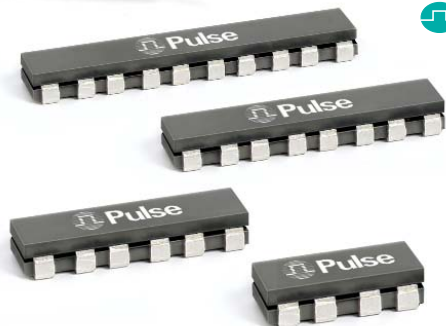


# SMT POWER INDUCTORS

## Power Beads - PA131xNL Series Coupled Inductors



- Two, three, four and five phase Coupled Inductors for VR10/VR11 applications
- For use only with Volterra VT1105M®, VT1115M® chipsets
- Coupled Inductors enable:**

- Output ripple current reduction due to AC magnetic field cancellation within the inductor core
- Improved efficiency due to lower peak currents
- Reduction in required output capacitance
- Faster transient response due to the ability to use lower effective inductance values
- Reduced overshoot/undershoot during load transients
- Frequency range up to 2MHz

### Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C

| Pulse Part No. | Number of Coupled Phases | Equivalent <sup>1</sup> Transient Inductance per Phase (nH) | Rated <sup>2</sup> per Phase (Adc) | Magnetizing Inductance per Phase <sup>3</sup><br>nH ±15%, 0Adc |             |             |             |              | Magnetizing Inductance per Phase <sup>4</sup><br>nH MIN, 5Adc |             |             |             |              | DCR/Phase <sup>5</sup> |     |
|----------------|--------------------------|---|------------------------------------|--|-------------|-------------|-------------|--------------|---|-------------|-------------|-------------|--------------|------------------------|-----|
|                |                          |   |                                    | L1<br>(1-2)  | L2<br>(3-4) | L3<br>(5-6) | L4<br>(7-8) | L5<br>(9-10) | L1<br>(1-2)   | L2<br>(3-4) | L3<br>(5-6) | L4<br>(7-8) | L5<br>(9-10) | TYP                    | MAX |
| PA1312NL       | 2                        | 50  | 40                                 | 300  | 300         | -           | -           | -            | 240   | 240         | -           | -           | -            | 0.425                  | 0.5 |
| PA1313NL       | 3                        | 50  | 40                                 | 360  | 440         | 360         | -           | -            | 285   | 350         | 285         | -           | -            |                        |     |
| PA1314NL       | 4                        | 50  | 40                                 | 360  | 480         | 480         | 360         | -            | 285   | 385         | 385         | 285         | -            |                        |     |
| PA1315NL       | 5                        | 50  | 40                                 | 360  | 460         | 480         | 460         | 360          | 285   | 365         | 385         | 365         | 285          |                        |     |

#### NOTES:

1. In a non-coupled multi-phase topology, the power supply sees the same inductance during transient and steady-state conditions. As a result, any attempt to lower the inductance to improve transient response has the negative result of increasing ripple and peak currents throughout the system during steady-state operation. However, in a coupled inductor multi-phase topology, the interaction of magnetic fields from each phase enables an overall reduction in ripple current during steady-state operation and a lower equivalent inductance during transient operation. The equivalent transient inductance per phase, as listed, represents the actual value of inductance that would be required in an non-coupled topology to realize the same transient performance. This value is achieved by core and winding geometry and is not directly measured by Pulse. For more information on the operation of the coupled inductor topology, please contact Volterra.

2. The rated current per phase is based on Volterra's testing of the Pulse coupled inductors.

3. The magnetizing inductance per phase is the measured inductance (at 0Adc) across each phase when all other phases are open-circuit. This inductance is a Pulse production measurement. Although the equivalent inductance per phase during steady-state is significantly higher than the equivalent transient inductance as listed, it should not be confused with the magnetizing inductance.

4. The magnetizing inductance per phase is the measured inductance (at 5Adc) across each phase when all other phases are open-circuit. This inductance is a Pulse production measurement. This test is performed to verify that the inductor can withstand a phase-to-phase load imbalance of 5Adc without saturating.

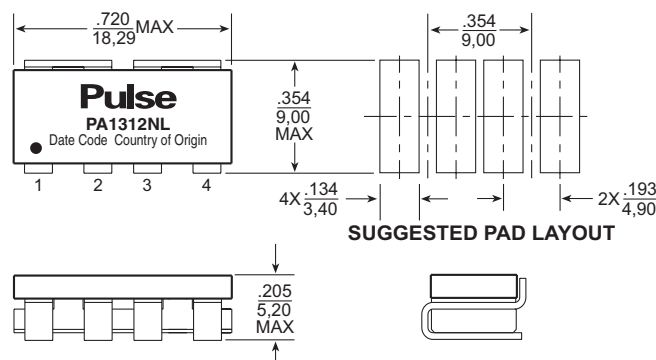
5. The nominal value of DCR/phase is for reference only. For production testing, the maximum limit is used.

6. The VT1105M® and VT1115M® are registered trademarks of Volterra Semiconductor Corporation.

## Mechanical

## Schematic

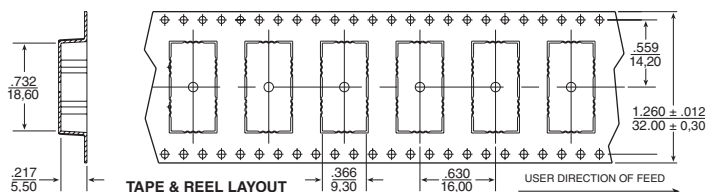
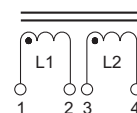
### PA1312NL



Weight ..... 3.0 grams  
Tape & Reel ..... 650/reel  
Tray ..... 60/tray

Dimensions: Inches  
mm

Unless otherwise specified, all tolerances are ± .010  
0,25



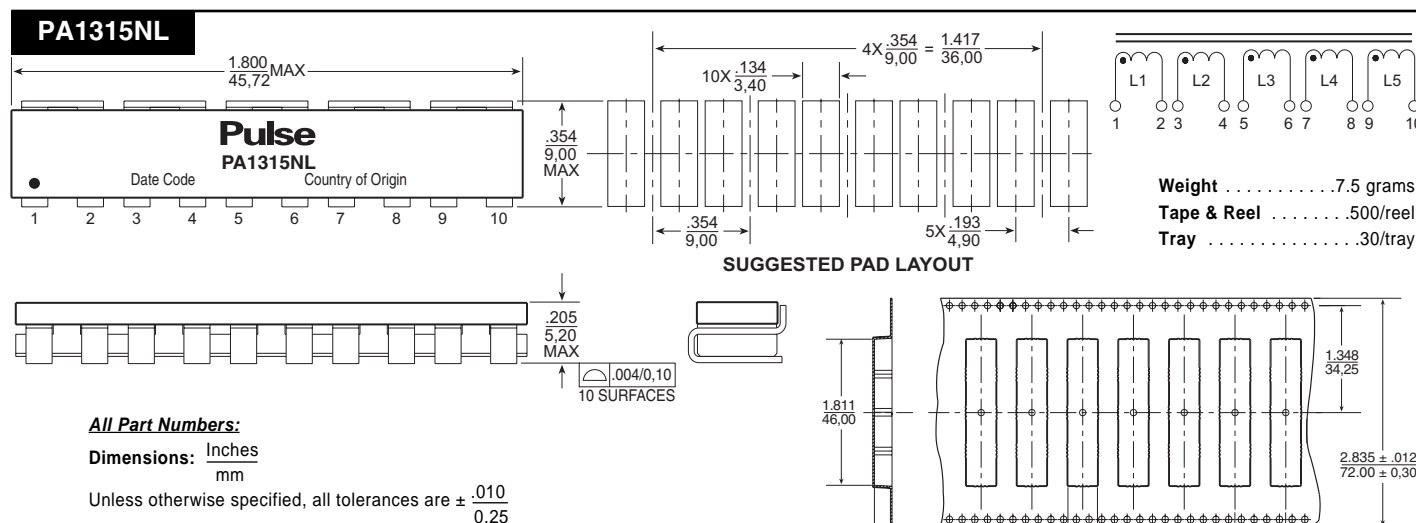
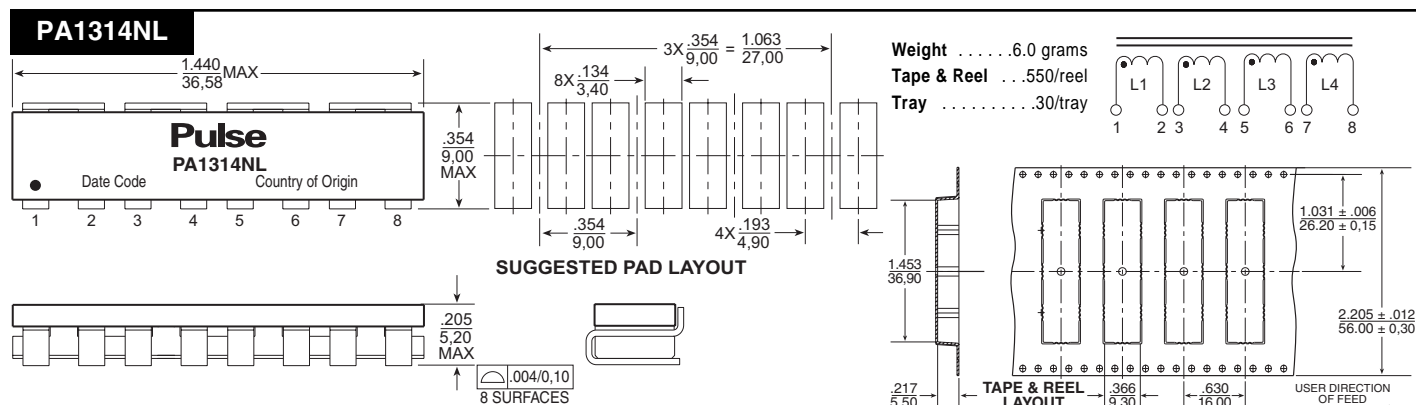
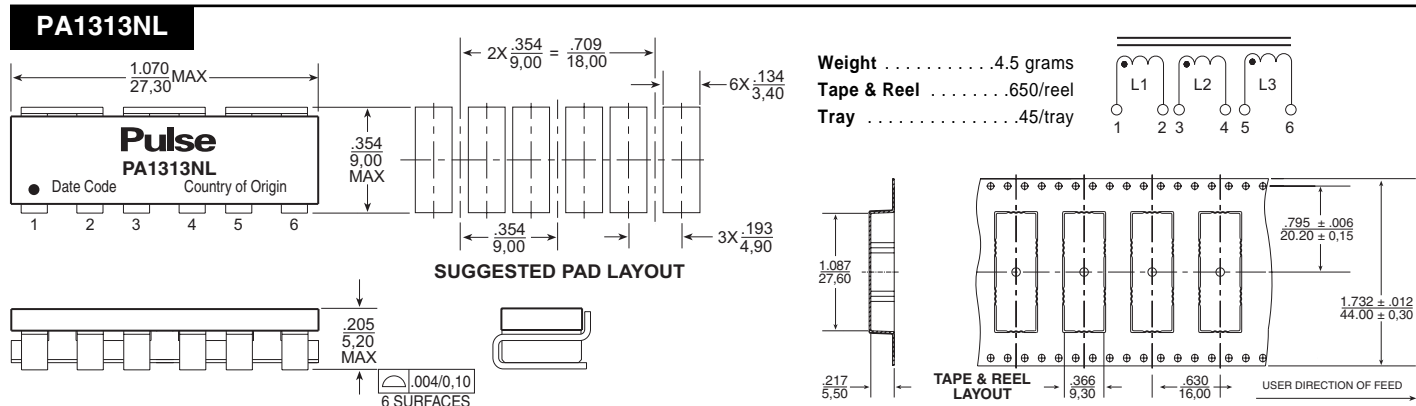
# SMT POWER INDUCTORS

## Power Beads - PA131xNL Series Coupled Inductors



### Mechanical

### Schematic



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