

Shielded, Wirewound Inductors Offer Greater Handling In Small Footprint

[Coilcraft's](#) PFL4514 shielded, wirewound power inductors allow circuit designers to increase board density without sacrificing efficiency. These surface-mount inductors, which require just 16 mm² of board space and stand only 1.4 mm high, handle up to 4.2 A of current. This current rating is one that typically requires much larger inductors, according to the vendor. Meanwhile the magnetically shielded package provides more design flexibility by permitting tighter component spacing without EMI (see the figure.)

The PFL4514 series offers inductance values from 1.0 μ H to 22 μ H and an operating temperature range of -40° to +125°C. Typical DCR is as low as 80 m Ω , enhancing performance in battery-powered devices. Where even lower DCR and higher current is required, a 0.3-mm taller part, the PFL4517 series, is available with DCR starting at 40 m Ω and saturation current ratings up to 6.5 A. Inductance values for the PFL4517 range from 0.68 μ H to 10 μ H.

When asked about the current-handling capabilities of the PFL4514 versus existing components, John Stellberg, director of marketing communications at Coilcraft, offers some comparisons with existing Coilcraft inductors (Tables 1-3.). Says Stellberg, these tables "show how the 22 μ H, 6.8 μ H and 1 μ H values from this family have I_{sat} ratings that are equal to or better than those of parts that are two or three times their size."

These inductors share a common footprint for design and prototyping flexibility. Composite-core construction and heavier-gauge windings provide high current handling and excellent DCR. The parts are halogen-free and RoHS-compliant, with matte tin over nickel terminations that are compatible with 260°C processing.

Coilcraft offers free evaluation samples on its website, or the complete range of values for both inductor families can be purchased in Designers Kit C453. Component pricing at 1,000 piece quantities is \$0.50. For datasheets, see <http://www.coilcraft.com/pdfs/pfl4514.pdf> and <http://www.coilcraft.com/pdfs/pfl4517.pdf>.



Figure. Measuring 4.9 x 3.4 x 1.4 mm (max), the PFL4514 series shielded, wirewound power inductors offer I_{sat} ratings that are equal to or better than those of parts that are two or three times their size.

Table. Comparing current ratings and sizes of PFL4514 shielded wirewound power inductors with other models from Coilcraft.

Inductance value	Model number	I _{sat} (A)	Volume (mm ³)
22 µH	PFL4514-223	0.79	23.32
	LPS4414-223	0.74	27.10
	LPS5015-223	0.75	37.50
	1008PS-223	0.79	39.46
	LPS5030-223	0.78	75.00
	MSS5131-223	0.7	80.63
	LPO2506I-223	0.7	85.60
	DO1608C-223	0.7	85.76
	LPO2506O-223	0.7	118.69
6.8 µH	PFL4514-682	1.7	23.32
	LPS4414-682	1.4	27.10
	LPS5015-682	1.5	37.50
	LPS5030-682	1.7	75.00
	MSS6122-682	1.5	81.86
	MOS6020-682	1.72	97.92
1 µH	PFL4514-102	4.2	23.32
	1008PS-102	4.2	39.46
	LPS4018-102	4.1	30.26
	LPS5015-102	3.9	37.50