

# ECSTA1V1308

## Automotive grade SMT current sense transformer



### Product features

- AEC-Q200 qualified
- EE8.3 SMT package (13 mm x 11 mm x 7.8 mm)
- Very low DC resistance
- Wide selection of turns ratios
- Sensed current – primary rated for 15 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

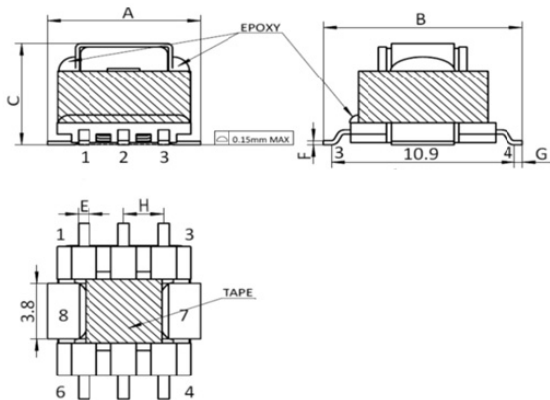


**Product specifications**

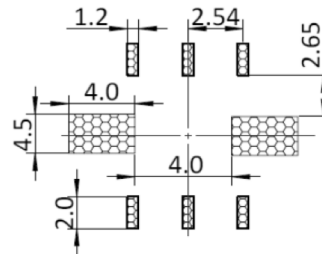
Part number <sup>3</sup>	Turns ratio sec :pri	Secondary inductance (mH) @ 100 kHz 0.1 V minimum	DCR sec ( $\Omega$ ) maximum	DCR pri (m $\Omega$ ) reference	Hi-pot pri to sec @ 3 mA 3 seconds 50 Hz	Sensed current <sup>1</sup> (A) maximum
ECSTA1V1308-1020-R	20:1	0.22	0.21	3.9	500 Vac	15
ECSTA1V1308-1030-R	30:1	0.5	0.32	3.9	500 Vac	15
ECSTA1V1308-1040-R	40:1	0.88	0.5	3.9	500 Vac	15
ECSTA1V1308-1050-R	50:1	1.4	0.65	3.9	500 Vac	15
ECSTA1V1308-1060-R	60:1	2	0.81	3.9	500 Vac	15
ECSTA1V1308-1070-R	70:1	2.7	1	3.9	500 Vac	15
ECSTA1V1308-1080-R	80:1	3.5	1.3	3.9	500 Vac	15
ECSTA1V1308-1100-R	100:1	5.6	2	3.9	500 Vac	15
ECSTA1V1308-1125-R	125:1	8.7	5.2	3.9	500 Vac	15
ECSTA1V1308-1150-R	150:1	12.6	6.5	3.9	500 Vac	15
ECSTA1V1308-1200-R	200:1	22	8	3.9	500 Vac	15

1. Primary current of 15 A causes less than 40°C temperature rise @ +25°C ambient. Higher current causes a greater temperature rise
2. Electrical specifications at +25 °C
3. Part Number Definition: ECSTA1V1308-1xxx-R  
ECSTA1V1308 = Product code and size  
1xxx= Turns ratio sec:pri 1=pri, xxx=sec; 1020= 20:1  
-R suffix = RoHS compliant

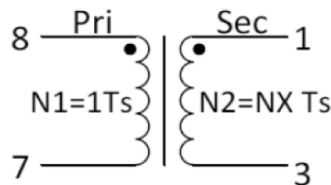
**Mechanical parameters, schematic, pad layout (mm)**



**Recommended PCB Layout**



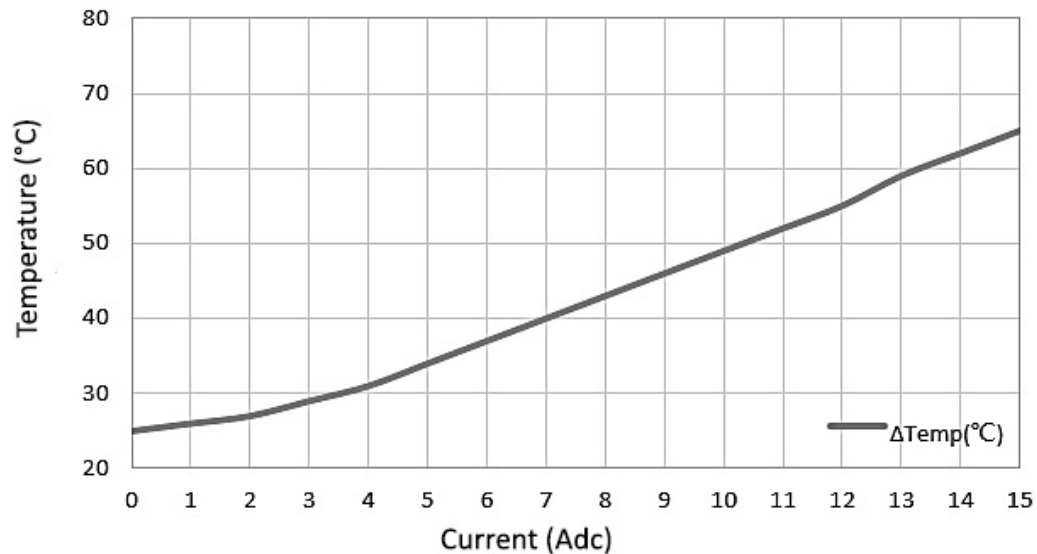
**Schematic**



Dimension	Value
A	11.00 maximum
B	13.00 maximum
C	7.80 maximum
E	0.7
F	0.25
G	0.8 ±0.2
H	2.5 ±0.3

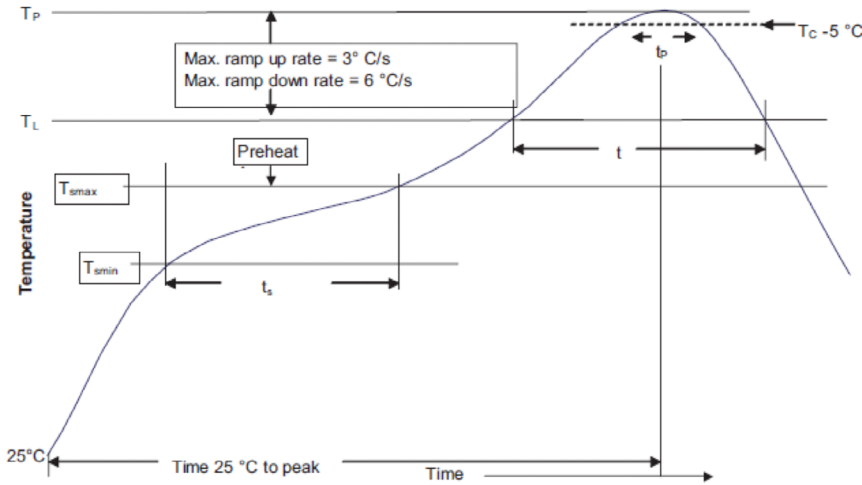
Part marking: White dot, Pin 1 indicator  
All soldering surfaces to be coplanar within 0.15 millimeters  
Tolerances are ±0.1 millimeters unless stated otherwise  
Traces or vias underneath the inductor is not recommended

Temperature rise vs current





### Solder reflow profile



**Table 1 - Standard SnPb solder (T<sub>c</sub>)**

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm)	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

**Table 2 - Lead (Pb) free solder (T<sub>c</sub>)**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

### Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T <sub>smin</sub> )	100 °C	150 °C
• Temperature max. (T <sub>smax</sub> )	150 °C	200 °C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 seconds	60-120 seconds
Ramp up rate T <sub>L</sub> to T <sub>p</sub>	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T <sub>L</sub> )	183 °C	217 °C
Time (t <sub>L</sub> ) maintained above T <sub>L</sub>	60-150 seconds	60-150 seconds
Peak package body temperature (T <sub>p</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (T <sub>c</sub> )	20 seconds*	30 seconds*
Ramp-down rate (T <sub>p</sub> to T <sub>L</sub> )	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

### Manual solder

30 W soldering iron. +350 °C ±10 °C, 3 seconds maximum. Do not touch product with iron. Generally manual, hand soldering is not recommended.

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