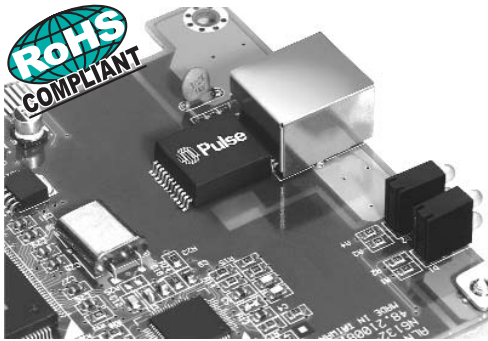


# 1000BASE-T MAGNETICS MODULES

## Designed to Support 1:1 Turns Ratio Transceivers



- RoHS-5 peak reflow temperature rating 235°C
- RoHS-6 peak reflow temperature rating 245°C
- Meets IEEE 802.3 specification

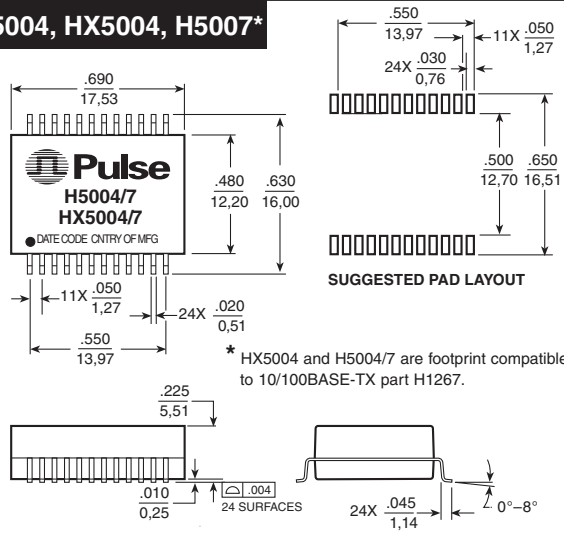
### Electrical Specifications @ 25°C — Operating Temperature 0°C to 70°C

| RoHS-5 <sup>4</sup><br>Compliant<br>Part<br>Number | RoHS-6 <sup>5</sup><br>Compliant<br>Part<br>Number | Number<br>of<br>Ports | Insertion<br>Loss<br>(dB MAX) | Return Loss<br>(dB MIN) |         |       |       |          | Differential to Common<br>Mode Rejection<br>(dB MIN) |       |       | Crosstalk<br>(dB MIN) |       |       | Hipot<br>(V <sub>RMS</sub><br>MIN) |
|--|--|-----------------------|-------------------------------|-------------------------|---------|-------|-------|----------|--|-------|-------|-----------------------|-------|-------|------------------------------------|
|  |  |                       |                               | 1-100MHz                | 1-30MHz | 40MHz | 50MHz | 60-80MHz | 100MHz   | 30MHz | 60MHz | 100MHz                | 30MHz | 60MHz |                                    |
| H5004 <sup>3c</sup>                                | H5004NL <sup>3d</sup>                              | 1                     | 1                             | -18                     | -18     | -16   | -12   | -10      | -43  | -37   | -33   | -43                   | -37   | -33   | 1500                               |
| HX5004 <sup>1,3c</sup>                             | HX5004NL <sup>1,3d</sup>                           | 1                     | 1                             | -18                     | -18     | -16   | -12   | -10      | -43  | -37   | -33   | -43                   | -37   | -33   | 1500                               |
| H5007 <sup>3c</sup>                                | H5007NL <sup>3d</sup>                              | 1                     | 1                             | -18                     | -18     | -16   | -12   | -10      | -43  | -37   | -33   | -43                   | -37   | -33   | 1500                               |
| H5008 <sup>3a</sup>                                | H5008NL <sup>3a</sup>                              | 1                     | 1                             | -18                     | -18     | -16   | -12   | -10      | -43  | -37   | -33   | -43                   | -37   | -33   | 1500                               |
| HX5008 <sup>1,3a</sup>                             | HX5008NL <sup>1,3a</sup>                           | 1                     | 1                             | -18                     | -18     | -16   | -12   | -10      | -43  | -37   | -33   | -43                   | -37   | -33   | 1500                               |
| H5009 <sup>3a</sup>                                | H5009NL <sup>3a</sup>                              | 1                     | 1                             | -18                     | -18     | -16   | -12   | -10      | -43  | -37   | -33   | -43                   | -37   | -33   | 1500                               |
| H5012 <sup>3a</sup>                                | H5012NL <sup>3a</sup>                              | 2                     | 1.4                           | -16                     | -14.4   | -13.1 | -12   | -10      | -45  | -40   | -35   | -43.5                 | -37.5 | -33   | 1500                               |
| H5014 <sup>3a</sup>                                | H5014NL <sup>3a</sup>                              | 2                     | 1.4                           | -16                     | -14.4   | -13.1 | -12   | -10      | -45  | -40   | -35   | -43.5                 | -37.5 | -33   | 1500                               |
| HX5014 <sup>1,3a</sup>                             | HX5014NL <sup>1,3a</sup>                           | 2                     | 1.4                           | -16                     | -14.4   | -13.1 | -12   | -10      | -45  | -40   | -35   | -43.5                 | -37.5 | -33   | 1500                               |
| H5015 <sup>3a</sup>                                | H5015NL <sup>3a</sup>                              | 1                     | 1                             | -18                     | -18     | -16   | -12   | -10      | -43  | -37   | -33   | -43                   | -37   | -33   | 1500                               |
| H5020 <sup>3a</sup>                                | H5020NL <sup>3a</sup>                              | 2                     | 1                             | -18                     | -14.4   | -13.1 | -12   | -10      | -40  | -35   | -30   | -40                   | -33   | -28   | 1500                               |
| HX5020 <sup>1,3a</sup>                             | HX5020NL <sup>1,3a</sup>                           | 2                     | 1                             | -18                     | -14.4   | -13.1 | -12   | -10      | -40  | -35   | -30   | -40                   | -33   | -28   | 1500                               |
| H5089 <sup>3a</sup>                                | H5089NL <sup>3a</sup>                              | 2                     | 1.4                           | -16                     | -14.4   | -13.1 | -12   | -10      | -45  | -40   | -35   | -43.5                 | -37.5 | -33   | 1500                               |

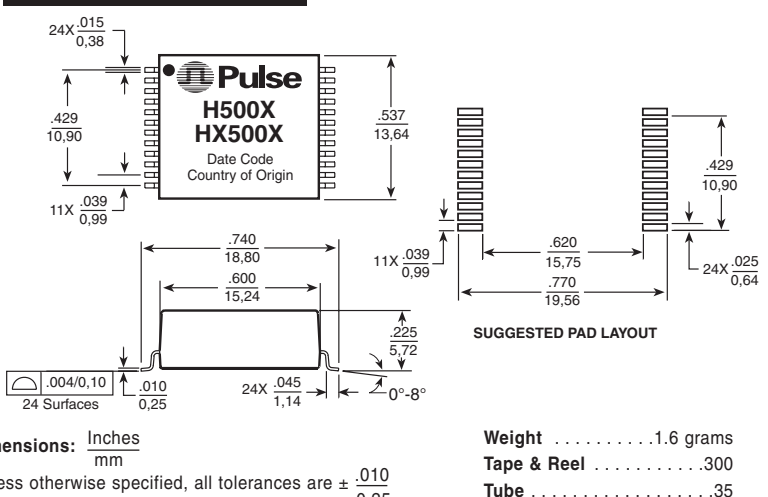
1. HX: Extended temperature version -40°C to +85°C
2. For Tape & Reel packaging, add a "T" suffix at the end of the part number, e.g. H5007T.
3. MSL=Moisture Sensitivity Level: a=1 b=2 c=3 d=4
4. RoHS-5: Product does not contain 5 out of the 6 banned substances specified in the RoHS directive (product contains lead in applications considered solder).
5. 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

### H5004, HX5004, H5007\*



### H5008, HX5008, H5009



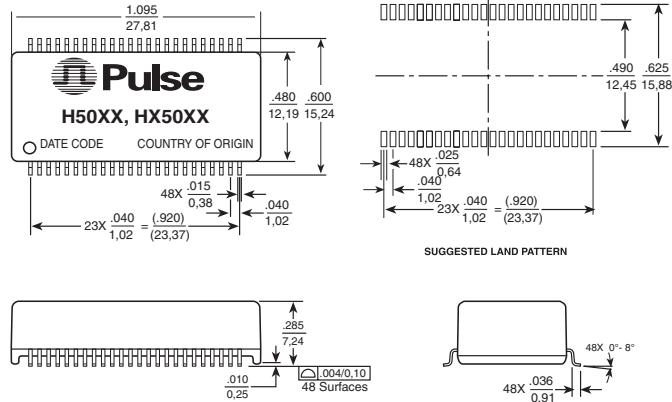
# 1000BASE-T MAGNETICS MODULES

Designed to Support 1:1  
Turns Ratio Transceivers



## Mechanicals (continued)

### H5012, H5014, HX5014, H5089

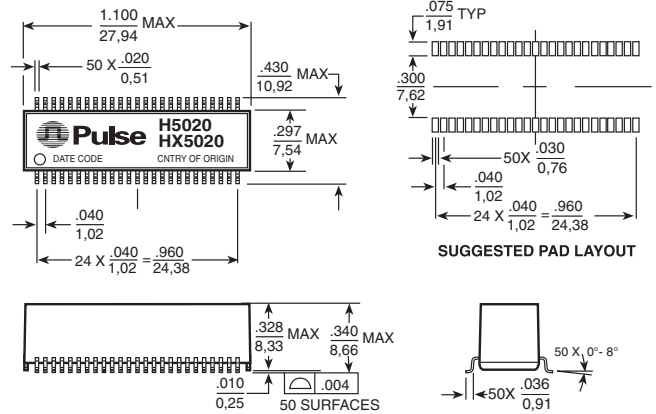


Weight ..... 4.0 grams  
Tape & Reel ..... .250/reel  
Tube ..... .15/tube

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

Unless otherwise specified, all tolerances are  $\pm \frac{.010}{0,25}$

### H5020, HX5020

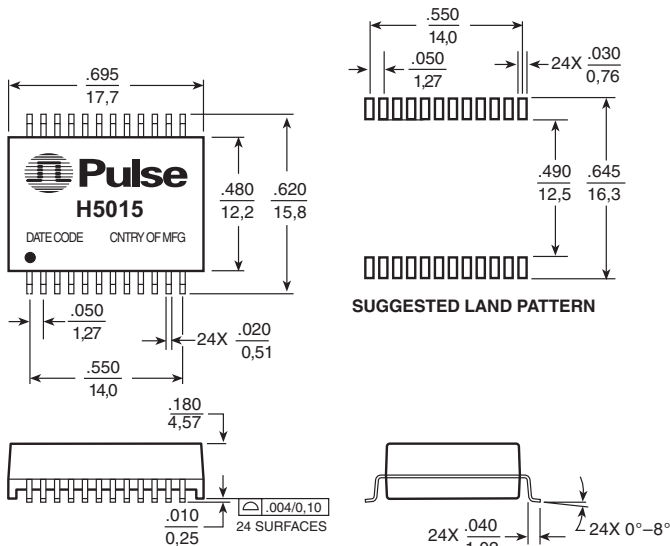


Weight ..... 1.6 grams  
Tape & Reel ..... .250/reel  
Tube ..... .15/tube

## Mechanicals (continued)

## Schematics

### H5015

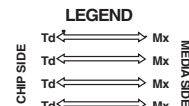
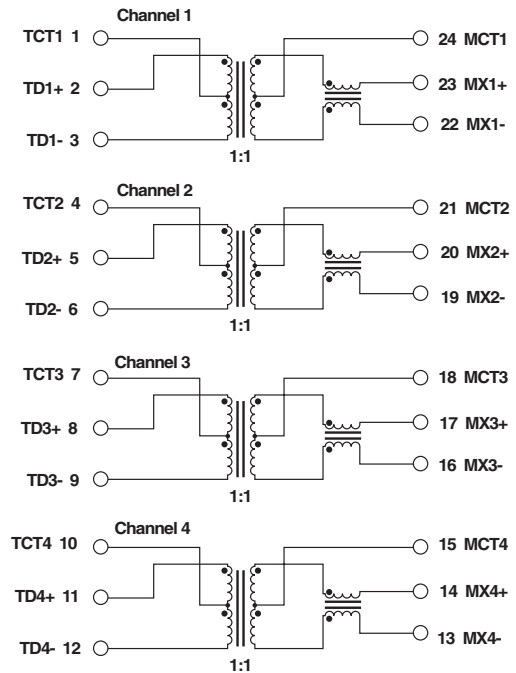


Weight ..... 1.5 grams  
Tape & Reel ..... .400/reel

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

Unless otherwise specified, all tolerances are  $\pm \frac{.005}{0,13}$

### H5004, HX5004, H5009



# 1000BASE-T MAGNETICS MODULES

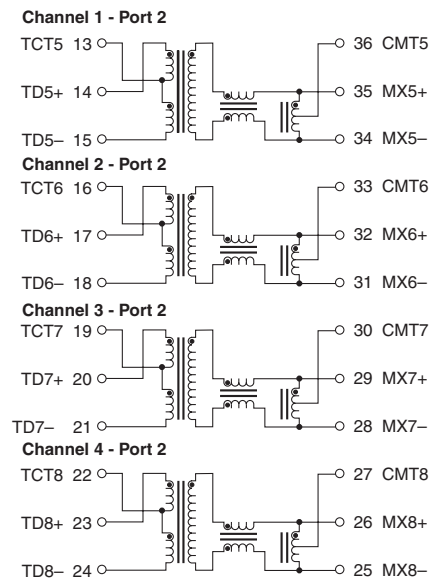
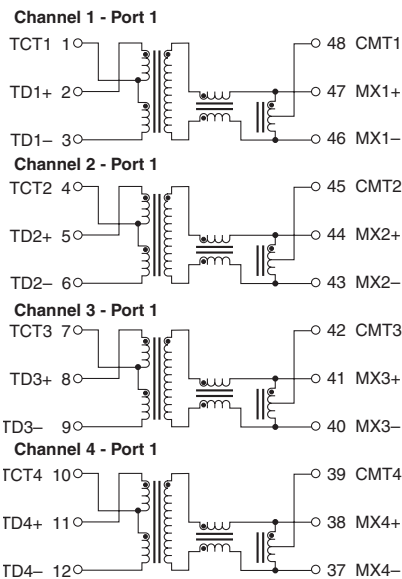
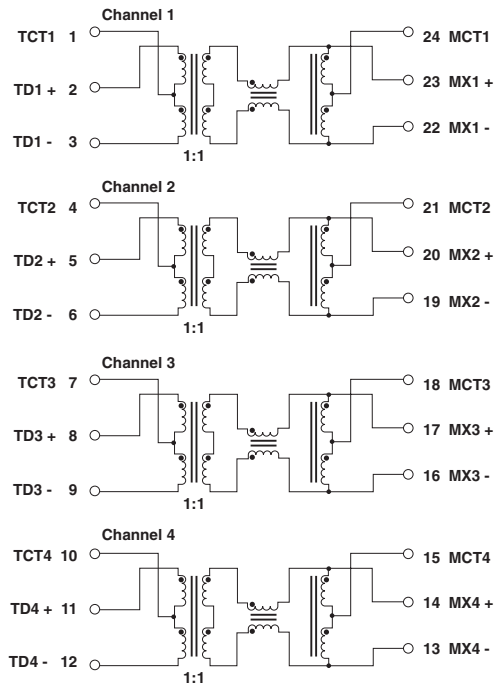
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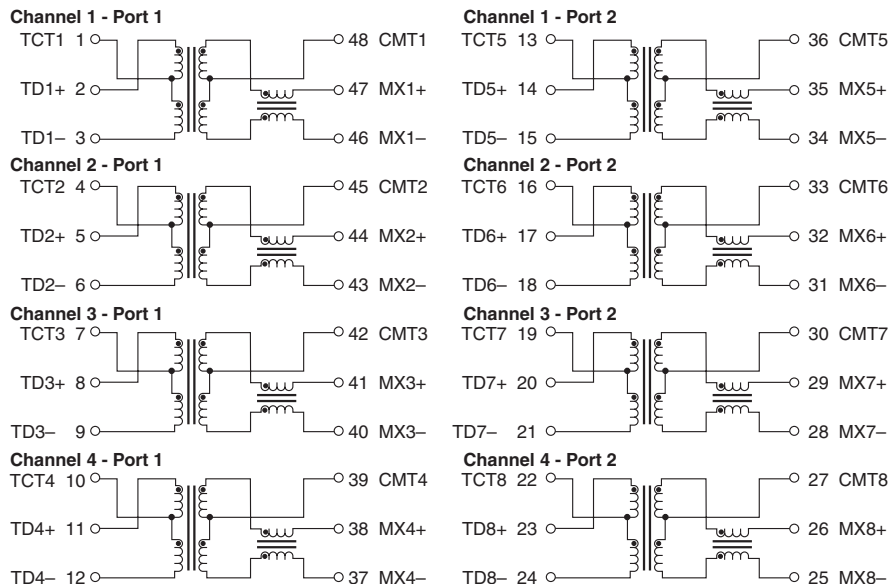
## Schematics (continued)

### H5007\*, H5008, HX5008, H5015

### H5012, H5089



### H5014, HX5014



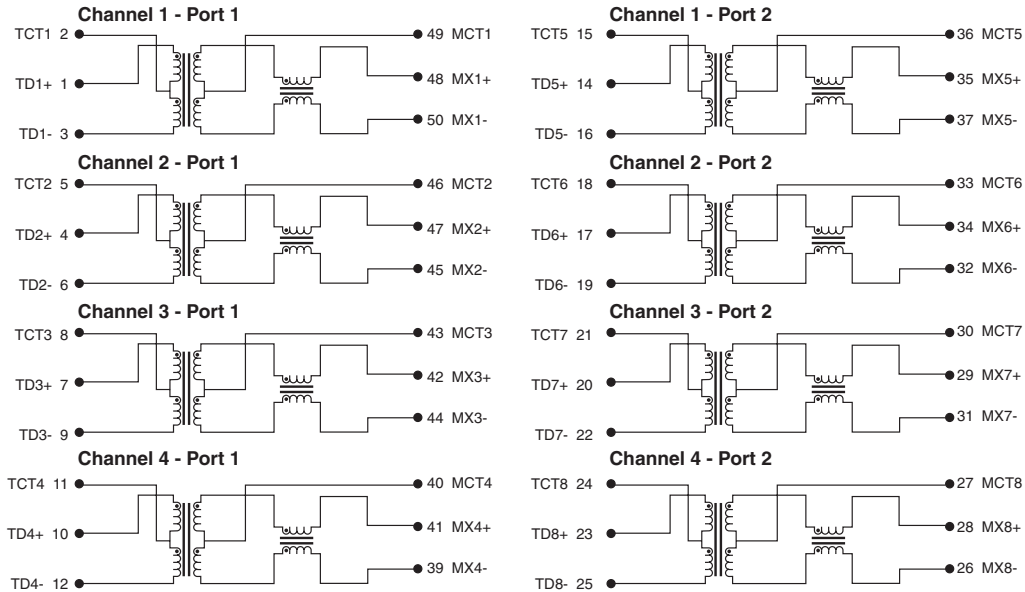
# 1000BASE-T MAGNETICS MODULES

Designed to Support 1:1  
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## Schematics (continued)

### H5020, HX5020



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