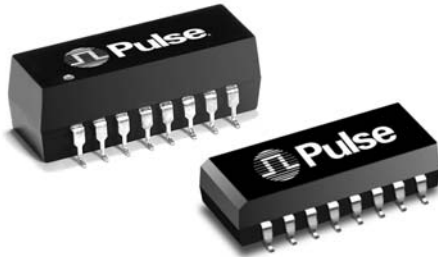







# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios



-  For RoHS part add suffix **NL**<sup>7</sup>
-  RoHS “**NL**” peak solder rating 260°C, non-RoHS peak solder rating 235°C
-  Compatible with Broadcom, Intel, Micrel, National Semiconductor, ICS, and TDK Transceivers
-  Meets IEEE 802.3 specification
-  Patented InterlockBase construction for high reliability

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

Part <sup>4</sup> Number	RoHS <sup>7</sup>	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	
H1012	NL <sup>6c</sup>	-1.0	-20	-20	-18	-14	-42	-36	-33	-50	-40	-40	1500
H1019	NL <sup>6c</sup>	-1.0	-20	-18	-18	-14	-45	-40	-35	-45	-40	-35	1500
H1042	5, 6 <sup>c</sup>	-1.0	-16	-13.5	-11.5	-10	-45	-40	-35	-40	-38	-35	1500
H1086 <sup>1</sup>	5, 6 <sup>c</sup>	-1.0	-22	-20	-18	-12	-45	-40	-35	-50	-40	-40	1500
H1089	5, 6 <sup>c</sup>	-1.0	-22	-20	-18	-12	-42	-38	-32	-50	-40	-40	1500
H1117	5, 6 <sup>c</sup>	-1.0	-22	-20	-18	-12	-45	-40	-35	-50	-40	-40	1500
H1138	NL <sup>6a</sup>	-0.8	-18	-16	-14	-12	42	-37	-33	-50	-40	-40	1500
HX1148 <sup>2</sup>	NL <sup>6c</sup>	-1.5	-18	-13.5	-11.5	-10	-42	-37	-33	-50	-40	-40	1500
HX1178 <sup>3</sup>	5, 6 <sup>c</sup>	-1.5	-18	-13.5	-11.5	-10	-42	-37	-33	-50	-40	-40	1500
PE-68515L	5, 6 <sup>c</sup>	-1.0	-18	-18	-16	-12	-50	-45	-40	-55	-50	-50	1500
PE-68517L	5, 6 <sup>c</sup>	-1.0	-18	-16	-15	-12	-45	-40	-35	-50	-40	-40	1500
H1338	5, 6 <sup>a</sup>	-1.1	-18	-16	-14	-12	-42	-37	-35	-40	-40	-35	1800

1. Rise time optimized for National's DP83843.
2. Operating temperature: -40°+ 85°C.
3. Meets UL 1950 and UL 1459 3rd edition requirements.
4. For Tape & Reel packaging, add a “T” suffix t the end of the part number when ordering e.g. H1012T
5. Contact Pulse for RoHS compliant part availability.
6. MSL=Moisture Sensitivity Level a=1 b=2 c=3 d=4.
7. Add suffix **NL** for RoHS compliant parts, e.g: H1012 changes to H1012**NL** or H1012**NLT** (for Tape & Reel).

U.S. Patent No. 5,015,981

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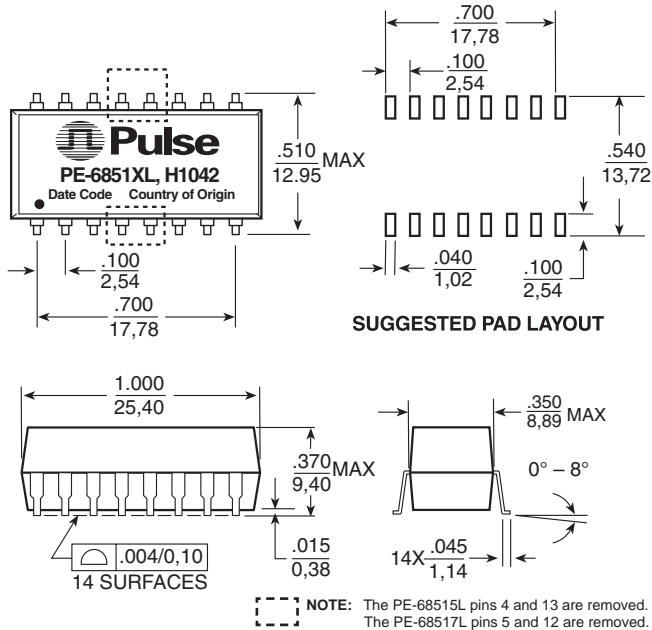
# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios



### Mechanicals

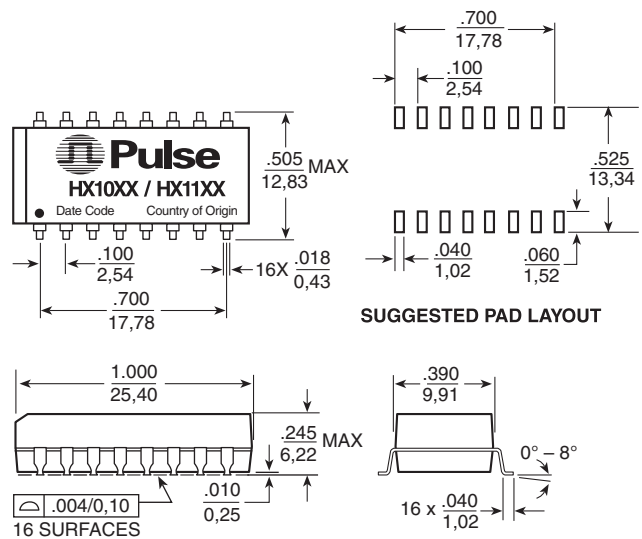
**PE-68515L, PE-68517L, H1042**



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

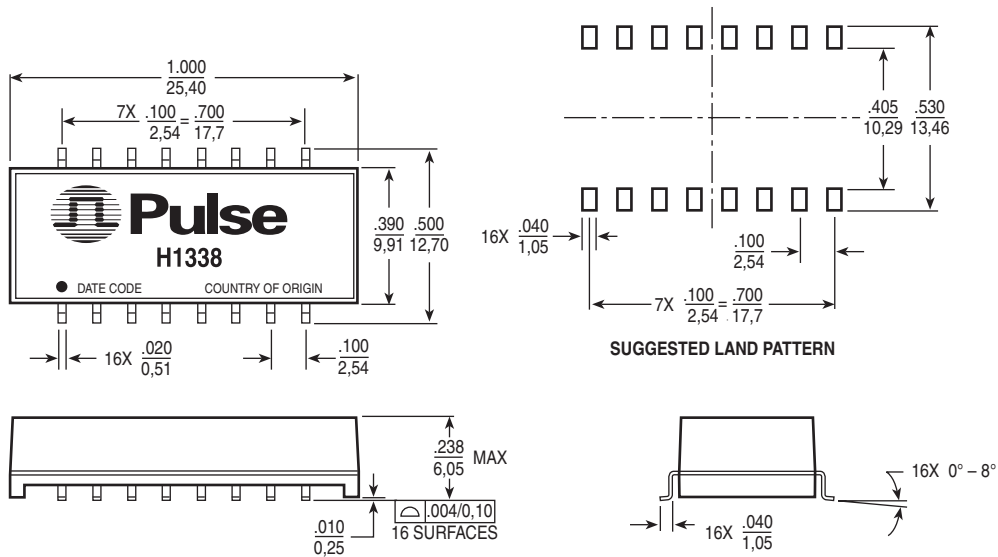
Dimensions:  $\frac{\text{Inches}}{\text{mm}}$  Unless otherwise specified, all tolerances are  $\pm \frac{.010}{0,25}$

**H1012, H1019, H1086, H1089, H1117, H1138, HX1148, HX1178**



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

**H1338**



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

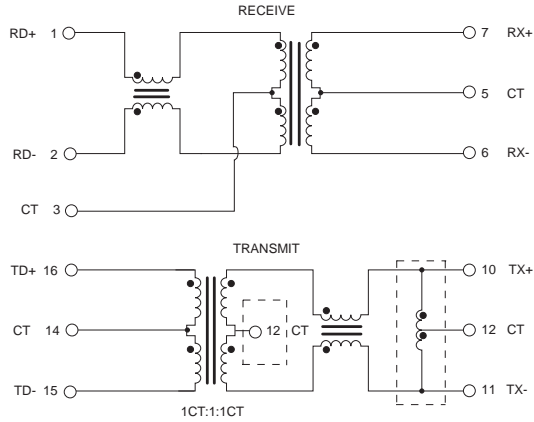
# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios



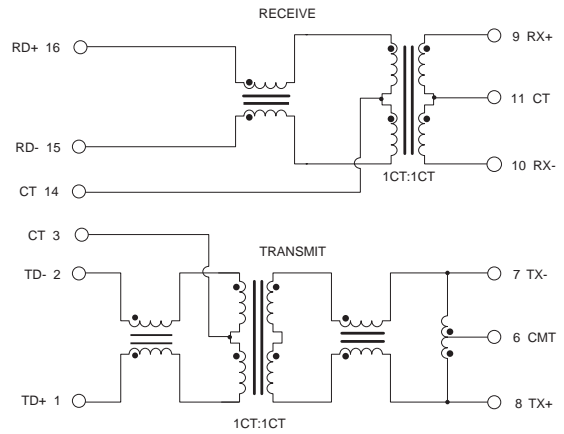
### Schematics

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

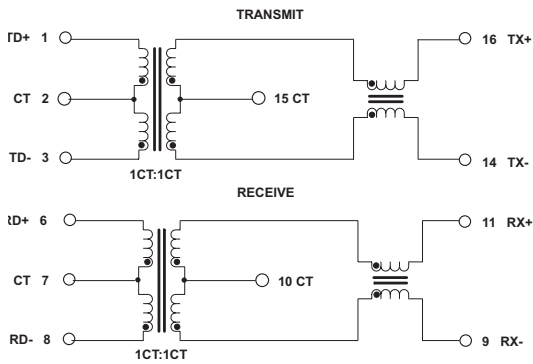


--- Center-tapped inductor not included in H1089. So, pin 12 connects to the transformer center tap.

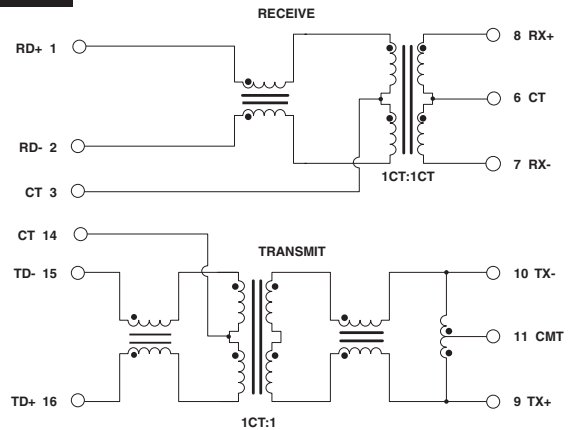
**PE-68517L, H1019**



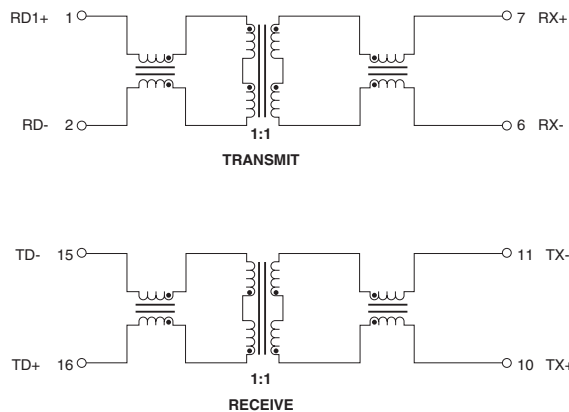
**H1117, HX1178**



**H1042**



**H1338**



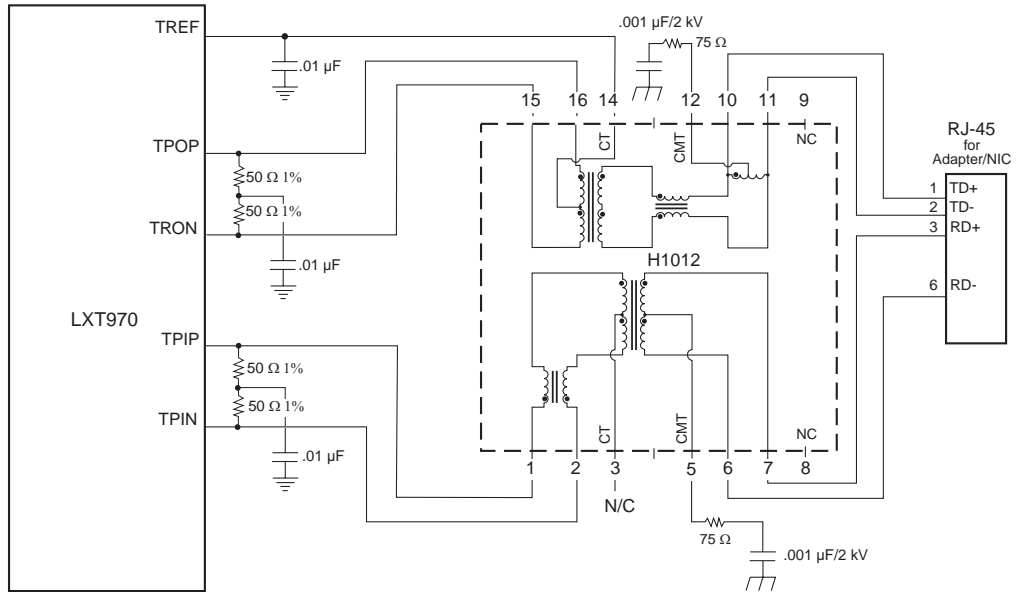
# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios

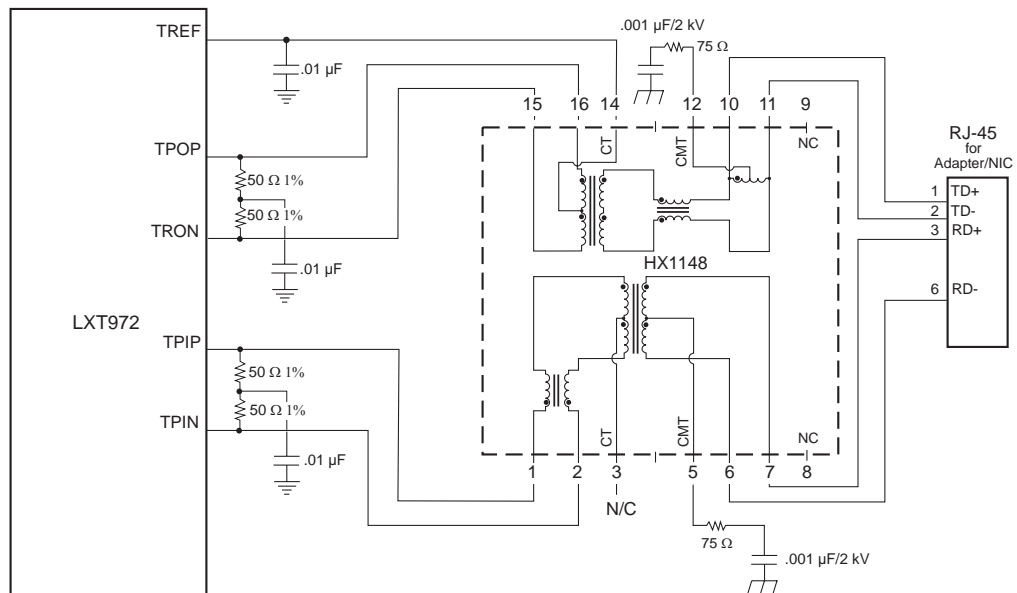


### Typical Application Circuits

**H1012, H1138**



**HX1148**



# 10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

## With 1:1 Transmit Turns Ratios



### Application Notes

This line of 10/100Base-TX magnetics modules has been specifically designed for the implementation of a 10Base-T and 100Base-TX transmission over data grade unshielded twisted pair cable (UTP-5). The modules provide excellent EMI filtering and are suitable for adapter card and multipoint applications.

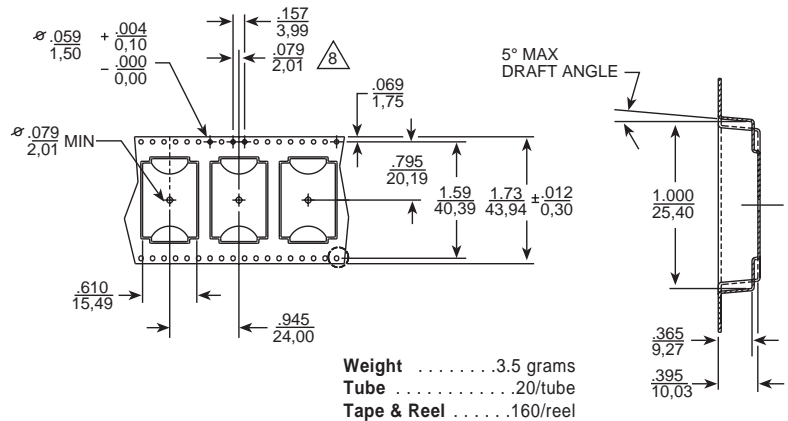
Pulse has worked closely with the leading IC manufacturers in providing these 10/100 solutions, thereby assuring compatibility with each transceiver. Additionally, each solution meets the stringent open circuit inductance requirements imposed by IEEE. When an 8 mA DC current is applied across the transformer windings, the transformer will provide at least 350  $\mu$ H. The transformers used in each module also provide 1500 Vrms minimum isolation, wide band width with minimal attenuation and fast rise times to minimize system level jitter. The H1086 provides a slower rise time for use with National's DP83843. The H1117 pin out is optimized for Kendin's KS8731 and KS8732. The HX1148 and HX1178 provide an extended temperature operating range (-40° to +85°C).

Surface mount devices manufactured by Pulse are designed to meet all published specifications after exposure to surface mount soldering temperatures. The SMT modules in this data sheet are transfer-molded in IC style packaging, making them robust enough to withstand convection and infrared reflow solder temperatures of up to 235°C. Additionally, compliant leads provide excellent solder-joint reliability with a coplanarity of  $\pm 0.02$ " (0,05 mm).

**NOTE:** Modules are packaged in tubes, unless Tape & Reel is specified. Please add the suffix "T" (such as H1012T) for Tape & Reel orders.

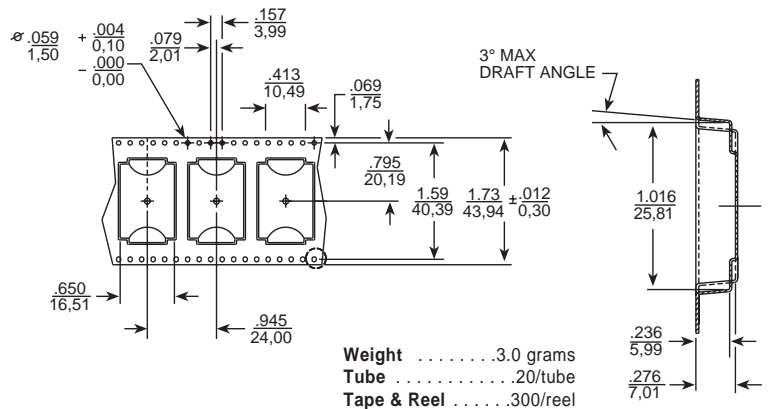
### Tape & Reel Specifications

#### PE-68515L, PE-68517L, H1042



#### H1012, H1019, H1086, H1089, H1117,

#### H1138, H1338, HX1148, HX1178



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