### High Reliability Power Inductors MS433PYA

- High temperature materials allow operation in ambient temperatures up to 155°C
- Tin-lead (Sn-Pb) termination for the best possible board adhesion
- Exceptionally low DCR – 5.81 mOhm
- Soft saturation makes them ideal for VRM/VRD applications.

#### Terminations
Tin-lead (63/37) over copper.

#### Core material
Composite

#### Weight
0.17 – 0.18 g

#### Ambient temperature
–55°C to +105°C with Irms current

#### Maximum part temperature
+155°C (ambient + temp rise)

#### Storage temperature
Component: –55°C to +155°C.
Tape and reel packaging: –55°C to +80°C

#### Resistance to soldering heat
Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

#### Moisture Sensitivity Level (MSL)
1 (unlimited floor life at <30°C / 85% relative humidity)

#### Enhanced crush-resistant packaging
1000/7” reel
Plastic tape: 12 mm wide, 0.23 mm thick, 8 mm pocket spacing, 2.3 mm pocket depth

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### Table: Inductance

<table>
<thead>
<tr>
<th>Part number</th>
<th>±20% (µH) typ</th>
<th>DCR (mOhms)</th>
<th>SRF (MHz)</th>
<th>Isat (A)</th>
<th>Irms (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min</td>
<td>typ</td>
<td>max</td>
<td>min</td>
<td>typ</td>
</tr>
<tr>
<td>MS433PYA221MSZ</td>
<td>0.22</td>
<td>5.81</td>
<td>6.40</td>
<td>153</td>
<td>191</td>
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<tr>
<td>MS433PYA401MSZ</td>
<td>0.40</td>
<td>7.55</td>
<td>8.30</td>
<td>116</td>
<td>145</td>
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<tr>
<td>MS433PYA601MSZ</td>
<td>0.60</td>
<td>9.50</td>
<td>10.45</td>
<td>85</td>
<td>106</td>
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<tr>
<td>MS433PYA102MSZ</td>
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<td>14.60</td>
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<td>79</td>
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<tr>
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<td>1.5</td>
<td>21.45</td>
<td>23.60</td>
<td>51</td>
<td>64</td>
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<tr>
<td>MS433PYA222MSZ</td>
<td>2.2</td>
<td>35.20</td>
<td>38.70</td>
<td>42</td>
<td>52</td>
</tr>
</tbody>
</table>

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1. When ordering, please specify testing code:
   - **MS433PYA222MSZ**
   - Testing:
     - Z = Unscreened
     - H = Group A screening per Coilcraft CP-SA-10001
     - All screening performed to the document’s latest revision

2. Inductance tested at 100 kHz, 0.1 Vrms, 0 Adc.
3. DCR measured on a micro-ohmmeter.
4. SRF measured using an Agilent/HP 4395A or equivalent.
5. DC current at 25°C that causes an inductance drop of 30% (typ) from its value without current.
6. Current that causes the specified temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.
7. Electrical specifications at 25°C.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

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**Irms Testing**

Irms testing was performed on 0.75 inch wide x 0.25 inch thick copper traces in still air.

Temperature rise is highly dependent on many factors including pcb land pattern, trace size, and proximity to other components. Therefore temperature rise should be verified in application conditions.
MS433PYA High Reliability Power Inductors

L vs Current

![Graphs showing inductance (µH) vs current (A) for different power inductors.](image)
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ESR vs Frequency

L vs Frequency

Dimensions are in inches

Suggested Land Pattern

*Height dimension shown is for the mounted part after reflow.
Dimension before mounting can be an additional 0.008 inch / 0.2 mm