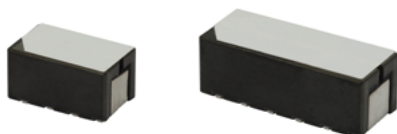


CL1110R

Multi-phase power inductor



Product features

- High current multi-phase inductor
- 50 nH per phase coupled inductor
- Ferrite core material
- Patents pending
- 11.8 mm wide x 10.5 mm high footprint surface mount package with 19.5 mm and 29.0 mm lengths
- Moisture sensitivity level (MSL): 1
- Termination finish matte tin over nickel

Applications

- For exclusive use with Maxim® VPR-Devices Voltage Regulator Modules (VRMs)

Environmental compliance and general specifications

- 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 ⁷	Inductor phases	OCL ¹ (nH) typical	OCL ¹ (nH) minimum	FLL ² (nH) minimum	I _{sat} ¹ ⁴ (A)	I _{sat} ² ⁵ (A)	DCR (mΩ) maximum @ +20 °C	SCL ³ (nH) ±20%	I _{sat} ³ ⁶ (A)
CL1110R1-4-R050-R	4	250	220	200	20	15	0.30	50	70
CL1110R1-6-R050-R	6	250	220	200	20	15	0.30	50	70

1. Open circuit inductance (OCL) test parameters: 1 MHz, 0.1 V_{rms}, 0.0 A_{dc}, +105 °C

2. Full load inductance (FLL) test parameters: 1 MHz, 0.1 V_{rms}, I_{sat}¹, +105 °C

3. Short Circuit Inductance (SCL) Test Parameters: 1MHz, 0.1V_{rms}, 0.0A_{dc}, +105 °C

4. I_{sat}¹: Peak current at which per phase OCL drops by approximately 20% at +25 °C

5. I_{sat}²: Peak current at which per phase OCL drops by approximately 20% at +105 °C

6. I_{sat}³: Peak current at which per phase SCL drops by approximately 20% at +105 °C

7. Part Number Definition: CL1110Rx-Rxxx-R

CL1110R = Product code and size

x = Version indicator

Rxxx = inductance value in μH, R= decimal point.

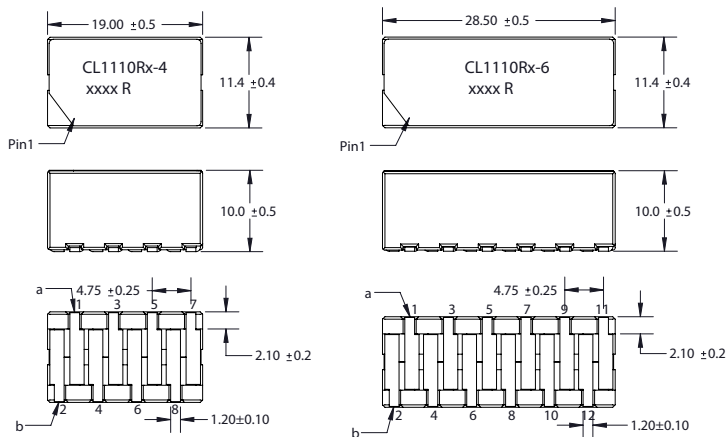
R suffix = RoHS compliant

Note: The rated current and rated inductance per phase is determined by Maxim's testing and circuit design.

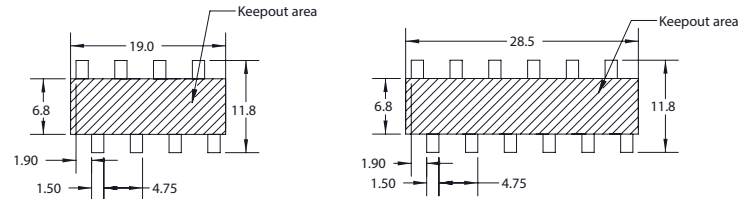
Additional information can be provided by contacting Maxim.

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.

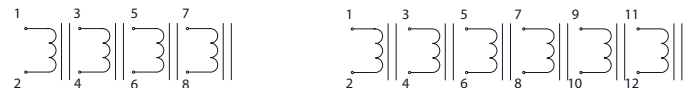
Dimensions- (mm)



Recommended pad layout



Schematic



Marking: CL1110Rx-y=(x= Version indicator, y=Number of phases) xxxx= Lot code, R=(Revision level)

Tolerances are ±0.15 millimeters unless stated otherwise

All soldering surfaces to be coplanar within 0.1 millimeters

Pad layout tolerances are ±0.1 millimeters unless stated otherwise

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

Traces or vias underneath the inductor is not recommended

CL1110R

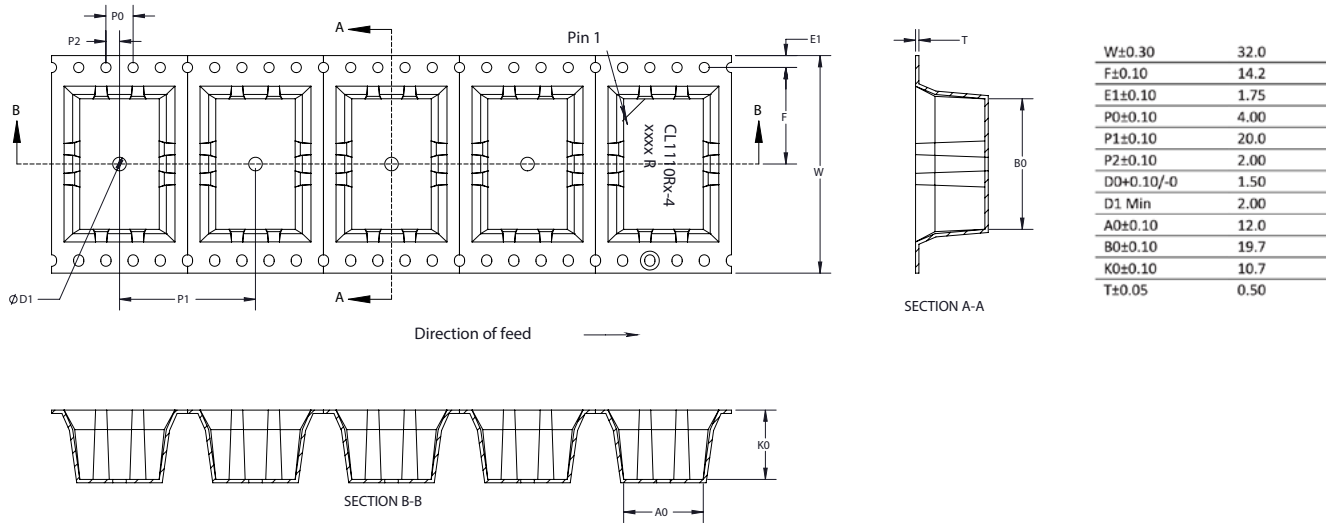
Multi-phase power inductor

Technical Data 11069
Effective April 2020

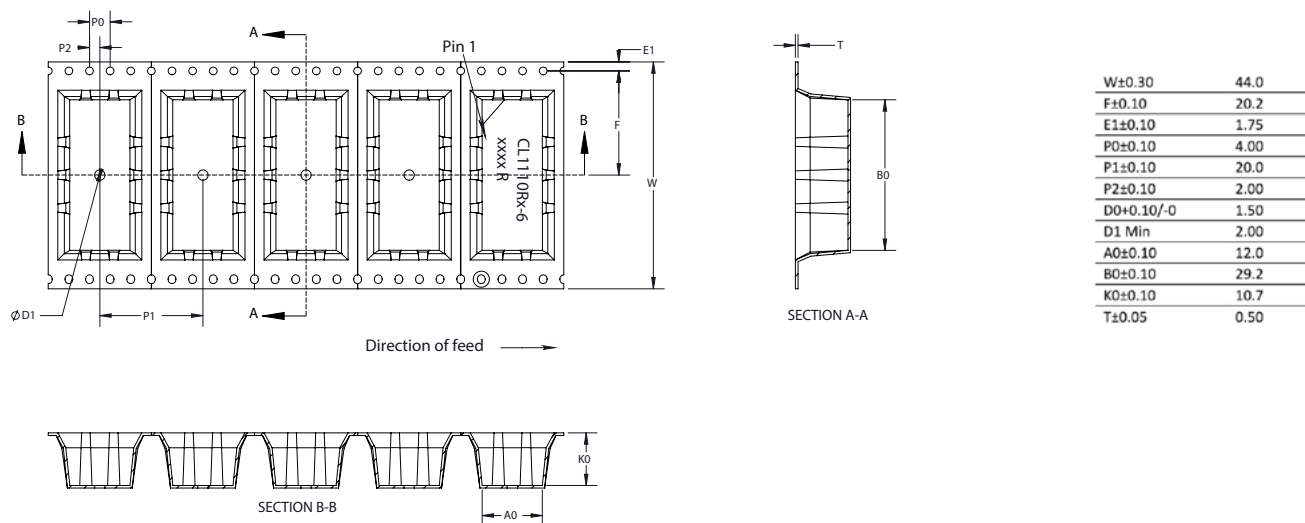
Packaging information- (mm)

Supplied in tape and reel packaging on a 13" diameter reel
Drawing not to scale

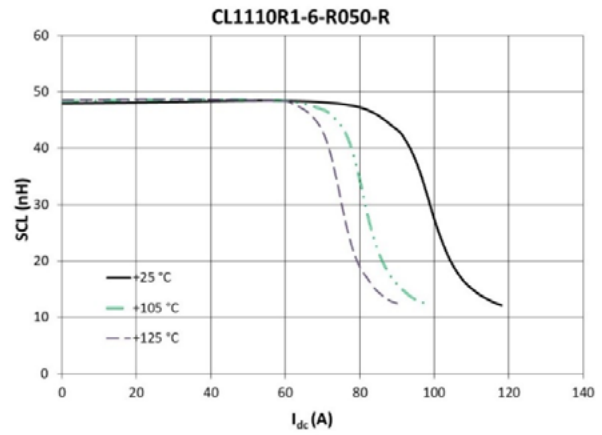
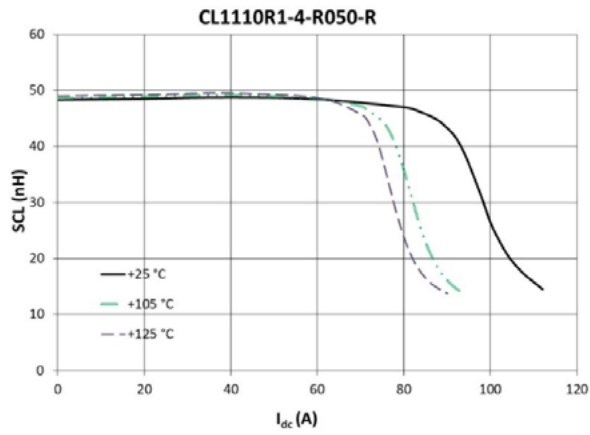
CL1110R1-4-R050-R
200 parts per reel



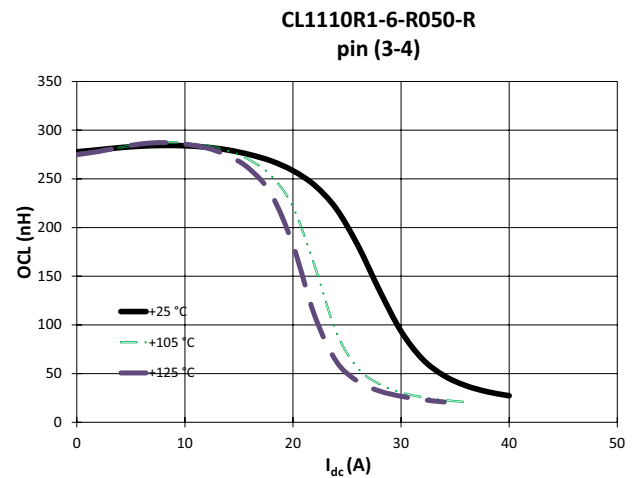
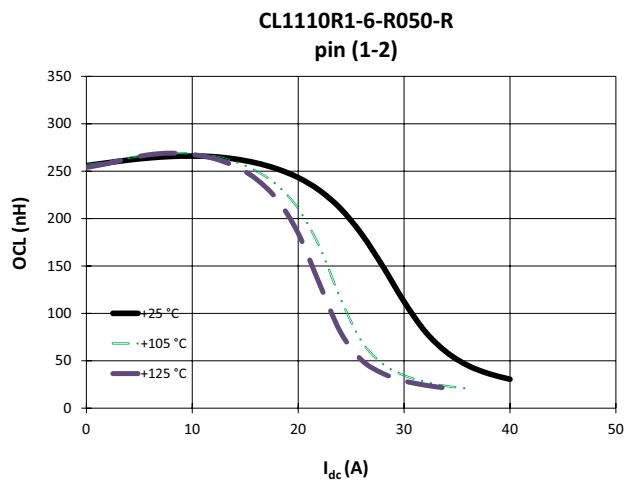
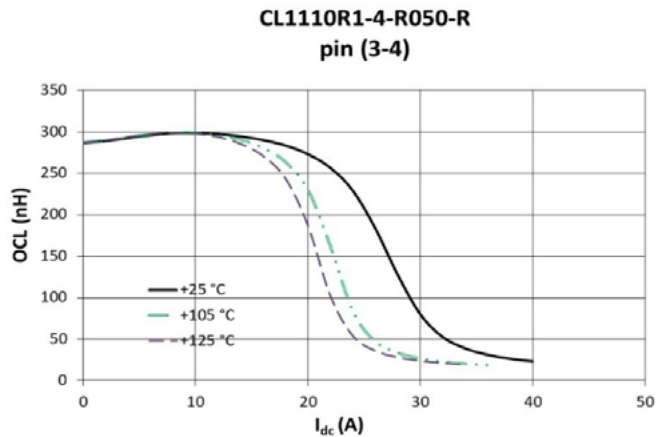
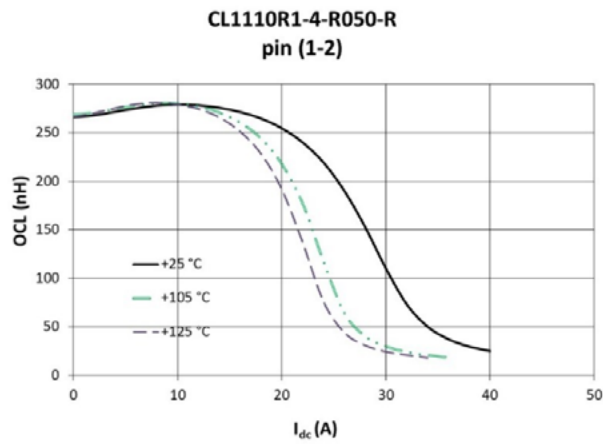
CL1110R1-6-R050-R
200 parts per reel



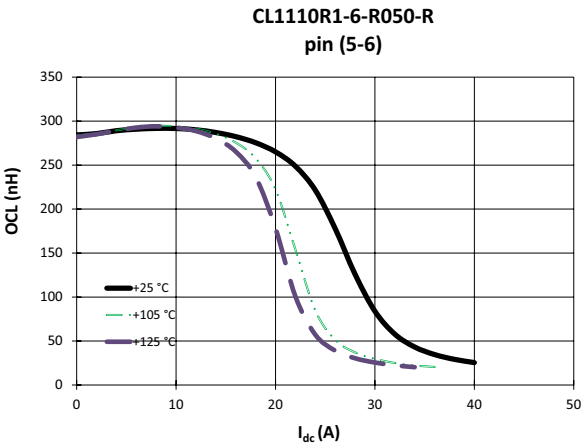
Inductance characteristics- SCL vs. current



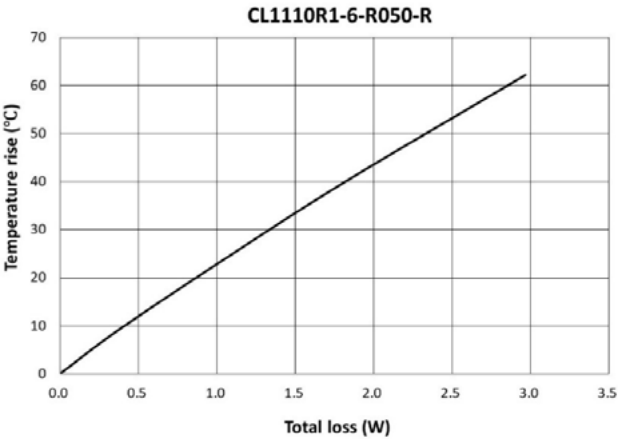
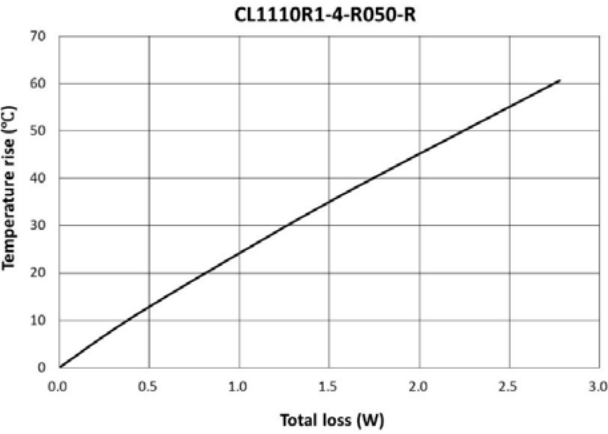
Inductance characteristics- OCL vs. current



Inductance characteristics- OCL vs. current



Temperature rise vs total loss



Solder reflow profile

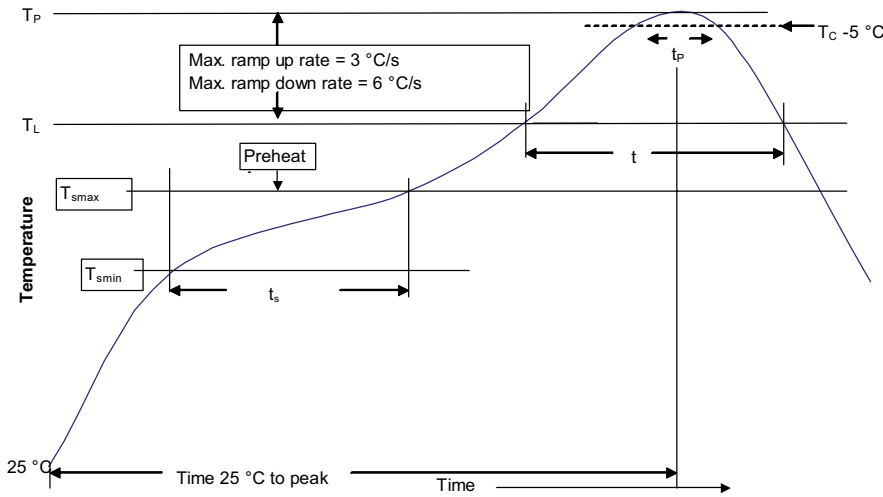


Table 1 - Standard SnPb solder (T_C)

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 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.

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