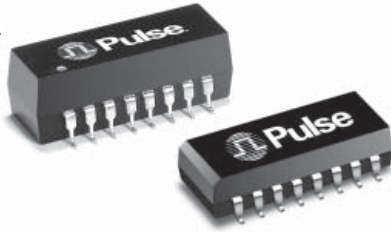


# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios



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

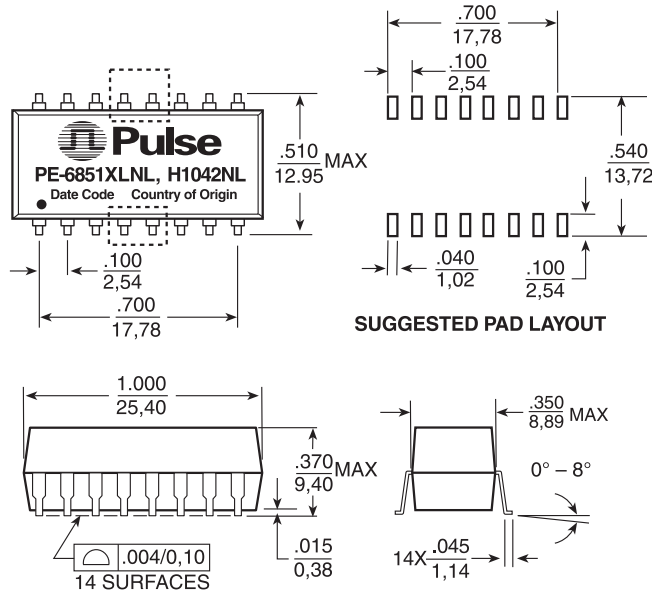
### Electrical Specifications @ 25°C — Operating Temperature 0°C to 70°C

RoHS 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 <sup>4d</sup>	-1.0	-20	-20	-18	-14	-42	-36	-33	-50	-40	-40	1500
H1019NL <sup>4c</sup>	-1.0	-20	-18	-18	-14	-45	-40	-35	-45	-40	-35	1500
H1042NL <sup>4c</sup>	-1.0	-16	-13.5	-11.5	-10	-45	-40	-35	-40	-38	-35	1500
H1086NL <sup>4c</sup>	-1.0	-22	-20	-18	-12	-45	-40	-35	-50	-40	-40	1500
H1089NL <sup>4c</sup>	-1.0	-22	-20	-18	-12	-42	-38	-32	-50	-40	-40	1500
H1138NL <sup>4a</sup>	-0.8	-18	-16	-14	-12	-42	-37	-33	-50	-40	-40	1500
HX1148NL <sup>2,4d</sup>	-1.5	-18	-13.5	-11.5	-10	-42	-37	-33	-50	-40	-40	1500
HX1178NL <sup>2,4d</sup>	-1.5	-18	-13.5	-11.5	-10	-42	-37	-33	-50	-40	-40	1500
PE-68515LNL <sup>4d</sup>	-1.0	-18	-18	-16	-12	-50	-45	-40	-55	-50	-50	1500
PE-68517LNL <sup>4d</sup>	-1.0	-18	-16	-15	-12	-45	-40	-35	-50	-40	-40	1500
H1338NL <sup>4a</sup>	-1.1	-18	-16	-14	-12	-42	-37	-35	-40	-40	-35	1500

1. Rise time optimized for National's DP83843.
2. Operating temperature: -40°+ 85°C.
3. When ordering Tape & Reel packaging, add a "T" suffix to the end of the part number, e.g. H1012NLT
4. MSL = Moisture Sensitivity Level: a = 1, b = 2, c = 3, d = 4.

## Mechanical

### PE-68515LNL, PE-68517LNL, H1042NL



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

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# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

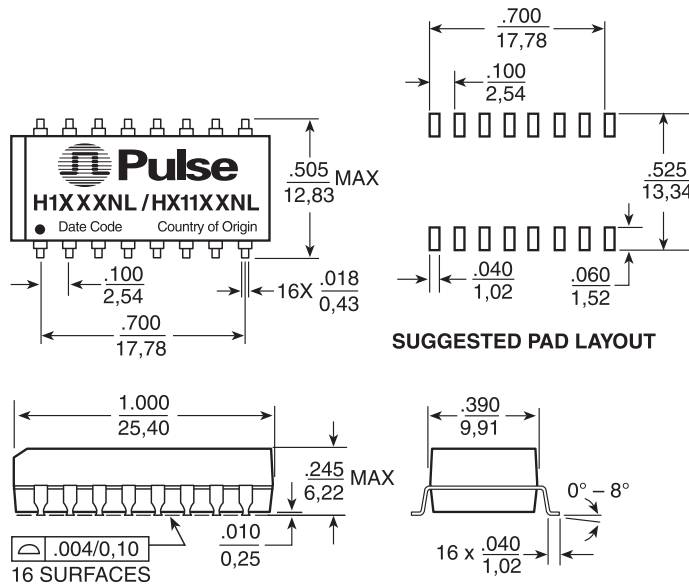
## With 1:1 Transmit Turns Ratios



### Mechanicals (continued)

**H1012NL, H1019NL, H1086NL, H1089NL, H1138NL**

**HX1148NL, HX1178NL**

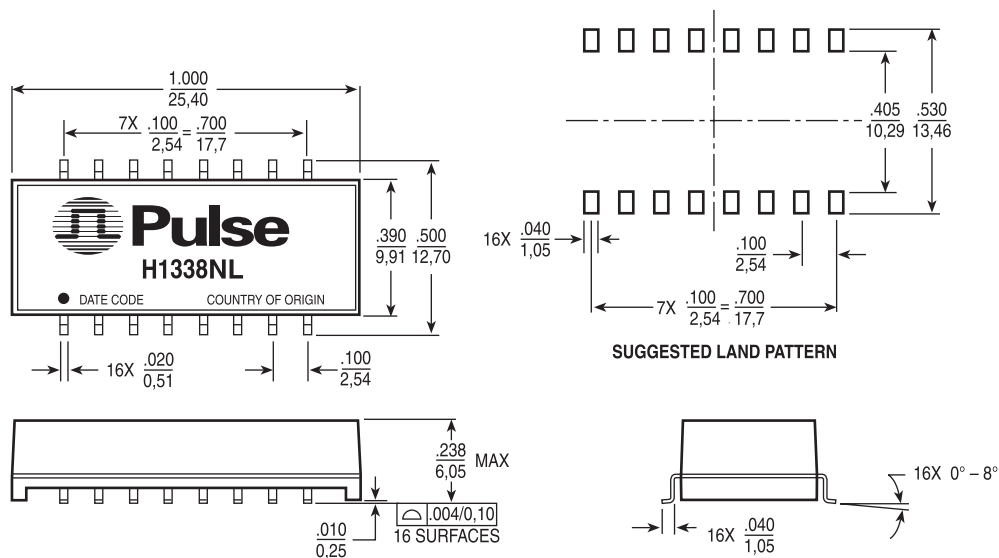


**SUGGESTED PAD LAYOUT**

**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

### H1338NL



**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

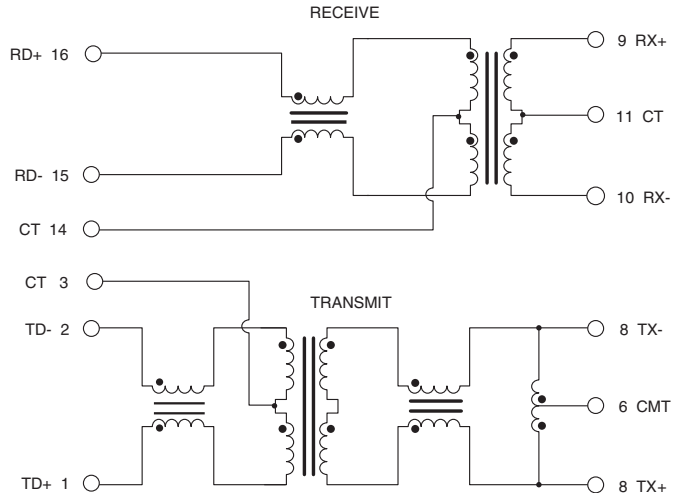
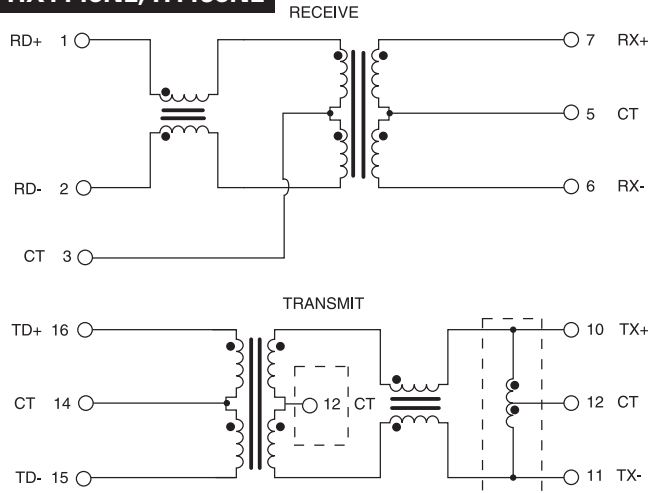


### Schematics

**PE-68515LNL, H1012NL, H1086NL, H1089NL**

**PE-68517LNL, H1019NL**

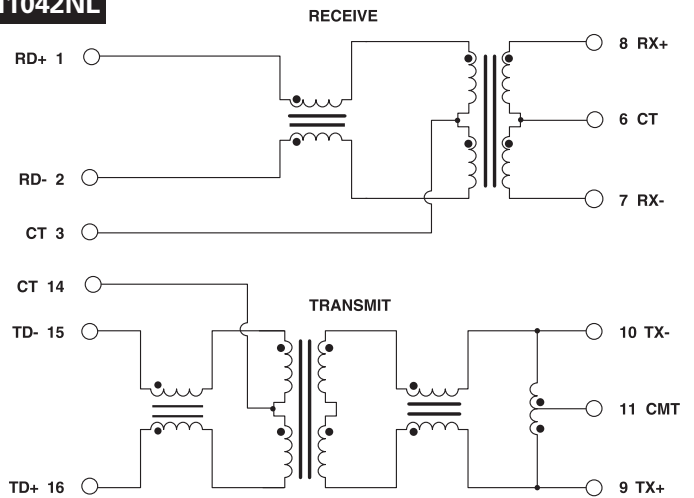
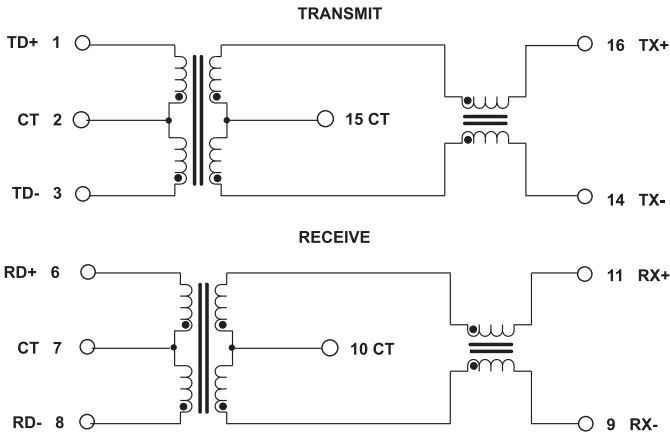
**HX1148NL, H1138NL**



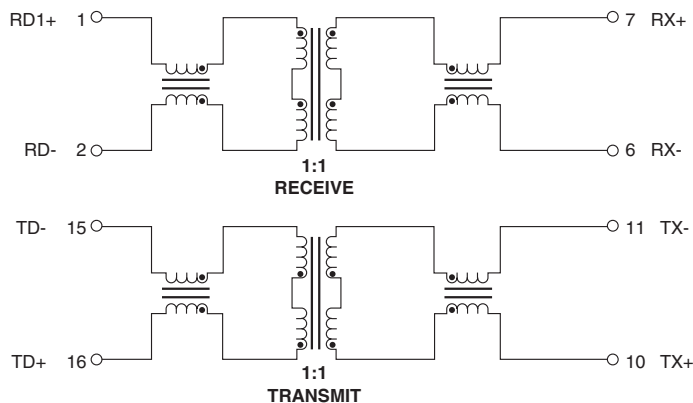
Center-tapped inductor not included in H1089. So, pin 12 connects to the transformer center tap.

**HX1178NL**

**H1042NL**



**H1338NL**



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# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios

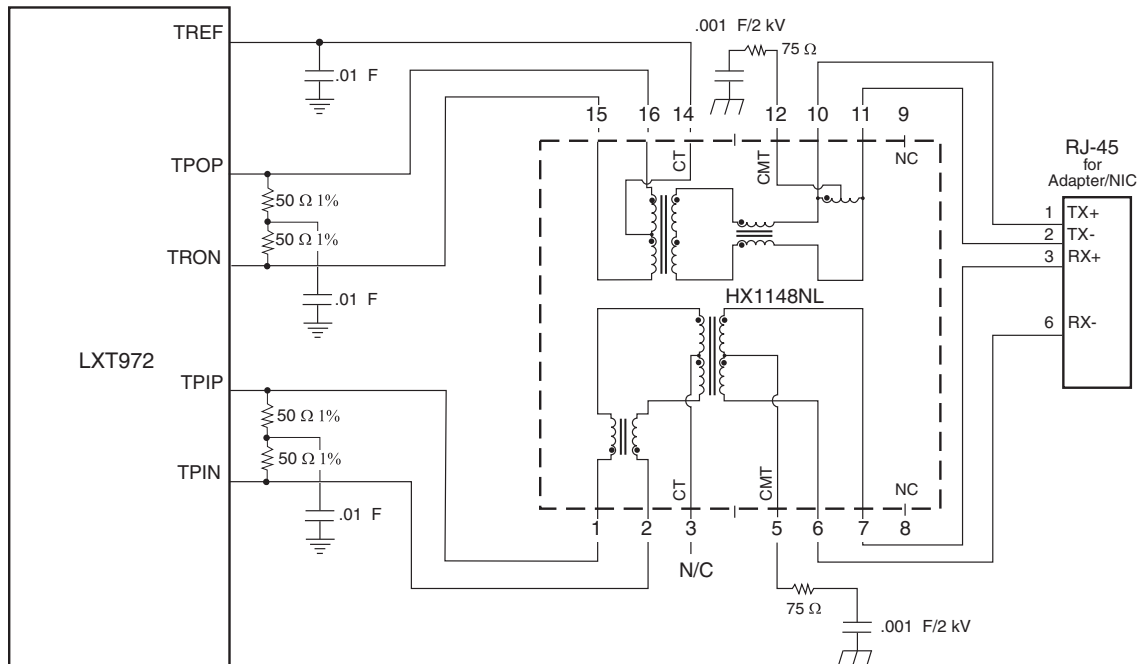


### Typical Application Circuits

#### H1012NL, H1138NL



#### HX1148NL



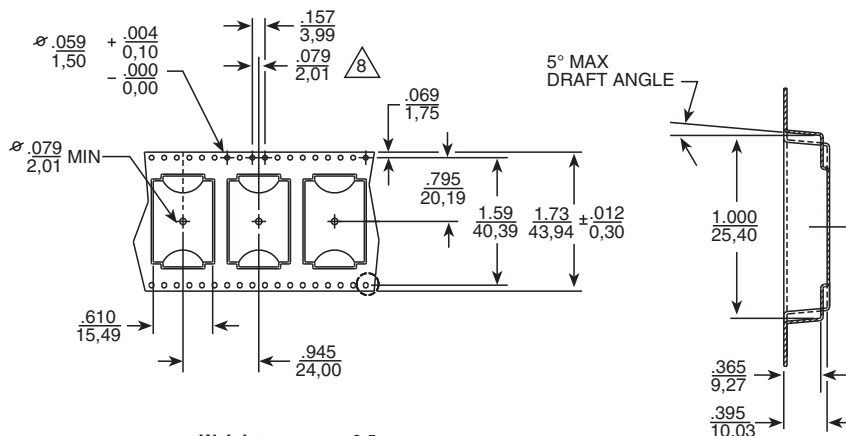
# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios



### Tape & Reel Specifications

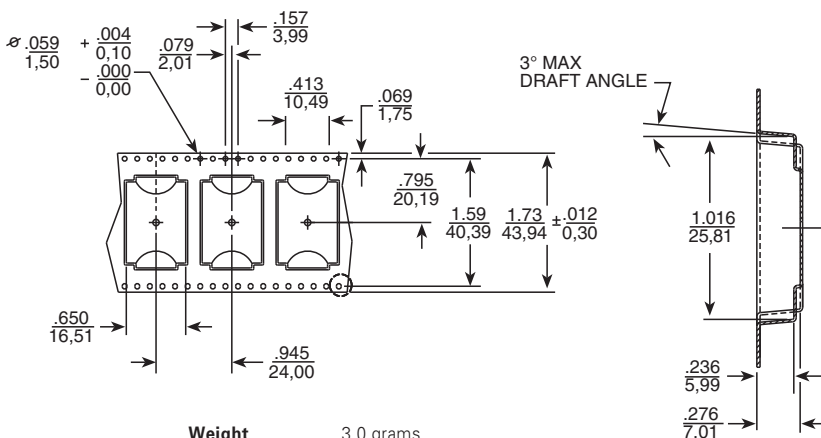
**PE-68515LNL, PE-68517LNL, H1042NL**



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

**H1012NL, H1019NL, H1086NL, H1089NL, H1138NL,**

**H1338NL, HX1148NL, HX1178NL**



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

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