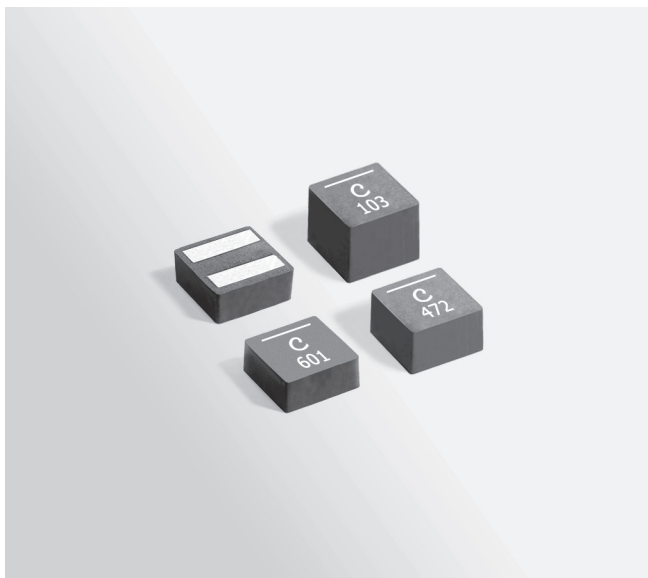




# HIGH TEMPERATURE

# Shielded Power Inductors – XAL40xx



- High current and very low DCR
- AEC-200 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 Irms current, +125°C to +165°C with derated current.

**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** Only pure water or alcohol recommended

| Part number <sup>1</sup> | Inductance <sup>2</sup><br>±20% (µH) | DCR (mOhms) <sup>3</sup> |       | SRF typ <sup>4</sup><br>(MHz) | Isat <sup>5</sup><br>(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       |
| XAL4020-152ME_           | 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** coded:

**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 which the inductance drops 30% (typ) from its value without current.

6. Current that causes the specified temperature rise from 25°C ambient.

7. Electrical specifications at 25°C.

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



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**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)

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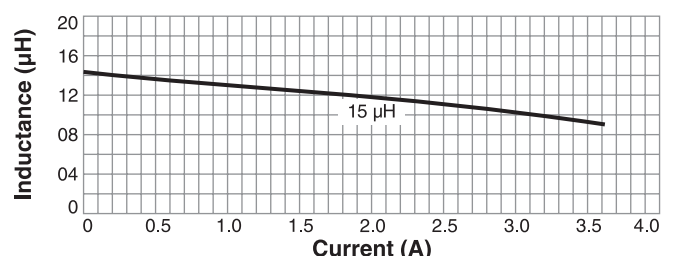
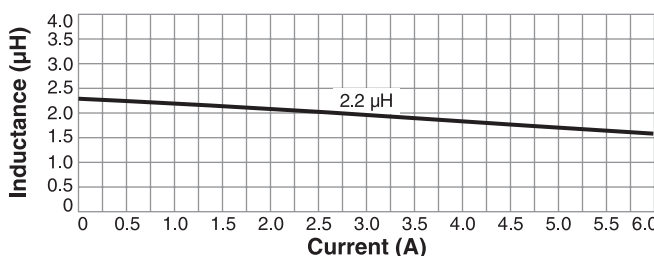
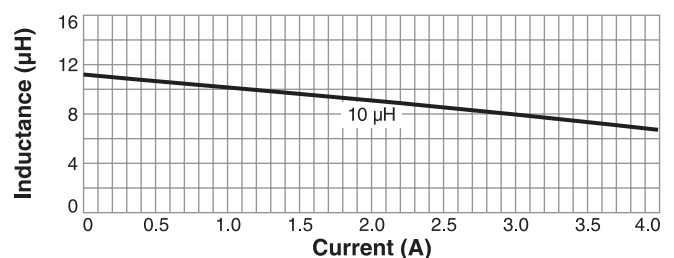
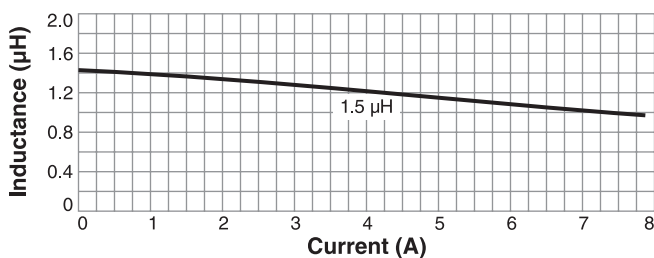
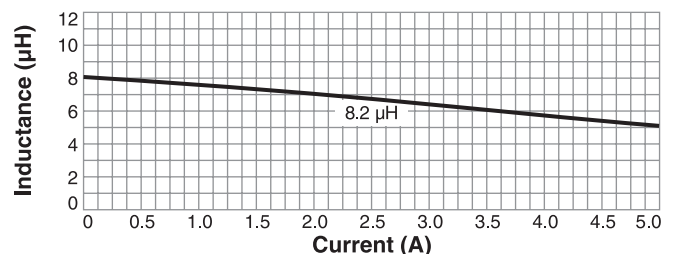
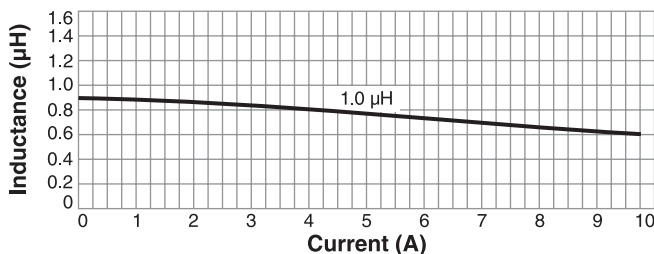
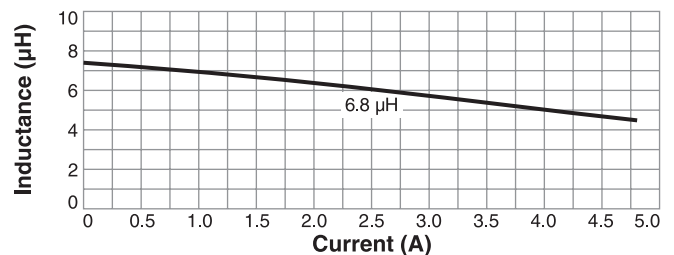
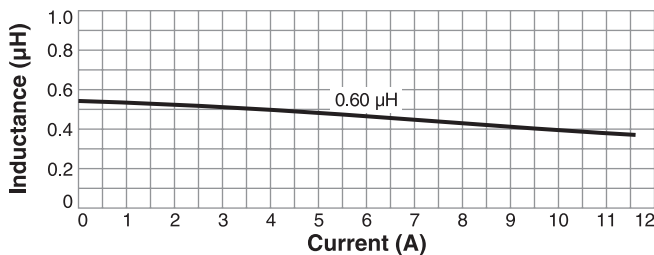
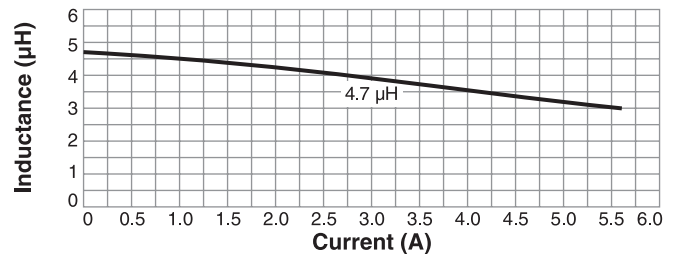
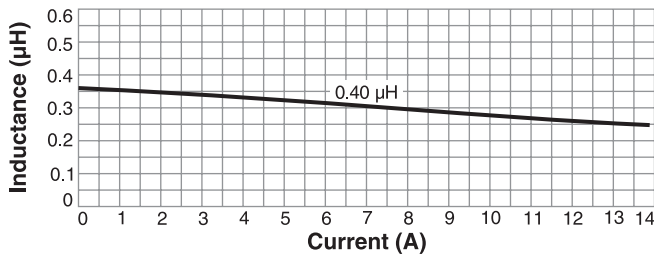
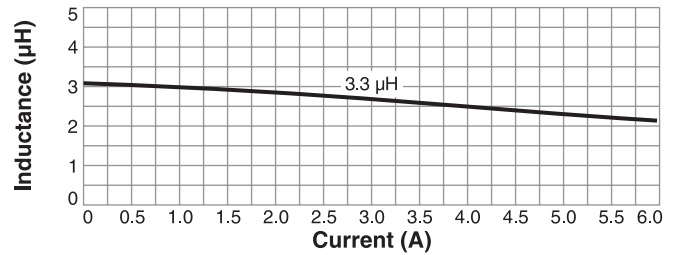
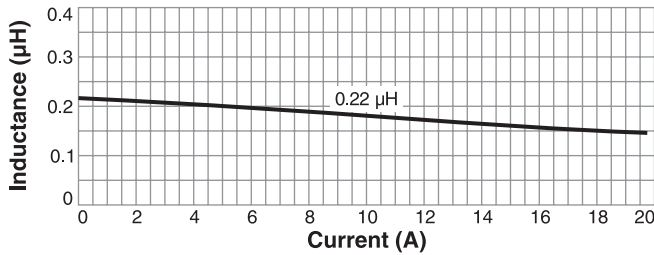
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# HIGH TEMPERATURE

## Shielded Power Inductors – XAL40xx

### L vs Current



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**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  
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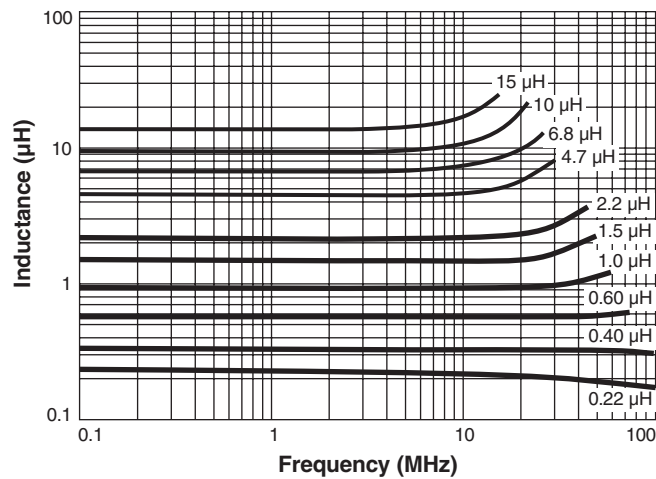
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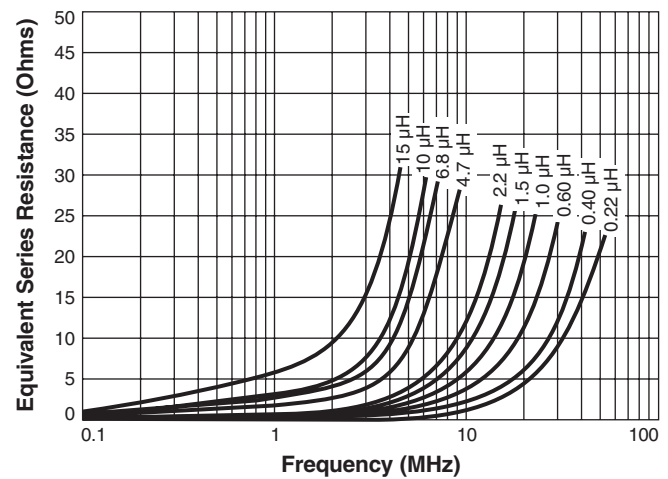
# HIGH TEMPERATURE

## Shielded Power Inductors – XAL40xx

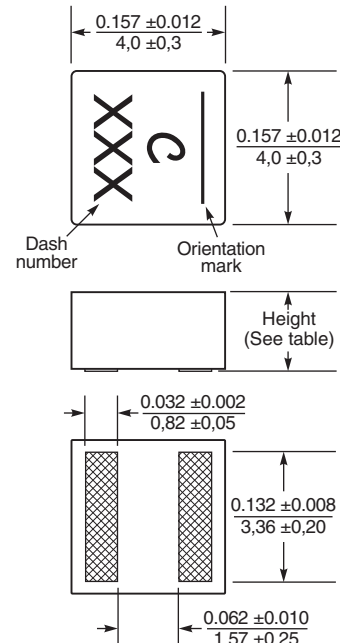
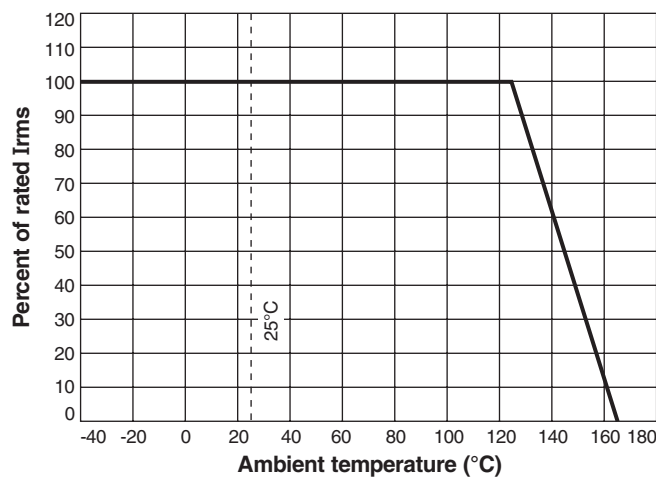
### Typical L vs Frequency



### Typical ESR vs Frequency

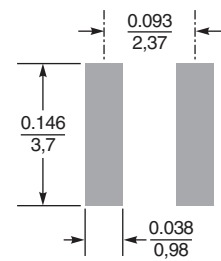


### Irms Derating



**Note:** Parts manufactured prior to 2011 may not have orientation 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 |

Dimensions are in  $\frac{\text{inches}}{\text{mm}}$

### Packaging

**XAL4020:** 1000/7" reel; 3500/13" reel Plastic tape: 12 mm wide, 0.23 mm thick, 8 mm pocket spacing, 2.1 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, 0.3 mm thick, 8 mm pocket spacing, 4.27 mm pocket depth



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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

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