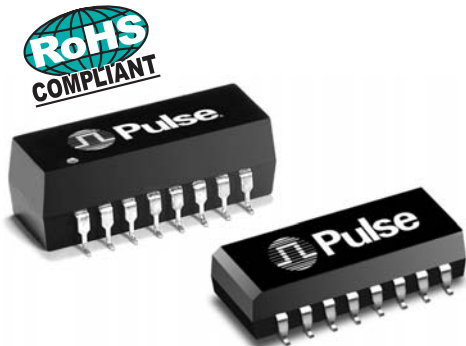







10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios



-  For RoHS part add suffix **NL**⁷
-  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 # Number | RoHS ⁷ | 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 | 100 MHz | |
| H1012 | NL ^{6c} | -1.0 | -20 | -20 | -18 | -14 | -42 | -36 | -33 | -50 | -40 | -40 | 1500 | |
| H1019 | NL ^{6c} | -1.0 | -20 | -18 | -18 | -14 | -45 | -40 | -35 | -45 | -40 | -35 | 1500 | |
| H1042 | 5, 6c | -1.0 | -16 | -13.5 | -11.5 | -10 | -45 | -40 | -35 | -40 | -38 | -35 | 1500 | |
| H1086 ¹ | 5, 6c | -1.0 | -22 | -20 | -18 | -12 | -45 | -40 | -35 | -50 | -40 | -40 | 1500 | |
| H1089 | 5, 6c | -1.0 | -22 | -20 | -18 | -12 | -42 | -38 | -32 | -50 | -40 | -40 | 1500 | |
| H1117 | 5, 6c | -1.0 | -22 | -20 | -18 | -12 | -45 | -40 | -35 | -50 | -40 | -40 | 1500 | |
| H1138 | NL ^{6a} | -0.8 | -18 | -16 | -14 | -12 | 42 | -37 | -33 | -50 | -40 | -40 | 1500 | |
| HX1148 ² | NL ^{6c} | -1.5 | -18 | -13.5 | -11.5 | -10 | -42 | -37 | -33 | -50 | -40 | -40 | 1500 | |
| HX1178 ³ | 5, 6c | -1.5 | -18 | -13.5 | -11.5 | -10 | -42 | -37 | -33 | -50 | -40 | -40 | 1500 | |
| PE-68515L | 5, 6c | -1.0 | -18 | -18 | -16 | -12 | -50 | -45 | -40 | -55 | -50 | -50 | 1500 | |
| PE-68517L | 5, 6c | -1.0 | -18 | -16 | -15 | -12 | -45 | -40 | -35 | -50 | -40 | -40 | 1500 | |
| H1338 | 5, 6a | -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 to 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

10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios

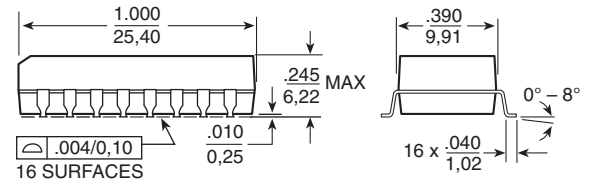
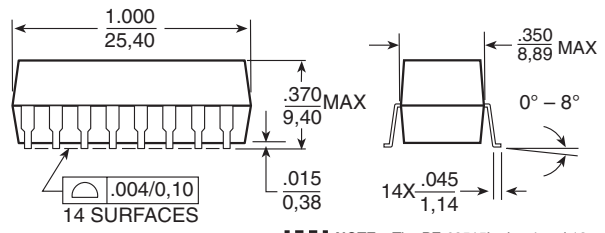
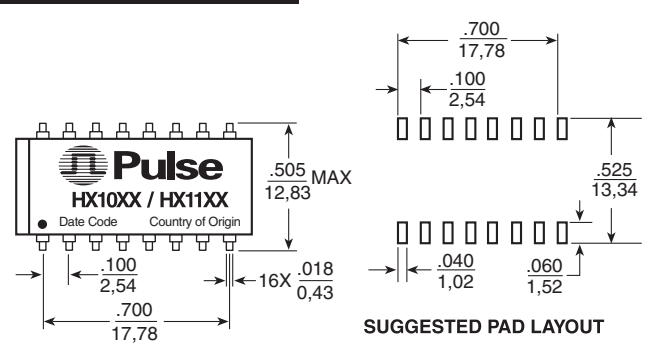
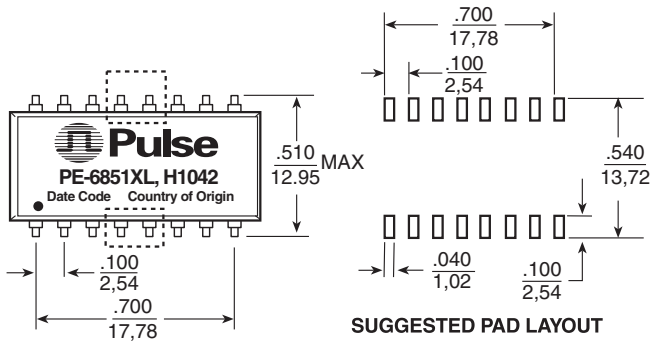


Mechanicals

PE-68515L, PE-68517L, H1042

H1012, H1019, H1086, H1089, H1117,

H1138, HX1148, HX1178



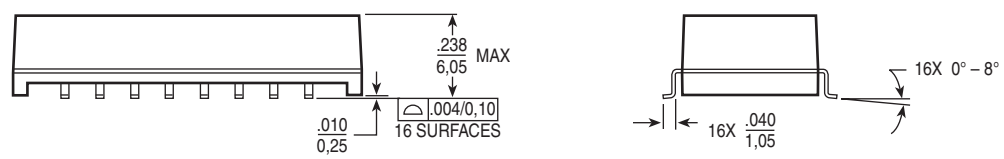
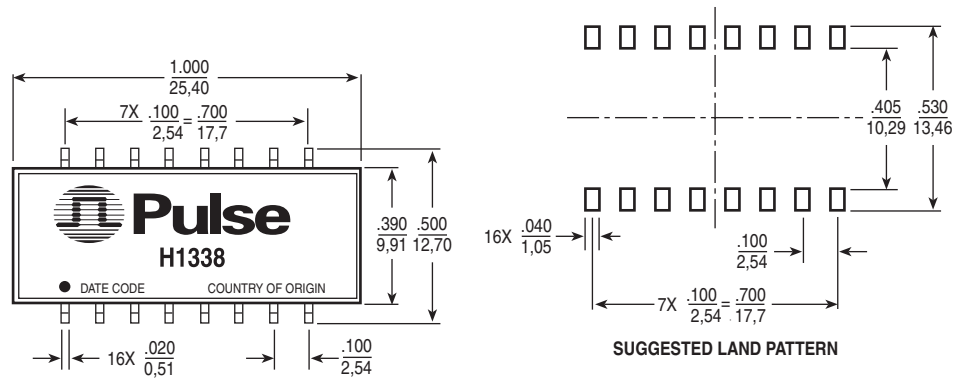
NOTE: The PE-68515L pins 4 and 13 are removed.
The PE-68517L pins 5 and 12 are removed.

Weight 3.5 grams
Tube20/tube
Tape & Reel 160/reel

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

Weight 3.0 grams
Tube20/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
Tube20/tube
Tape & Reel 300/reel

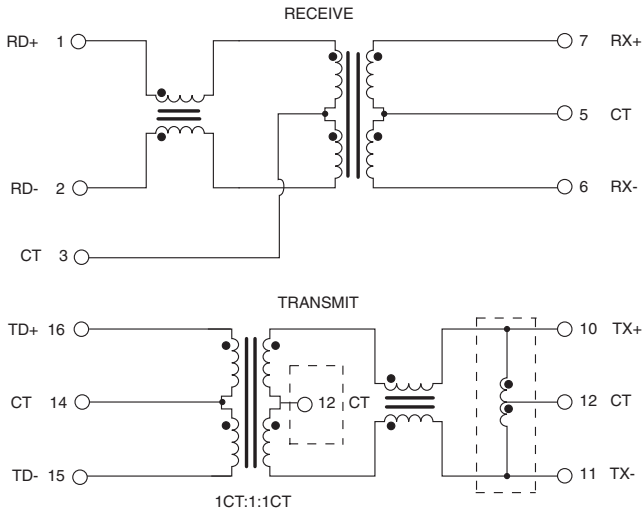
10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios



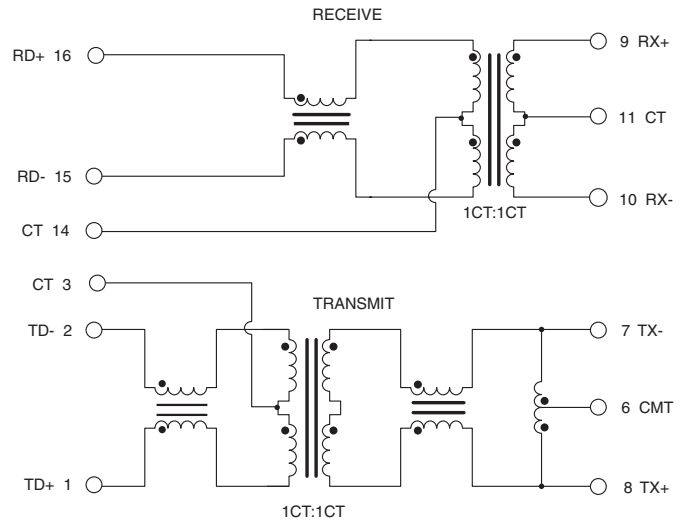
Schematics

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

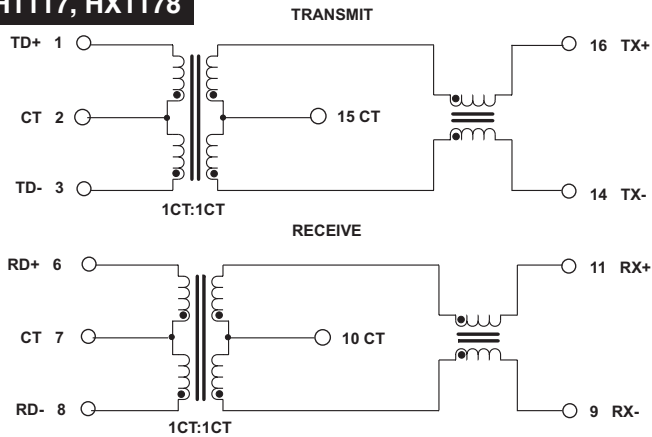


Center-tapped inductor not included in H1089. So, pin 12 connects to the transformer center tap.

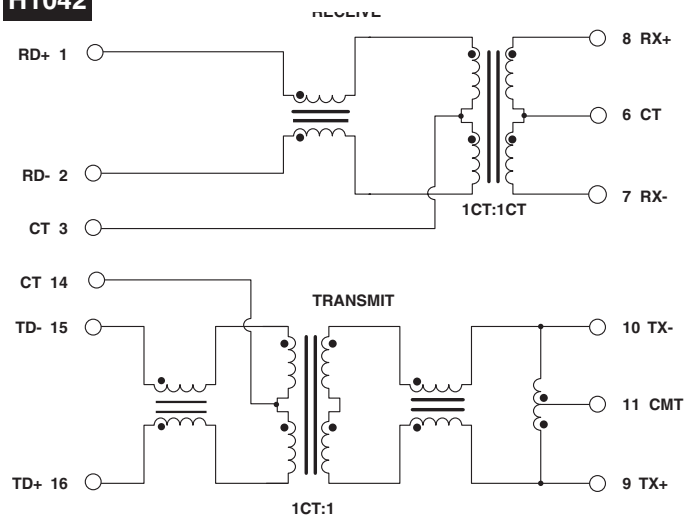
PE-68517L, H1019



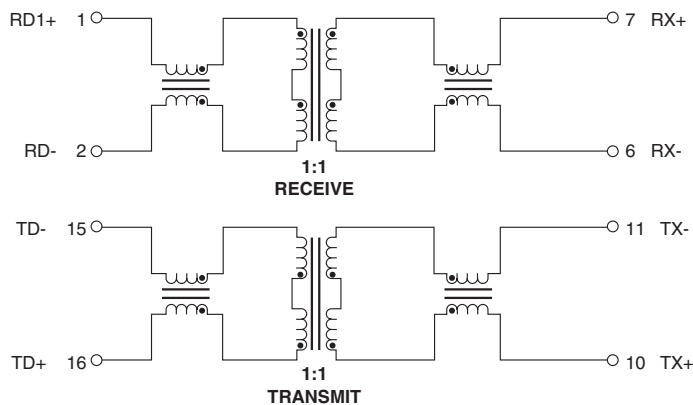
H1117, HX1178



H1042



H1338



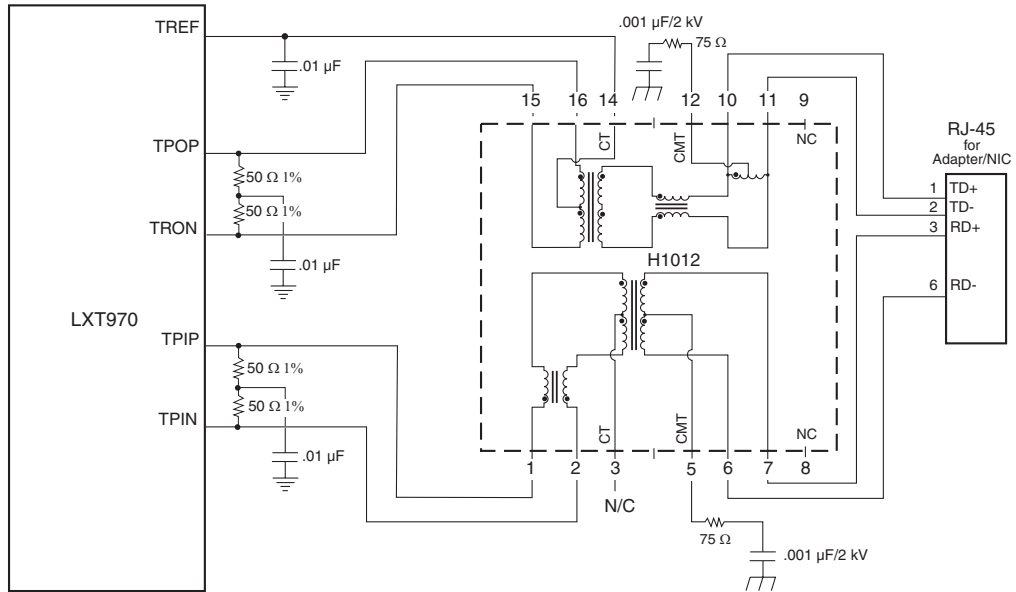
10/100 BASE-T SINGLE PORT TRANSFORMER MODULES

With 1:1 Transmit Turns Ratios

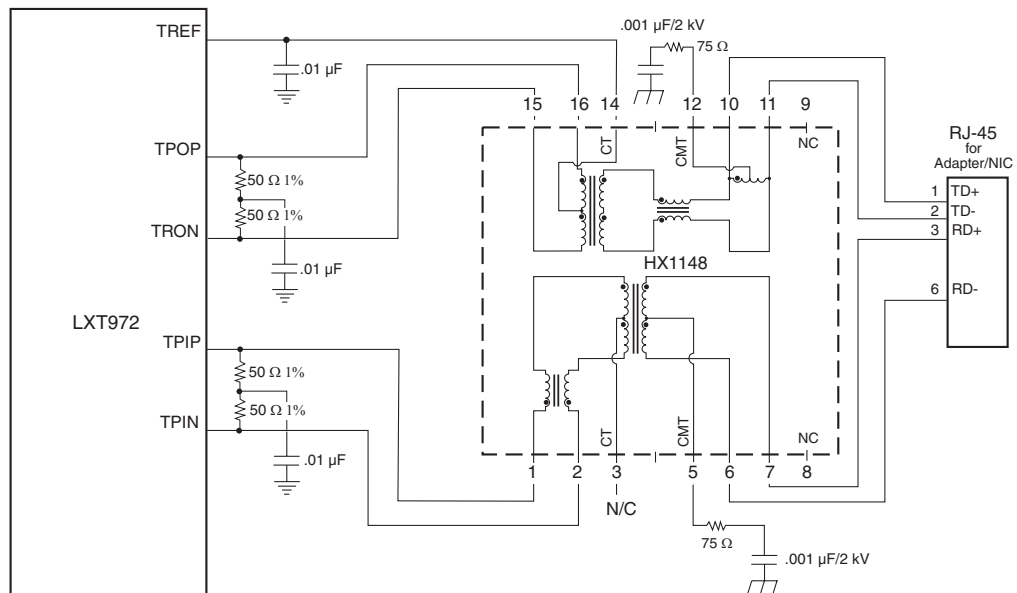


Typical Application Circuits

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 multiport applications.

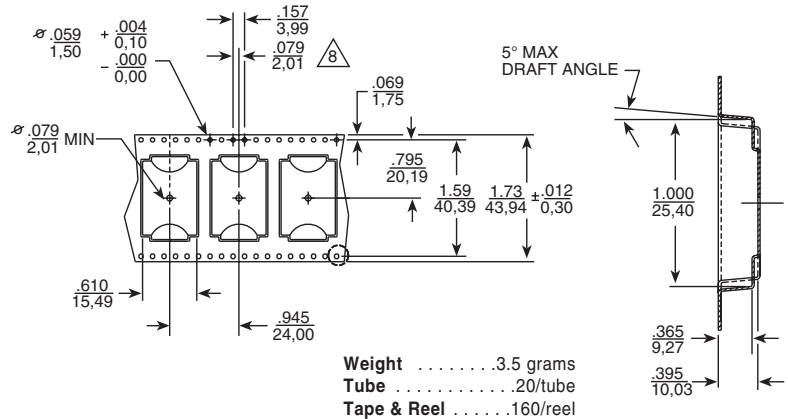
Pulse has worked closely with the leading IC manufacturers in providing these 10/100 solutions, thereby assuring compatibility with each transceiver. Additionally, each solution meets the stringent open circuit inductance requirements imposed by IEEE. When an 8 mA DC current is applied across the transformer windings, the transformer will provide at least 350 μ 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 ± 0.002 " (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.

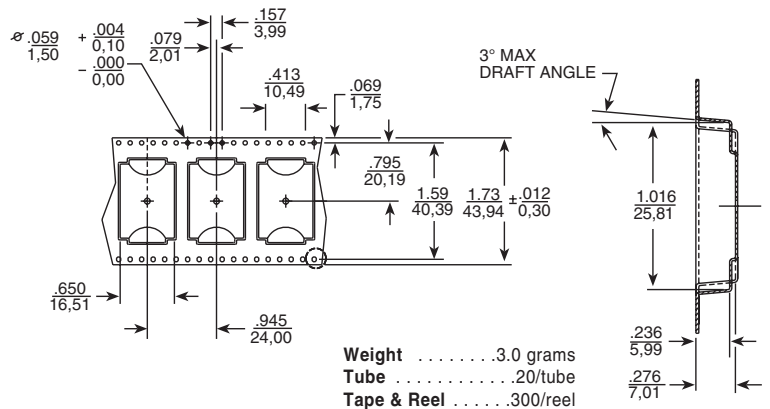
Tape & Reel Specifications

PE-68515L, PE-68517L, H1042



H1012, H1019, H1086, H1089, H1117,

H1138, H1338, HX1148, HX1178



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