# SMT Current Sense Transformers

**PA1005.XXXNL and PM2165.XXXNL**

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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Commercial</th>
<th>Automotive</th>
<th>Turns Ratio</th>
<th>Current Rating¹ (A)</th>
<th>Secondary Inductance (mH MIN)</th>
<th>DCR (mΩ² MAX)</th>
<th>Hipot (VRMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Primary</td>
<td>Secondary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(8-7)</td>
<td>(1-3)</td>
</tr>
<tr>
<td>PA1005.020NL</td>
<td>PM2165.020NL</td>
<td>1:20</td>
<td>20</td>
<td>0.08</td>
<td>0.75</td>
<td>550</td>
<td>1000</td>
</tr>
<tr>
<td>PA1005.030NL</td>
<td>PM2165.030NL</td>
<td>1:30</td>
<td>20</td>
<td>0.18</td>
<td>0.75</td>
<td>870</td>
<td>1000</td>
</tr>
<tr>
<td>PA1005.040NL</td>
<td>PM2165.040NL</td>
<td>1:40</td>
<td>20</td>
<td>0.32</td>
<td>0.75</td>
<td>1140</td>
<td>1000</td>
</tr>
<tr>
<td>PA1005.050NL</td>
<td>PM2165.050NL</td>
<td>1:50</td>
<td>20</td>
<td>0.5</td>
<td>0.75</td>
<td>1500</td>
<td>1000</td>
</tr>
<tr>
<td>PA1005.060NL</td>
<td>PM2165.060NL</td>
<td>1:60</td>
<td>20</td>
<td>0.72</td>
<td>0.75</td>
<td>2250</td>
<td>1000</td>
</tr>
<tr>
<td>PA1005.070NL</td>
<td>PM2165.070NL</td>
<td>1:70</td>
<td>20</td>
<td>0.98</td>
<td>0.75</td>
<td>4750</td>
<td>1000</td>
</tr>
<tr>
<td>PA1005.100NL</td>
<td>PM2165.100NL</td>
<td>1:100</td>
<td>20</td>
<td>2.00</td>
<td>0.75</td>
<td>5500</td>
<td>1000</td>
</tr>
<tr>
<td>PA1005.125NL</td>
<td>PM2165.125NL</td>
<td>1:125</td>
<td>20</td>
<td>3.00</td>
<td>0.75</td>
<td>6500</td>
<td>500</td>
</tr>
</tbody>
</table>

### Notes:

1. The temperature of component (ambient temperature plus temperature 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 (Rt) use the following formula:
   \[ Rt (W) = \frac{V_{ref} \times N}{I_{peak\_primary}} \]
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:
   \[ B_{pk} = 37.59 \times V_{ref} \times (Duty\_Cycle\_Max) \times 10^5 / (N \times Freq\_kHz) \]
   * 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 PA1005.020NL-T). 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 (Cpk) >1.33 and therefore may not strictly conform to PPAP.

## Specifications

- **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
SMT Current Sense Transformers
PA1005.XXXNL and PM2165.XXXNL

Mechanical

Schematic

For More Information
Pulse Worldwide Headquarters
15255 Innovation Drive Ste 100
San Diego, CA 92128
U.S.A.

Pulse Europe
Pulse Electronics GmbH
Am Rottland 12
58540 Meinerzhagen
Germany

Pulse China Headquarters
Pulse Electronics (ShenZhen) CO., LTD
D708, Shenzhen Academy of Aerospace Technology,
The 10th Keji South Road,
NanChai District, Shenzhen,
P.R. China 518057

Pulse North China
Room 2704/2705
Super Ocean Finance Ctr.
2067 Yan An Road West
Shanghai 200336
China

Pulse South Asia
3 Fraser Street 0428
DUO Tower
Singapore 189552

Pulse North Asia
1F., No.111 Xiuyuan Road
Zhongli District
Taoyuan City 32057
Taiwan (R.O.C)

Weight: 0.34 grams
Dimensions: Inches

Tape & Reel: 900/reel

Tray: 120/tray

Unless otherwise specified, all tolerances are ±.010

Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice. Other brand and product names mentioned herein may be trademarks or registered trademarks of their respective owners. © Copyright, 2019. Pulse Electronics, Inc. All rights reserved.