

## Chip Inductors for RF Applications / Medical Applications (Wire wound-open)

FASTRON's wire wound chip inductors are designed for radio frequency (RF) applications that require optimal Q on high frequency circuits. Its gold flash pad metallization provides better solderability for a higher yield in production. Additionally, their encapsulation not only protects the winding but also allows for surface mount assembly. It comes in compact sizes (from 0402 to 1812) and is available in reel packaging. Unlisted inductance values are usually available upon request. Ferrite core versions are also available for selected case sizes for applications which require higher inductances in a smaller case size.

### Applications

Used in LC resonant circuits such as oscillator and signal generators, impedance matching, RF filters etc.

Mobile Telecommunication: GSM, CDMA, TCDMA, cordless phones, 2 way radio

Automotive Subsystems: TPMS, Keyless Entry, Anti-Theft, GPS

Wireless Communication: W-LAN, WIFI, WIMAX, RFID, Bluetooth

Non-magnetic versions for medical imaging applications: ASM series

### Technical Data

|                                             |                                                                                                                                                                                                                                                   |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L – Value (Rated Inductance)                | ≥ 1 MHz measured with HP 4286A RF LCR meter or equivalent at frequency $f_L$ , 25°C ambient<br>< 1 MHz measured with HP 4285A or equivalent at frequency $f_L$ , 25°C ambient                                                                     |
| Q – Factor (min)                            | ≥ 1 MHz measured with E4991B Impedance Analyzer or equivalent at frequency $f_Q$ , 25°C ambient<br>< 1 MHz measured with HP 4285A or equivalent at frequency $f_Q$ , 25°C ambient                                                                 |
| SRF (min)                                   | Measured with HP8753ES Network Analyzer or equivalent at 25°C ambient                                                                                                                                                                             |
| DCR (max)                                   | Measured at 25°C ambient                                                                                                                                                                                                                          |
| Rated DC Current: Irms                      | Max permissible current that causes a 15°C component temperature rise from 25°C ambient for AS, AQ, ASM & F<br>Max permissible current that causes a 40°C component temperature rise from 25°C ambient for AQC & FLP                              |
| Saturation Current: Isat                    | Max permissible DC bias at 25°C ambient that causes inductivity drop 30% (typ.) related to the unloaded inductivity for FLP.                                                                                                                      |
| Operating Temperature                       | -40°C to +100°C (Including component self-heating): F<br>-40°C to +125°C (Including component self-heating): FLP<br>-40°C to +140°C (Including component self-heating): AS, AQ, ASM & AQC                                                         |
| Surface Finishing                           | Epoxy molded flat top for perfect pick and place assembly                                                                                                                                                                                         |
| Pad Metallization                           | Gold flash as top layer for AS, AQ, F & AF<br>Silver-Palladium-Platinum for ASM & AQC<br>Tin as top layer for FLP                                                                                                                                 |
| Wire Termination                            | Spot welding                                                                                                                                                                                                                                      |
| Recommended Soldering Method                | <a href="#">Reflow</a>                                                                                                                                                                                                                            |
| Moisture Sensitivity Levels (MSL)           | MSL Level 1, indicating unlimited floor life at ≤ 30°C / 85% relative humidity                                                                                                                                                                    |
| Solderability                               | Using lead free solder (Sn 99.9) at 260°C ± 5°C for 5 ± 0.5 seconds, min 90% solder coverage of metallization<br>Standard: IEC 68-2-20 (Ta)                                                                                                       |
| Resistance to Soldering Heat                | Resistant to 260°C ± 5°C for 10 ± 1 seconds<br>Standard: IEC 68-2-20 (Tb)                                                                                                                                                                         |
| Resistance to Solvent                       | Resistant to isopropyl alcohol for 5 ± 0.5 minutes at 23°C ± 5°C<br>Standard: IEC 68-2-45                                                                                                                                                         |
| Climatic Test                               | Defined by the following standards<br>IEC 68-2-1 for Cold test: -55°C for 96 hours<br>IEC 68-2-2 for Dry heat test: +85°C for ferrite core and 125°C for ceramic core for 96 hours<br>IEC 60068-2-78 for Humidity test: 40°C at RH 95% for 4 days |
| Thermal Shock Test                          | Temperature cycle (ceramic): -40°C to +125°C to -40°C<br>Temperature cycle (ferrite): -40°C to +85°C to -40°C<br>Max/Min temperature duration: 15 minutes<br>Temperature transition duration: 5 minutes<br>Cycles: 25<br>Standard: MIL-STD-202G   |
| Adhesion of Soldered Component (Shear Test) | Components withstand a pushing force of 10N for 10 ± 1 seconds<br>Standard: IEC 60068-2-21, method Ue3                                                                                                                                            |
| Mechanical Shock                            | Mil-Std 202 Method 213, Condition C<br>3 axis, 6 times, total 18 shocks<br>100 G, 6 ms, half-sine                                                                                                                                                 |
| Vibration                                   | Mil-Std 202 Method 204<br>20 mins at 5G<br>10 Hz to 2000 Hz<br>12 cycles each of 3 orientations                                                                                                                                                   |

## Chip Inductors for RF Applications / Medical Applications (Wire wound-open)

Ordering Code Example : 0402AS-1N0X-YY ➔ 0402AS-1N0K-01

0402 AS - 1N0 X - YY  
(Case Size) (Core Type) (Inductance Value) (Tolerance) (Packaging Code)

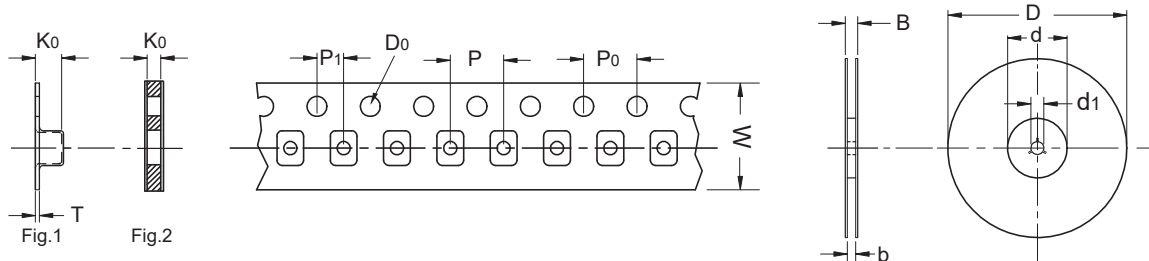
Case Sizes - 0402, 0603, 0805, 1008, 1206, 1210, 1812

Core Type - AS, AQ, AQC, ASM (Ceramic), F (Ferrite), AF (Ceramic & Ferrite), FLP (Ferrite Low Profile)

Tolerances - F (1%), G (2%), A (3%), J (5%), K (10%), L (15%), M (20%)

Packaging Code - 01, 04, 08 (Taped / Reel)

Packaging  
Specification  
Schematic



| Type | Packaging Code | D   | D0   | d   | d1 | B    | b    | W  | P | P0 | P1 | K0   | T    | Fig |
|------|----------------|-----|------|-----|----|------|------|----|---|----|----|------|------|-----|
| 0402 | 01,08          | 180 | 1.55 | 60  | 13 | 11.9 | 9.5  | 8  | 2 | 4  | 2  | 0.60 | -    | 2   |
| 0603 | 01,08          | 180 | 1.55 | 60  | 13 | 11.4 | 9.0  | 8  | 4 | 4  | 2  | 0.98 | -    | 2   |
| 0603 | 04             | 330 | 1.55 | 100 | 13 | 14.4 | 8.4  | 8  | 4 | 4  | 2  | 0.98 | -    | 2   |
| 0805 | 01,08          | 180 | 1.55 | 60  | 13 | 11.4 | 9.0  | 8  | 4 | 4  | 2  | 1.63 | 0.25 | 1   |
| 0805 | 04             | 330 | 1.55 | 100 | 13 | 14.4 | 8.4  | 8  | 4 | 4  | 2  | 1.63 | 0.25 | 1   |
| 1008 | 01,08          | 180 | 1.50 | 60  | 13 | 11.4 | 9.5  | 8  | 4 | 4  | 2  | 2.23 | 0.30 | 1   |
| 1008 | 04             | 330 | 1.55 | 100 | 13 | 14.4 | 8.4  | 8  | 4 | 4  | 2  | 1.63 | 0.25 | 1   |
| 1206 | 01,08          | 180 | 1.50 | 60  | 13 | 18.4 | 13.7 | 12 | 4 | 4  | 2  | 1.80 | 0.30 | 1   |
| 1206 | 04             | 330 | 1.50 | 100 | 13 | 18.4 | 12.4 | 12 | 4 | 4  | 2  | 1.80 | 0.30 | 1   |
| 1210 | 01             | 180 | 1.55 | 60  | 13 | 18.4 | 13.7 | 12 | 8 | 4  | 2  | 2.55 | 0.30 | 1   |
| 1210 | 04             | 330 | 1.55 | 100 | 13 | 18.4 | 12.4 | 12 | 8 | 4  | 2  | 2.55 | 0.30 | 1   |
| 1812 | 01             | 180 | 1.50 | 60  | 13 | 18.4 | 13.7 | 12 | 8 | 4  | 2  | 3.70 | 0.35 | 1   |
| 1812 | 04             | 330 | 1.50 | 100 | 13 | 18.4 | 12.4 | 12 | 8 | 4  | 2  | 3.70 | 0.35 | 1   |

## FASTRON's Component Key Characteristics



Approved according to AEC-Q200



Approved according to AEC-Q200 with High Temperature



Suitable for High Temperature



Part is RoHS conform and Halogen free



Mechanical Shock and Vibration Proof



Designed for High Q-values



Exceptionally High Q-values



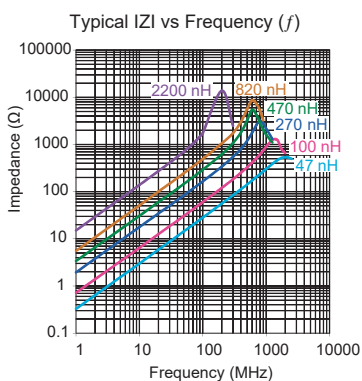
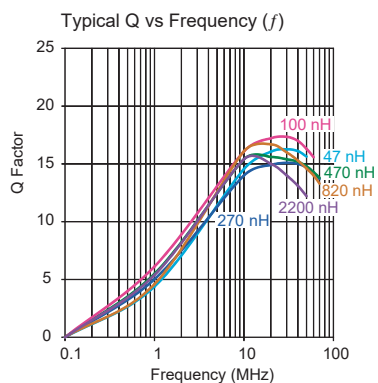
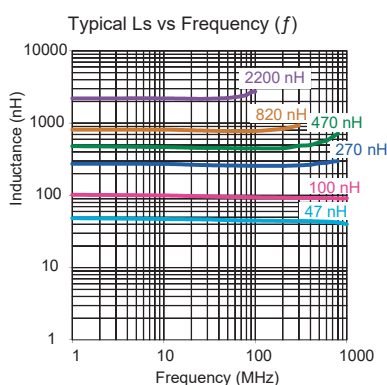
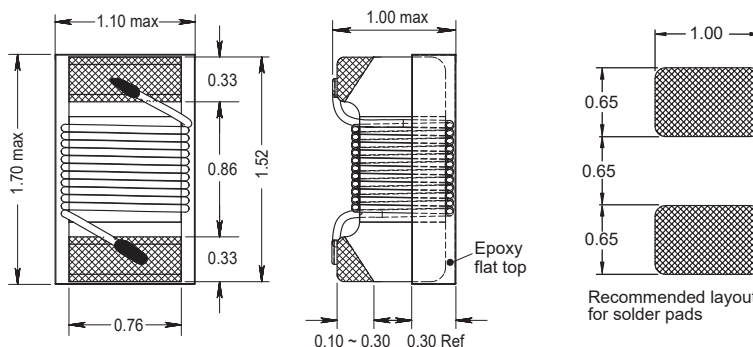
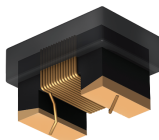
Optimized for High Currents



Optimized for High Voltages

**0603 F**

Engineer's Kit: EK-0603F-X



Single layer (typ)

| Part No       | Inductance<br>L (nH) | f <sub>L</sub><br>(MHz) | Tol<br>± (%) | Q<br>min | f <sub>Q</sub><br>(MHz) | SRF<br>(MHz) | DCR<br>max (Ω) | Rated DC<br>Current (A) |
|---------------|----------------------|-------------------------|--------------|----------|-------------------------|--------------|----------------|-------------------------|
| 0603F-047K-YY | 47                   | 7.9                     | 10           | 12       | 7.9                     | 1500 min     | 0.075          | 1.40                    |
| 0603F-072K-YY | 72                   | 7.9                     | 10           | 12       | 7.9                     | 1400 min     | 0.12           | 1.40                    |
| 0603F-R10K-YY | 100                  | 7.9                     | 10           | 12       | 7.9                     | 1150 min     | 0.13           | 1.40                    |
| 0603F-R12K-YY | 120                  | 7.9                     | 10           | 12       | 7.9                     | 1100 min     | 0.15           | 1.40                    |
| 0603F-R15K-YY | 150                  | 7.9                     | 10           | 12       | 7.9                     | 1050 min     | 0.15           | 1.30                    |
| 0603F-R18K-YY | 180                  | 7.9                     | 10           | 12       | 7.9                     | 950 min      | 0.15           | 1.30                    |
| 0603F-R22K-YY | 220                  | 7.9                     | 10           | 12       | 7.9                     | 800 min      | 0.16           | 0.95                    |
| 0603F-R24K-YY | 240                  | 7.9                     | 10           | 12       | 7.9                     | 800 min      | 0.16           | 0.95                    |
| 0603F-R27K-YY | 270                  | 7.9                     | 10           | 12       | 7.9                     | 775 min      | 0.30           | 0.71                    |
| 0603F-R33K-YY | 330                  | 7.9                     | 10           | 12       | 7.9                     | 725 min      | 0.46           | 0.56                    |
| 0603F-R39K-YY | 390                  | 7.9                     | 10           | 12       | 7.9                     | 620 min      | 0.51           | 0.50                    |
| 0603F-R47K-YY | 470                  | 7.9                     | 10           | 12       | 7.9                     | 540 min      | 0.62           | 0.42                    |
| 0603F-R56K-YY | 560                  | 7.9                     | 10           | 12       | 7.9                     | 525 min      | 0.44           | 0.55                    |
| 0603F-R68K-YY | 680                  | 7.9                     | 10           | 12       | 7.9                     | 260 min      | 0.52           | 0.47                    |
| 0603F-R78K-YY | 780                  | 7.9                     | 10           | 12       | 7.9                     | 460 min      | 0.69           | 0.39                    |
| 0603F-R82K-YY | 820                  | 7.9                     | 10           | 12       | 7.9                     | 410 min      | 0.83           | 0.40                    |
| 0603F-1R0K-YY | 1000                 | 7.9                     | 10           | 12       | 7.9                     | 280 min      | 1.10           | 0.40                    |
| 0603F-1R2K-YY | 1200                 | 7.9                     | 10           | 12       | 7.9                     | 230 min      | 1.70           | 0.35                    |
| 0603F-1R5K-YY | 1500                 | 7.9                     | 10           | 12       | 7.9                     | 230 min      | 1.70           | 0.35                    |
| 0603F-1R8K-YY | 1800                 | 7.9                     | 10           | 12       | 7.9                     | 170 typ      | 1.85           | 0.35                    |
| 0603F-2R2K-YY | 2200                 | 7.9                     | 10           | 12       | 7.9                     | 140 typ      | 2.00           | 0.32                    |

Core Material: Ferrite

Revision date: 11 Jan 2022

SPQ: Taped / Reel 1000 [-08]  
4000 [-01]  
15000 [-04]

Remarks: - Unlisted inductance values available upon request.  
- 2% and 5% tolerance available upon request.

# Mouser Electronics

Authorized Distributor

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