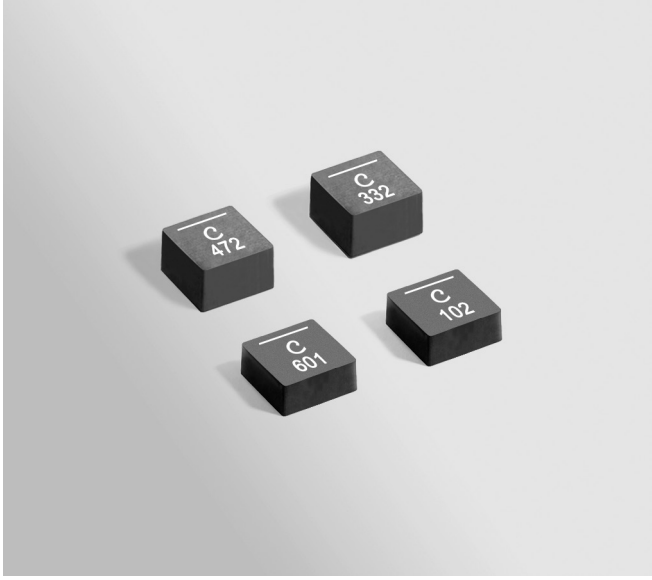
Shielded Power Inductors – XAL40xx



- 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

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[1]	Inductance[2] ±20% (µH)	DCR (mOhms)[3] typ	DCR (mOhms)[3] max	SRF typ[4] (MHz)	Isat[5] (A)	Irms (A)[6] 20°C rise	Irms (A)[6] 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:

   XAL4020-222MEC

   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 100 kHz, 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.

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Document 806-1 Revised 07/13/16

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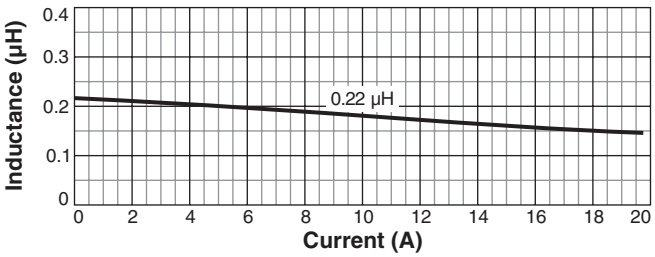
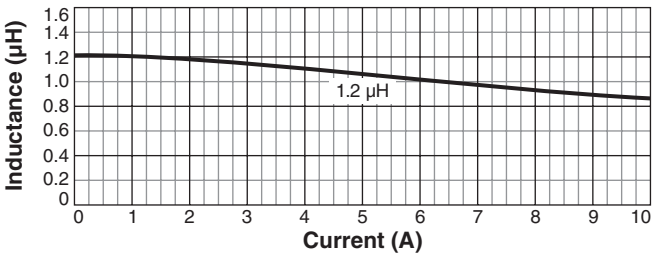
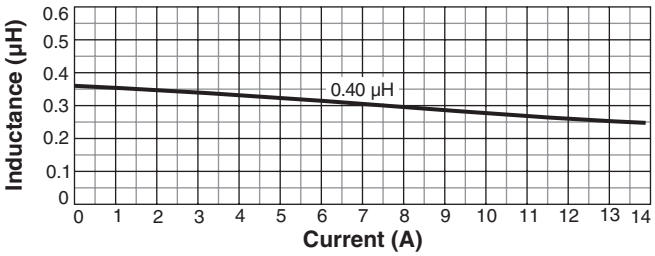
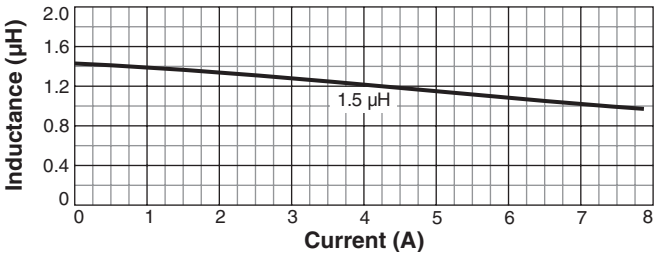
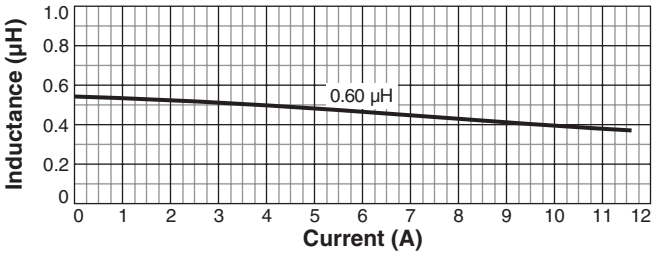
L vs Current

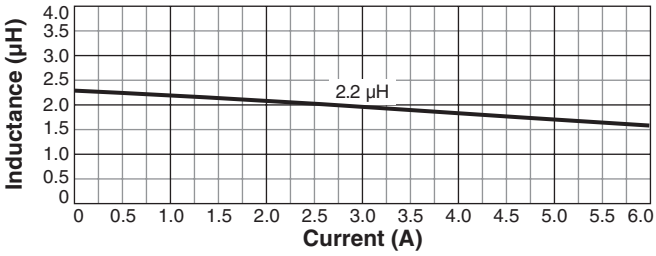


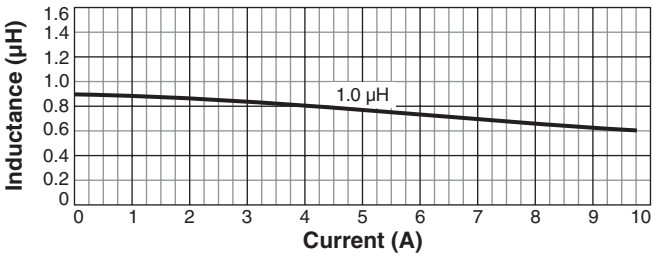












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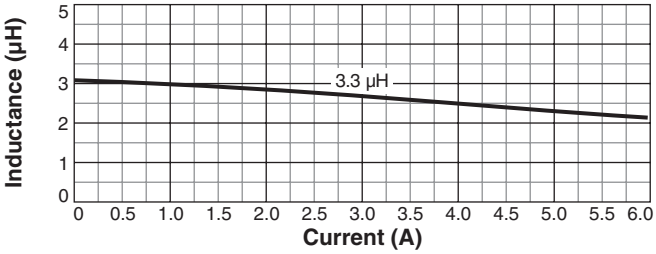
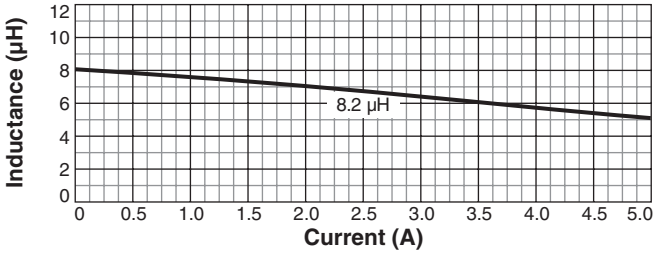
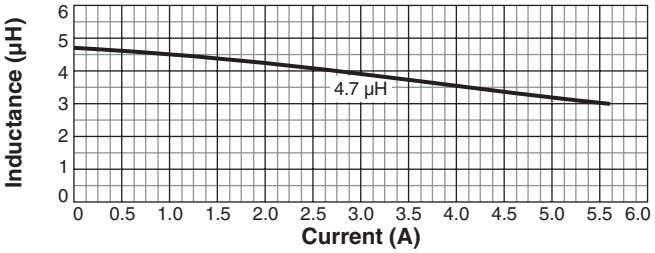
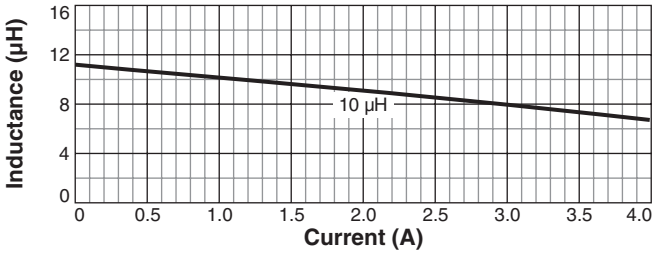
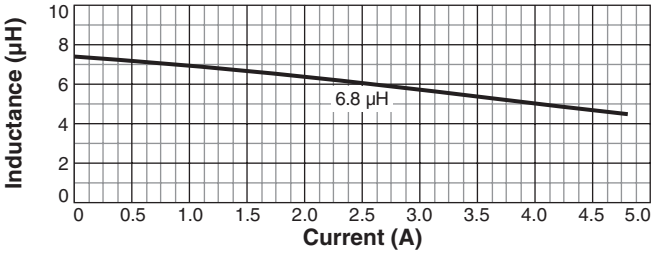
L vs Current

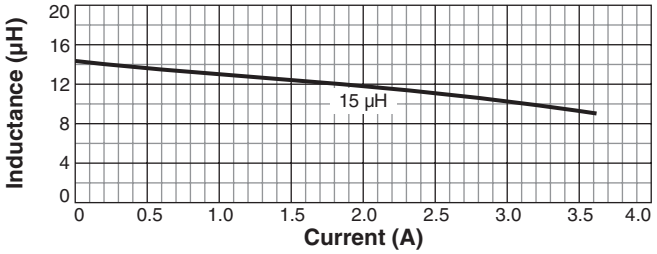












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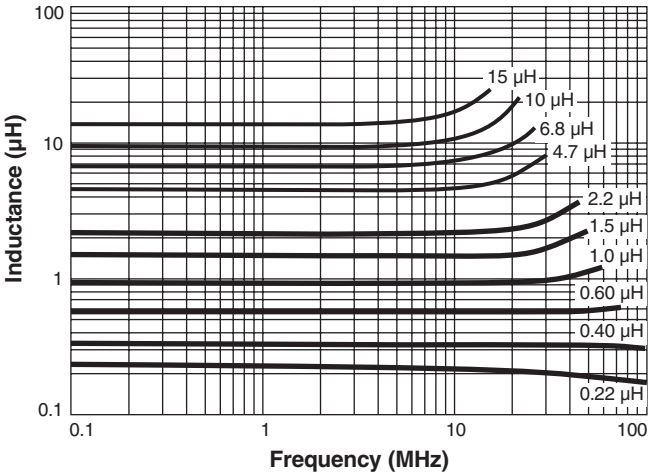
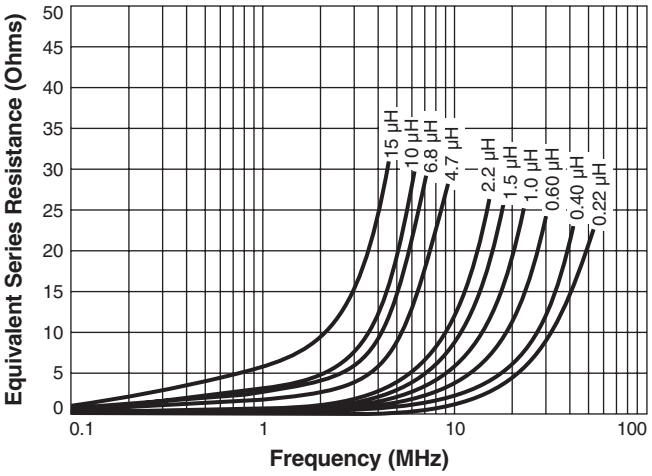
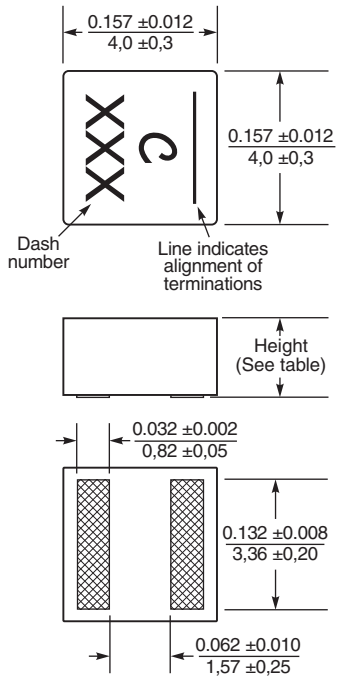
Typical L vs Frequency



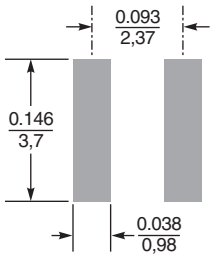
Typical ESR vs Frequency





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

Recommended Land Pattern



	Maximum* height	Weight
XAL4020	0.083 / 2,1	0.17 – 0.18 g
XAL4030	0.122 / 3,1	0.26 – 0.28 g
XAL4040	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.

Dimensions are in inches / 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

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