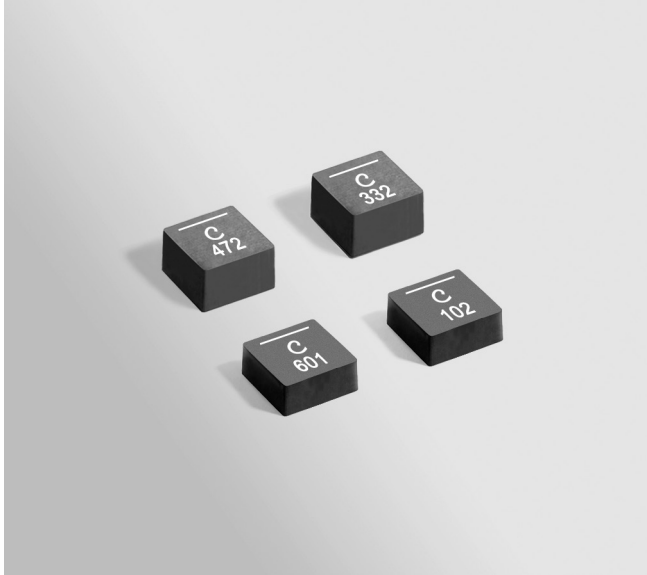




# Shielded Power Inductors – XAL40xx



- High current and very low DCR
- AEC-Q200 Grade 1 qualified (–40°C to +125°C ambient)
- Soft saturation makes them ideal for VRM/VRD applications.

**Designer's Kit C429** contains 5 of each value

**Core material** Composite

**Core and winding loss** See [www.coilcraft.com/coreloss](http://www.coilcraft.com/coreloss)

**Environmental** RoHS compliant, halogen free

**Terminations** RoHS compliant tin-silver (96.5/3.5) over copper. Other terminations available at additional cost.

**Ambient temperature** –40°C to +125°C with (40°C rise) Irms current.

**Maximum part temperature** +165°C (ambient + temp rise). **Derating.**

**Storage temperature** Component: –40°C to +165°C.

Tape and reel packaging: –40°C to +80°C

**Resistance to soldering heat** Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

**Moisture Sensitivity Level (MSL)** 1 (unlimited floor life at <30°C / 85% relative humidity)

**Failures in Time (FIT) / Mean Time Between Failures (MTBF)**

38 per billion hours / 26,315,789 hours, calculated per Telcordia SR-332

**PCB washing** Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See [Doc787\\_PCB\\_Washing.pdf](#).

Part number <sup>1</sup>	Inductance <sup>2</sup> ±20% (µH)	DCR (mOhms) <sup>3</sup>		SRF typ <sup>4</sup> (MHz)	Isat <sup>5</sup> (A)	Irms (A) <sup>6</sup>	
		typ	max			20°C rise	40°C rise
XAL4020-221ME_	0.22	5.81	6.40	191	18.7	12.0	16.8
XAL4020-401ME_	0.40	7.55	8.30	145	12.5	10.0	14.0
XAL4020-601ME_	0.60	9.50	10.45	106	10.4	7.9	11.7
XAL4020-102ME_	1.0	13.25	14.60	79	8.7	6.7	9.6
XAL4020-122ME_	1.2	17.75	19.50	69	7.9	6.6	9.0
XAL4020-152ME_	1.5	21.45	23.60	64	7.1	5.2	7.5
XAL4020-222ME_	2.2	35.20	38.70	52	5.6	4.0	5.5
XAL4030-332ME_	3.3	26.0	28.6	43	5.5	5.0	6.6
XAL4030-472ME_	4.7	40.1	44.1	36	4.5	3.9	5.1
XAL4030-682ME_	6.8	67.4	74.1	29	3.6	3.0	3.9
XAL4040-822ME_	8.2	60.8	66.9	27	4.0	2.4	3.4
XAL4040-103ME_	10	84.0	92.4	24	3.0	2.2	3.1
XAL4040-153ME_	15	109	120	20	2.8	2.0	2.8

## Irms Testing

Irms testing was performed on 0.75 inch wide × 0.25 inch thick copper traces in still air.

Temperature rise is highly dependent on many factors including pcb land pattern, trace size, and proximity to other components. Therefore temperature rise should be verified in application conditions.

1. When ordering, please specify **termination** and **packaging** codes:

XAL4020-222ME**C**

**Termination:** **E** = RoHS compliant tin-silver over copper.

**Special order:** **T** = RoHS tin-silver-copper (95.5/4/0.5) or **S** = non-RoHS tin-lead (63/37).

**Packaging:** **C** = 7" machine-ready reel. EIA-481 embossed plastic tape.

**B** = Less than full reel. In tape, but not machine ready. To have a leader and trailer added (\$25 charge), use code letter C instead.

**D** = 13" machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked.

2. Inductance tested at 1 MHz, 0.1 Vrms, 0 Adc.
3. DCR measured on a micro-ohmmeter.
4. SRF measured using Agilent/HP 4395A or equivalent.
5. DC current at 25°C that causes an inductance drop of 30% (typ) from its value without current.  
[Click for temperature derating information.](#)
6. Current that causes the specified temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings. [Click for temperature derating information.](#)
7. Electrical specifications at 25°C.

Refer to Doc 362 "Soldering Surface Mount Components" before soldering.



[www.coilcraft.com](http://www.coilcraft.com)

**US** +1-847-639-6400 [sales@coilcraft.com](mailto:sales@coilcraft.com)

**UK** +44-1236-730595 [sales@coilcraft-europe.com](mailto:sales@coilcraft-europe.com)

**Taiwan** +886-2-2264 3646 [sales@coilcraft.com.tw](mailto:sales@coilcraft.com.tw)

**China** +86-21-6218 8074 [sales@coilcraft.com.cn](mailto:sales@coilcraft.com.cn)

**Singapore** + 65-6484 8412 [sales@coilcraft.com.sg](mailto:sales@coilcraft.com.sg)

Document 806-1 Revised 06/15/17

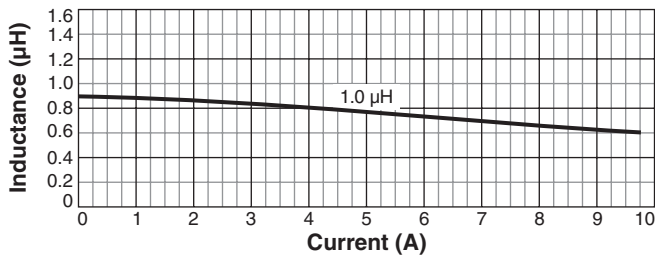
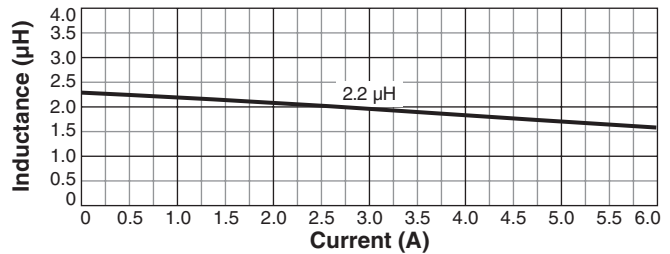
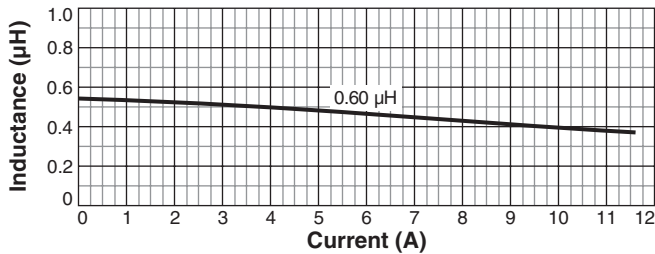
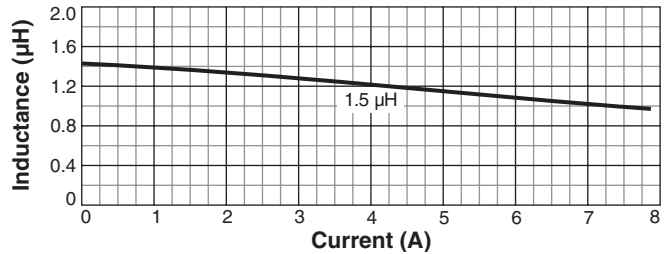
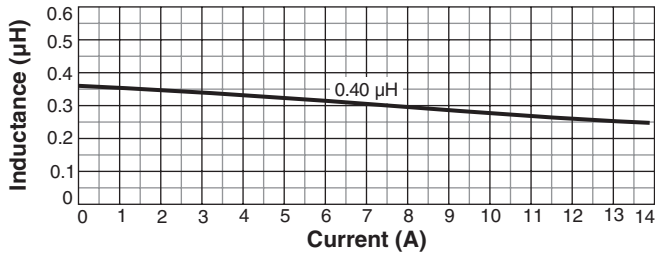
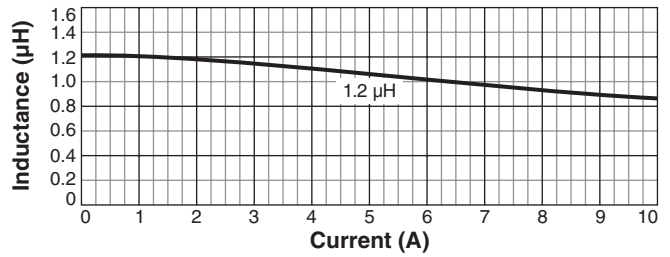
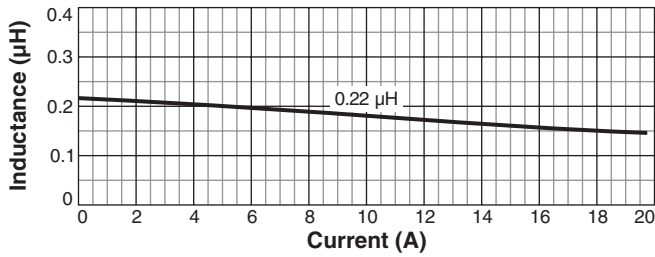
© Coilcraft Inc. 2017

This product may not be used in medical or high risk applications without prior Coilcraft approval. Specification subject to change without notice. Please check web site for latest information.



# Shielded Power Inductors – XAL40xx

## L vs Current



**US** +1-847-639-6400 sales@coilcraft.com  
**UK** +44-1236-730595 sales@coilcraft-europe.com  
**Taiwan** +886-2-2264 3646 sales@coilcraft.com.tw  
**China** +86-21-6218 8074 sales@coilcraft.com.cn  
**Singapore** + 65-6484 8412 sales@coilcraft.com.sg

Document 806-2 Revised 06/15/17

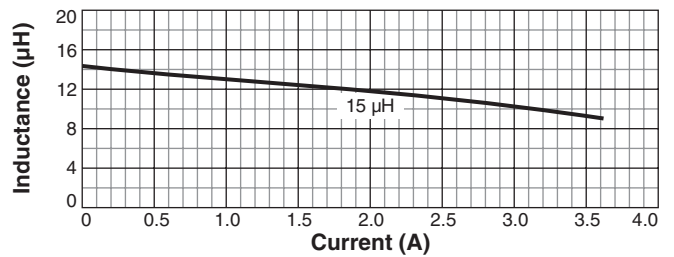
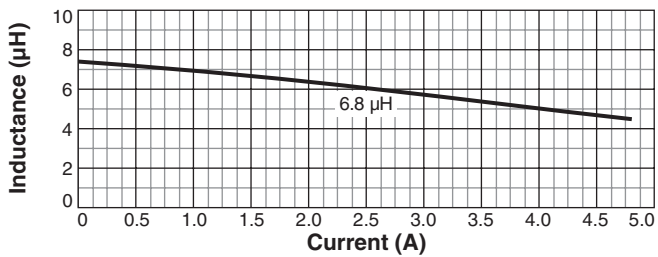
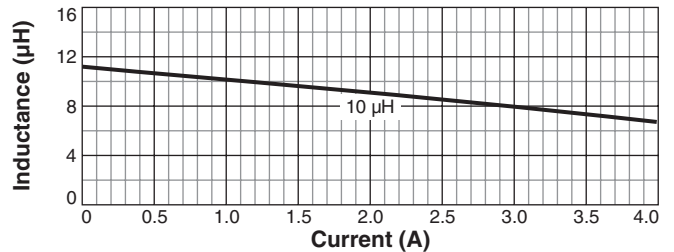
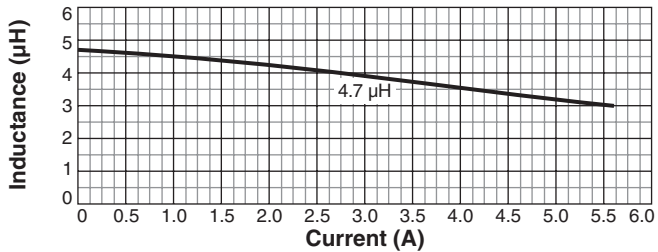
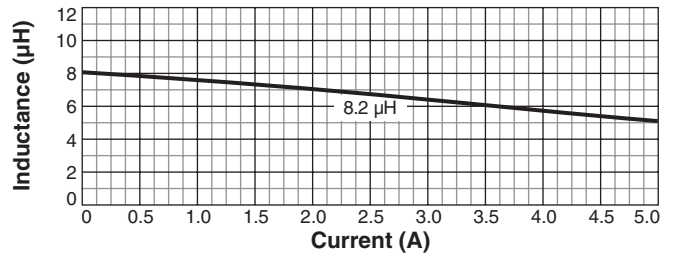
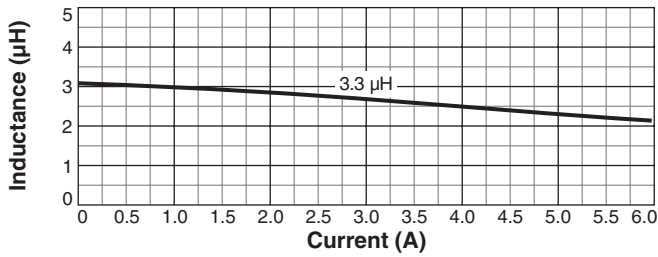
© Coilcraft Inc. 2017

This product may not be used in medical or high risk applications without prior Coilcraft approval. Specification subject to change without notice. Please check web site for latest information.



# Shielded Power Inductors – XAL40xx

## L vs Current



www.coilcraft.com

**US** +1-847-639-6400 sales@coilcraft.com  
**UK** +44-1236-730595 sales@coilcraft-europe.com  
**Taiwan** +886-2-2264 3646 sales@coilcraft.com.tw  
**China** +86-21-6218 8074 sales@coilcraft.com.cn  
**Singapore** + 65-6484 8412 sales@coilcraft.com.sg

Document 806-3 Revised 06/15/17

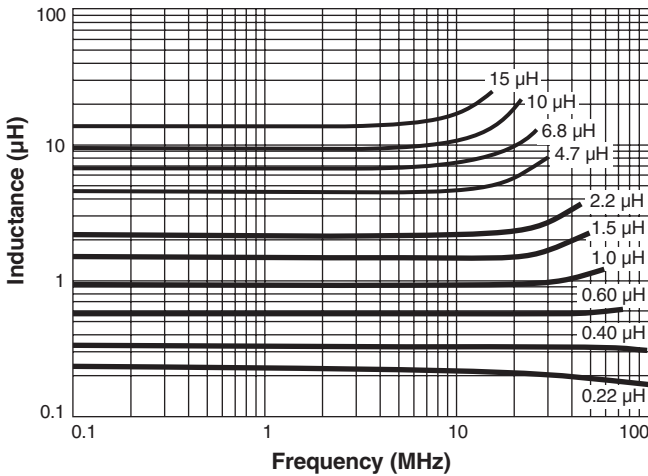
© Coilcraft Inc. 2017

This product may not be used in medical or high risk applications without prior Coilcraft approval. Specification subject to change without notice. Please check web site for latest information.

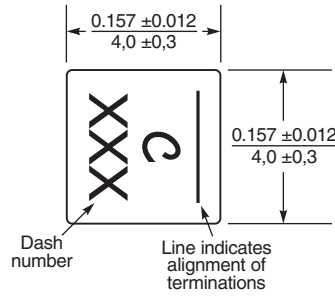
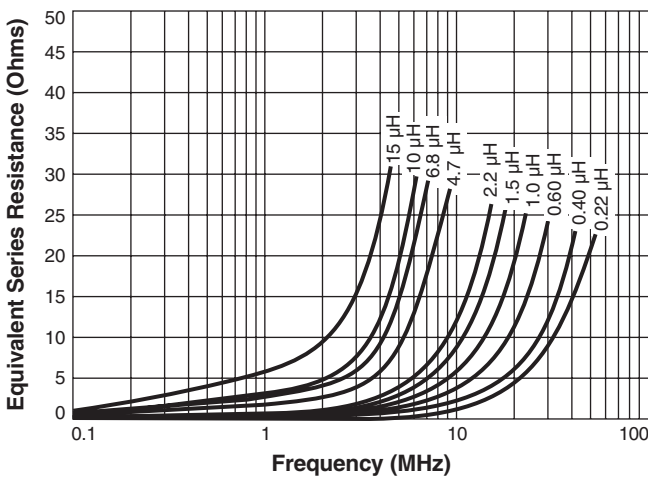


# Shielded Power Inductors - XAL40xx

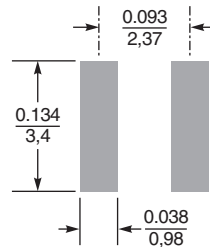
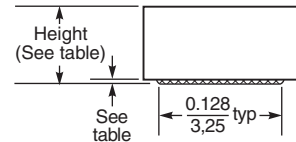
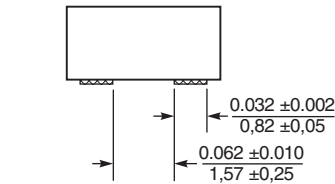
## Typical L vs Frequency



## Typical ESR vs Frequency



**Note:** Parts manufactured prior to 2011 may not have alignment mark.



**Recommended Land Pattern**

Dimensions are in inches / mm

Dash number	Terminal thickness (typ) (in / mm)	Maximum* height (in / mm)	Weight
-221	0.0039 / 0.10	0.083 / 2,1	0.17 - 0.18 g
-401	0.0039 / 0.10	0.083 / 2,1	0.17 - 0.18 g
-601	0.0039 / 0.10	0.083 / 2,1	0.17 - 0.18 g
-102	0.0039 / 0.10	0.083 / 2,1	0.17 - 0.18 g
-122	0.0039 / 0.10	0.083 / 2,1	0.17 - 0.18 g
-152	0.0031 / 0.08	0.083 / 2,1	0.17 - 0.18 g
-222	0.0024 / 0.06	0.083 / 2,1	0.17 - 0.18 g
-332	0.0039 / 0.10	0.122 / 3,1	0.26 - 0.28 g
-472	0.0031 / 0.08	0.122 / 3,1	0.26 - 0.28 g
-682	0.0024 / 0.06	0.122 / 3,1	0.26 - 0.28 g
-822	0.0031 / 0.08	0.161 / 4,1	0.35 - 0.37 g
-103	0.0024 / 0.06	0.161 / 4,1	0.35 - 0.37 g
-153	0.0024 / 0.06	0.161 / 4,1	0.35 - 0.37 g

\* For optional tin-lead and tin-silver-copper terminations, dimensions are for the mounted part. Dimensions before mounting can be an additional 0.005 inch / 0.13 mm.

### Packaging

**XAL4020:** 1000/7" reel; 3500/13" reel Plastic tape: 12 mm wide, 0.23 mm thick, 8 mm pocket spacing, 2.3 mm pocket depth

**XAL4030:** 500/7" reel; 2000/13" reel Plastic tape: 12 mm wide, 0.23 mm thick, 8 mm pocket spacing, 3.25 mm pocket depth

**XAL4040:** 500/7" reel; 2000/13" reel Plastic tape: 12 mm wide, 0.30 mm thick, 8 mm pocket spacing, 4.27 mm pocket depth



**US** +1-847-639-6400 sales@coilcraft.com  
**UK** +44-1236-730595 sales@coilcraft-europe.com  
**Taiwan** +886-2-2264 3646 sales@coilcraft.com.tw  
**China** +86-21-6218 8074 sales@coilcraft.com.cn  
**Singapore** + 65-6484 8412 sales@coilcraft.com.sg