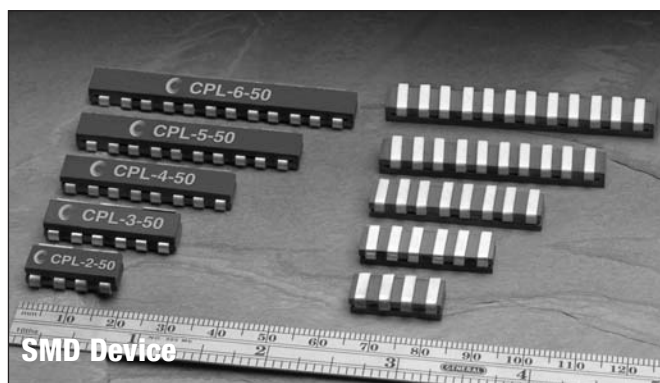


Multi-Phase Power Inductors

CPL, CPLA & CPLE Series



Description

- Halogen Free
- **CPLA Series** features acoustic noise dampening properties
- **CPL Series** features optimized core material for enhanced light load efficiency

- 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
- Frequency range up to 2MHz
- Patents pending
- RoHS compliant

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, 750 parts per reel, 13" diameter reel

Function Specifications						Test Specifications				
Part Number	Inductor Phases	DCR (Ω) Nom. @25°C	DCR (Ω) Max. @25°C	Rated Inductance per Phase (nH) ³	I Rated per Phase (A) ³	Pin Numbers	OCL (nH) ^{1,2}	Pin Numbers	OCL (nH) ^{1,2}	Magnetizing Inductance @ 5A (25°C)
CPL Series										
CPL-2-50TR-R	2	0.0005	0.0006	50 ± 20%	40	(1-2)	365 ±18%	(3-4)	365 ±18%	300
CPL-3-50TR-R	3	0.0005	0.0006	50 ± 20%	40	(3-4)	490 ±20%	(1-2), (5-6)	365 ±18%	400
CPL-4-50TR-R	4	0.0005	0.0006	50 ± 20%	40	(3-4), (5-6)	490 ±20%	(1-2), (7-8)	365 ±18%	400
CPL-5-50TR-R	5	0.0005	0.0006	50 ± 20%	40	(3-4), (5-6), (7-8)	490 ±20%	(1-2), (9-10)	365 ±18%	400
CPL-6-50TR-R	6	0.0005	0.0006	50 ± 20%	40	(3-4), (5-6), (7-8), (9-10)	490 ±20%	(1-2), (11-12)	365 ±18%	400
CPLA Series - Acoustic Noise Dampening										
CPLA-2-50TR-R	2	0.0005	0.0006	50 ± 20%	40	(1-2)	365 ±18%	(3-4)	365 ±18%	300
CPLA-3-50TR-R	3	0.0005	0.0006	50 ± 20%	40	(3-4)	490 ±20%	(1-2), (5-6)	365 ±18%	400
CPLA-4-50TR-R	4	0.0005	0.0006	50 ± 20%	40	(3-4), (5-6)	490 ±20%	(1-2), (7-8)	365 ±18%	400
CPLA-5-50TR-R	5	0.0005	0.0006	50 ± 20%	40	(3-4), (5-6), (7-8)	490 ±20%	(1-2), (9-10)	365 ±18%	400
CPL Series - Low Core Loss for Light Load Efficiency										
CPL-2-50TR-R	2	0.0005	0.0006	50 ± 20%	40	(1-2)	365 ±18%	(3-4)	365 ±18%	300
CPL-3-50TR-R	3	0.0005	0.0006	50 ± 20%	40	(3-4)	490 ±20%	(1-2), (5-6)	365 ±18%	400
CPL-4-50TR-R	4	0.0005	0.0006	50 ± 20%	40	(3-4), (5-6)	490 ±20%	(1-2), (7-8)	365 ±18%	400
CPL-5-50TR-R	5	0.0005	0.0006	50 ± 20%	40	(3-4), (5-6), (7-8)	490 ±20%	(1-2), (9-10)	365 ±18%	400

¹ OCL (Open Circuit Inductance)

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

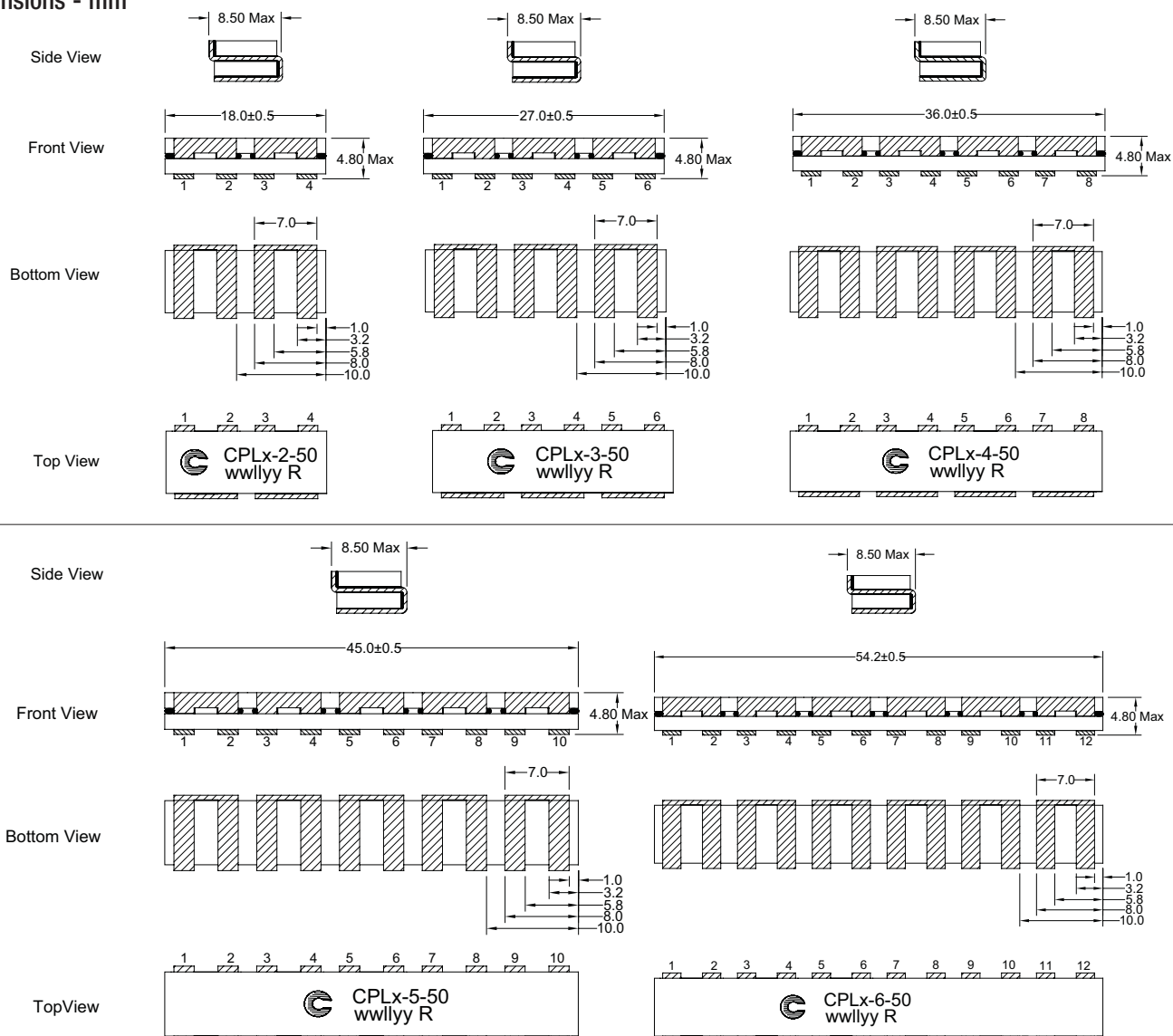
³ The rated current and rated inductance per phase is determined by Volterra's testing and circuit design. Additional information can be provided by contacting Volterra.

⁴ Part Number Definition: CPLx-y-50TR-R-50TR-R

- CPLx= Product code and size - CPL (standard)/CPLA (acoustic dampening)/CPL (low core loss)
- -y= number of phases • -50 = rated inductance value per phase in nH
- TR= Tape and reel • -R suffix= RoHS compliant

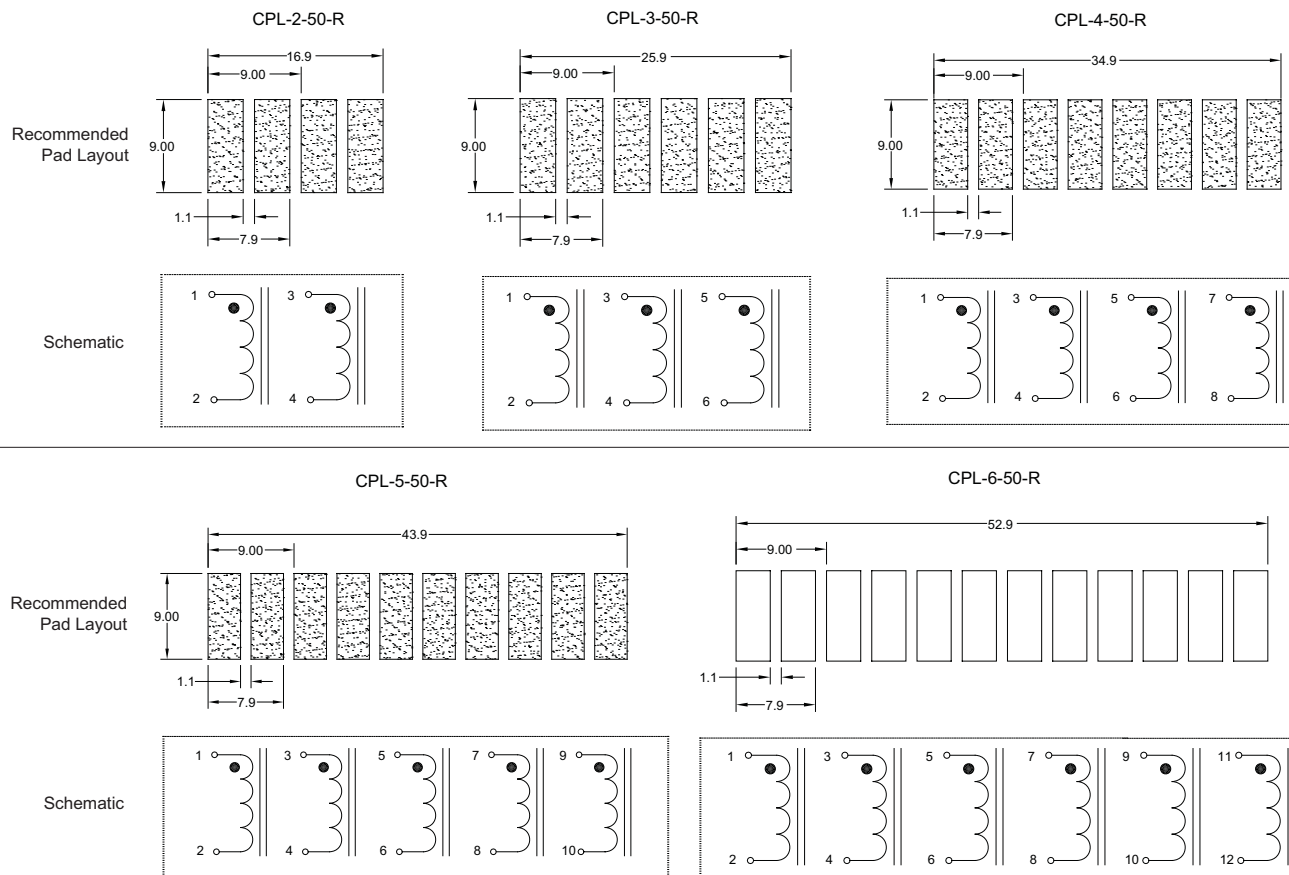
^A This device is licensed for use only when incorporated within a voltage regulator employing power regulating devices manufactured by Volterra® Semiconductor Corporation. No license is granted expressly or by implication to use this device with power regulating devices manufactured by any company other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

Dimensions - mm



Part Marking: Coiltronics logo CPL/CPLA/CPL = Product Code and Size -y (-2, -3, -4 & -5, -6) = Number of Phases -50 = Inductance value per phase wwilly = Date code R = Revision level

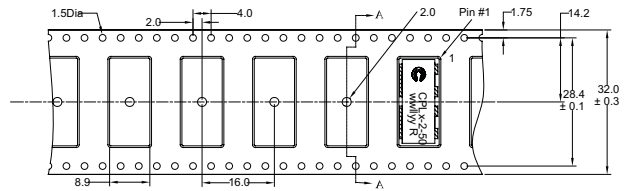
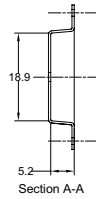
Pad Layouts & Schematics - mm



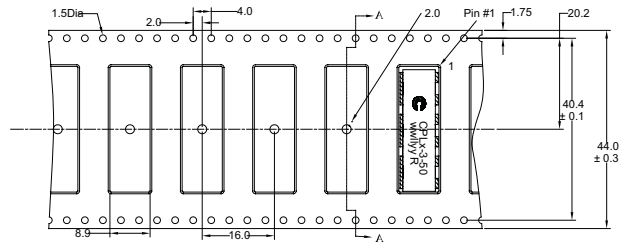
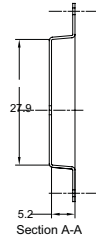
All dimensions $\pm 0.2\text{mm}$ unless otherwise specified.

Packaging Information - mm

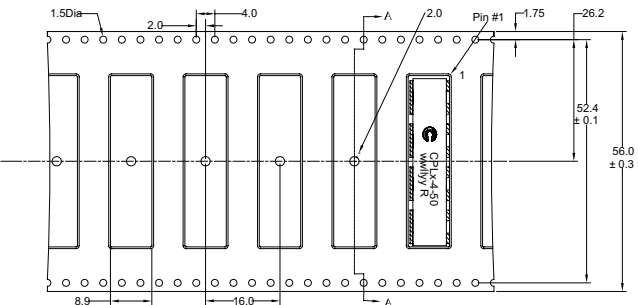
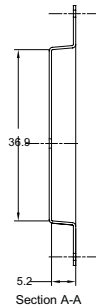
CPLx-2-50



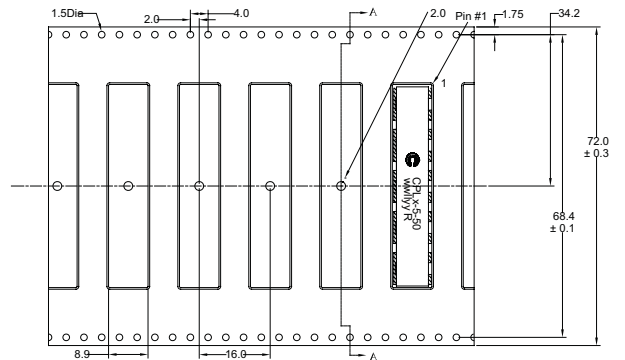
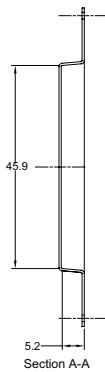
CPLx-3-50



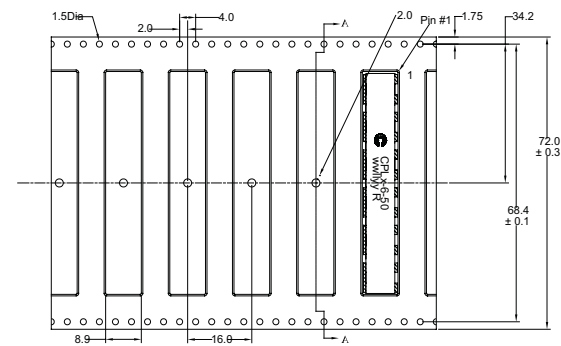
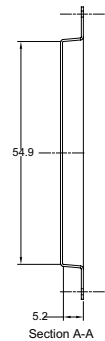
CPLx-4-50



CPLx-5-50



CPLx-6-50



Supplied in tape-and-reel packaging, 750 parts per reel, 13" diameter reel.

User direction of feed →

Solder Reflow Profile

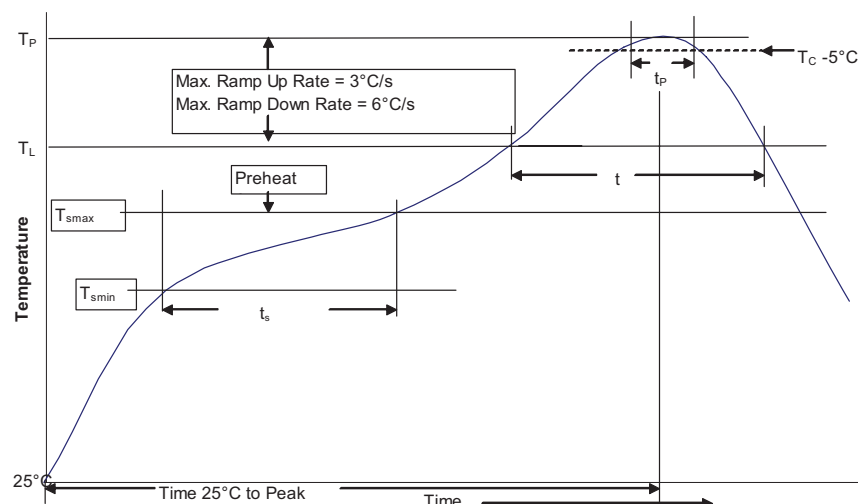


Table 1 - Standard SnPb Solder (T_c)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	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
<1.6mm	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.

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