

CL1 108 and CLA1 108

Multi-phase power inductors



Product features

- High current multi-phase inductor applications
- 50 nH per phase coupled inductor
- CLA Family features acoustic noise dampening properties
- Ferrite core material
- Patents pending
- Moisture Sensitivity Level (MSL): 1

Applications

- For exclusive use with Volterra® or Maxim® VPR-Devices

Environmental data

- Storage temperature range (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



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Product specifications

| Part number ^{4,5} | Functional | | | | | Test | | | | |
|--|-----------------|------------------------|--|---|---|---------------------|-------------------------|---------------|-------------------------|--|
| | Inductor phases | DCR (mΩ) ±10% @ +20 °C | Rated inductance per phase ³ (nH) | I Rated per phase ³ (A _{dc}) | I _{max} Peak per phase ³ (A _{dc}) | Pin numbers | OCL ^{1,2} (nH) | Pin numbers | OCL ^{1,2} (nH) | Magnetizing inductance ² (nH) @ 10 A _{dc} (+25 °C) |
| CL1108 Family—Standard | | | | | | | | | | |
| CL1108-2-50TR-R | 2 | 0.28 | 50 ± 20% | 50 | 80 | (3-4) | 380±20% | (1-2) | 380±20% | 300 |
| CL1108-3-50TR-R | 3 | 0.28 | 50 ± 20% | 50 | 80 | (3-4) | 400±20% | (1-2), (5-6) | 380±20% | 300 |
| CL1108-4-50TR-R | 4 | 0.28 | 50 ± 20% | 50 | 80 | (3-4), (5-6) | 400±20% | (1-2), (7-8) | 380±20% | 300 |
| CL1108-5-50TR-R | 5 | 0.28 | 50 ± 20% | 50 | 80 | (3-4), (5-6), (7-8) | 400±20% | (1-2), (9-10) | 380±20% | 300 |
| CLA1108 Family—Acoustic Noise Dampening | | | | | | | | | | |
| CLA1108-2-50TR-R | 2 | 0.28 | 50 ± 20% | 50 | 80 | (3-4) | 380±20% | (1-2) | 380±20% | 300 |
| CLA1108-3-50TR-R | 3 | 0.28 | 50 ± 20% | 50 | 80 | (3-4) | 400±20% | (1-2), (5-6) | 380±20% | 300 |
| CLA1108-4-50TR-R | 4 | 0.28 | 50 ± 20% | 50 | 80 | (3-4), (5-6) | 400±20% | (1-2), (7-8) | 380±20% | 300 |

1. Open Circuit Inductance (OCL)

2. Test parameters: 1 MHz, 0.1 V_{rms}, 0.0 A_{dc} @ +25 °C

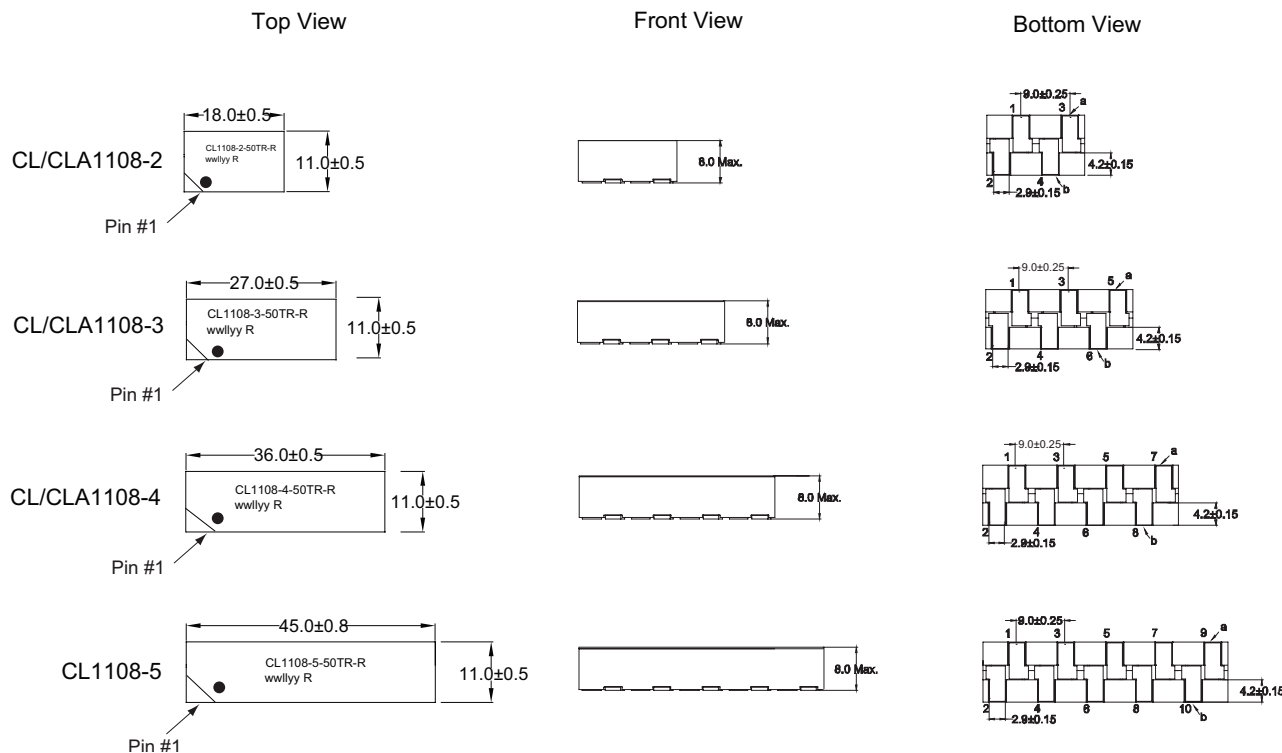
3. The rated current, I_{max} peak current, and rated inductance per phase is determined by Volterra/Maxim's testing and circuit design. Additional information can be provided by contacting Volterra/Maxim.

4. Part Number Definition: CLx1108-y-50TR-R

- CL(x)1108 = Product code and size (CL= standard, CLA= Acoustic Noise Dampening)
- y = number of phases
- 50 = inductance value per phase nH
- TR = Tape and reel packaging
- -R suffix= RoHS compliant

5. This device is licensed for use only when incorporated within a voltage regulator employing power regulating devices manufactured by Volterra Semiconductor, LLC or Maxim Integrated Devices, Inc. No license is granted expressly or by implication to use this device with power regulating devices manufactured by any company other than Volterra or Maxim.

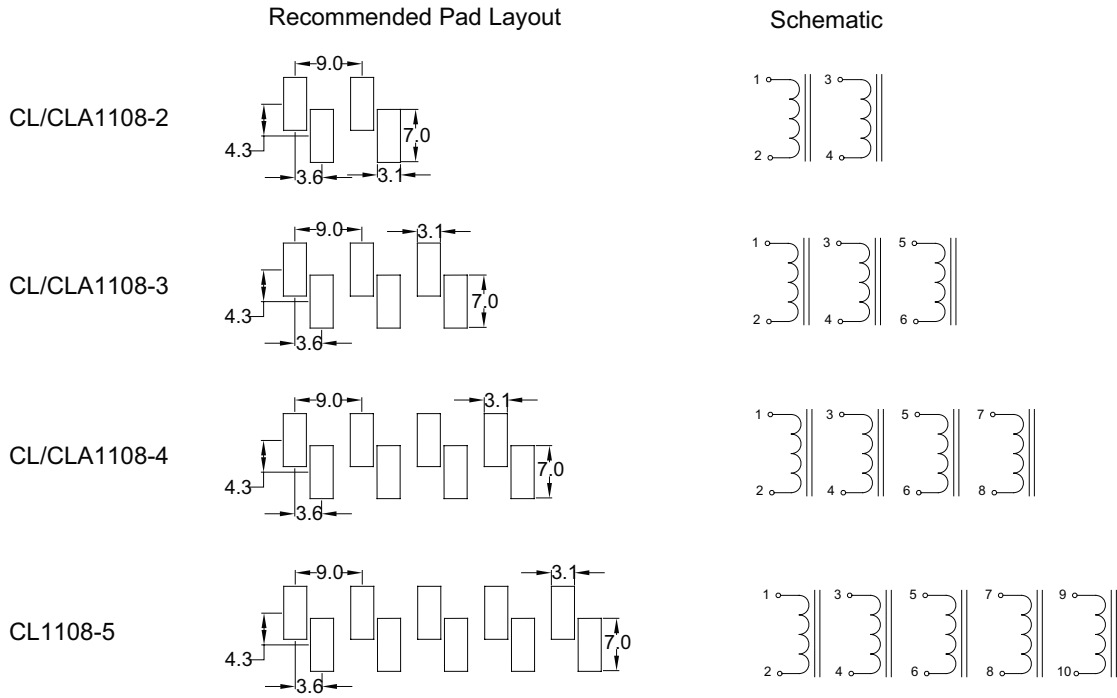
Dimensions (mm)



Part marking: Pin 1 dot, CL1108/CLA1108= (product code and size, CL= standard, CLA= acoustic noise dampening), -2,-3,-4,-5, = (number of phases), -50= inductance value per phase in nH, TR= tape and reel, -R = RoHS compliant
wwlllyy = date code, R = revision level

Tolerances are ±0.25 millimeters unless stated otherwise
All soldering surfaces to be coplanar within 0.13 millimeter
Do not route traces or vias underneath the inductor

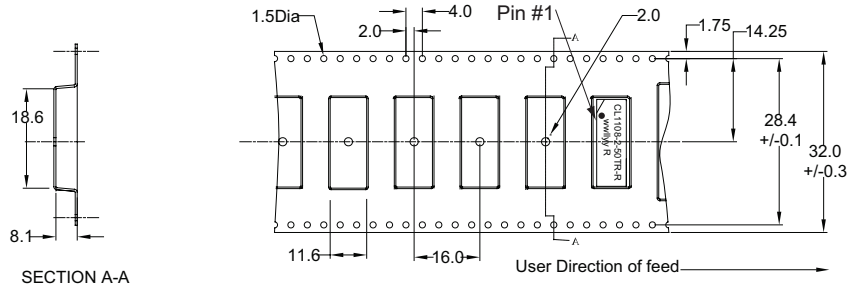
Pad layouts & schematics (mm)



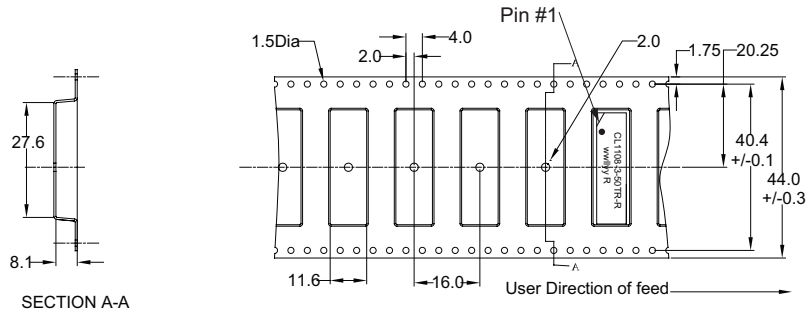
Packaging information (mm)

Supplied in tape and reel packaging on a 13" diameter reel.

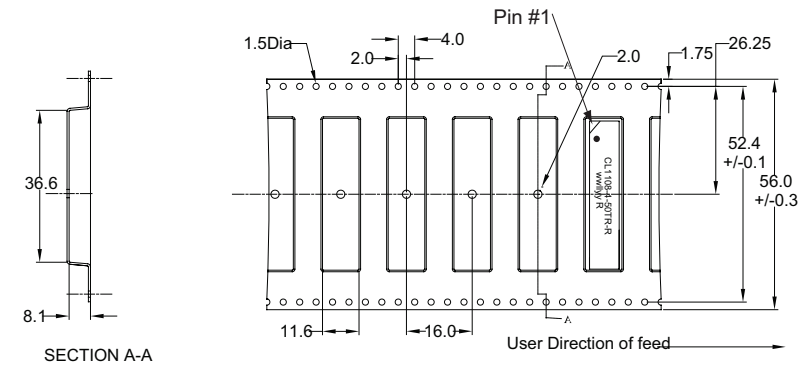
CL/CLA1108-2
500 parts per reel



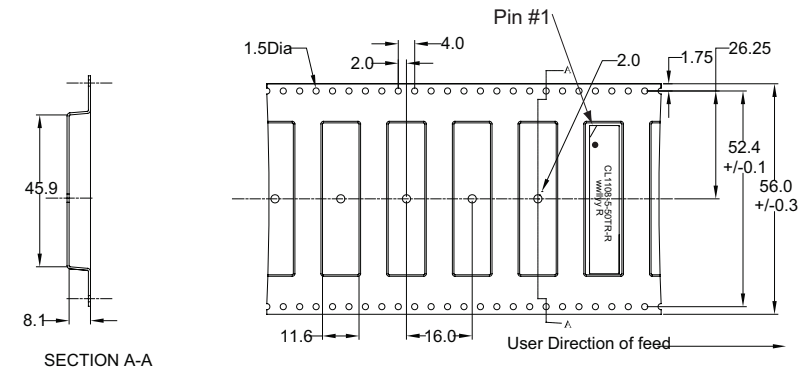
CL/CLA1108-3
200 parts per reel



CL/CLA1108-4
200 parts per reel



CL1108-5
150 parts per reel



Solder reflow profile

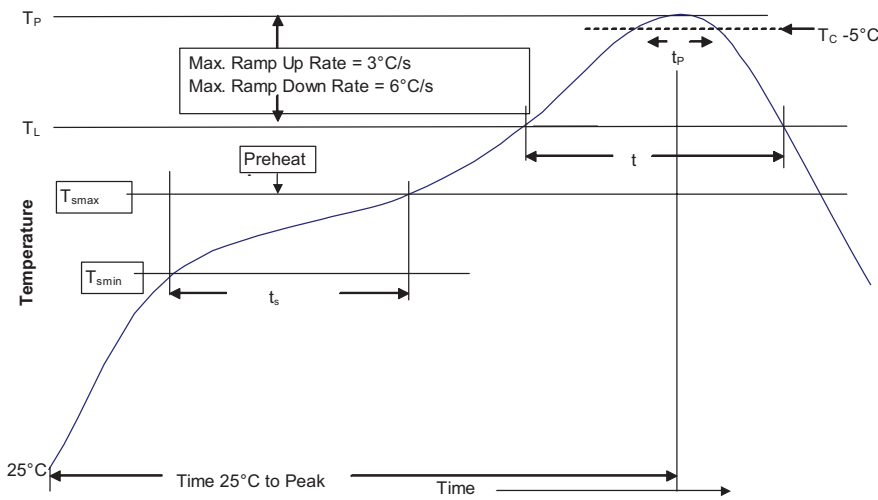


Table 1 - Standard SnPb Solder (T_C)

| Package Thickness | Volume mm ³ <350 | Volume mm ³ ≥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 ³ <350 | Volume mm ³ 350 - 2000 | Volume mm ³ >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 JDEC 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 |
| 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.

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[CL1108-3-50TR-R](#) [CL1108R1-4-R035-R](#)