Current Sense Transformers CST2020

- AEC-Q200 Grade 1 (−40°C to +125°C)
- 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): 10.06 per billion hours / 9.940E+07 hours, calculated per Telcordia SR-332
Packaging: 100 per tray

### Specifications

<table>
<thead>
<tr>
<th>Part number</th>
<th>Turns (N) pri: sec</th>
<th>Inductance (mH)</th>
<th>DCR max (Ohms) pri: sec</th>
<th>Frequency min (kHz)</th>
<th>Volt-time product (Vµsec)</th>
<th>Sensed current max (A)</th>
<th>Terminating resistance R_T (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CST2020-070L</td>
<td>1:70</td>
<td>3.46</td>
<td>0.00084</td>
<td>0.83</td>
<td>1.8</td>
<td>277</td>
<td>40</td>
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<tr>
<td>CST2020-100L</td>
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<td>7.07</td>
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<td>40</td>
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<tr>
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<td>3.95</td>
<td>0.60</td>
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<td>40</td>
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<tr>
<td>CST2020-300L</td>
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<td>63.63</td>
<td>0.00084</td>
<td>7.84</td>
<td>0.40</td>
<td>1186</td>
<td>40</td>
</tr>
</tbody>
</table>

1. Inductance measured between secondary pins at 10 kHz, 0.1 Vrms, 0 Adc.
2. Volt-time product is for the secondary, between pin 3 and 1.
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 (R_T) 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:
   \[ R_T = \frac{V_{out}}{N_{sec}/I_{in}} \]
5. Electrical specifications at 25°C.

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

## Typical Circuit

![Typical Circuit Diagram]

\[ I_{in} \]
\[ (1 \text{ turn}) \]

\[ R_T \]
\[ V_{out} \]
CST2020 Current Sense Transformers

Temperature Rise vs Current

Temperature rise (from 25°C)

Current (Arms)

Temperature Rise vs Current Graph

Dimensions are in inches

Recommended PC Board Layout

Dimensions are in mm

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