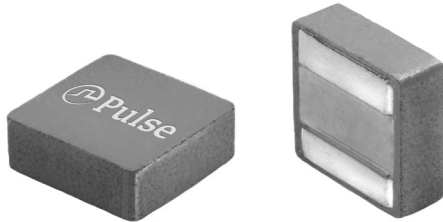










# SMT Power Inductors

High Current Composite Inductor - PA5004.XXXNLT and PM2204.XXXNLT



-  **Height:** 3.1mm Max
-  **Footprint:** 6.8mm x 6.6mm Max
-  **Current Rating:** up to 40A<sub>pk</sub>
-  **Inductance Range:** 0.18uH to 4.5uH
-  High current, low DCR, and high efficiency
-  High reliability
-  Minimized acoustic noise and minimized leakage flux noise
-  Available in Commercial (PA5004) and Automotive (PM2204) grades

## Electrical Specifications @ 25°C, Operating Temperature Range -55C to +155C

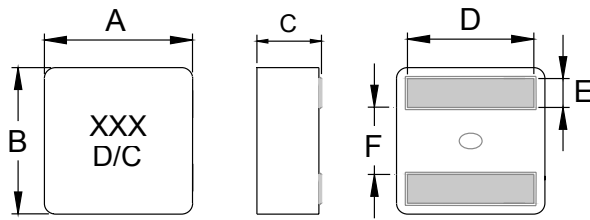
| Part Number   |                         | Inductance<br>100KHz, 0.1V<br>uH±20% | Rated <sup>3</sup><br>Current<br>A | DC Resistance |            | Saturation <sup>2</sup><br>Current<br>A | K Factor<br>for<br>Core Loss | Mechanical<br>D<br>±0.3 |
|---------------|-------------------------|--------------------------------------|------------------------------------|---------------|------------|---|------------------------------|-------------------------|
| Commerical    | Automotive <sup>6</sup> |                                      |                                    | TYP.<br>mΩ    | MAX.<br>mΩ |   |                              |                         |
| PA5004.181NLT | PM2204.181NLT           | 0.18                                 | 32                                 | 1.8           | 2.0        | 40                                      | 358.8                        | 5.30                    |
| PA5004.331NLT | PM2204.331NLT           | 0.33                                 | 25                                 | 2.3           | 2.6        | 32                                      | 228.3                        | 5.55                    |
| PA5004.561NLT | PM2204.561NLT           | 0.56                                 | 22                                 | 3.1           | 3.5        | 29                                      | 167.4                        | 5.30                    |
| PA5004.681NLT | PM2204.681NLT           | 0.68                                 | 20                                 | 4.9           | 5.3        | 25                                      | -                            | 5.30                    |
| PA5004.102NLT | PM2204.102NLT           | 1                                    | 18                                 | 5.7           | 6.3        | 23                                      | 132.2                        | 5.20                    |
| PA5004.122NLT | PM2204.122NLT           | 1.2                                  | 16                                 | 6.9           | 7.7        | 22                                      | 109.2                        | 5.15                    |
| PA5004.152NLT | PM2204.152NLT           | 1.5                                  | 15                                 | 8.5           | 9.4        | 20                                      | -                            | 5.15                    |
| PA5004.182NLT | PM2204.182NLT           | 1.8                                  | 14                                 | 9.5           | 10.5       | 18.2                                    | 93                           | 5.10                    |
| PA5004.222NLT | PM2204.222NLT           | 2.2                                  | 10                                 | 11.3          | 12.6       | 15.9                                    | 81                           | 5.05                    |
| PA5004.332NLT | PM2204.332NLT           | 3.3                                  | 8                                  | 19.0          | 21.2       | 12.2                                    | 64.4                         | 5.00                    |
| PA5004.452NLT | PM2204.452NLT           | 4.5                                  | 7                                  | 23.3          | 25.7       | 10                                      | 49.2                         | 5.00                    |
| PA5004.472NLT | PM2204.472NLT           | 4.7                                  | 6.6                                | 23.5          | 26         | 9.5                                     | -                            | 5.00                    |

### Notes:

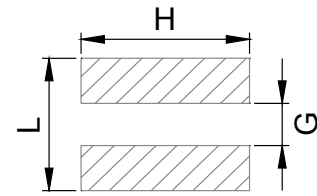
- Actual temperature of the component during system operation (ambient plus temperature rise) must be within the standard operating range.
- The saturation current is the current at which the initial inductance drops approximately 30% at the stated ambient temperature. This current is determined by placing the component in the specified ambient environment and applying a short duration pulse current (to eliminate self-heating effect) to the component.
- The rated current is the DC current required to raise the component temperature by approximately 40 °C. Take note that the components' performance varies depending on the system condition. It is suggested that the component be tested at the system level, to verify the temperature rise of the component during system operation.
- The part temperature (ambient+temp rise) should not exceed 155 °C under worst case operating conditions. Circuit design, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
- Parts shown in bold are standard catalog parts and are available through sample stock and distribution. Parts in lighter font are available but are not necessarily held in sample stock or distribution and lead times may be longer. Please contact Pulse for availability.
- The PM2204.XXXNLT part numbers are AEC-Q200 and IATF16949 certified. The mechanical dimensions are 100% tested in production but do not necessarily meet a product capability index (Cpk) >1.33 and therefore may not strictly conform to PPAP.

## Mechanical

### PA5004.XXXNLT and PM2204.XXXNLT



FINAL LAYOUT

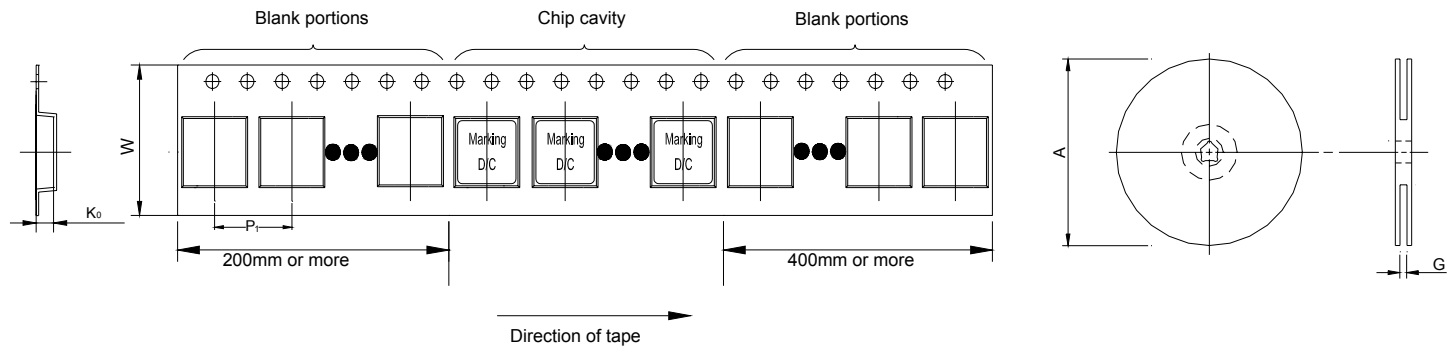


SUGGESTED PAD LAYOUT

| Series        | Mechanical    | A       | B       | C       | D              | E       | F       | L         | G         | H         |
|---------------|---------------|---------|---------|---------|----------------|---------|---------|-----------|-----------|-----------|
| PA5004/PM2204 | 1.2uH & below | 6.8±0.2 | 6.4±0.2 | 2.8±0.2 | SEE SPEC TABLE | 1.4±0.3 | 2.6±0.3 | 5.6 (REF) | 2.5 (REF) | 5.6 (REF) |
|               | 1.5uH & below |         |         | 2.9±0.2 |                |         |         |           |           |           |

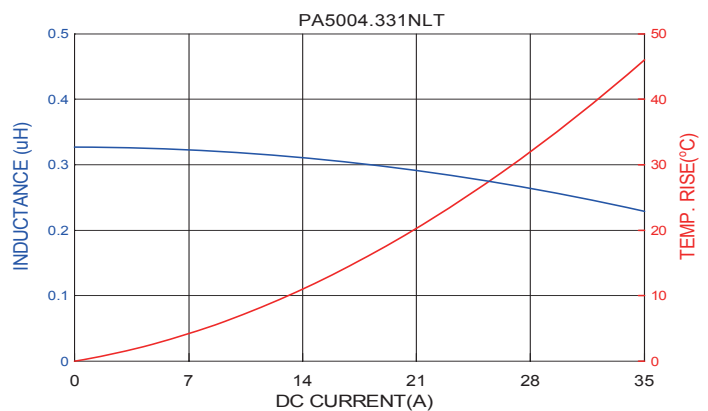
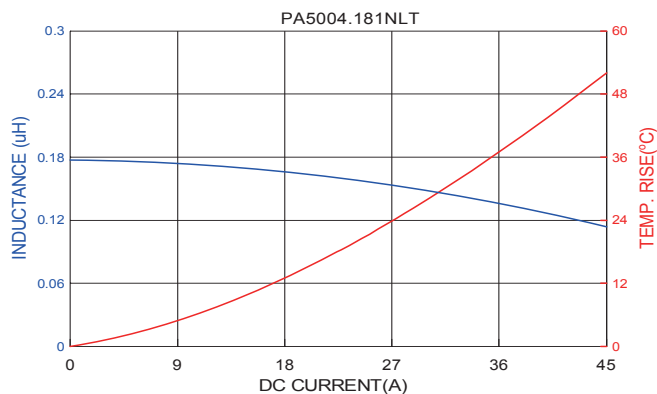
All Dimensions in mm.

### TAPE & REEL INFO



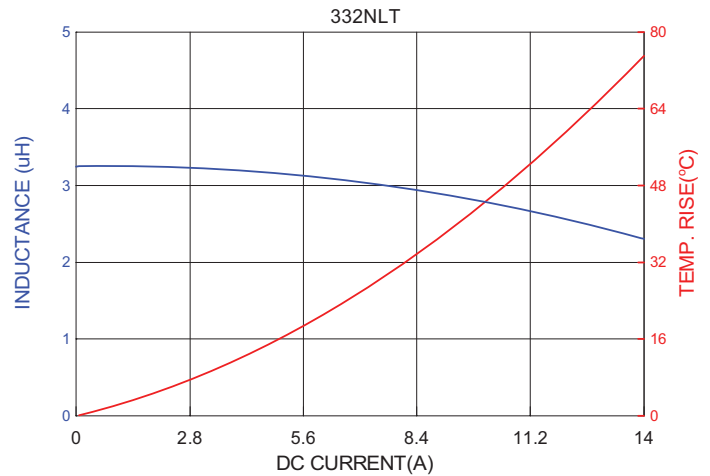
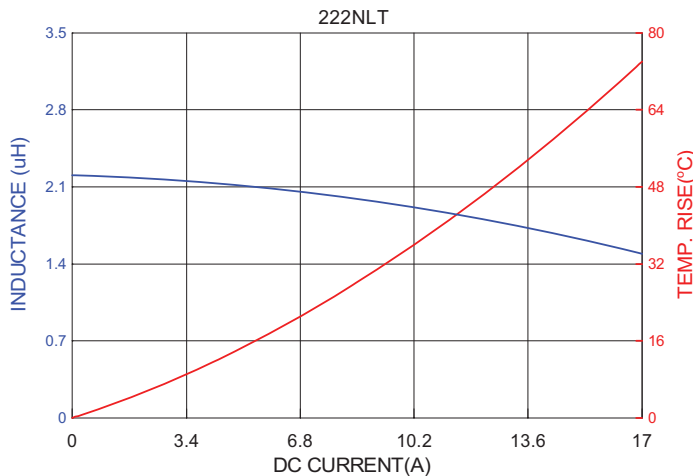
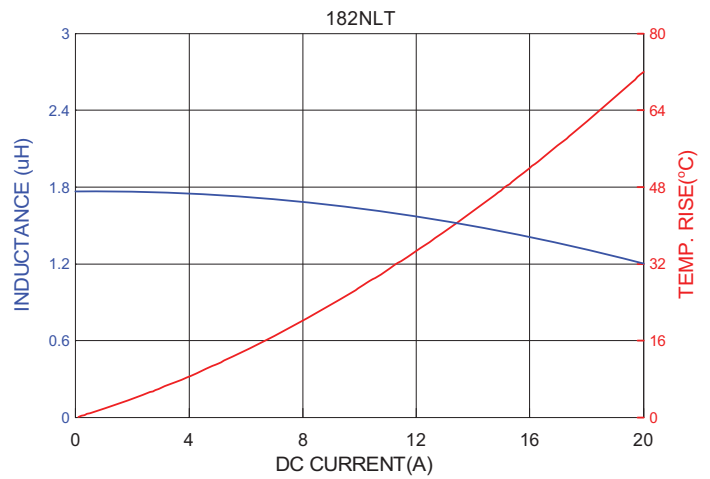
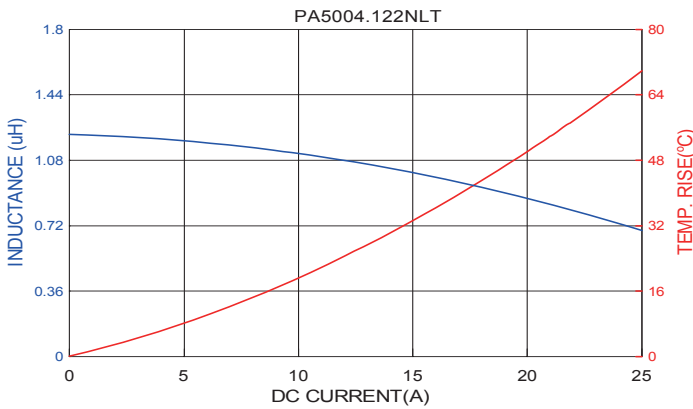
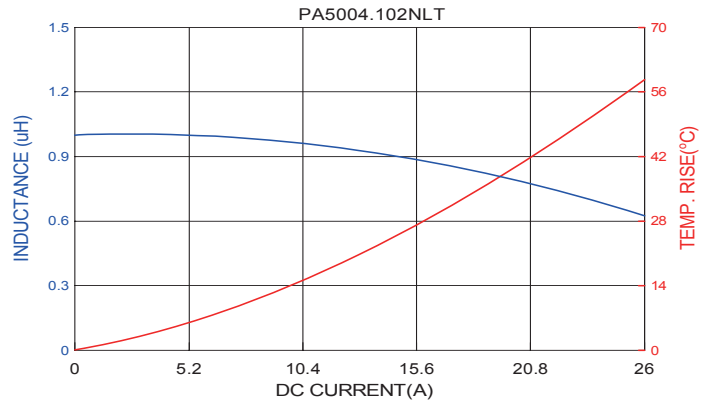
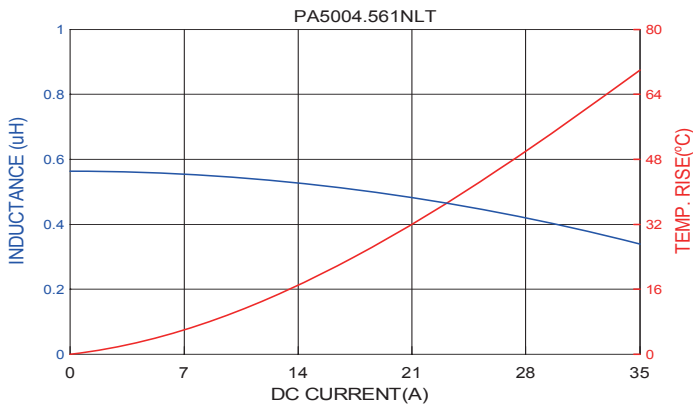
|               | SURFACE MOUNTING TYPE, REEL/TAPE LIST |      |                |    |                |          |
|---------------|---------------------------------------|------|----------------|----|----------------|----------|
|               | REEL SIZE (mm)                        |      | TAPE SIZE (mm) |    |                | QTY      |
|               | A                                     | G    | P <sub>1</sub> | W  | K <sub>0</sub> | PCS/REEL |
| PA5004/PM2204 | Ø330                                  | 16.4 | 12             | 16 | 3.3            | 1000     |

### Typical Performance Curves



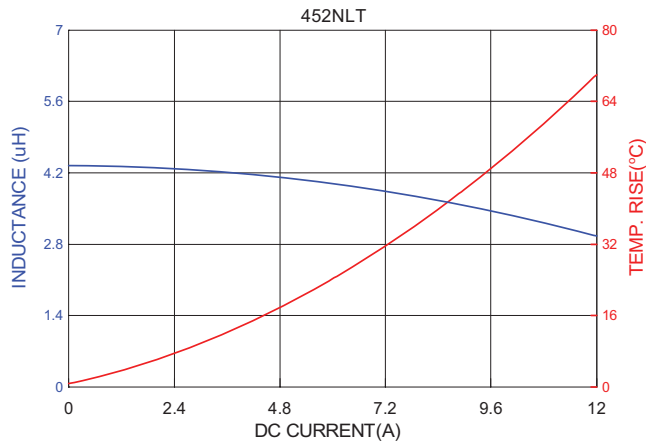
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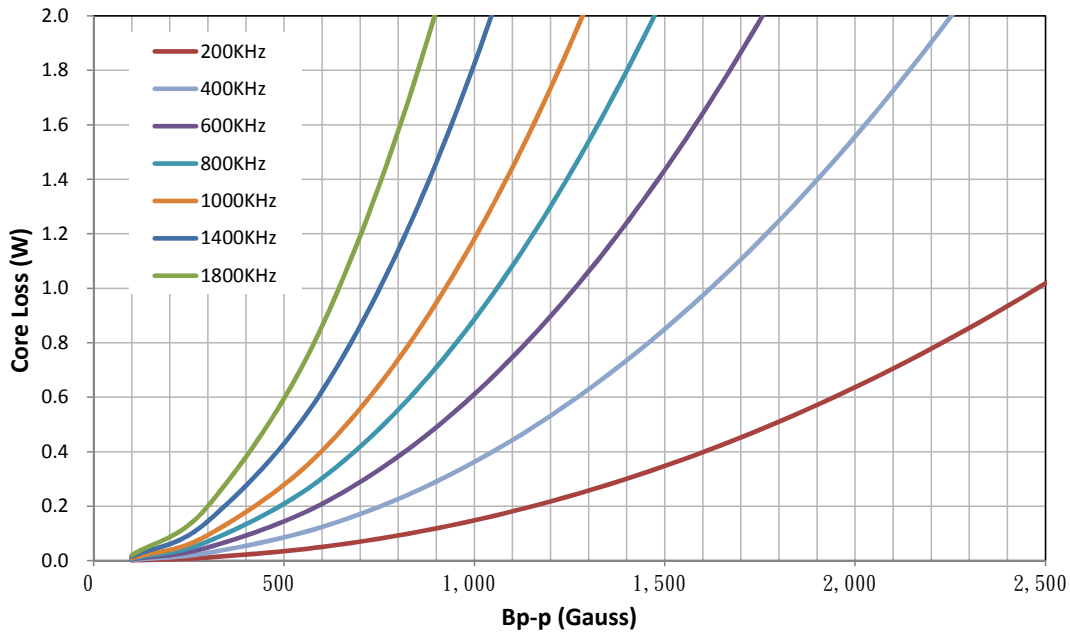


# SMT Power Inductors

High Current Composite Inductor - PA5004.XXXNLT and PM2204.XXXNLT



## CORE LOSS vs FLUX DENSITY



$$Bp-p = K * L(uH) * \Delta I(A)$$

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