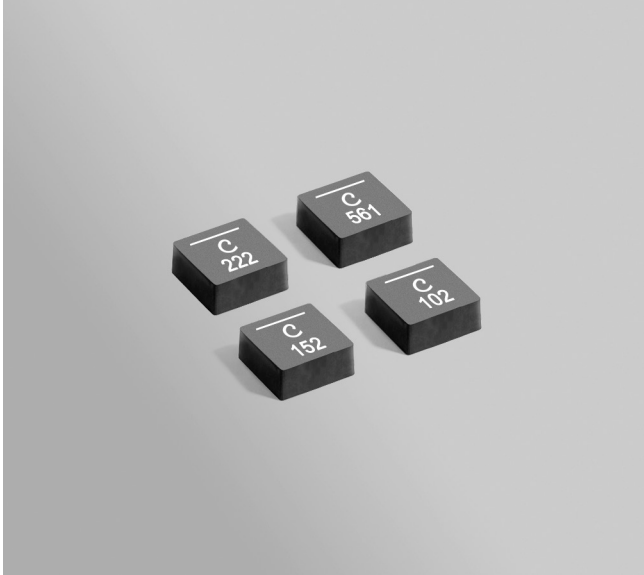




# Shielded Power Inductor XEL4020



- Extremely low DCR and ultra low AC losses for high switching frequencies (2 to 5 MHz)
- AEC-Q200 Grade 1 qualified (–40°C to +125°C ambient)
- Superior current handling with soft saturation characteristics
- Can withstand high current spike

**Core material** Composite

**Environment** RoHS compliant, halogen free

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

**Weight** 0.11 g

**Maximum operating voltage** 120 V

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

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

**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

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

**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><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 |
| XEL4020-101ME_           | 0.10                                 | 2.04                     | 2.50  | 280                           | 28.5                     | 14.6                  | 19.9      |
| XEL4020-201ME_           | 0.20                                 | 3.04                     | 3.35  | 180                           | 19.7                     | 14.0                  | 17.2      |
| XEL4020-331ME_           | 0.33                                 | 5.18                     | 5.70  | 124                           | 15.7                     | 11.9                  | 15.4      |
| XEL4020-561ME_           | 0.56                                 | 8.00                     | 8.80  | 90                            | 11.3                     | 9.9                   | 13.8      |
| XEL4020-821ME_           | 0.82                                 | 11.80                    | 13.00 | 69                            | 10.2                     | 8.1                   | 11.5      |
| XEL4020-102ME_           | 1.0                                  | 13.25                    | 14.60 | 68                            | 9.0                      | 6.7                   | 9.6       |
| XEL4020-122ME_           | 1.2                                  | 17.75                    | 19.50 | 59                            | 8.1                      | 6.6                   | 9.0       |
| XEL4020-152ME_           | 1.5                                  | 21.45                    | 23.60 | 54                            | 7.4                      | 5.2                   | 7.5       |
| XEL4020-222ME_           | 2.2                                  | 35.20                    | 38.70 | 41                            | 5.9                      | 4.0                   | 5.5       |

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

**XEL4020-222MEC**

**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 (1000 parts per full reel).

**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 (3500 parts per full reel).

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.

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.

7. Electrical specifications at 25°C.

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

## 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.



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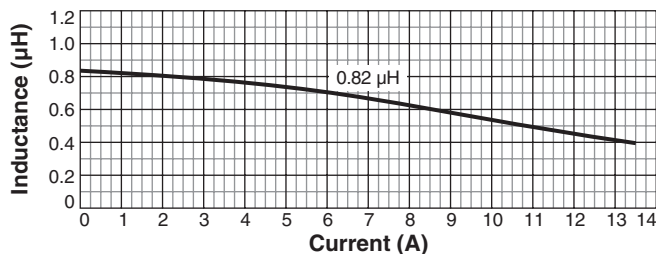
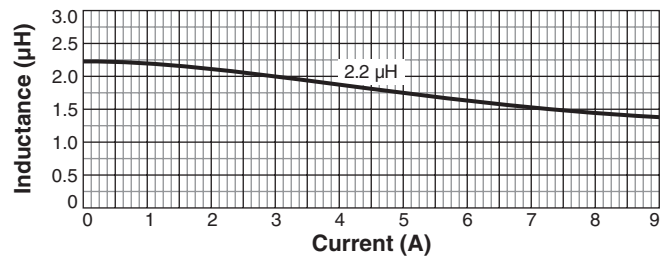
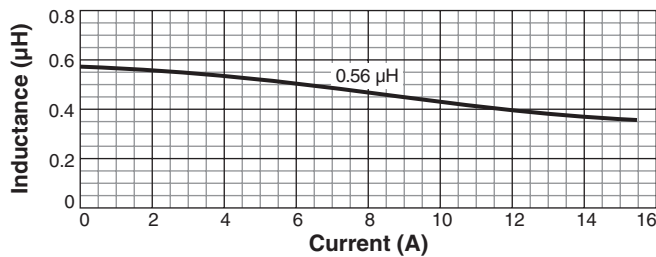
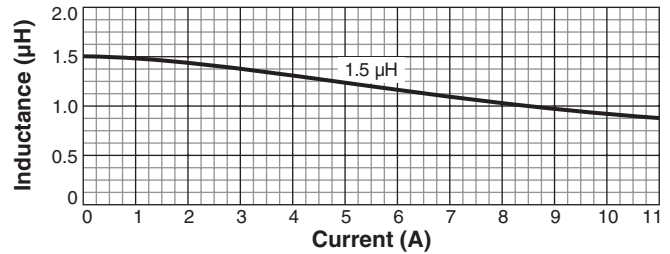
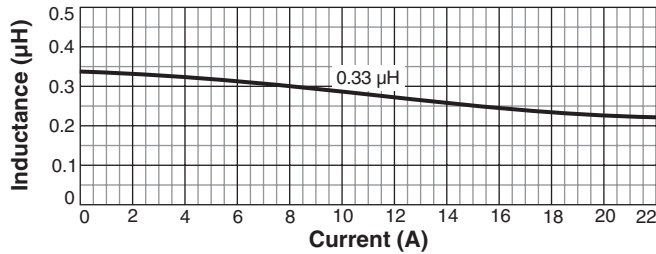
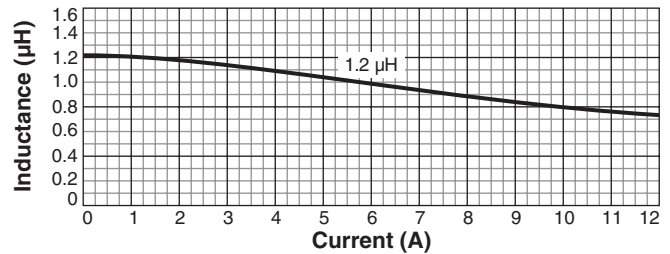
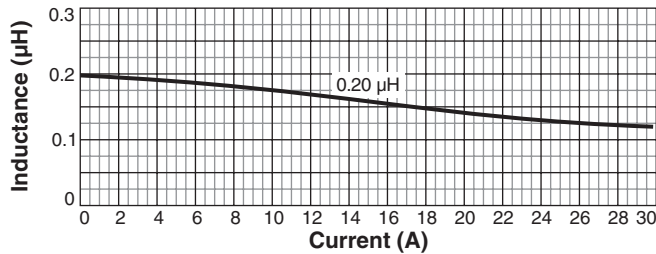
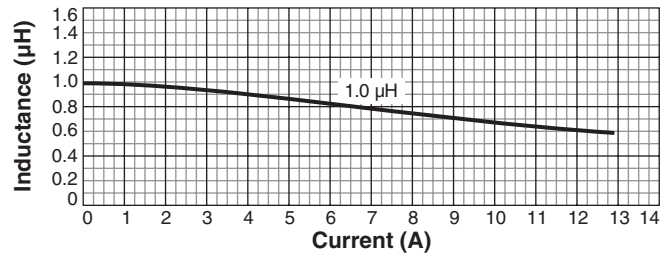
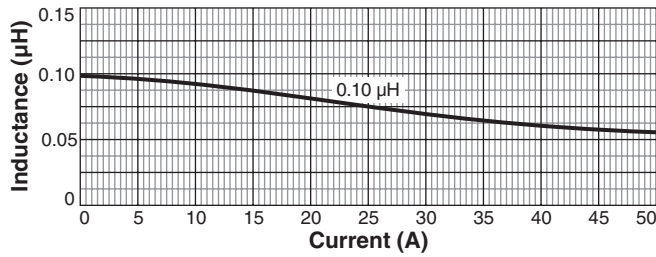
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**VERY LOW AC  
AND DC LOSSES**

# Shielded Power Inductor – XEL4020

## L vs Current



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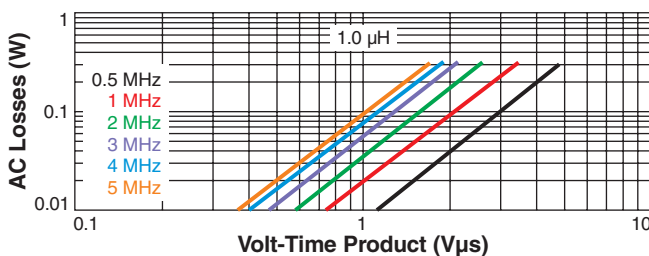
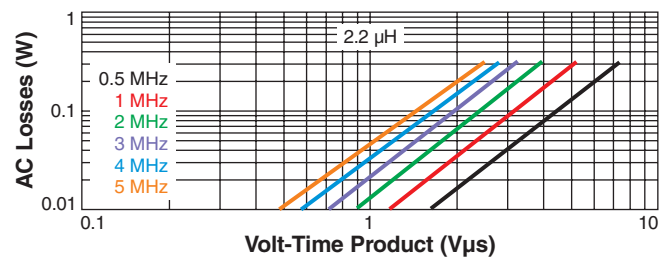
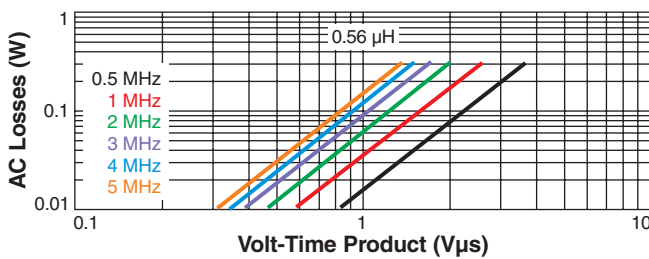
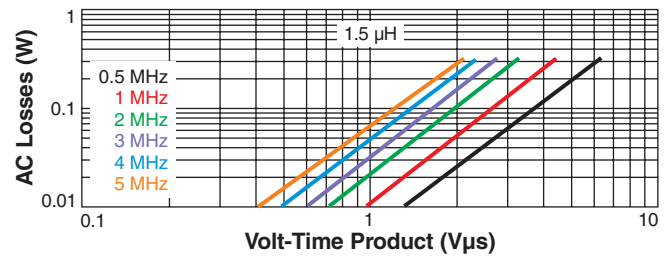
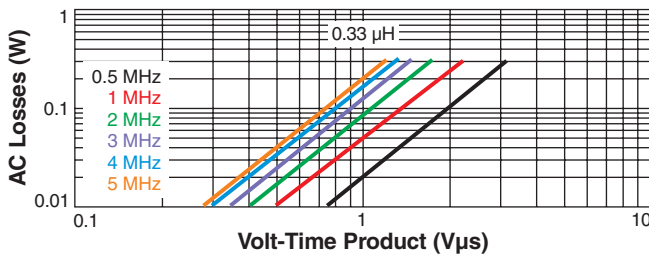
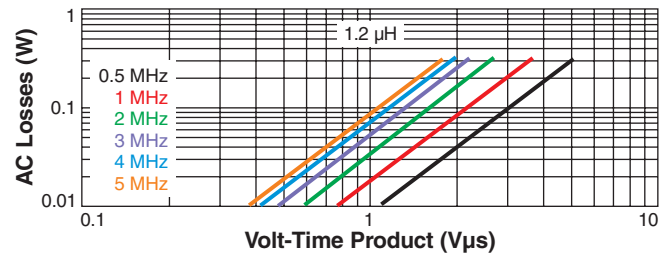
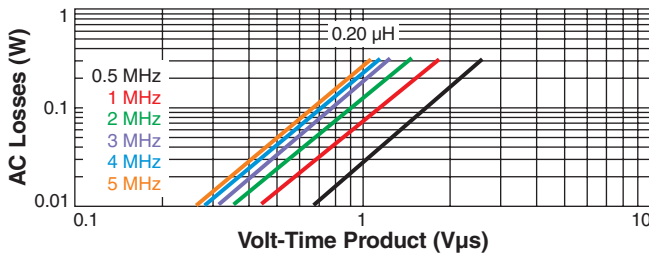
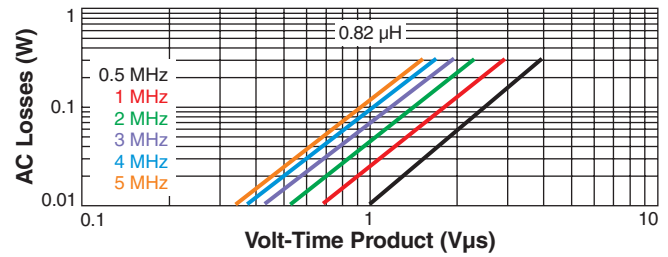
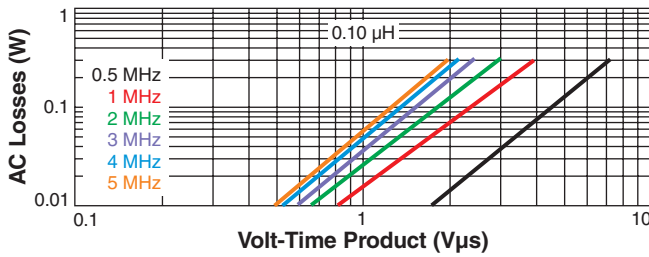
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**VERY LOW AC  
AND DC LOSSES**

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## AC Losses vs Volt-Time Product



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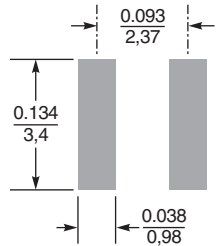
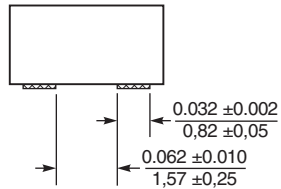
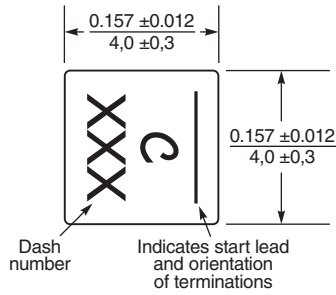
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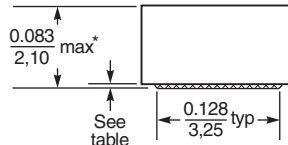
**VERY LOW AC  
AND DC LOSSES**

# Shielded Power Inductor – XEL4020



**Recommended  
Land Pattern**

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



| Dash number | Terminal thickness (typ) (in / mm) |
|-------------|------------------------------------|
| -101        | 0.0079 / 0.20                      |
| -201        | 0.0079 / 0.20                      |
| -331        | 0.0059 / 0.15                      |
| -561        | 0.0047 / 0.12                      |
| -821        | 0.0039 / 0.10                      |
| -102        | 0.0039 / 0.10                      |
| -122        | 0.0039 / 0.10                      |
| -152        | 0.0031 / 0.08                      |
| -222        | 0.0024 / 0.06                      |

\* 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.

## L vs Frequency

