

Multi-Phase Power Inductors

CL0904 Series



Applications

- For exclusive use with Volterra® VPR-Devices

Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (range is application specific)
- Solder reflow temperature: J-STD-020D compliant

Packaging

- Supplied in tape and reel packaging, 1000 parts per 13" reel

Description

- Halogen free, lead free and RoHS compliant
- Designed exclusively for use with Volterra® VPR-Devices ^A
- High current multi-phase inductor applications
- Ferrite core material
- 50nH per phase coupled inductor
- 125°C maximum temperature operation
- Patents pending

Specifications										
Functional						Test				
Part Number ⁴	Inductor Phases	DCR (mΩ) ±10% @20°C	Rated Inductance per Phase (nH)	I Rated per Phase (A) ³	I _{max} Peak per Phase (A) ³	Pin Number	OCL (nH) ^{1,2}	Pin Number	OCL (nH) ^{1,2}	Magnetized Inductance (nH) @ 5A _{dc} (25°C)
CL0904-2-50TR-R	2	0.35	50 ± 20%	35	80	(1-2)	320±20%	(3-4)	320±20%	245
CL0904-3-50TR-R	3	0.35	50 ± 20%	35	50	(3-4)	400±20%	(1-2), (5-6)	380±20%	250

1. Open Circuit Inductance (OCL)

2. Test Parameters: 1MHz, 0.1V_{rms}, 0.0A_{dc}.

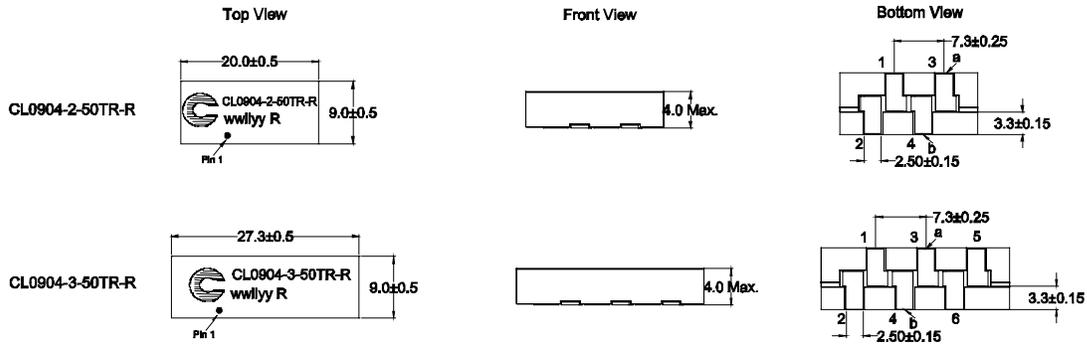
3. The rated current, I_{max} peak current, and rated inductance per phase is determined by Volterra's testing and circuit design. Additional information can be provided by contacting Volterra.

4. Part Number Definition: CL0904-x-50TR-R

- CL0904= Product code and size
- "x" = number of phases
- "50" = inductance value per phase nH
- "TR" = Tape and Reel packaging
- "-R" suffix = RoHS compliant

A This device is licensed for use only when incorporated within a voltage regulator employing power regulating devices manufactured by Volterra Semiconductor Corp. No license is granted expressly or by implication to use this device with power regulating devices manufactured by any company other than Volterra.

Dimensions - mm



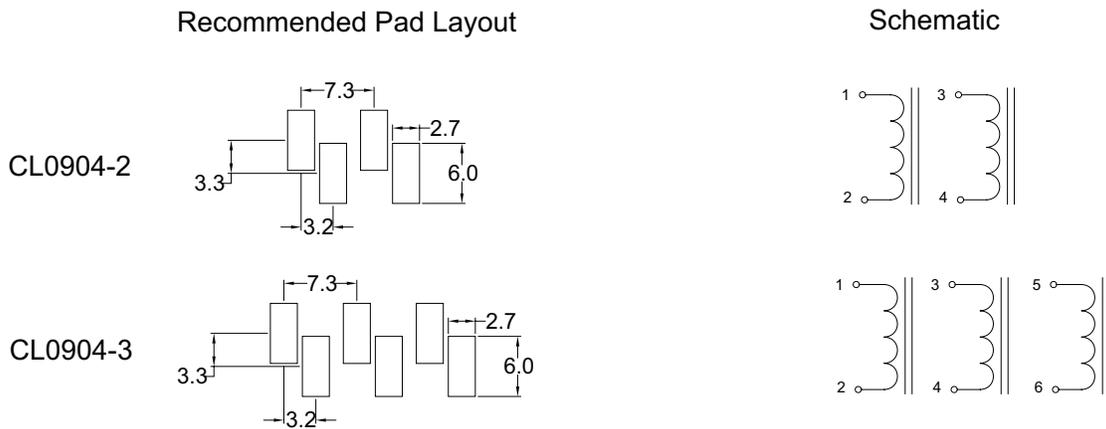
DCR measured from point 'a' to point "b"

Part Marking: Coiltronics Logo CL0904= Product Code and Size -x (-2, -3)= Number of phases -50= inductance value per phase

TR= Tape and Reel wwlyy= Date Code R=Revision Level

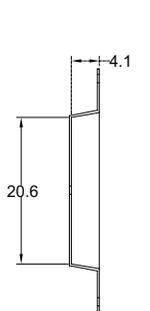
Soldering surfaces to be coplanar within 0.13 millimeters.

Pad Layouts & Schematics- mm

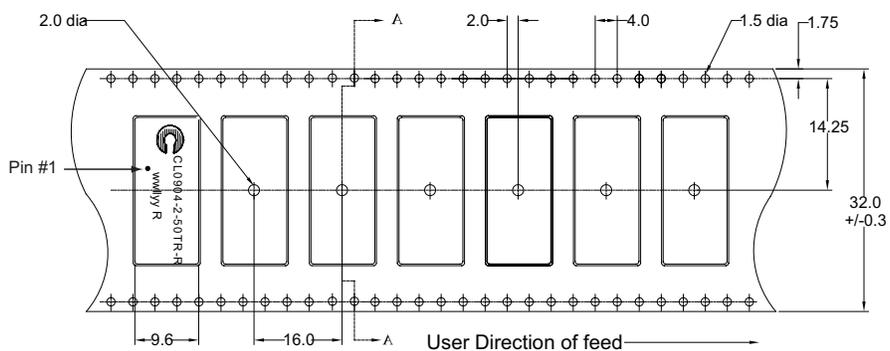


Packaging Information - mm

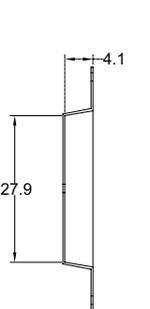
CL094-2



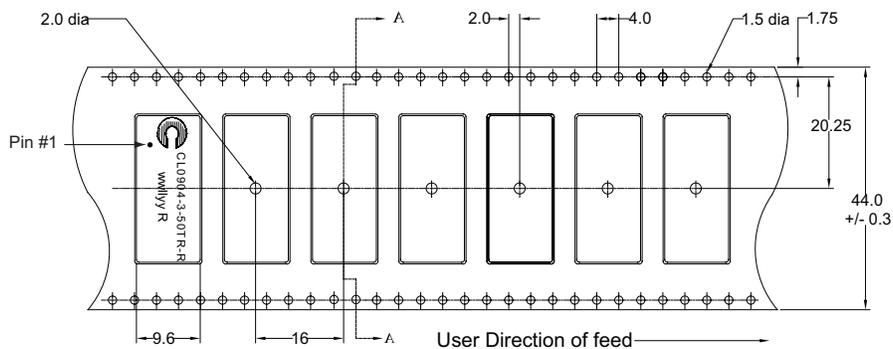
SECTION A-A



CL094-3



SECTION A-A



Supplied in tape and reel packaging, 1000 parts per 13" diameter reel.

Solder Reflow Profile

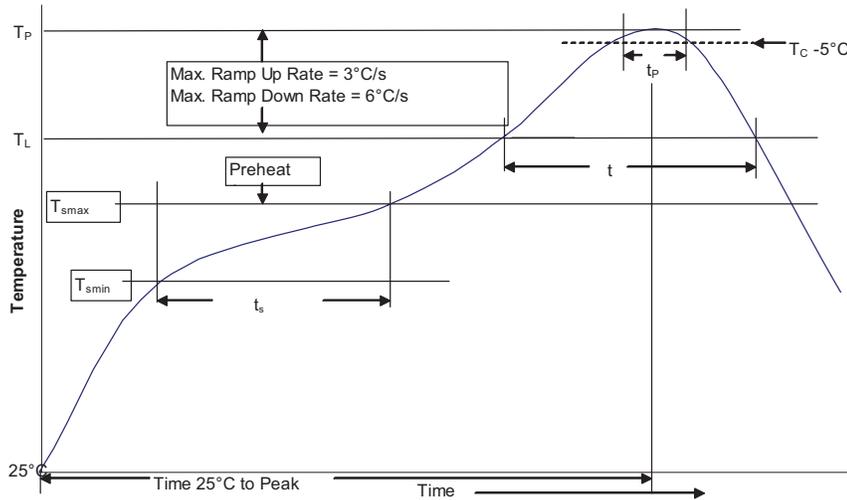


Table 1 - Standard SnPb Solder (T_c)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5mm$	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_c)

Package Thickness	Volume mm^3 <350	Volume mm^3 350 - 2000	Volume mm^3 >2000
<1.6mm	260°C	260°C	260°C
1.6 - 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

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
Average ramp up rate T_{smax} to T_p	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (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**
Average ramp-down rate (T_p to T_{smax})	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.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

North America

Cooper Electronic Technologies
1225 Broken Sound Parkway NW
Suite F
Boca Raton, FL 33487-3533
Tel: 1-561-998-4100
Fax: 1-561-241-6640
Toll Free: 1-888-414-2645

Cooper Bussmann
P.O. Box 14460
St. Louis, MO 63178-4460
Tel: 1-636-394-2877
Fax: 1-636-527-1607

Europe

Cooper Electronic Technologies
Cooper (UK) Limited
Burton-on-the-Wolds
Leicestershire • LE12 5TH UK
Tel: +44 (0) 1509 882 737
Fax: +44 (0) 1509 882 786

Cooper Electronic Technologies
Avda. Santa Eulalia, 290
08223
Terrassa, (Barcelona), Spain
Tel: +34 937 362 812
+34 937 362 813
Fax: +34 937 362 719

Asia Pacific

Cooper Electronic Technologies
1 Jalan Kilang Timor
#06-01 Pacific Tech Centre
Singapore 159303
Tel: +65 278 6151
Fax: +65 270 4160

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