

***Bourns® Magnetics
SRP Series Inductors Product Training Module
August, 2019***

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Introduction

Purpose:

- To introduce Bourns® Magnetics SRP Series Shielded Power Inductors

Objectives:

- Introduce SRP Series inductors
- Understand the construction and characteristics
- Review typical applications
- Selection variety
- Navigating through the data sheet
- Available product literatures and design tools

Contents:

- 12 slides

Learning Time:

- TBD minutes

SRP Series Shielded Power Inductors

The SRP Series power inductors are designed for high current application and low radiation in a compact size. The inductor coil is wound with either round or flat wire complete press molded with iron base metal alloy powder core which results a magnetically shielded, high current capability and compact size inductors well suited for variety of latest technology electric applications.

Features:

- Shielded construction
- Metal alloy powder core
- Low DCR
- High saturation current
- High temperature
- Low buzz noise
- Round wire / Flat wire
- AEC-Q200 compliant available

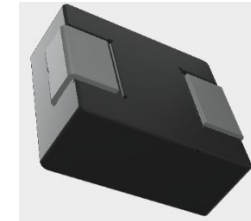
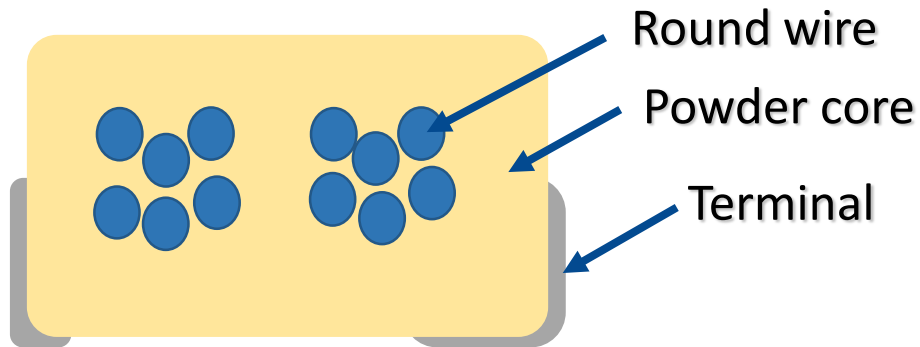
Applications:

- AC/ DC and DC/DC converters
 - EMI filters
- for*
- Automotive
 - Consumer
 - Industrial
 - Medical
 - Telecom

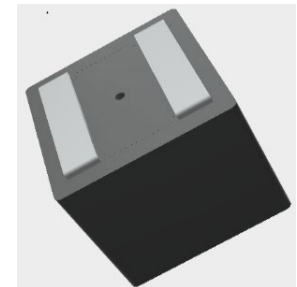
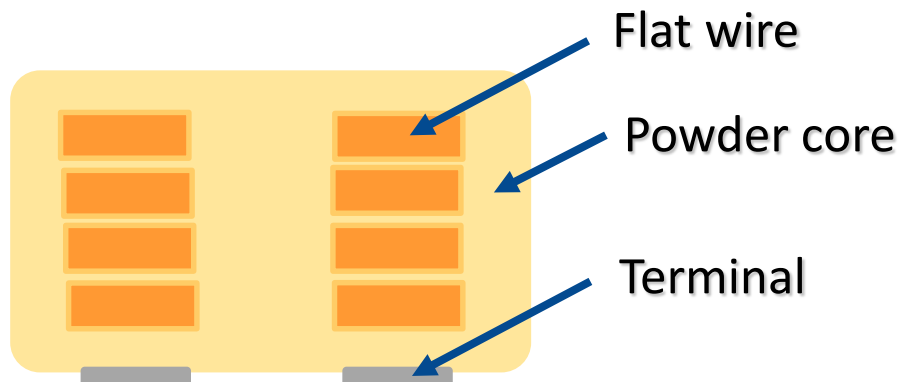


Construction

SRP, SRP-A, SRP-C, SRP-TA and SRP-AA Series

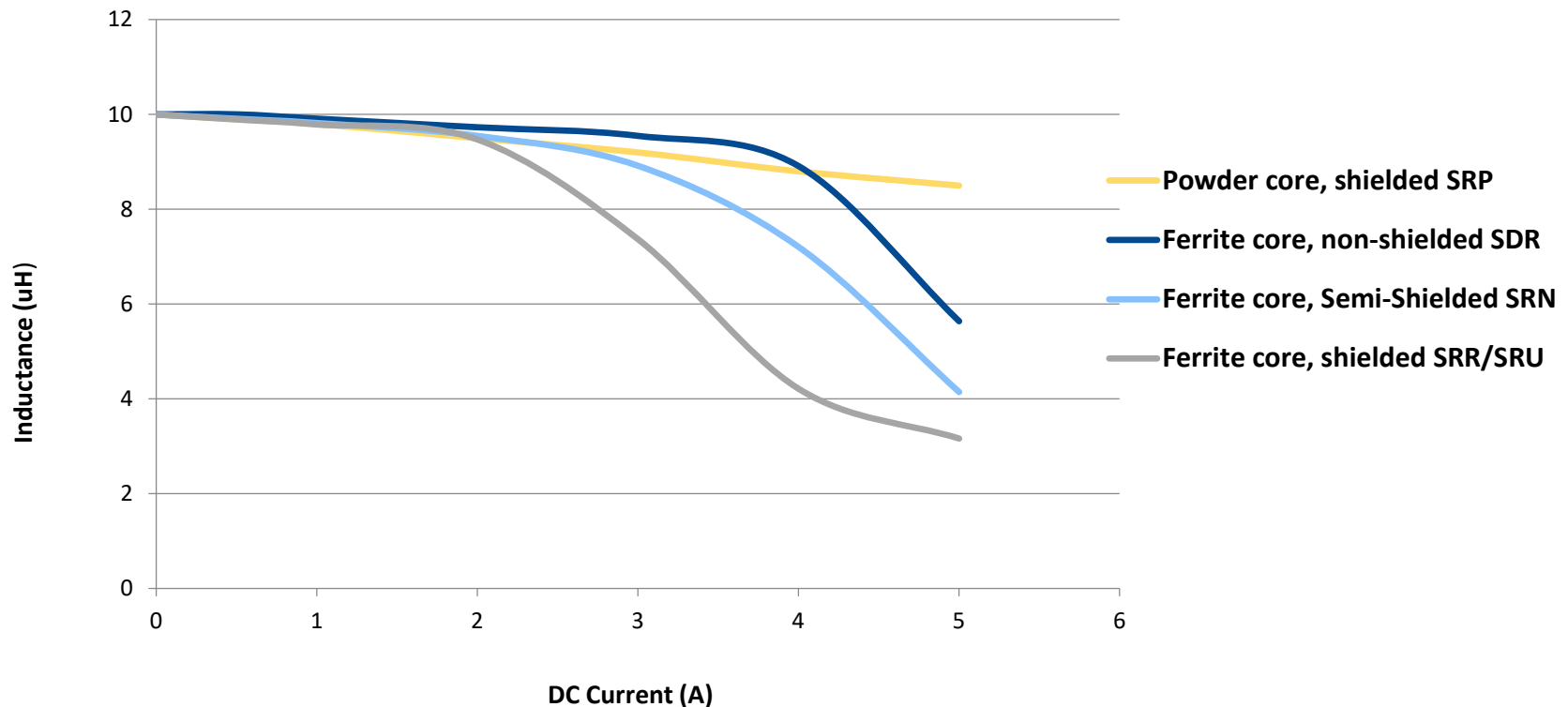


SRP-CA and SRP-FA Series



Characteristics

- Distributed air gap feature – Soft saturation
- High current capacity – Low inductance reduction at high current

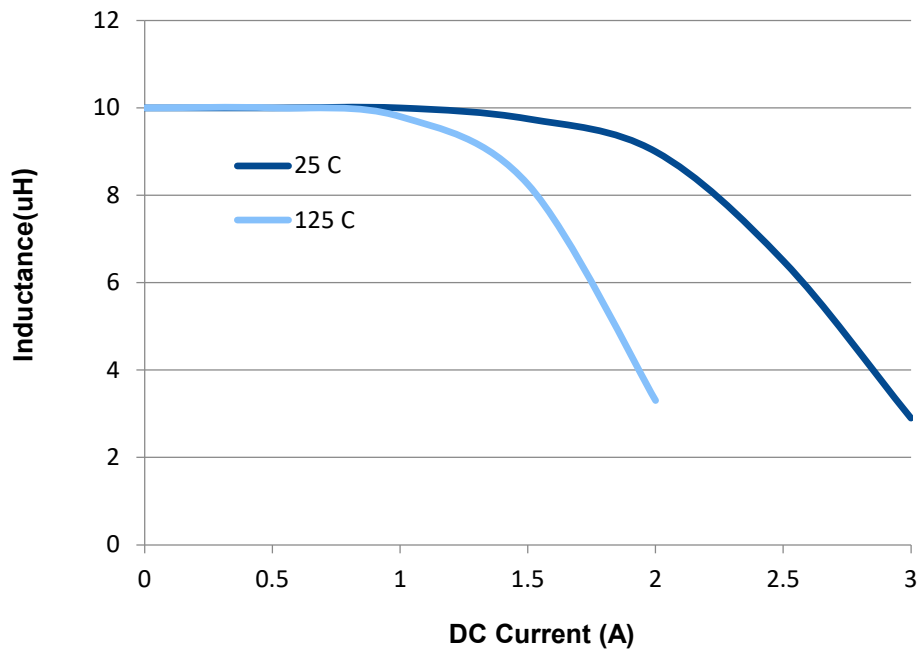


Comparison made to 10uH, approximate 8x8x4mm size inductors

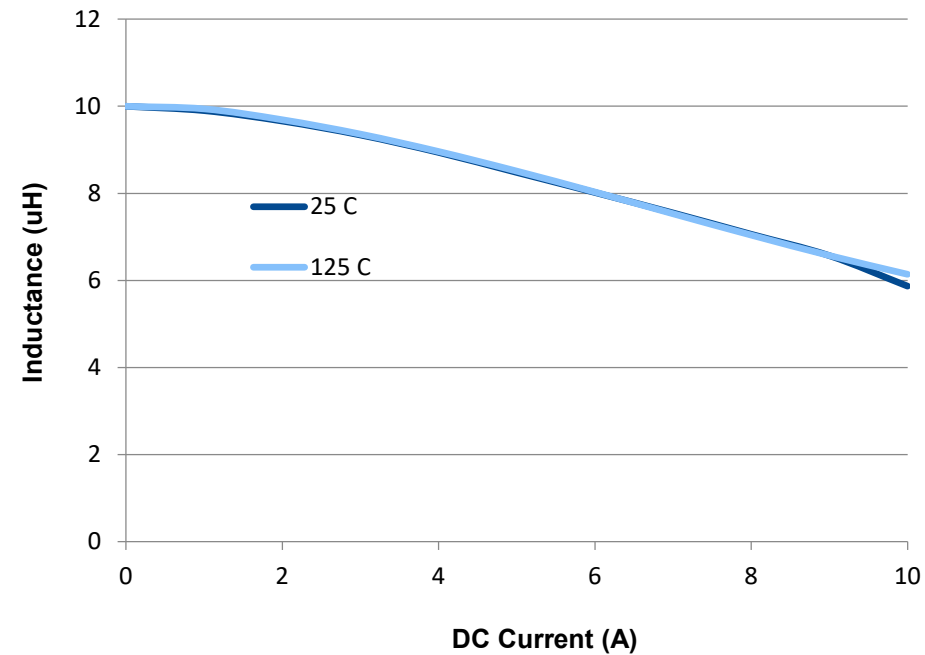
Characteristics

- Stable current handling capacity at elevated temperature

Ferrite Core (vary I_{sat})



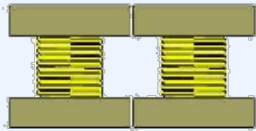
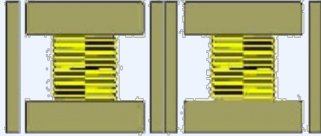
Powder Core (stable I_{sat})



Comparison made to SRR7035A-100M – ferrite vs. SRP7028A-100M powder core

Characteristics

- Low magnetic flux radiation –
Coupling Factor to characterize shielding effectiveness

Inductor Size	LxWxH (mm) 8 x 8 x 5	LxWxH (mm) 8 x 8 x 4	LxWxH (mm) 8 x 8 x 4.3	LxWxH (mm) 7 x 7 x 4
Style				
	Non-shielded, SDR	Semi-shielded, SRN	Shielded, SRR/SRU	High Current-Shielded, SRP
Open-circuit Inductance	10 μ H / 10 μ H	10 μ H / 10 μ H	10 μ H / 10 μ H	10 μ H / 10 μ H
Mutual Inductance	2.28 μ H	1.66 μ H	0.037 μ H	0.027 μ H
Coupling Factor @ 100 KHz	22.8 %	16.6 %	0.37 %	0.27 %

Typical Applications

- AC / DC and DC / DC converters
- EMI filters

For

Automotive



Consumer



Medical*, FDA Class I, II



Telecom



Industrial



** Excluding life-saving, life-critical or life-sustaining applications*

Selection variety

- Footprint Range: 2 x 1.6 to 28 x 28 mm
- Height Range: 1.0 to 19 mm
- Inductance Range: 0.1 to 100 μ H
- Irms Rated Current Range: 1 to 70 A
- Isat Rated Current Range: 1.8 to 118 A
- Operating Temperature: Up to +155 °C
- Total Available Series: 31
- AEC-Q200 Compliant Series: 25

BOURNS®										Markets	Applications	Products	Services	News	Resources	Support
Series	Data Sheet	Photo	Shielded	Size	Inductance Range	Current Range	Related Documents	Design Files	Buy Now							
SRP1770TA			Yes	17.3 x 16.9 x 6.7 mm	1 - 100 µH	5.3 - 52 A	SRP1770TA	Downloads	Buy							
SRP2010			Yes	2.0 x 1.6 x 1.0 mm	0.24 - 2.2 µH	1.7 - 4.5 A	SRP2010	Downloads	Buy							

Navigating through the data sheet



Features

- Shielded construction
- Metal alloy powder core
- High saturation current
- Flat wire
- AEC-Q200 compliant
- RoHS compliant* and halogen free**

SRP5050FA Series – Shielded Power Inductors

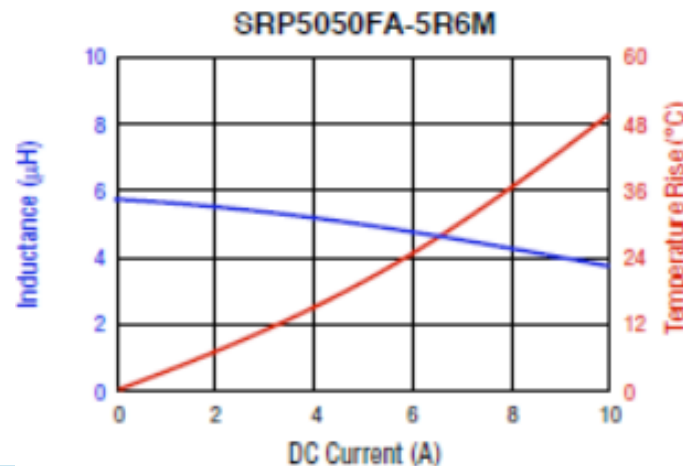
Electrical Specifications @ 25 °C

Bourns Part Number	Inductance @ 100 kHz / 0.1 V		SRF (MHz) Typ.	DCR (mΩ) Typ.	DCR (mΩ) Max.	I rms (A) Typ.		I sat (A) Typ.
	L (μH)	Tol. %				20 °C Temp. Rise	40 °C Temp. Rise	
SRP5050FA-5R6M	5.60	± 20 %	20	22.0	24.20	5.3	7.2	8.6
SRP5050FA-6R8M	6.80	± 20 %	18	26.0	26.60	4.8	6.4	7.8
SRP5050FA-8R2M	8.20	± 20 %	15	29.5	32.50	4.6	6.1	7.2

General Specifications

Operating Temperature -55 °C to +155 °C
(Temperature rise included)
Storage Temperature (Component) -55 °C to +155 °C
Rated Current Inductance drops
30 % at least
Temperature Rise 20 or 40 °C
at rated I_{rms}¹

Inductance vs. IDC
Temp. Rise vs. IDC



Product literatures and Design Tools at www.bourns.com

- Parametric search
- Cross reference
- Design Files

Parametric Search

Magnetic Products - Inductors ▼

Inductance (μH) 10 ▼
Current (mA) 1250 ▼
Dimension-LxWxH (mm) --SELECT ONE-- ▼
DCR (Ohms) --SELECT ONE-- ▼

PART NUMBER	Inductance (μH)	Current (mA)	Dimension-LxWxH (mm)	DCR (Ohms)
 SRU5018-100Y	10	1250	5.2 x 1.8 x 5.2	0.065

Cross-Reference Search

Competitor model or part number.

Begins With ▼

Go ▶

IHLP4040DZER

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Markets

Applications

Products

Services

News

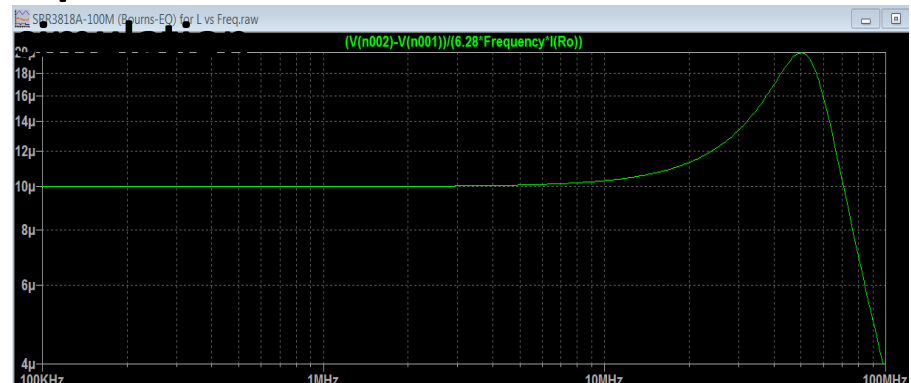
Resources

Series	Data Sheet	Photo	Shielded	Size	Inductance Range	Current Range	Related Documents	Design Files
SRP3020TA			Yes	3.5 x 3.2 x 1.8 mm	0.1 - 10 μH	1.4 - 10.5 A	SRP3020TA	Downloads

3D drawing for mechanical layout



Equivalent circuit for electrical



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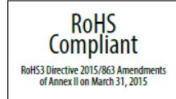
Product literatures and Design Tools at www.bourns.com

- Power Inductor Short form brochure
- Design kits



Bourns® SMD High Current Power Inductor Design Kit

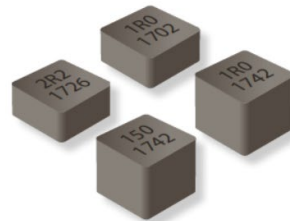
Power Management Applications • AEC-Q200 Compliant



Bourns® 4 and 6 mm SRP Series

- SRP4020FA Series: 10 Inductance Values / 10 Components Each
- SRP6030CA Series: 8 Inductance Values / 10 Components Each
- SRP6050CA Series: 7 Inductance Values / 10 Components Each
- SRP6060FA Series: 7 Inductance Values / 10 Components Each

Design Kits for most Bourns® product lines are available.
Contact your nearest Bourns sales office for more information.



SRP-A-LAB8

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High Current, Shielded Power Inductors

Power Inductors - SRP Series, SMD High Current, Shielded

Model	Photo	Size (mm)			Core		Inductance Range (µH)				RMS Current Range (A)			Operating Temperature Range (°C)	AEC-Q200 Compliant, Automotive Grade
		Length	Width	Height	Ferrite	Metal Alloy	4.3	1	10	100	1	10	100		
SRP2010		2	1.6	1	-	-	0.24	2.2	1.7	4.5	-	-	-	-40 to +125	No
SRP2510A		2.5	2	1	-	-	0.22	4.7	1.36	5.8	-	-	-	-40 to +125	No
SRP2512		2.5	2	1.2	-	-	0.47	2.2	2.1	4.5	-	-	-	-40 to +125	No
SRP2512A		2.5	2	1.2	-	-	0.47	4.7	2.1	4.5	-	-	-	-40 to +125	No
SRP3012DA		3.5	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP4020FA		4.1	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP4030FA		4.1	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP4012DA		4.45	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP4012FA		4.45	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP3030CA		5.4	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP3030FA		5.5	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP3015DA		5.7	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP3015FA		5.7	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP3030DA		5.7	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP4030CA		6.6	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP4030FA		6.6	-	-	-	-	-	-	-	-	-	-	-	-	-
SRP6060FA		6.6	-	-	-	-	-	-	-	-	-	-	-	-	-

Surface Mount Power Inductors & Common Mode Chokes



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http://www.bourns.com/docs/technical-documents/technical-library/inductive-components/publications/bourns_inductors_chokes_selection_guide.pdf

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Summary

The SRP Series powder core inductors offer:

- Shielded construction
- Low DCR
- High saturation current
- High temperature
- Low buzz noise
- Round wire / Flat wire
- AEC-Q200 compliant available

Applications:

- AC/DC and DC/DC converters
- EMI filters

for

- Automotive
- Consumer
- Industrial
- Medical
- Telecom

The background is a deep blue gradient. A bright, white, curved light streak sweeps across the upper half of the image. Below this, numerous out-of-focus light circles (bokeh) are scattered across the lower half, creating a sense of depth and movement.

Thank you!

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