ECST1V0703

SMT current sense transformer

Product features

- 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

- Switching power supplies
- Feedback control
- Overload sensing
- Load drop/shut down detection

Environmental compliance and general specifications

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

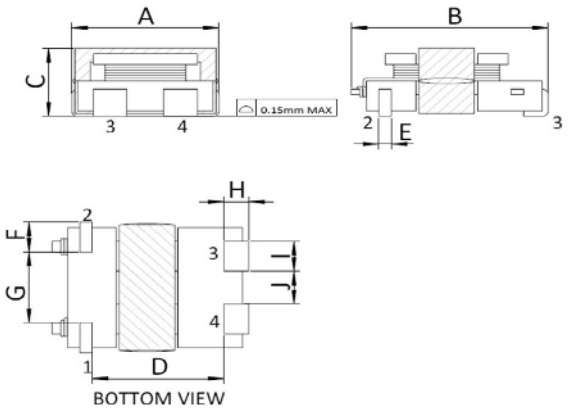
Powering Business Worldwide

Product specifications

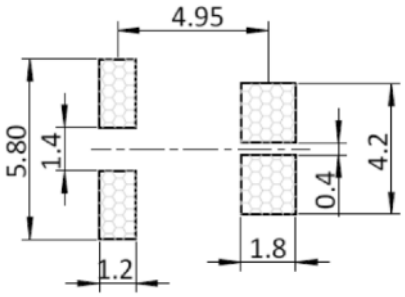
Part number[3]	Turns ratio sec:pri	Secondary inductance (mH) @ 100 kHz 0.1 V minimum	DCR sec (Ω) maximum	DCR pri (mΩ) reference	Hi-pot pri to sec @ 2 mA 3 seconds 50 Hz	Sensed current[1] (A) maximum
ECST1V0703-1020-R	20:1	0.053	0.42	1.5	500 Vac	9
ECST1V0703-1050-R	50:1	0.333	2.76	1.5	500 Vac	9
ECST1V0703-1070-R	70:1	0.652	5.04	1.5	500 Vac	9
ECST1V0703-1100-R	100:1	1.33	10.68	1.5	500 Vac	9
ECST1V0703-1150-R	150:1	2.99	22.3	1.5	500 Vac	9

1. Primary current of 9 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: ECST1V0703-1xxx-R
   ECST1V0703 = 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)

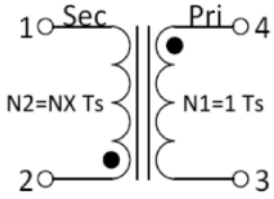


Recommended PCB Layout



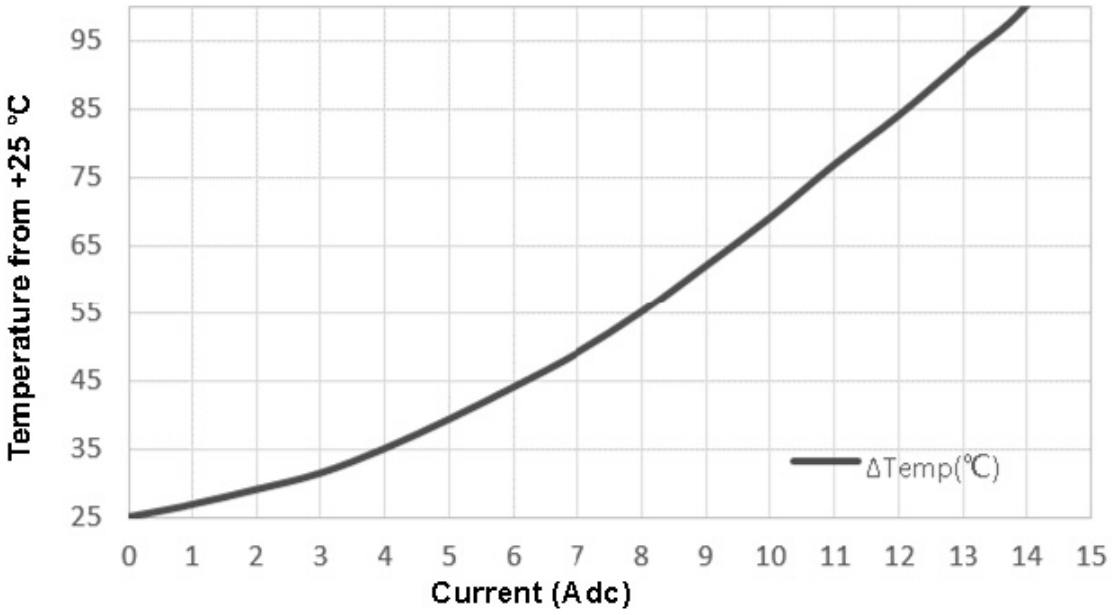
Dimension	Value
A	5.20 maximum
B	7.20 maximum
C	3.00 maximum
D	4.05
E	0.4
F	1.1
G	2.6
H	1.2
I	1.1
J	1.2

Schematic



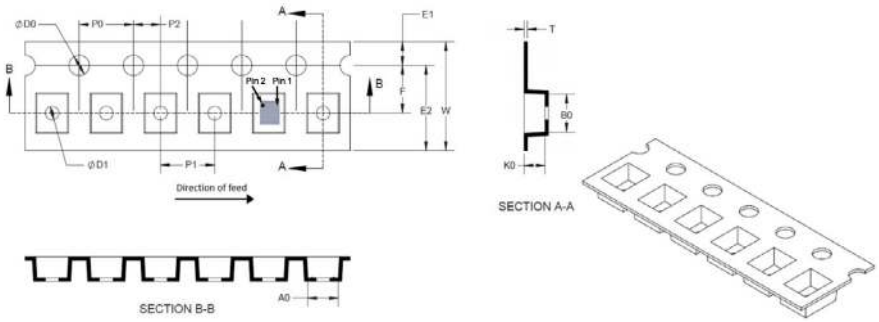
Part marking: White dot, Pin 2 indicator
All soldering surfaces to be coplanar within 0.15 millimeters
Tolerances are ±0.1 millimeters unless stated otherwise
Traces or vias underneath the inductor is not recommended

Temp rise vs current

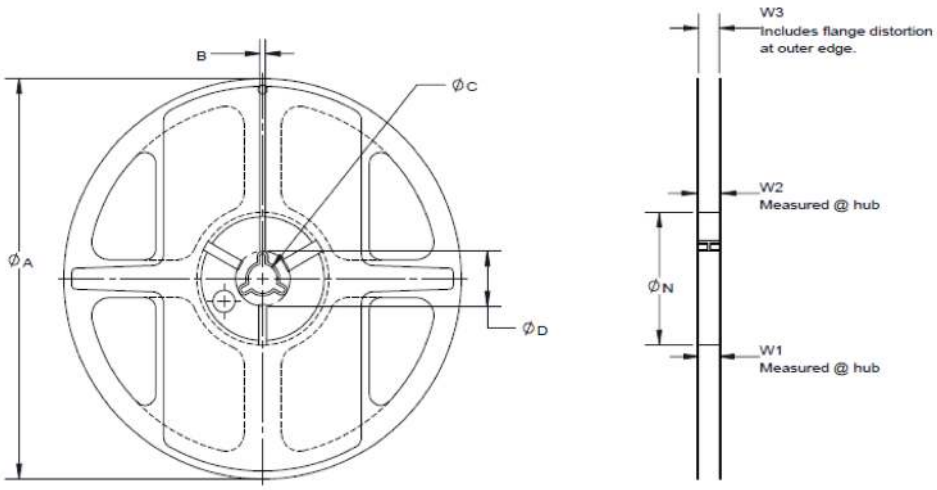


Packaging information (mm)

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



Dimension	Value
W	16 ±0.3
P1	8.0 ±0.1
E1	1.75 ±0.1
F	7.50 ±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
N	100 ±1.0
C	13+0.5/-0.2
W1	16.4+2.0/-0.0

Solder reflow profile

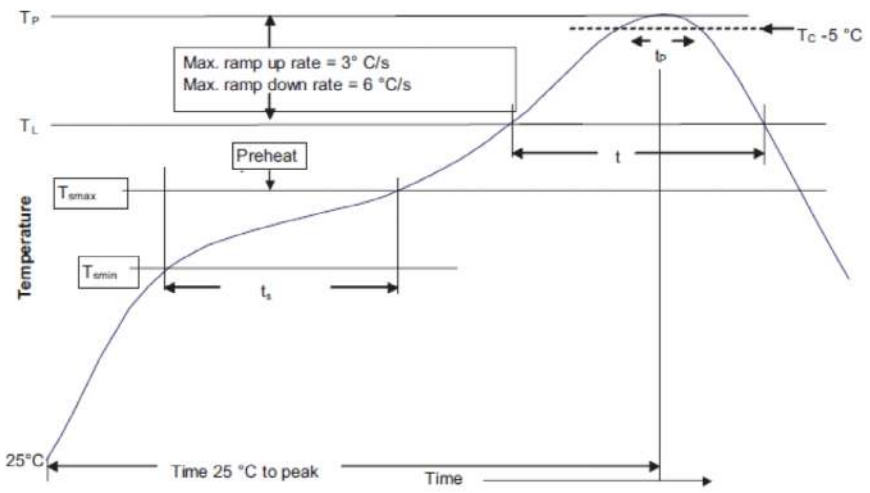


Table 1 - Standard SnPb solder (T_C)

Package Thickness	Volume mm3 <350	Volume mm3 ≥350
<2.5 mm)	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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_{smin})	100 °C	150 °C
	• Temperature max. (T_{smax})	150 °C	200 °C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Ramp up rate T_L to T_p		3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L		183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)* within 5 °C of the specified classification temperature (T_C)		20 seconds*	30 seconds*
Ramp-down rate (T_p to T_L)		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_p) 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.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com/electronics

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