Current Sense Transformers CST2020

- AEC-Q200 Grade 1 qualified (−40°C to +125°C ambient)
- Sensed current up to 40 A
- Frequency range 400 Hz to 1 MHz
- Very low primary DC resistance
- Meets Reinforced Insulation per UL 60950-1
- 4000 Vrms, one minute isolation (hipot) between windings

**Core material** Ferrite
**Terminations** Tin-silver-copper over tin over copper over steel (pins 1 – 3); Tin-silver-copper over tin over nickel over copper (pins 4 – 5)
**Weight** 7 – 8.5 g
**Ambient temperature** −40°C to +125°C
**Maximum part temperature** +165°C (ambient + temp rise)
**Storage temperature** Component: −40°C to +165°C.
**Tray packaging** −40°C to +80°C
**Moisture Sensitivity Level (MSL)** 1 (unlimited floor life at <30°C / 85% relative humidity)

**Failures in Time (FIT) / Mean Time Between Failures (MTBF)**
38 per billion hours / 26,315,789 hours, calculated per Telcordia SR-332

**Packaging**
100 per tray

**PCB washing** Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See Doc787_PCB_Washing.pdf.

**Typical Circuit**

<table>
<thead>
<tr>
<th>Part number</th>
<th>Turns (N)</th>
<th>Inductance1</th>
<th>DCR max (Ohms)</th>
<th>Frequency min (kHz)</th>
<th>Volt-time product2 (Vµsec)</th>
<th>Sensed current I3 max (A)</th>
<th>Terminating resistance R4 (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CST2020-070L</td>
<td>1:70</td>
<td>3.46</td>
<td>0.83</td>
<td>1.8</td>
<td>277</td>
<td>40</td>
<td>1.75</td>
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<tr>
<td>CST2020-100L</td>
<td>1:100</td>
<td>7.07</td>
<td>1.23</td>
<td>1.3</td>
<td>395</td>
<td>40</td>
<td>2.5</td>
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<tr>
<td>CST2020-200L</td>
<td>1:200</td>
<td>28.28</td>
<td>3.95</td>
<td>0.60</td>
<td>791</td>
<td>40</td>
<td>5.0</td>
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<tr>
<td>CST2020-300L</td>
<td>1:300</td>
<td>63.63</td>
<td>7.84</td>
<td>0.40</td>
<td>1186</td>
<td>40</td>
<td>7.5</td>
</tr>
</tbody>
</table>

1. Inductance measured between secondary pins at 10 kHz, 0.1 Vrms, 0 Adc.
3. Primary current of 40 A causes less than 40°C temperature rise from 25°C ambient. Higher current causes a greater temperature rise (see Temperature Rise vs Current curve).
4. Terminating resistance (R4) value is based on 1 Volt output with 40 Amps flowing through the primary. Varying terminating resistance increases or decreases output Voltage/Ampere according to the following equation:
   \[ R_T = V_{out} \times N_{sec}/I_{in} \]
5. Electrical specifications at 25°C.

Refer to Doc362 “Soldering Surface Mount Components” before soldering.
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Temperature Rise vs Current

Graph showing the relationship between temperature rise (from 25°C) and current (in Arms).

Recommended PC Board Layout

Dimensions are in inches/mm

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