CL0608

Multi-phase power inductors



Product features

- High current multi-phase inductor
- 100 nH per phase coupled inductor
- 10.8 mm x 6.35 mm footprint surface mount package in an 8.2 mm height
- Ferrite core material
- Moisture Sensitivity Level (MSL): 1

Applications

- For exclusive use with Maxim® Multi-phase controllers
- Voltage Regulator Modules (VRMs) and high power density VRMs
  - Server and desktop
  - Central processing unit (CPU)
  - Graphics processing unit (GPU)
  - Application specific integrated circuit (ASIC)
- Data networking and storage systems
- High current Point-of-Load (POL) modules
- Vcore regulators

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
- Halogen free, lead free, RoHS compliant

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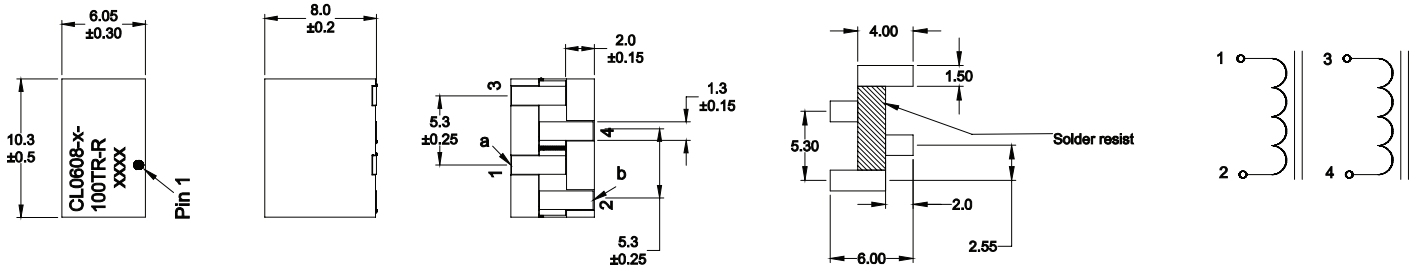
Product specifications

Part Number[5]	Inductor Phases	OCL[1] (nH) ±20%	FLL[2] (nH) minimum	$I_{sat}1$[2] (A)	DCR (mΩ) ±10% @ 20 °C	SCL[3] (nH) ±20%	$I_{sat}2$[4] (A)
CL0608- 2- 100TR-R	2	380	300	15	0.89	100	38

1. Open Circuit Inductance (OCL) Test Parameters: 1.0 MHz, 0.1 V_{rms}, 0.0 Adc, +25 °C
2. Full Load Inductance (FLL) Test Parameters: 1.0 MHz, 0.1 V_{rms}, $I_{sat}1$, +25 °C
3. Short Circuit Inductance (SCL) Test Parameters: 1.0 MHz, 0.1 V_{rms}, 0.0 Adc, +25 °C
   CL0608-2-100TR-R short (1 & 4), measure (2 & 3), and divide by 2.
4. $I_{sat}2$: Peak current where SCL drops approximately 20% @ +25 °C
8. Part Number Definition: CL0608-x-100TR-R
   CL0608 = Product code and size
   x = Number of phases
   100 = Inductance value per phase in nH
   TR = Tape and reel packaging
   -R suffix = RoHS compliant

Note: This device is licensed for use only when incorporated within a voltage regulator employing power regulating devices manufactured by 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 Maxim.

Dimensions (mm)

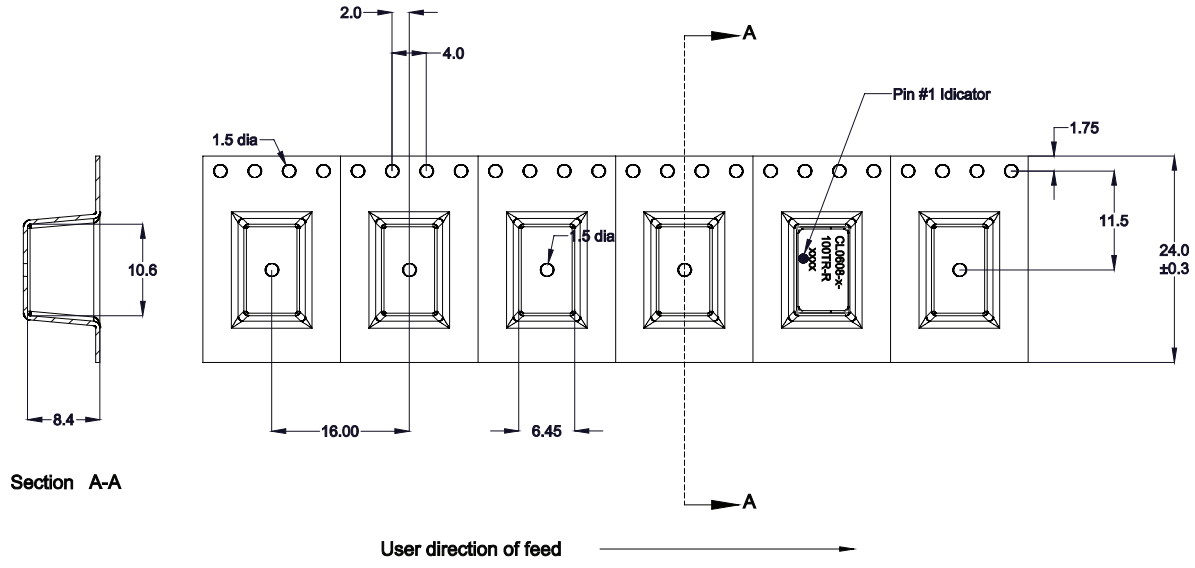


Part marking: CL0608-x-100TR-R (x = number of phases), xxxx = lot code
Tolerances are ±0.25 millimeters unless stated otherwise
All soldering surfaces to be coplanar within 0.13 millimeters
PCB tolerances are ±0.1 millimeters unless stated otherwise
DCR measured from point "a" to point "b"
Do not route traces or vias underneath the inductor

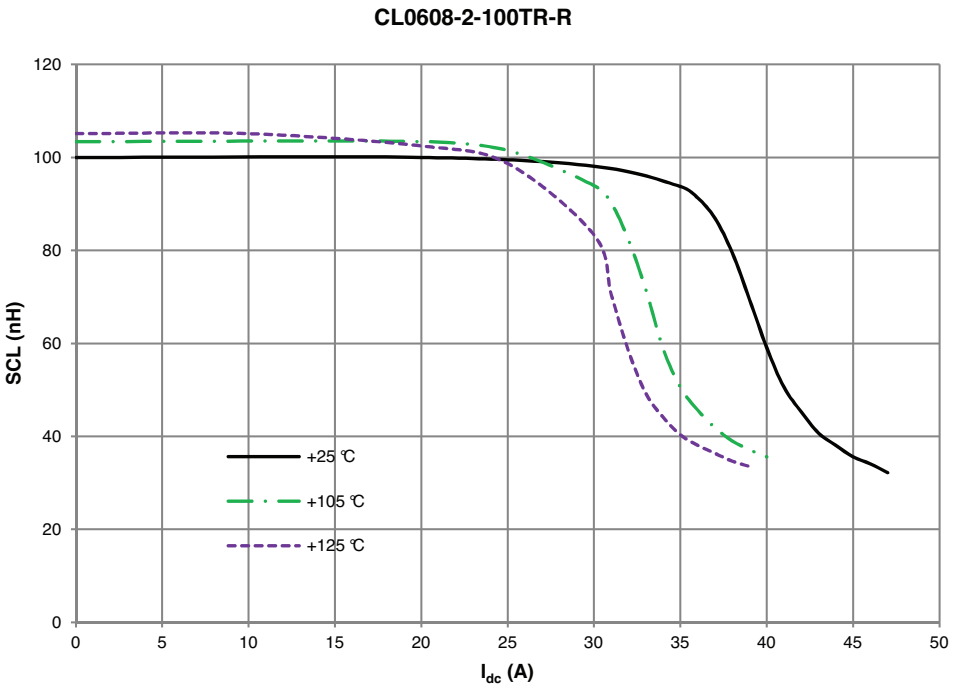
Packaging information (mm)

Supplied in tape and reel packaging , 500 parts per 13" diameter reel

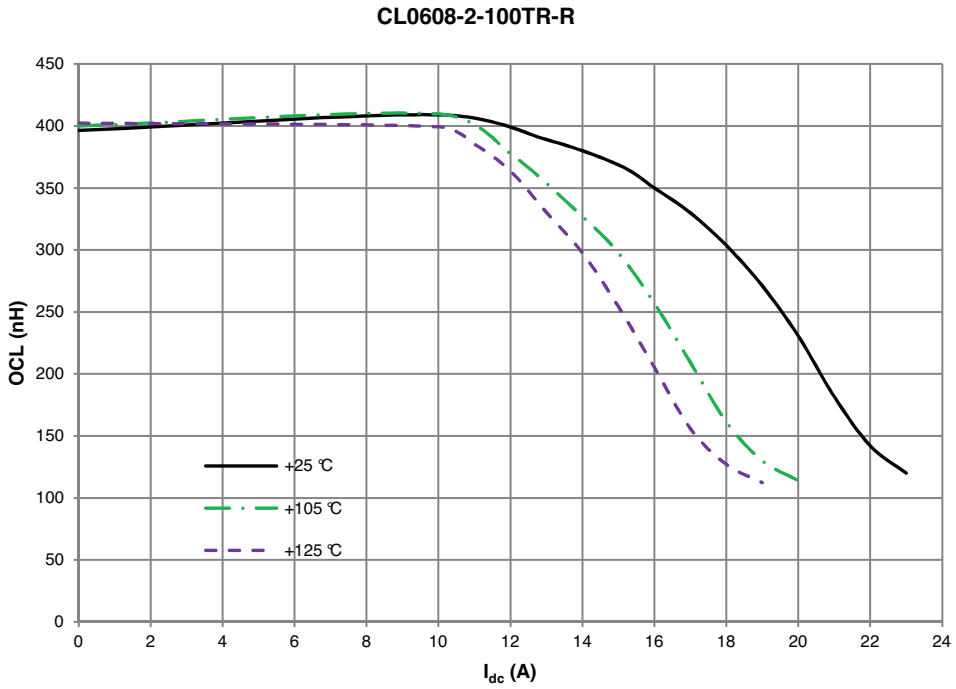
Drawing not to scale



Inductance characteristics – SCL vs. current



Inductance characteristics – OCL vs. current



Solder reflow profile

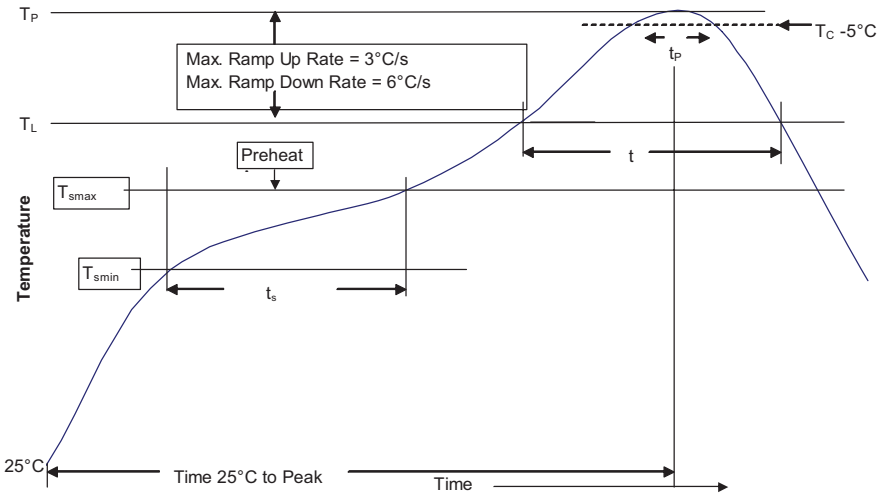


Table 1 - Standard SnPb Solder (T_C)

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

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

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	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-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) Time at liquidous (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**
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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