Current Sense Transformers CST7030

- AEC-Q200 Grade 1 qualified (−40°C to +125°C ambient)
- Small surface mount current sensors
- Sensed current up to 20 A; Frequency range up to 1 MHz
- Very low primary DC resistance
- 500 Vrms, one minute isolation (hipot) between windings
- Designed for:
  - Continuous AC current monitoring in switched-mode power supply;
  - Overload and short-circuit protection; Current measurement in traction motor and battery management systems in conventional and xEV (EV, HEV, FCEV) vehicles.
- Can also be used in 48 V vehicle electrical systems

<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 range (kHz)</th>
<th>Volt-time product (Vµsec)</th>
<th>Sensed current I_in max (A)</th>
<th>Terminating resistance R_T (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CST7030-020L_1</td>
<td>1:20</td>
<td>0.053</td>
<td>0.0015 0.420</td>
<td>78–1000</td>
<td>6.4</td>
<td>20</td>
<td>1.0</td>
</tr>
<tr>
<td>CST7030-050L_1</td>
<td>1:50</td>
<td>0.333</td>
<td>0.0015 2.76</td>
<td>31–1000</td>
<td>16.0</td>
<td>20</td>
<td>2.5</td>
</tr>
<tr>
<td>CST7030-070L_1</td>
<td>1:70</td>
<td>0.652</td>
<td>0.0015 5.04</td>
<td>22–1000</td>
<td>22.4</td>
<td>20</td>
<td>3.5</td>
</tr>
<tr>
<td>CST7030-100L_1</td>
<td>1:100</td>
<td>1.330</td>
<td>0.0015 10.68</td>
<td>16–1000</td>
<td>32.0</td>
<td>20</td>
<td>5.0</td>
</tr>
<tr>
<td>CST7030-150L_1</td>
<td>1:150</td>
<td>2.993</td>
<td>0.0015 22.30</td>
<td>10–1000</td>
<td>48.0</td>
<td>20</td>
<td>7.5</td>
</tr>
</tbody>
</table>

1. When ordering, please specify packaging code:

   CST7030-150L

   Packaging:  
   - C = 7" machine-ready reel. EIA-481 embossed plastic tape (600 parts per full reel).
   - B = Less than full reel. In tape, but not machine ready. To have a leader and trailer added ($25 charge), use code letter C instead.
   - D = 13" machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked (2500 parts per full reel).

2. Inductance measured between secondary pins at 100 kHz, 0.1 Vrms, 0 Adc.


4. Primary current of 20 A causes less than 25°C temperature rise from 25°C ambient. Higher current causes a greater temperature rise (see Temperature Rise vs Current curve).

5. Terminating resistance (R_T) value is based on 1 Volt output with 20 Amps flowing through the primary. Varying terminating resistance increases or decreases output Voltage/Ampere according to the following equation:

   \[ R_T = \frac{V_{out}}{I_{in}} \times N_{sec}/I_{in} \]

6. Electrical specifications at 25°C.

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

Typical Circuit

- Core material: Ferrite
- Terminations: RoHS compliant tin-silver over tin over nickel over phos bronze
- Weight: 0.16 g
- Ambient temperature: −40°C to +125°C
- Maximum part temperature: +165°C (ambient + temp rise)
- Storage temperature: Component: −40°C to +125°C. Tape and reel packaging: −40°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)
- Failures in Time (FIT) / Mean Time Between Failures (MTBF): 38 per billion hours / 26,315,789 hours, calculated per Telcordia SR-332
- Packaging: 600/7” reel; 2500/13” reel Plastic tape: 16 mm wide, 0.35 mm thick, 8 mm pocket spacing, 3.0 mm pocket depth
- AEC-Q200 Grade 1 qualified (−40°C to +125°C ambient)
- Small surface mount current sensors
- Sensed current up to 20 A; Frequency range up to 1 MHz
- Very low primary DC resistance
- 500 Vrms, one minute isolation (hipot) between windings
- Designed for:
  - Continuous AC current monitoring in switched-mode power supply;
  - Overload and short-circuit protection; Current measurement in traction motor and battery management systems in conventional and xEV (EV, HEV, FCEV) vehicles.
- Can also be used in 48 V vehicle electrical systems
CST7030 SMT Current Sense Transformers

Temperature Rise vs Current

![Temperature Rise vs Current Graph]

Dimensions

![Dimensions Diagram]

Dimensions are in inches

Recommended Land Pattern

![Recommended Land Pattern Diagram]