Current Sensing Transformers

These low cost Coilcraft current sensing transformers are designed for use up to 100 kHz. They incorporate the current and sense windings in one small, encapsulated package requiring minimum board space.

Varying the terminating resistance allows sensitivities of 1 to 100 Volts output per Ampere input.

Coilcraft current sensing transformers are designed to meet UL/CSA/IEC 60950 Reinforced Insulation specification and provide 3 mm creepage/clearance between primary and secondary windings. Winding to winding isolation is 3750 Vrms.

Applications include feedback control, overload sensing, detecting load drop or shutdown, and proportional output.

Coilcraft Designer’s Kit P403 contains the three standard current sensing transformers, sensor-only versions of each, plus two 50/60Hz current sensors. To order, contact Coilcraft or visit http://order.coilcraft.com.

<table>
<thead>
<tr>
<th>Part number</th>
<th>Turns (N)</th>
<th>Inductance¹ (mH)</th>
<th>DCR max (Ohms)</th>
<th>Frequency range² (kHz)</th>
<th>Sensed current range Iₚᵛₑ</th>
<th>Terminating resistance Rₚ³ (Ohms)</th>
<th>Rₚ for 1 Vₑₒᵤᵗ from 1 A Iᵢₙ</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS4050V-01L</td>
<td>1:50</td>
<td>5</td>
<td>0.007 0.7</td>
<td>5 – 25</td>
<td>2 mA – 10 A</td>
<td>50 – 5000</td>
<td>50 Ohms</td>
</tr>
<tr>
<td>CS4100V-01L</td>
<td>1:100</td>
<td>20</td>
<td>0.007 1.4</td>
<td>5 – 50</td>
<td>5 mA – 24 A</td>
<td>100 – 10,000</td>
<td>100 Ohms</td>
</tr>
<tr>
<td>CS4200V-01L</td>
<td>1:200</td>
<td>80</td>
<td>0.001 4.0</td>
<td>1 – 100</td>
<td>5 mA – 35 A</td>
<td>200 – 20,000</td>
<td>200 Ohms</td>
</tr>
</tbody>
</table>

1. Inductance is for the secondary, measured at 16.75 kHz, 1 Vrms.
2. Square wave response deteriorates above and below this frequency.
3. Varying terminating resistance increases or decreases output Voltage/Ampere according to the following equation: Rₚ = Vₑₒᵤᵗ × Nₚₑₑ / Iᵢₙ
4. Ambient temperature range –40°C to +85°C.
5. Electrical specifications at 25°C.

Typical Circuit

![Typical Circuit Diagram]

Recommended PC Board Layout (viewed from top)

- **Internal code**:
  - 0.77 (19.56 max)
  - 0.03 (0.76)
  - 0.75 (19.05 max)
  - 0.105/0.150
  - 2.67/3.81

- **Terminations**: Tin-silver over copper

- **Weight**: 8.8 – 9.3 g

- **Packaging**: 29 per tube