

# ECST1V0504

## SMT current sense transformer



### Product features

- EE4.4 SMT package (4.8 mm x 3.65 mm x 3.55 mm)
- Very low DC resistance
- Wide selection of turns ratios
- Sensed current – primary rated for 7 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



**Product specifications**

Part number <sup>3</sup>	Turns ratio sec:pri	Secondary inductance (μH) @ 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 <sup>1</sup> (A) maximum
ECST1V0504-1020-R	20:1	33	0.35	3	500 Vac	7
ECST1V0504-1030-R	30:1	74	0.8	3	500 Vac	7
ECST1V0504-1040-R	40:1	132	1.6	3	500 Vac	7
ECST1V0504-1050-R	50:1	205	2.5	3	500 Vac	7
ECST1V0504-1060-R	60:1	295	3.6	3	500 Vac	7
ECST1V0504-1070-R	70:1	400	4.6	3	500 Vac	7
ECST1V0504-1100-R	100:1	820	9.5	3	500 Vac	7
ECST1V0504-1125-R	125:1	1280	13	3	500 Vac	7
ECST1V0504-1150-R	150:1	1800	21	3	500 Vac	7

1. Primary current of 7 A causes less than 40°C temperature rise @ +25°C ambient. Higher current causes a greater temperature rise

2. Electrical specifications at +25 °C

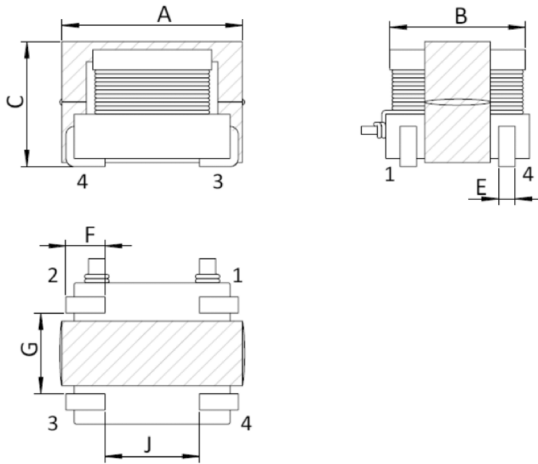
3. Part Number Definition: ECST1V0504-1xxx-R

ECST1V0504 = Product code and size

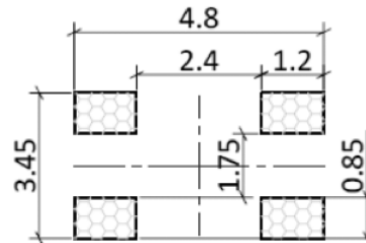
1xxx= Turns ratio sec:pri; 1=pri, xxx=sec; 1020= 20:1

-R suffix = RoHS compliant

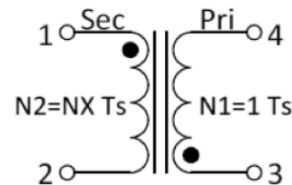
**Mechanical parameters, schematic, pad layout (mm)**



**Recommended PCB Layout**



**Schematic**



Dimension	Value
A	4.80 maximum
B	3.65 maximum
C	3.55 maximum
E	0.4
F	0.85
G	2.10
H	2.50

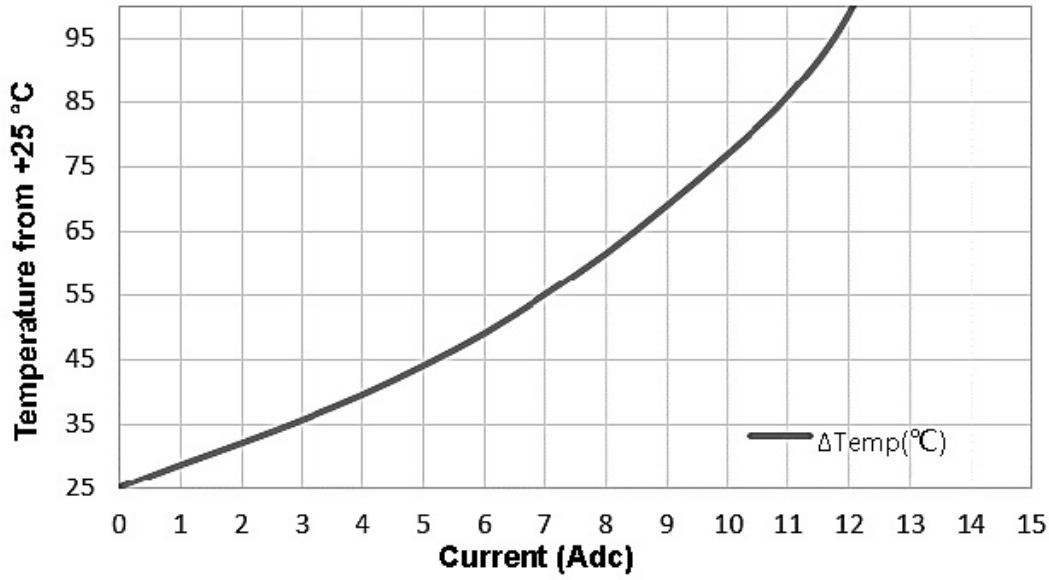
Part marking: White dot, Pin 1 indicator

All soldering surfaces to be coplanar within 0.15 millimeters

Tolerances are ±0.1 millimeters unless stated otherwise

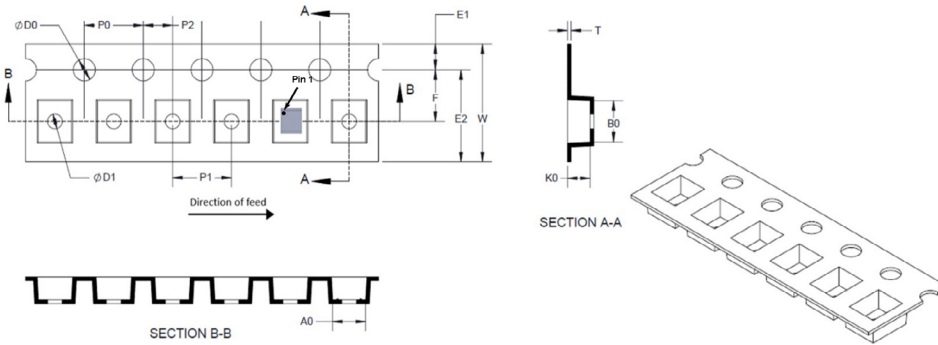
Traces or vias underneath the inductor is not recommended

Temp rise vs current

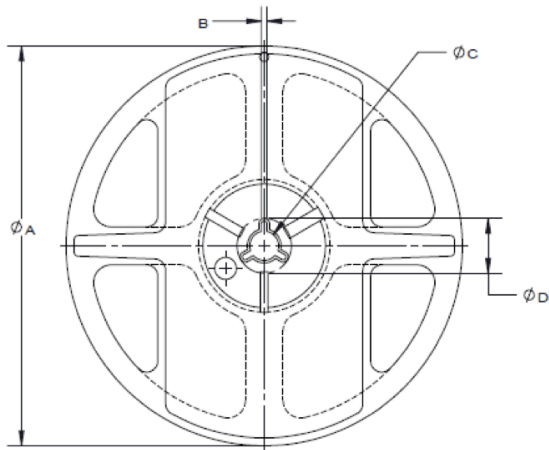


**Packaging information (mm)**

Supplied in tape and reel packaging, 13" diameter reel (EIA-481 compliant)  
2000 parts per reel

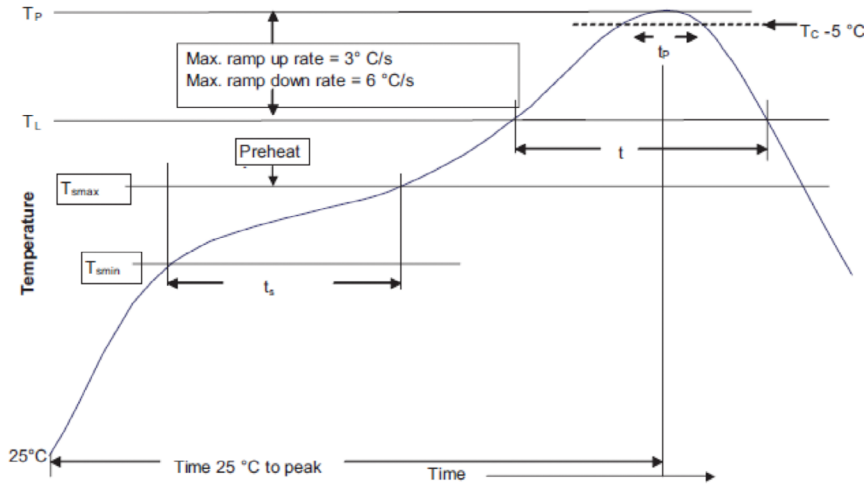


Dimension	Value
W	12 ±0.3
P1	8.0 ±0.1
E1	1.75 ±0.1
F	5.50 ±0.05
P2	2.0 ±0.05
D0	1.5 +0.1/-0
D1	1.5 +0.1/-0
B0	4.4 ±0.1
A0	4.8 ±0.1
K0	3.5 ±0.1
P0	4.0 ±0.1
T	0.35 ±0.05



Dimension	Value
A	330 ±3.0
N	100 ±1.0
C	13+0.5/-0.2
W1	12.4+2.0/-0.0

### Solder reflow profile



**Table 1 - Standard SnPb solder ( $T_c$ )**

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 ( $T_c$ )**

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. ( $T_{smin}$ )	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 ( $T_L$ )	183 °C	217 °C
Time ( $t_L$ ) maintained above $T_L$	60-150 seconds	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.

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