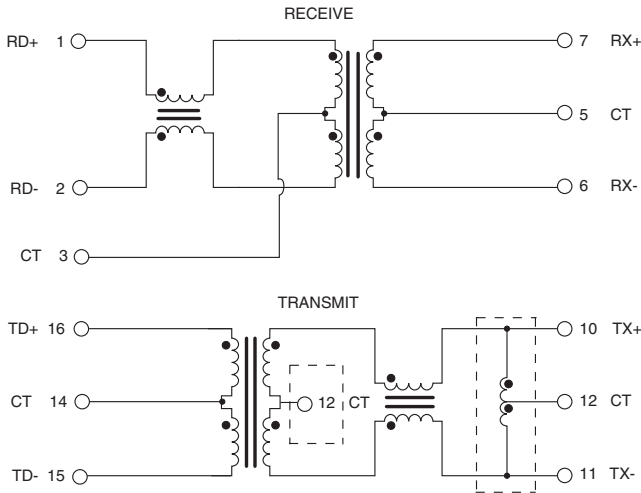
10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios



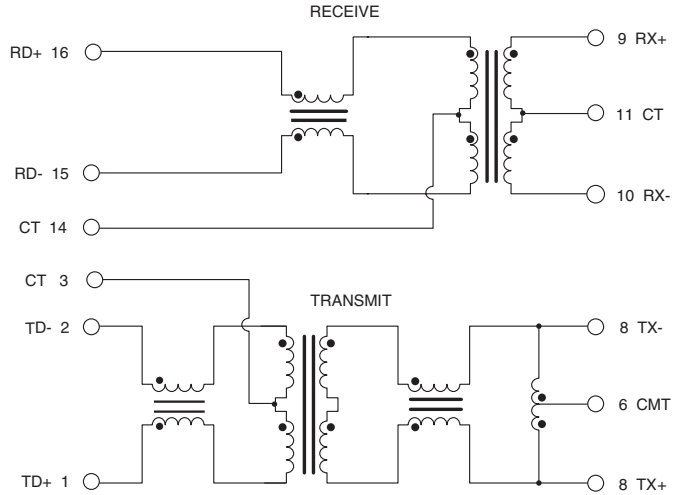
Schematics

PE-68515L, H1012, H1086, H1089, HX1148, H1138

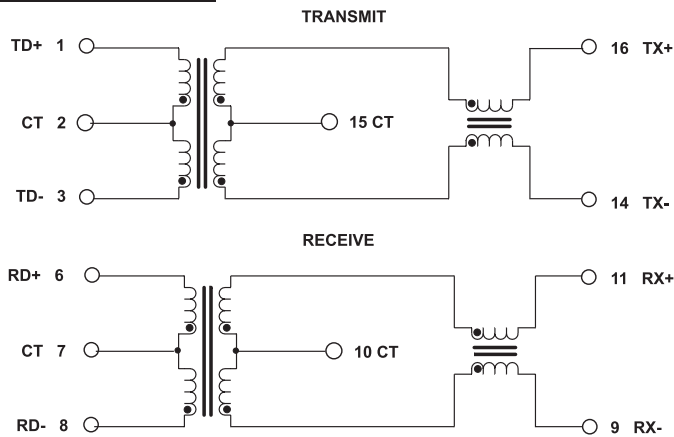


Center-tapped inductor not included in H1089. So, pin 12 connects to the transformer center tap.

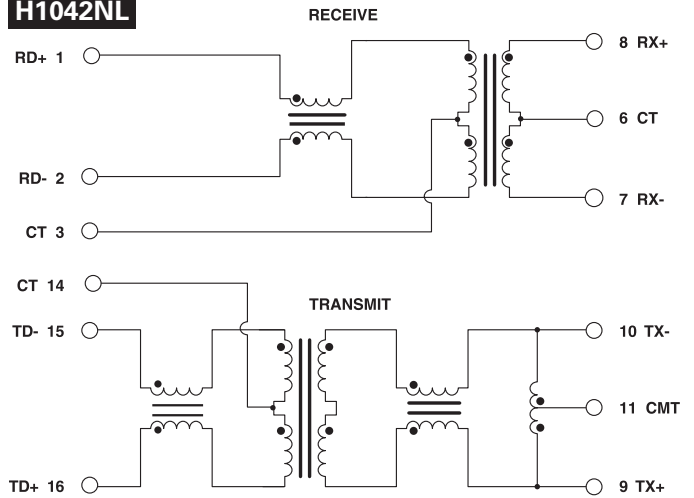
PE-68517L, H1019



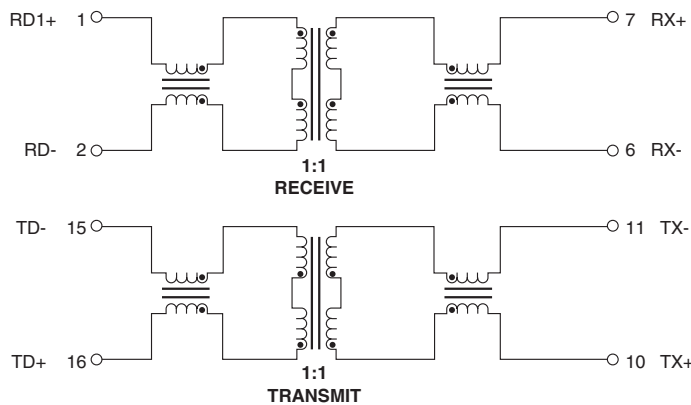
H1117, HX1178



H1042NL



H1338



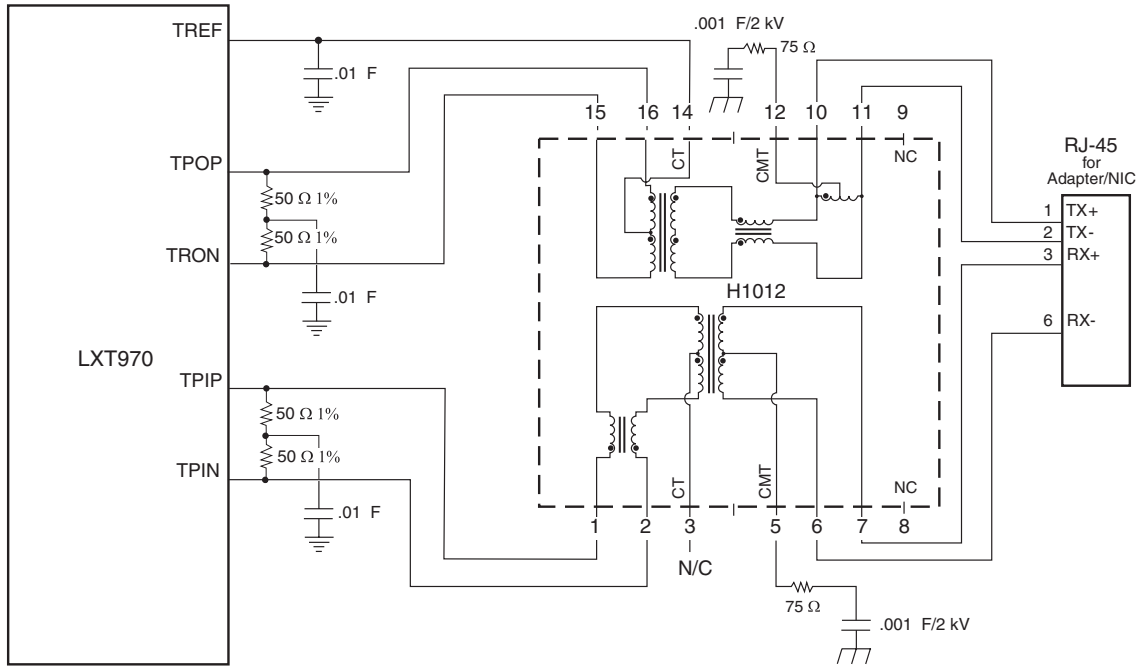
10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios

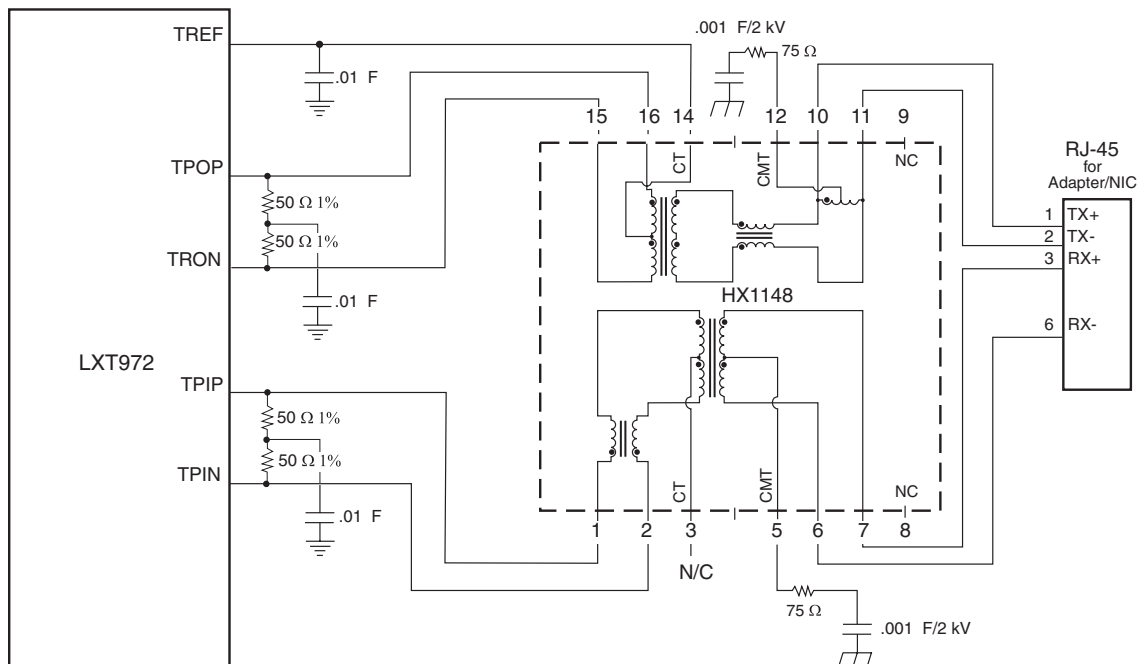


Typical Application Circuits

H1012, H1138



HX1148



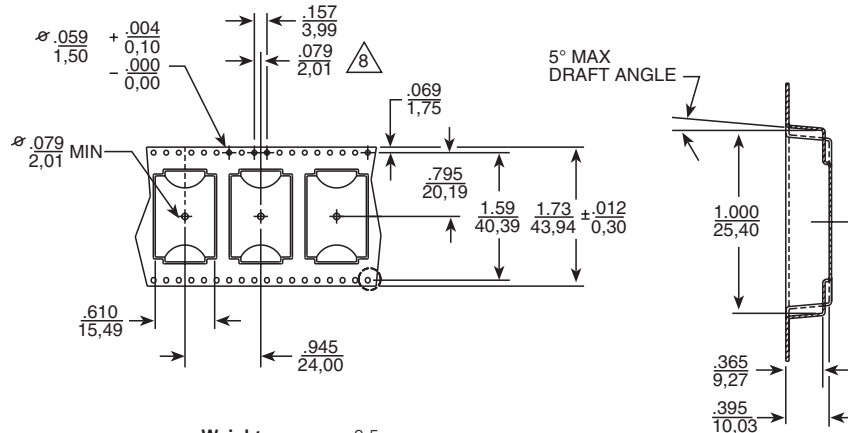
10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios



Tape & Reel Specifications

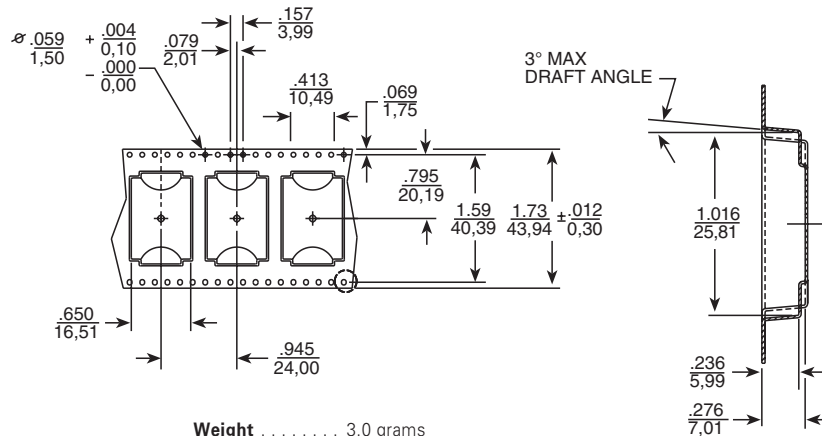
PE-68515L, PE-68517L, H1042NL



Weight 3.5 grams
 Tube 20/tube
 Tape & Reel 160/reel

H1012, H1019, H1086, H1089, H1117,

H1138, H1338, HX1148, HX1178



Weight 3.0 grams
 Tube 20/tube
 Tape & Reel 300/reel

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