

ECSTA1V0703

Automotive grade SMT current sense transformer



Product features

- AEC-Q200 qualified
- EE4.6 SMT package (7.2 mm x 5.2 mm x 3.0 mm)
- Very low DC resistance
- Wide selection of turns ratios
- Sensed current – primary rated for 9 A
- Frequency range: 50 kHz to 1 MHz
- Moisture sensitivity level (MSL): 1

Applications

- Motor drive
- On-board chargers
- DC/DC converters
- Wireless chargers
- Battery management systems (BMS)
- EV charging
- Feedback control
- Overload sensing

Environmental compliance and general specifications

- Storage temperature (component): -40 °C to +125 °C
- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant



Product specifications

| Part number ³ | Turns ratio sec :pri | Secondary inductance (mH) @ 100 kHz 0.1 V minimum | DCR sec (Ω) maximum | DCR pri (m Ω) reference | Hi-pot pri to sec @ 2 mA 3 seconds 50 Hz | Sensed current ¹ (A) maximum |
|--------------------------|----------------------|---|------------------------------|---------------------------------|--|---|
| ECSTA1V0703-1020-R | 20:1 | 0.053 | 0.42 | 1.5 | 500 Vac | 9 |
| ECSTA1V0703-1050-R | 50:1 | 0.333 | 2.76 | 1.5 | 500 Vac | 9 |
| ECSTA1V0703-1070-R | 70:1 | 0.652 | 5.04 | 1.5 | 500 Vac | 9 |
| ECSTA1V0703-1100-R | 100:1 | 1.33 | 10.68 | 1.5 | 500 Vac | 9 |
| ECSTA1V0703-1150-R | 150:1 | 2.993 | 22.3 | 1.5 | 500 Vac | 9 |

1. Primary current of 9 A causes less than 40°C temperature rise @ +2.5°C ambient. Higher current causes a greater temperature rise

2. Electrical specifications at +25 °C

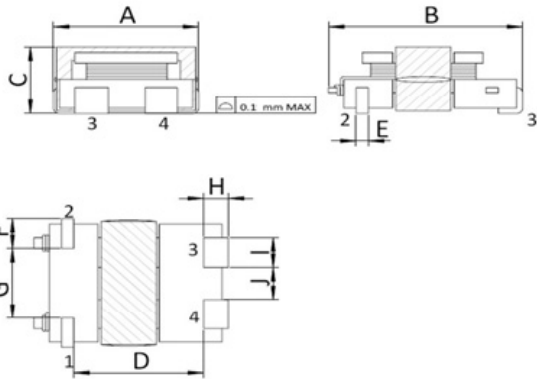
3. Part Number Definition: ECSTA1V0703-1xxx-R

ECSTA1V0703 = Product code and size

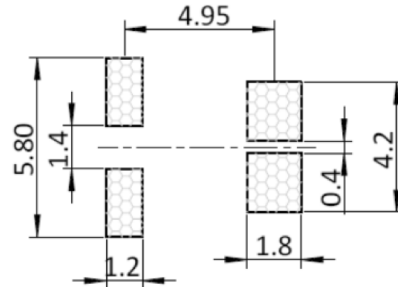
1xxx= Turns ratio sec:pri 1=pri, xxx=sec; 1020= 20:1

-R suffix = RoHS compliant

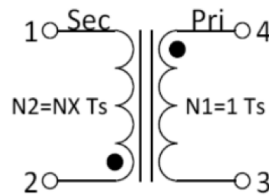
Mechanical parameters, schematic, pad layout (mm)



Recommended PCB Layout



Schematic



| Dimension | Value |
|-----------|--------------|
| A | 5.20 maximum |
| B | 7.20 maximum |
| C | 3.00 maximum |
| D | 4.05 |
| E | 0.4 |
| F | 1.1 |
| G | 2.6 |
| H | 1.2 |
| I | 1.1 |
| J | 1.2 |

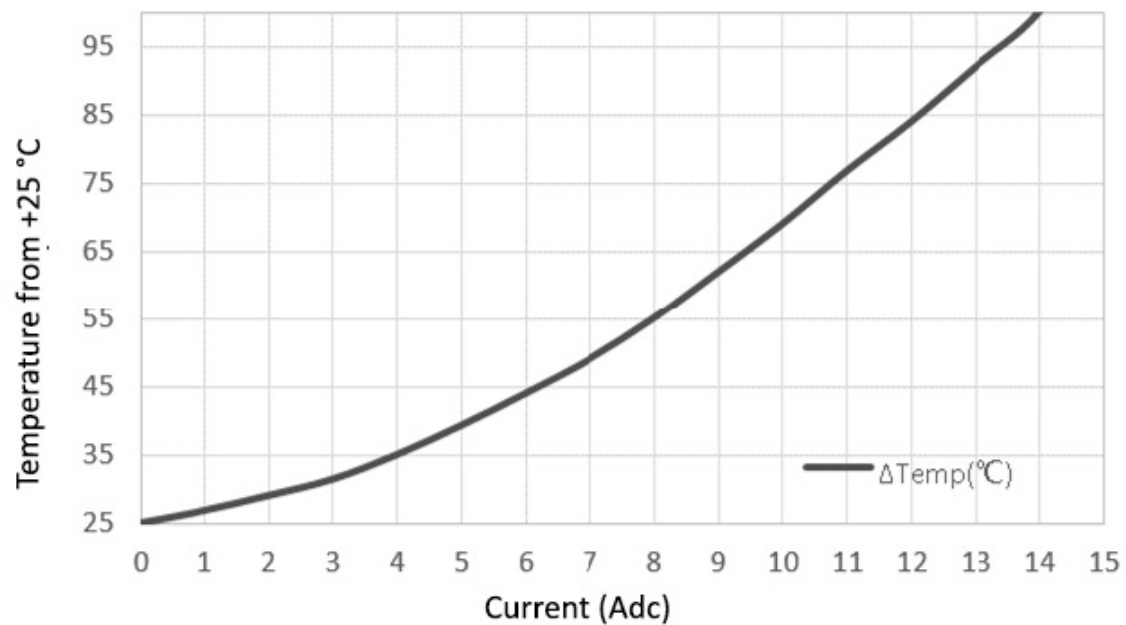
Part marking: White dot, Pin 2 indicator

All soldering surfaces to be coplanar within 0.1 millimeters

Tolerances are ±0.1 millimeters unless stated otherwise

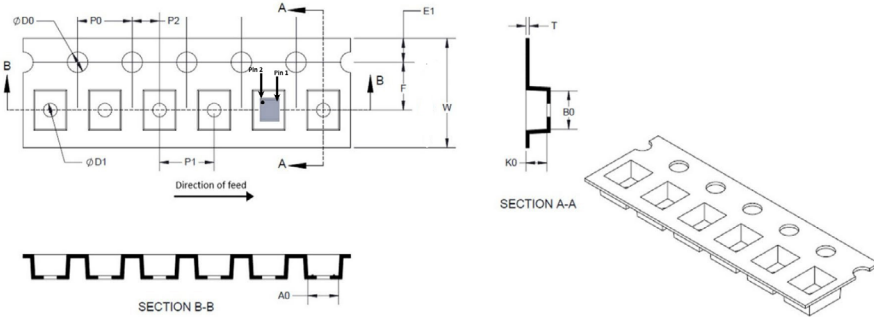
Traces or vias underneath the inductor is not recommended

Temperature rise vs current

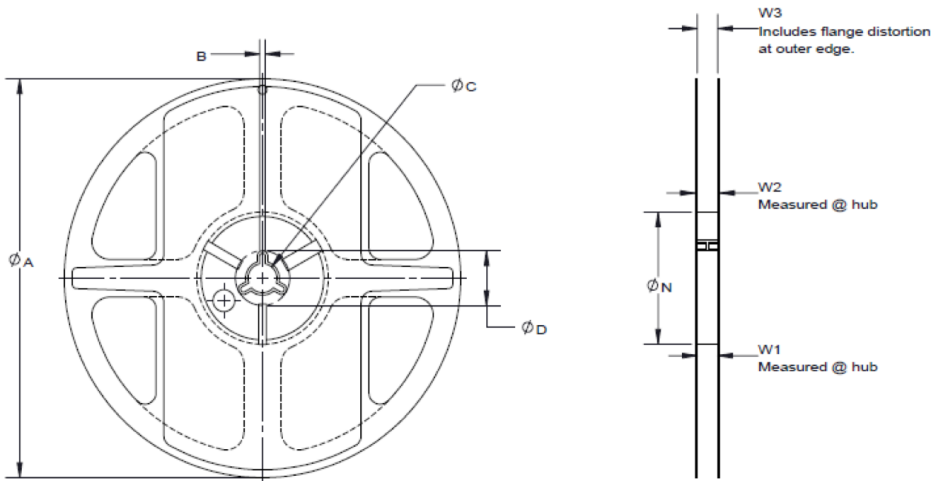


Packaging information (mm)

Supplied in tape and reel packaging, 13" diameter reel (EIA-481 compliant)
2500 parts per reel



| Dimension | Value |
|-----------|-------------|
| W | 16.0 ±0.3 |
| P1 | 8.0 ±0.1 |
| E1 | 1.75 ±0.1 |
| F | 7.5 ±0.05 |
| P2 | 2.0 ±0.05 |
| D0 | 1.5 +0.1/-0 |
| D1 | 1.5 +0.1/-0 |
| B0 | 7.2 ±0.1 |
| A0 | 5.2 ±0.1 |
| K0 | 2.9 ±0.1 |
| P0 | 4.0 ±0.1 |
| T | 0.35 ±0.05 |



| Dimension | Value |
|-----------|----------------|
| A | 330 ±3.0 |
| B | 2.6 ±0.3 |
| N | 100 ±1.0 |
| C | 13+0.5/-0.2 |
| D | 21.5 ±0.5 |
| W1 | 16.4 +2.0/-0.0 |
| W2 | 22.4 max |
| W3 | na |