# SMT Current Sense Transformers

**PA1005.XXXNL and PM2165.XXXNL**

![SMT Current Sense Transformers](image)

- **Height:** 5.5mm Max
- **Footprint:** 8.4mm x 7.2mm Max
- **Current Rating:** up to 20A
- **Frequency Range:** 20kHz to 1MHz
- **Low Primary DCR version of P820X**

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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Turns Ratio</th>
<th>Current Rating(^1) (A)</th>
<th>Secondary Inductance (mH MIN)</th>
<th>DCR (mΩ (\text{MAX}))</th>
<th>Hipot (V_{\text{RMS}})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Commercial</strong></td>
<td><strong>Automotive(^2)</strong></td>
<td></td>
<td>Primary (8-7)</td>
<td>Secondary (1-3)</td>
</tr>
<tr>
<td>PA1005.020NL</td>
<td>1:20</td>
<td>20</td>
<td>0.08</td>
<td>0.75</td>
<td>550</td>
</tr>
<tr>
<td>PA1005.030NL</td>
<td>1:30</td>
<td>20</td>
<td>0.18</td>
<td>0.75</td>
<td>870</td>
</tr>
<tr>
<td>PA1005.040NL</td>
<td>1:40</td>
<td>20</td>
<td>0.32</td>
<td>0.75</td>
<td>1140</td>
</tr>
<tr>
<td>PA1005.050NL</td>
<td>1:50</td>
<td>20</td>
<td>0.5</td>
<td>0.75</td>
<td>1500</td>
</tr>
<tr>
<td>PA1005.060NL</td>
<td>1:60</td>
<td>20</td>
<td>0.72</td>
<td>0.75</td>
<td>2250</td>
</tr>
<tr>
<td>PA1005.070NL</td>
<td>1:70</td>
<td>20</td>
<td>0.98</td>
<td>0.75</td>
<td>4750</td>
</tr>
<tr>
<td>PA1005.100NL</td>
<td>1:100</td>
<td>20</td>
<td>2.00</td>
<td>0.75</td>
<td>5500</td>
</tr>
<tr>
<td>PA1005.125NL</td>
<td>1:125</td>
<td>20</td>
<td>3.00</td>
<td>0.75</td>
<td>6500</td>
</tr>
</tbody>
</table>

### Notes:

1. The temperature of component (ambient temperature plus temper-ature rise) must be within the specified operating temperature range.
2. The maximum current rating is based upon temperature rise of the component and represents the DC current which will cause a typical temperature rise of 40°C with no airflow.
3. To calculate value of terminating resistor \(R_t\) use the following formula:
   \[
   R_t = \frac{V_{\text{ref}} \times N}{I_{\text{peak\_primary}}}
   \]
4. The peak flux density of the device must remain below 2000 Gauss. To calculate the peak flux density for uni-polar current use following formula:
   \[
   B_{pk} = 37.59 \times V_{\text{ref}} \times \text{(Duty\_Cycle\_Max)} \times 10^7 / (N \times \text{Freq\_kHz})
   \]
   * for bi-polar current applications divide \(B_{pk}\) (as calculated above) by 2.
5. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PA1005.020NL becomes PA1005.020NT). Pulse complies to industry standard tape and reel specification EIA481.
6. The "NL" suffix indicates an RoHS-compliant part number. Non-NL suffixed parts are not necessarily RoHS compliant, but are electrically and mechanically equivalent to NL versions. If a part number does not have the "NL" suffix, but an RoHS compliant version is required, please contact Pulse for availability.
7. The PM2165.XXXNL 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 \(\text{Cpk} >1.33\) and therefore may not strictly conform to PPAP.
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**Mechanical**

**Schematic**

Weight: 0.34 grams
Tape & Reel: 900/reel
Tray: 120/tray

**Dimensions:**
- Inches
- All tolerances are: ±0.010 mm

**Tape & Reel Info**

**Surface Mounting Type, Reel/Tape List**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>REEL SIZE (mm)</th>
<th>TAPE SIZE (mm)</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1005.XXXNL/PM2165.XXXNL</td>
<td>Ø330</td>
<td>16.4</td>
<td>5.65</td>
</tr>
</tbody>
</table>

**Dimensions:**
- Inches
- All tolerances are: ±0.010 mm