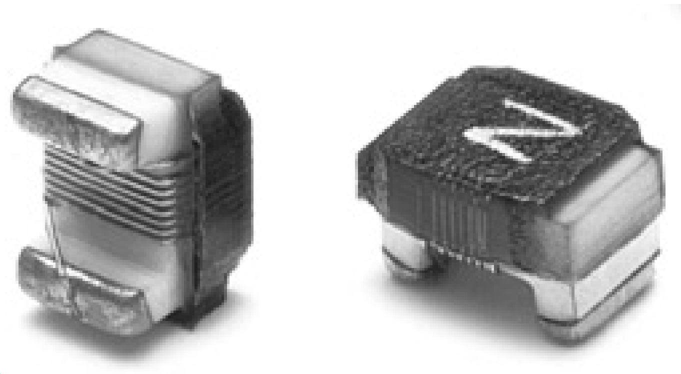
Pulse
A TECHNITROL COMPANY

Wire-Wound - 0402, 0603, 0805, 1008, 1206 & 1210

RF Chip Inductors



WC701.D (12/02)

WIRE-WOUND
RF CHIP INDUCTORS

Pulse has been the industry leader in bringing magnetic component solutions to customers worldwide since 1956, providing the industry's most complete selection of products for Local Area Network, Power, and Telecommunications applications. Pulse serves the international marketplace from its corporate headquarters in the U.S.A. in San Diego, California with worldwide headquarters in the United Kingdom, France, Singapore and Taiwan. State-of-the-art manufacturing facilities are located in China and France. In addition, leading-edge design centers are in the United States, Ireland, Canada, France, Taiwan, Singapore, and China.

Pulse provides a full range of qualifications and capabilities. This includes Just-in-Time, Dock-to-Stock, and EDI ordering to serve the growing needs of our customers.

Committed to quality, reliability, and application assistance, Pulse components bring the highest possible level of compliance to international standards. All development and manufacturing sites are ISO 9000 Registered. Pulse takes a leadership role in defining industry applications standards with active participation in IEEE, ANSI, ADSL Forum, CEBus Council, HomePNA™, and other committees, ensuring that the customer will have full standards compliance when Pulse products are on board!

Our leadership in bringing new technologies to our customers ranges from providing the world's first Ethernet transformer to introducing the first fully integrated Token Ring Line Interface Module. Pulse continues to advance magnetics technology with other "firsts"-a surface mount, 3 kV T1/E1 transformer, fully automated production of Pot Core Style transformers, ADSL POTS low pass filters and line transformers, HDSL/HDSL2 line transformers, and Home Phoneline Networking (HPN) filter modules. Most recently, Pulse introduced a surface mount diplex filter for cable modems, set-tops boxes, and internet devices.

The 0402 to 1210 Series of Miniature RF Inductors all contain wirewound technology and ceramic or ferrite cores, thus providing the ultimate performance demanded by today's RF applications. Inductors feature high Qs and SRFs and an industry standard size and footprint. Tighter inductance tolerances are available. CD Series parts are matched in performance to the other market leaders through the full operating frequency range. CD, CM, CQ, FD and FT Series inductors are available in tin/lead termination.

Sample kits are available from Pulse for all series. Please refer to page 2 for part numbers.

Use the Product Finder on the Pulse web site: **http://www.pulseeng.com/Products**

WIRE-WOUND
RF CHIP INDUCTORS

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The 0402 to 1210 series range of Miniature Chip Inductors contains the very latest in wire-wound technology and Ceramic or Ferrite Core, thus providing the ultimate in performance demanded by today's Wireless products. The Inductors provide high Q and SRFs in an industry standard size and footprint.

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US 858 674 8100 • UK 44 1483 401 700 • France 33 3 84 35 04 04 • Singapore 65 287 8998 • Taiwan 886 2 2698 0228 • Hong Kong 852 2788 6588 • http://www.pulseeng.com

WIRE-WOUND
RF CHIP INDUCTORS

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Part Number Legend

PE — 0805 C D 121 K T T

PACKAGE STYLE
(0402, 0603, 0805, 1008, 1210 or 1206)

CORE MATERIAL
C = Ceramic (Alumina)
CD = Standard Range
CM = High Performance
CQ = High Q
F = Ferrite

INDUCTANCE (nH)
1st 2 digits are significant.
3rd digit is multiplier.

TOLERANCE
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%

TERMINATION
T = AgPd/Tin-Lead

PACKAGING
T = Tape & Reel (7" reel/8 mm wide tape/4 mm pitch)

Size	Qty./reel
0402	3000 pieces
0603	2000 pieces
0805	2000 pieces
1008	1600 pieces
1210	2000 pieces
1206	2000 pieces

Design Kits Available from Pulse

Product KIT Series	Kit Part Number	Tolerance
0402CD Series	PE-0402CDKIT-T	5%
0603CD Series	PE-0603CDKIT-T	2%
0805CD Series	PE-0805CDKIT-T	2%
0805FT Series	PE-0805FTKIT-T	5%
1008CD Series	PE-1008CDKIT-T	2%
1008FD Series	PE-1008FDKIT-T	5%
1210FT Series	PE-1210FTKIT-T	5%
1206CD Series	PE-1206CDKIT-T	5%

NOTE: 0805CM, 1008CM and 1008CQ design kits are not available at this time.

WIRE-WOUND RF CHIP INDUCTORS
Selection Guides

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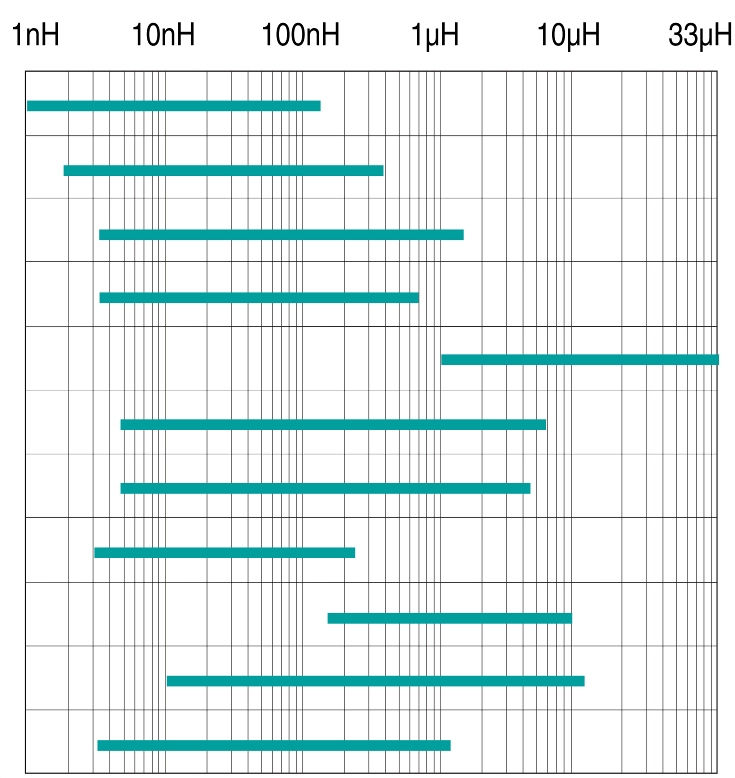
Electrical Specifications

Part Number	Size	Construction	Inductance (nH)
0402CD	0402	Wirewound	1.0 to 120
0603CD	0603	Wirewound	1.8 to 390
0805CD	0805	Wirewound	3.3 to 1500
0805CM	0805	Wirewound	3.3 to 680
0805FT	0805	Wirewound	1000 to 68000
1008CD	1008	Wirewound	4.7 to 5600
1008CM	1008	Wirewound	4.7 to 4700
1008CQ	1008	Wirewound	3.0 to 220
1008FD	1008	Wirewound	150 to 10000
1210FT	1210	Wirewound	10 to 12000
1206CD	1206	Wirewound	3.3 to 1200



CD Series: Standard 100% compatible with other market leaders.
CM Series: Offers improved electrical performance to Pulse CD series.
CQ Series: Offers high Q and high Idc series.

Competition Cross Reference

		Pulse Wire-wound Inductors								
Type	**Competition**	**0402CD**	**0603CD**	**0805CD**	**0805FT**	**1008CQ**	**1008CD**	**1008FD**	**1210FT**	**1206CD**
Wire Wound	Coilcraft	0402CS	0603CS	0805CS/ HS/HT		1008HQ	1008CS/ HT/CT	1008LS		1206CS
	Murata			LQW1608A			LQN21A			
	Taiyo Yuden			LB2012T			LEM_2520T			
	TDK				NL2016		NLH2520		NL3225	

WIRE-WOUND RF CHIP INDUCTORS
Performance Specifications

Pulse
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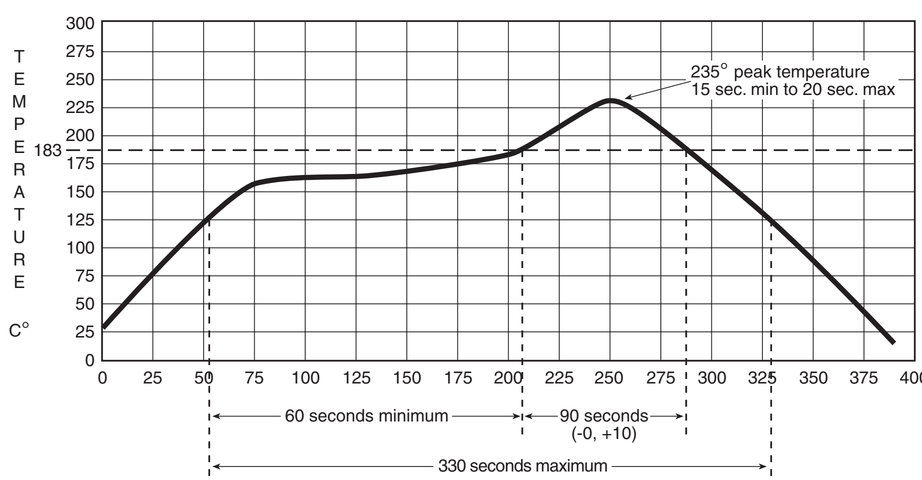
Environmental Testing

Storage and Operating Temperature Range: **-40 to +125°C**	Inductors are subjected to the extremes for 48 hours. Then tested at 25°C	There shall be no deformation or change in appearance Inductance shall not change by more than ±5% Q values shall not change by more than ±10%
Thermal Shock: **-40 to +85°C**	Inductors are subjected to 30 cycles for 30 minutes at each extreme. Then tested at 25°C	
Moisture Resistance	Inductors are subjected to 10 cycles of 24 hours at 70°C with 90 to 95% Relative Humidity Then tested at 25°C	
Operating Life	Inductors are subjected to 1000 hours at 85°C with 85% Relative Humidity with the rated current applied	There shall be no Damaged, Open or Shorted Windings

Mechanical Testing

Temperature Range:	Inductors are subjected to the following: Use a solder pot at 260°C, with RMA Flux. Each termination is immersed in 63Sn/37Pb molten solder for 4 to 6 seconds.	There shall be no deformation or change in appearance Inductance shall not change by more than ±5% Q values shall not change by more than ±10%
Recommended Solder Heat Resistance Profile		

WIRE-WOUND RF CHIP INDUCTORS
Performance Specifications

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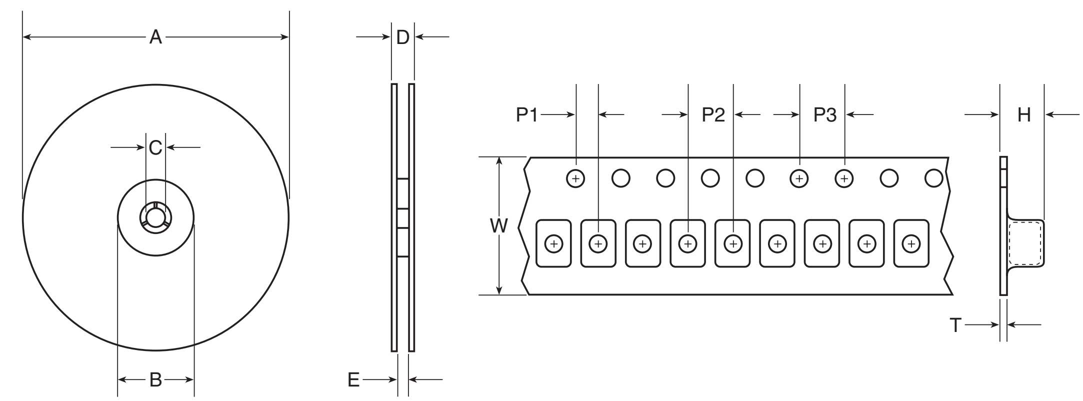
Mechanical Testing		
Vibration (Random)	Samplers are subjected to random vibration as per NAVMAT P9492	There shall be no deformation or change in appearance Inductance shall not change by more than ±5% Q values shall not change by more than ±10%
Mechanical Shock	Inductors are subjected to one half sine wave pulse (8700 g's for 0.3 ms) in each directional axis for a total of 18 shocks	
Moisture Resistance	Reflow Inductors on to test pads using 63 Sn/37 Pb solder paste (IR Reflow profile = 200°C for 30 seconds or peak 235°C for 20 seconds)	The inductors shall withstand a minimum force of 1000 g's in any direction using a dynamometer force guage.

Tape and Reel Specifications



Packaging Specifications												
Series	**Parts per Reel**	**Reel Dimensions (mm)**					**Tape Dimensions (mm)**					
		A	**B**	**C**	**D**	**E**	**W**	**P1**	**P2**	**P3**	**H**	**T**
0402CD	3000	178	50	13	14.4	8.4	8	2	4	4	1.1	0.3
0603CD	2000	178	50	13	14.4	8.4	8	2	4	4	1.7	0.3
0805CD	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
0805CM	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
0805FT	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
1008CD	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
1008CM	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
1008CQ	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
1008FD	2000	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
1210FT	2000	330	50	13	18.4	14.4	12	8	4	2	4.0	0.3
1206CD	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3

NOTE: P1, P2 and P3 are same for all chip inductor series. Keeping the same dimensions for guide hole and pocket pitch (P1), pocket pitch (P2), guide hole pitch (P3) and tape width (8mm) for all series, enables the packaging machine to maintain the same settings while changing models. The only difference between the series are the parts per reel which contribute to a different length of tapes/reel per model.

WIRE-WOUND RF CHIP INDUCTORS - 0402CD SERIES

Pulse
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- Wirewound ceramic core construction
- High Q values
- High self resonant frequency
- Tin/lead terminations
- Industry standard 0402 (1005) surface mount land pattern
- Refer to page 3 for Competition Cross Reference

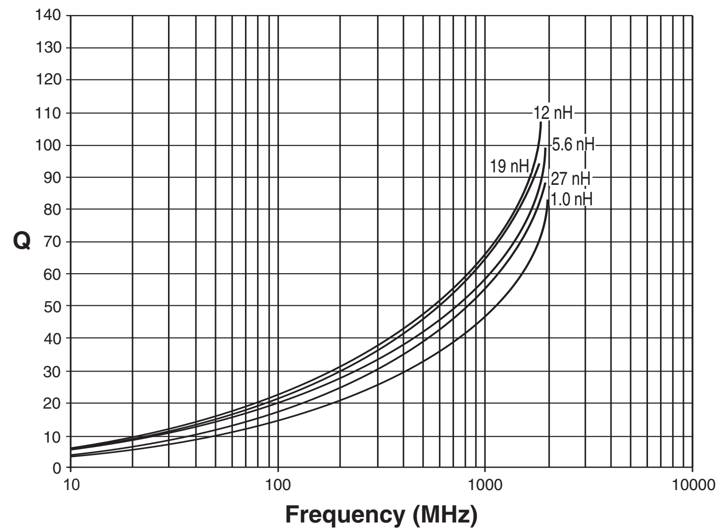
Electrical Specifications @ 25°C

Part Number	Inductance 1 (nH)	Standard Tolerance	Optional Tolerance	Q 2 (MIN)	SRF 3 (MHz MIN)	R_{DC} (Ω MAX)	I_{DC} (mA MAX)	900 MHz (L TYP)	900 MHz (Q TYP)	1.7 GHz (L TYP)	1.7 GHz (Q TYP)
PE-0402CD1N0KTT	1.0 @ 250 MHz	±10% (K)	±5% (J)	16 @ 250 MHz	6000	0.045	1360	1.02	77	1.02	69
PE-0402CD1N2KTT	1.2 @ 250 MHz	±10% (K)	±5% (J)	16 @ 250 MHz	6000	0.048	1300	1.10	73	1.02	70
PE-0402CD1N8KTT	1.8 @ 250 MHz	±10% (K)	±5% (J)	16 @ 250 MHz	6000	0.060	1100	1.78	60	1.78	75
PE-0402CD2N0KTT	2.0 @ 250 MHz	±10% (K)	±5% (J)	16 @ 250 MHz	6000	0.070	1040	1.93	54	1.93	75
PE-0402CD2N2KTT	2.2 @ 250 MHz	±10% (K)	±5% (J)	19 @ 250 MHz	6000	0.070	960	2.19	59	2.23	100
PE-0402CD3N3KTT	3.3 @ 250 MHz	±10% (K)	±5% (J)	19 @ 250 MHz	6000	0.066	840	3.10	65	3.12	87
PE-0402CD3N6KTT	3.6 @ 250 MHz	±10% (K)	±5% (J)	19 @ 250 MHz	6000	0.066	840	3.56	45	3.62	71
PE-0402CD3N9KTT	3.9 @ 250 MHz	±10% (K)	±5% (J)	19 @ 250 MHz	5800	0.066	840	3.89	50	4.00	75
PE-0402CD4N7KTT	4.7 @ 250 MHz	±10% (K)	±5% (J)	20 @ 250 MHz	5800	0.078	810	4.74	54	4.85	79
PE-0402CD5N1KTT	5.1 @ 250 MHz	±10% (K)	±5% (J)	20 @ 250 MHz	5800	0.083	800	5.15	56	5.25	82
PE-0402CD5N6KTT	5.6 @ 250 MHz	±10% (K)	±5% (J)	20 @ 250 MHz	5800	0.083	760	5.16	54	5.28	81
PE-0402CD6N2KTT	6.2 @ 250 MHz	±10% (K)	±5% (J)	20 @ 250 MHz	5800	0.083	760	6.16	52	6.37	76
PE-0402CD7N5KTT	7.5 @ 250 MHz	±10% (K)	±5% (J)	22 @ 250 MHz	5800	0.104	680	7.91	60	8.22	88
PE-0402CD8N2KTT	8.2 @ 250 MHz	±10% (K)	±5% (J)	22 @ 250 MHz	4400	0.104	680	8.5	57	8.85	84
PE-0402CD9N0KTT	9.0 @ 250 MHz	±10% (K)	±5% (J)	22 @ 250 MHz	4160	0.104	681	9.07	62	9.53	78
PE-0402CD100KTT	10 @ 250 MHz	±10% (K)	±5% (J)	21 @ 250 MHz	3900	0.195	480	9.8	50	10.1	67
PE-0402CD110KTT	11 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	3680	0.120	640	10.7	52	11.2	78
PE-0402CD120KTT	12 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	3600	0.120	640	11.9	53	12.7	71
PE-0402CD150KTT	15 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	3280	0.172	560	14.6	55	15.5	77
PE-0402CD190KTT	19 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	3040	0.202	480	19.1	50	21.1	67
PE-0402CD230KTT	23 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	2720	0.214	400	23.8	49	26.9	64
PE-0402CD270KTT	27 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	2480	0.298	400	28.7	49	33.5	63
PE-0402CD330KTT	33 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	2380	0.340	350	39.0	46	46.1	56
PE-0402CD360KTT	36 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	2320	0.403	320	39.5	44	48.4	53
PE-0402CD400KTT	40 @ 250 MHz	±10% (K)	±5% (J)	24 @ 250 MHz	2240	0.438	320	39.0	44	47.4	33
PE-0402CD470KTT	47 @ 250 MHz	±10% (K)	±5% (J)	20 @ 250 MHz	2100	0.830	150	50.0	38	–	–
PE-0402CD680KTT	68 @ 250 MHz	±10% (K)	±5% (J)	18 @ 250 MHz	1840	0.970	120	72.0	34	–	–
PE-0402CD121KTT	120 @ 250 MHz	±10% (K)	±5% (J)	14 @ 250 MHz	1520	1.220	90	94.0	28	–	–

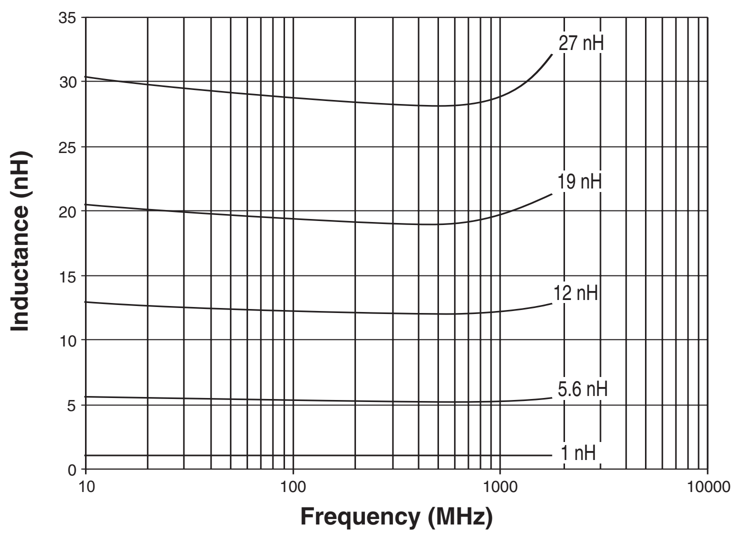
Notes:

1. Inductance measured using a HP4286A RF Impedance Analyzer. (Please note that inductance information is not stamped on part, because of the extremely small size).
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15°C maximum temperature rise.
6. Sample Kit Part Number: **PE-0402CDKIT-T**
7. Component Weight: 0.002 grams typical.

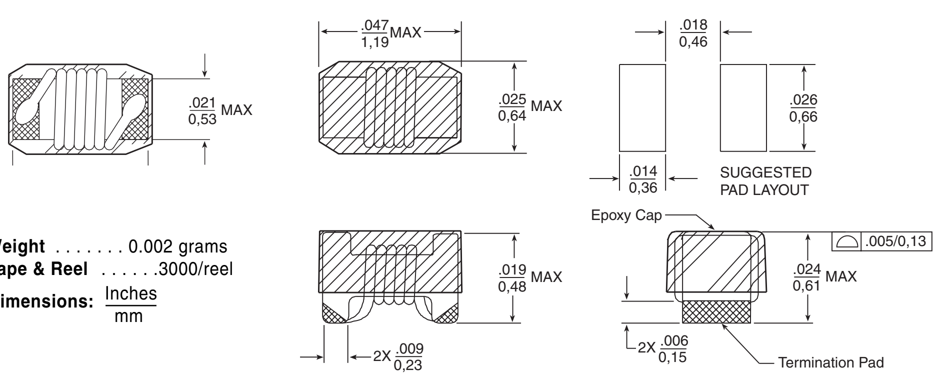
Typical Q vs Frequency

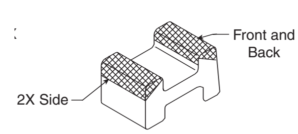


Typical Inductance vs Frequency



Mechanical





Pictorial view of core (for reference only)

Weight .... 0.002 grams
Tape & Reel 3000/reel
Dimensions: Inches / mm

WIRE-WOUND RF CHIP INDUCTORS - 0603CD SERIES

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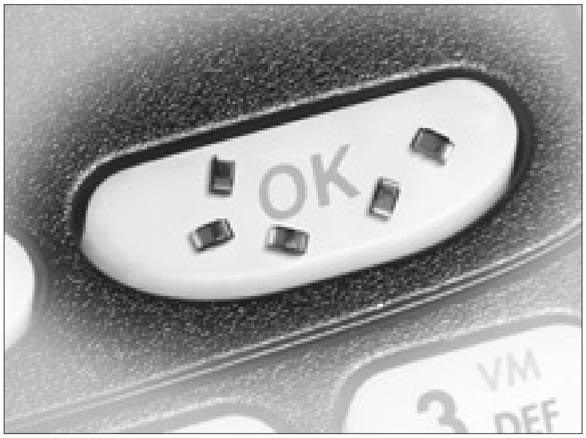


- Wirewound ceramic core construction
- High Q values
- High self resonant frequency
- Tin/lead terminations
- Industry standard 0603 (1608) surface mount land pattern
- See page 3 for Competition Cross Reference

Electrical Specifications @ 25°C

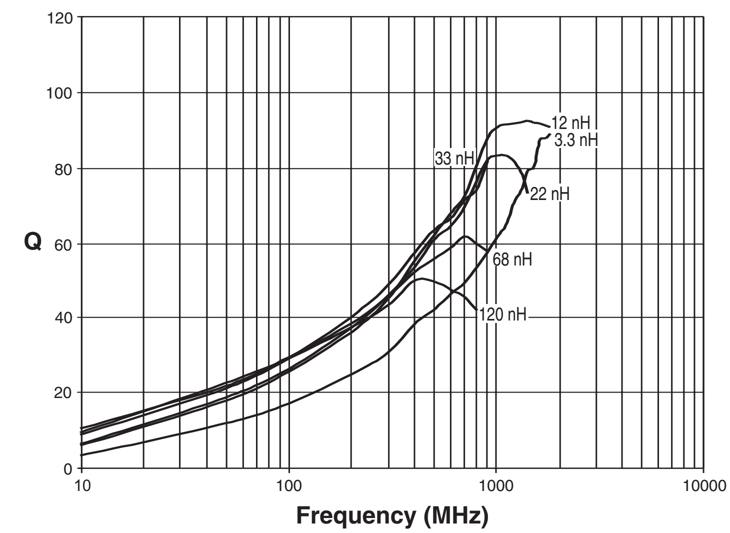
Part Number	Inductance [1] (nH)	Standard Tolerance	Optional Tolerance	Q [2] (MIN)	SRF [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)	900 MHz (L TYP)	900 MHz (Q TYP)	1.7 GHz (L TYP)	1.7 GHz (Q TYP)
PE-0603CD010KTT	1.8 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	17 @ 250 MHz	>6000	0.045	700	1.68	34	1.7	50
PE-0603CD3N6KTT	3.6 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	23 @ 250 MHz	>6000	0.070	700	3.60	46	3.6	65
PE-0603CD030KTT	3.9 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	23 @ 250 MHz	>6000	0.080	700	3.85	49	4.0	69
PE-0603CD4N3KTT	4.3 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	21 @ 250 MHz	>6000	0.102	700	3.85	49	4.0	69
PE-0603CD040KTT	4.7 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	20 @ 250 MHz	5800	0.116	700	3.85	49	4.0	69
PE-0603CD060KTT	6.8 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	29 @ 250 MHz	5800	0.110	700	6.8	58	7.1	79
PE-0603CD080KTT	8.2 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	31 @ 250 MHz	5000	0.120	700	8.2	62	8.7	77
PE-0603CD100KTT	10 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	35 @ 250 MHz	4800	0.130	700	10	64	10.8	84
PE-0603CD120KTT	12 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	35 @ 250 MHz	4000	0.130	700	12	70	13	85
PE-0603CD150KTT	15 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	36 @ 250 MHz	4000	0.170	700	16	72	17	87
PE-0603CD160KTT	16 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	36 @ 250 MHz	3800	0.170	700	17	72	19	98
PE-0603CD180KTT	18 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	35 @ 250 MHz	3100	0.170	700	19	71	22	114
PE-0603CD220KTT	22 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	41 @ 250 MHz	3000	0.190	700	23	83	27	128
PE-0603CD240KTT	24 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	41 @ 250 MHz	3050	0.200	600	25	85	29	128
PE-0603CD270KTT	27 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	40 @ 250 MHz	2800	0.220	600	28	86	34	129
PE-0603CD330KTT	33 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	40 @ 250 MHz	2300	0.220	600	36	67	51	42
PE-0603CD390KTT	39 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	40 @ 250 MHz	2200	0.250	600	43	77	61	75
PE-0603CD430KTT	43 @ 250 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	40 @ 250 MHz	2100	0.260	600	48	72	69	62
PE-0603CD470KTT	47 @ 200 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	41 @ 200 MHz	2000	0.280	600	53	66	85	38
PE-0603CD560KTT	56 @ 200 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	40 @ 200 MHz	1900	0.310	600	67	61	131	26
PE-0603CD680KTT	68 @ 200 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	37 @ 200 MHz	1700	0.340	600	82	52	210	14
PE-0603CD720KTT	72 @ 150 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	34 @ 150 MHz	1700	0.490	400	83	82	159	65
PE-0603CD820KTT	82 @ 150 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	34 @ 150 MHz	1700	0.540	400	100	77	250	34
PE-0603CD101KTT	100 @ 150 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	35 @ 150 MHz	1400	0.580	400	130	57	—	—
PE-0603CD111KTT	110 @ 150 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	33 @ 150 MHz	1350	0.610	300	150	64	—	—
PE-0603CD121KTT	120 @ 150 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	34 @ 150 MHz	1300	0.650	300	179	41	—	—
PE-0603CD151KTT	150 @ 150 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	28 @ 150 MHz	990	0.920	280	250	25	—	—
PE-0603CD181KTT	180 @ 100 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	25 @ 100 MHz	990	1.250	240	305	22	—	—
PE-0603CD221KTT	220 @ 100 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	25 @ 100 MHz	900	1.900	200	480	8	—	—
PE-0603CD271KTT	270 @ 100 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	24 @ 100 MHz	900	2.300	170	980	4	—	—
PE-0603CD331KTT	330 @ 100 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	22 @ 100 MHz	840	2.600	150	1100	3	—	—
PE-0603CD391KTT	390 @ 100 MHz	+/-10% (K)	+/-5% (J), +/-2% (G)	20 @ 100 MHz	790	2.900	130	1220	3	—	—

Notes:

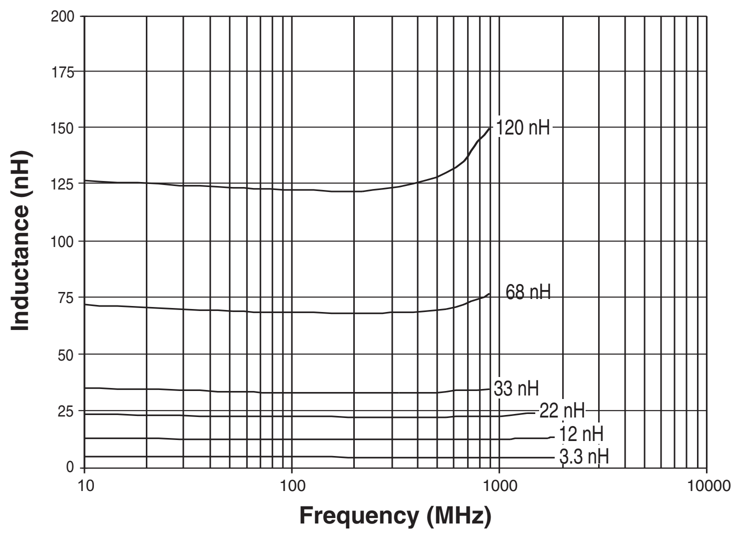
1. Inductance measured using a HP4286A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15°C maximum temperature rise.
6. Sample Kit Part Number: **PE-0603CDKIT-T**

WIRE-WOUND RF CHIP INDUCTORS - 0603CD SERIES

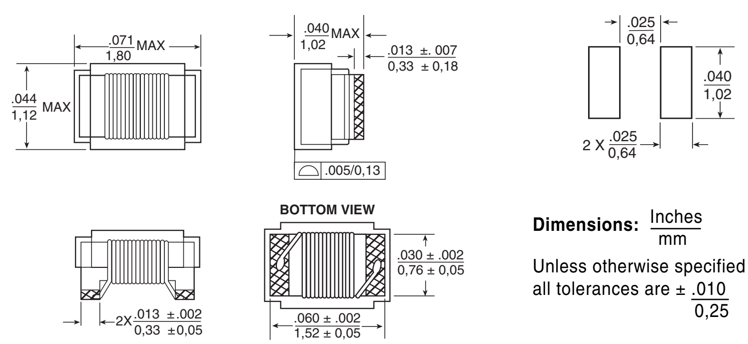
Typical Q vs Frequency



Typical Inductance vs Frequency



Mechanical



Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND RF CHIP INDUCTORS - 0805CD SERIES

Pulse
A TECHNITROL COMPANY

- Wirewound ceramic core construction
- High Q values and self-resonant frequency
- Tin/lead terminations
- Industry standard 0805 (2012) surface mount land pattern
- Refer to page 3 for Competition Cross Reference

Electrical Specifications @ 25°C

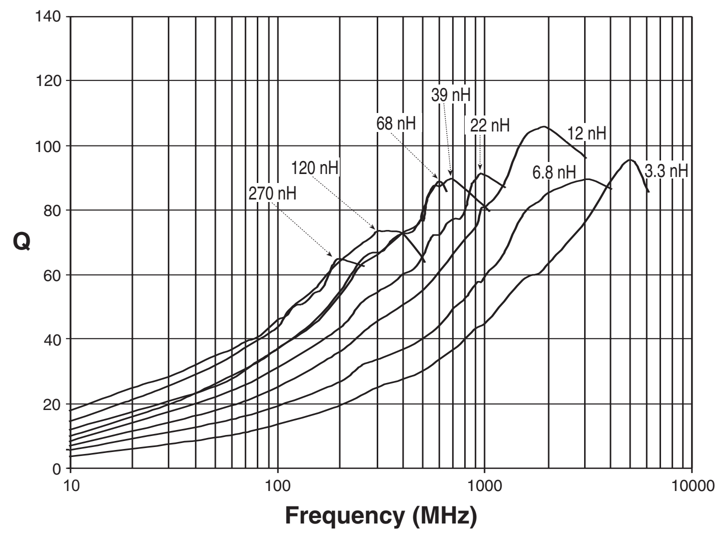
Part Number	Inductance [1] (nH)	Standard Tolerance	Optional Tolerances	Q [2] (MIN)	SRF [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)	Part Code
PE-0805CD030KTT	3.3 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 1500 MHz	6000	0.080	600	A
PE-0805CD050KTT	5.6 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 1500 MHz	5800	0.100	600	—
PE-0805CD060KTT	6.8 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 1000 MHz	5500	0.110	600	B
PE-0805CD080KTT	8.2 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 1000 MHz	4700	0.120	600	C
PE-0805CD100KTT	10.2 @ 250 MHz	±10% (K)	±5% (J)	50 @ 500 MHz	4100	0.140	600	P1
PE-0805CD120KTT	12 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 500 MHz	4000	0.150	600	D
PE-0805CD150KTT	15 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 500 MHz	3400	0.170	600	E
PE-0805CD180KTT	18 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 500 MHz	3300	0.200	600	F
PE-0805CD220KTT	22 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	55 @ 500 MHz	2600	0.220	500	G
PE-0805CD270KTT	27 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	55 @ 500 MHz	2500	0.250	500	H
PE-0805CD330KTT	33 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	2050	0.270	500	J
PE-0805CD390KTT	39 @ 250 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	2000	0.290	500	K
PE-0805CD470KTT	47 @ 200 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1650	0.310	500	L
PE-0805CD560KTT	56 @ 200 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1550	0.340	500	M
PE-0805CD680KTT	68 @ 200 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1450	0.380	500	N
PE-0805CD820KTT	82 @ 150 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	65 @ 500 MHz	1300	0.420	400	O
PE-0805CD910KTT	91 @ 150 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	65 @ 500 MHz	1250	0.440	400	—
PE-0805CD101KTT	100 @ 150 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	65 @ 500 MHz	1200	0.460	400	P
PE-0805CD121KTT	120 @ 150 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 250 MHz	1100	0.510	400	R
PE-0805CD151KTT	150 @ 100 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 250 MHz	920	0.560	400	S
PE-0805CD181KTT	180 @ 100 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 250 MHz	870	0.640	400	T
PE-0805CD221KTT	220 @ 100 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 250 MHz	850	0.700	400	U
PE-0805CD271KTT	270 @ 100 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	48 @ 250 MHz	650	1.000	350	X
PE-0805CD331KTT	330 @ 100 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	48 @ 250 MHz	600	1.400	310	Y
PE-0805CD391KTT	390 @ 100 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	48 @ 250 MHz	560	1.500	290	A1
PE-0805CD471KTT	470 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	33 @ 100 MHz	375	1.760	250	B1
PE-0805CD561KTT	560 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	23 @ 50 MHz	340	1.900	230	C1
PE-0805CD681KTT	680 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	23 @ 50 MHz	188	2.200	190	D1
PE-0805CD821KTT	820 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	23 @ 50 MHz	215	2.350	180	F1
PE-0805CD102KTT	1000 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	25 @ 50 MHz	200	3.600	150	G1
PE-0805CD122KTT	1200 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	25 @ 50 MHz	200	3.900	120	H1
PE-0805CD152KTT	1500 @ 25 MHz	±10% (K)	±5% (J), ±2% (G)	23 @ 50 MHz	180	4.300	100	—

NOTES:

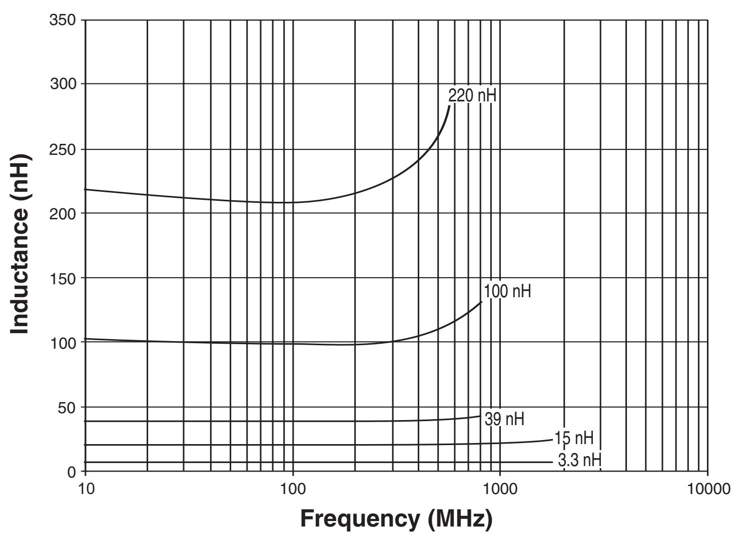
1. Inductance measured using a HP4286A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15ºC maximum temperature rise.
6. Sample Kit Part Number: **PE-0805CDKIT-T**

WIRE-WOUND RF CHIP INDUCTORS - 0805CD SERIES

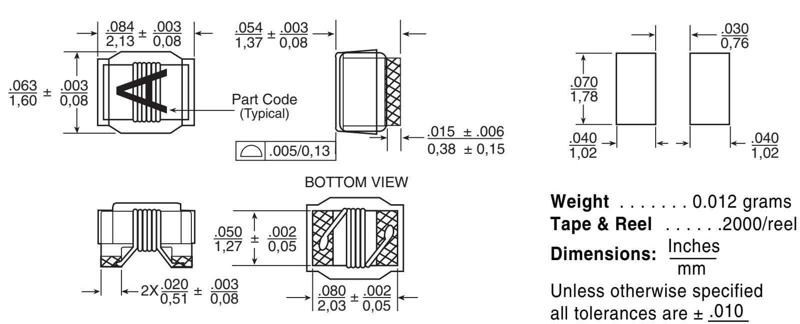
Typical Q vs Frequency



Typical Inductance vs Frequency



Mechanical



Weight . . . . 0.012 grams
Tape & Reel 2000/reel
Dimensions: Inches/mm

Unless otherwise specified all tolerances are ± .010/0,25

WIRE-WOUND RF CHIP INDUCTORS - 0805CM SERIES

Pulse
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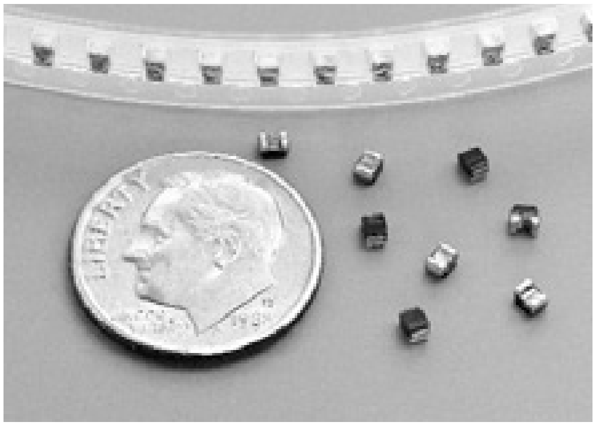


- Wirewound ceramic core construction
- High Q values and self-resonant frequency
- Tin/lead terminations
- Industry standard 0805 (2012) surface mount land pattern
- Refer to page 3 for Competition Cross Reference

Electrical Specifications @ 25°C

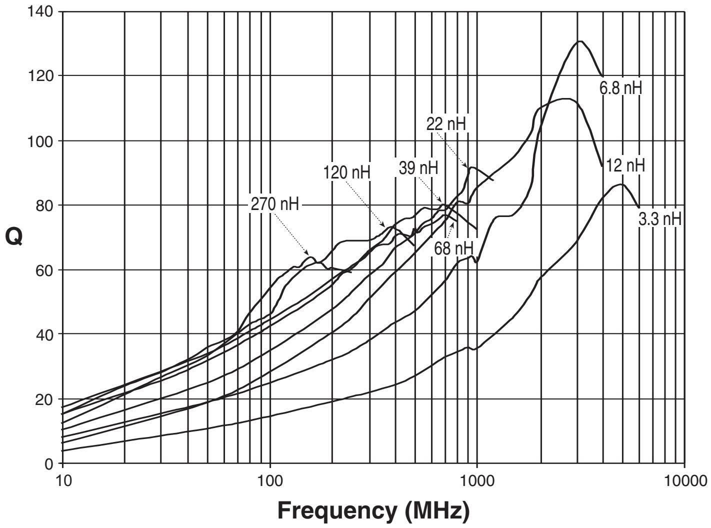
Part Number	Inductance [1] (nH)	Standard Tolerance	Optional Tolerances	Q [2] (MIN)	SRF [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)	Part Code
PE-0805CM030KTT	3.3 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	37 @ 1500 MHz	5000	0.060	600	A
PE-0805CM060KTT	6.8 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	46 @ 1000 MHz	5000	0.150	600	B
PE-0805CM080KTT	8.2 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	47 @ 1000 MHz	3900	0.130	600	C
PE-0805CM120KTT	12 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 500 MHz	2900	0.130	600	D
PE-0805CM150KTT	15 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 500 MHz	2700	0.150	600	E
PE-0805CM180KTT	18 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 500 MHz	2600	0.130	600	F
PE-0805CM220KTT	22 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	55 @ 500 MHz	2200	0.130	500	G
PE-0805CM270KTT	27 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	55 @ 500 MHz	2000	0.230	500	H
PE-0805CM330KTT	33 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	58 @ 500 MHz	1800	0.180	500	J
PE-0805CM390KTT	39 @ 250 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1600	0.230	500	K
PE-0805CM470KTT	47 @ 200 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1650	0.250	500	L
PE-0805CM560KTT	56 @ 200 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1300	0.160	500	M
PE-0805CM680KTT	68 @ 200 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1350	0.180	500	N
PE-0805CM820KTT	82 @ 150 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 500 MHz	1300	0.360	400	O
PE-0805CM101KTT	100 @ 150 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	55 @ 500 MHz	1100	0.360	400	P
PE-0805CM121KTT	120 @ 150 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	45 @ 250 MHz	1100	0.560	350	R
PE-0805CM151KTT	150 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 250 MHz	900	0.560	350	S
PE-0805CM181KTT	180 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 250 MHz	875	0.690	300	T
PE-0805CM221KTT	220 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	45 @ 250 MHz	800	0.850	300	U
PE-0805CM271KTT	270 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 100 MHz	800	0.900	300	X
PE-0805CM331KTT	330 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 100 MHz	775	1.300	300	Y
PE-0805CM391KTT	390 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 100 MHz	725	1.700	300	A1
PE-0805CM471KTT	470 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	38 @ 100 MHz	600	3.250	240	B1
PE-0805CM561KTT	560 @ 100 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 100 MHz	600	3.100	240	C1
PE-0805CM681KTT	680 @ 50 MHz	± 10% (K)	±5% (J), ±2% (G), ±1% (F)	32 @ 50 MHz	550	3.500	240	D1

NOTES:

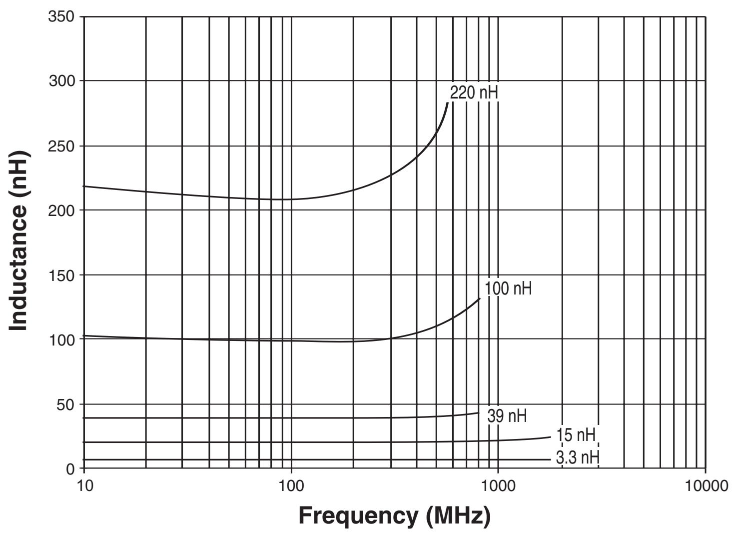
1. Inductance measured using a HP4286A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15ºC maximum temperature rise.

WIRE-WOUND RF CHIP INDUCTORS - 0805CM SERIES

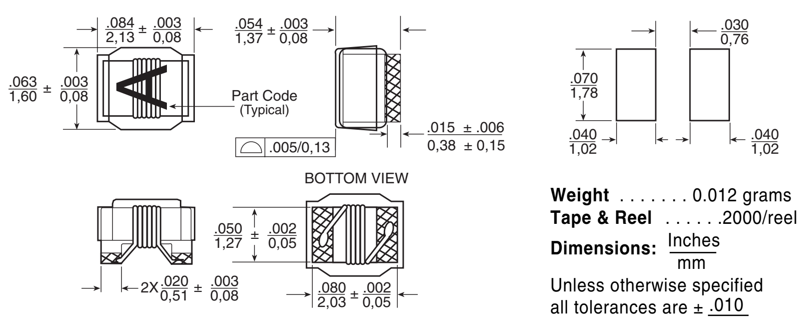
Typical Q vs Frequency



Typical Inductance vs Frequency



Mechanical



Weight . . . . 0.012 grams
Tape & Reel 2000/reel
Dimensions: Inches / mm
Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND RF CHIP INDUCTORS - 0805FT SERIES

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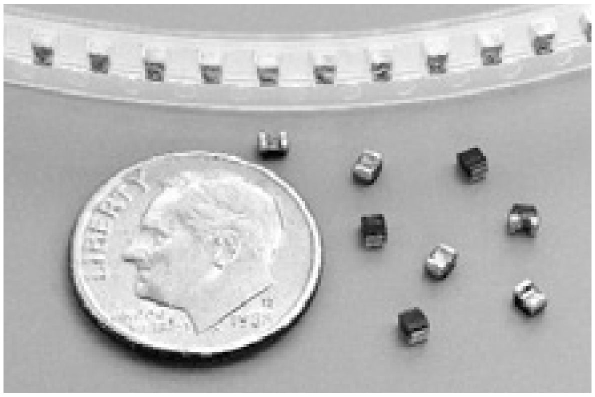


- Wirewound ferrite core construction
- High Q values and self-resonant frequency
- Gold terminations
- Industry standard 0805 (2012) surface mount land pattern
- Refer to page 3 for Competition Cross Reference

Electrical Specifications @ 25°C

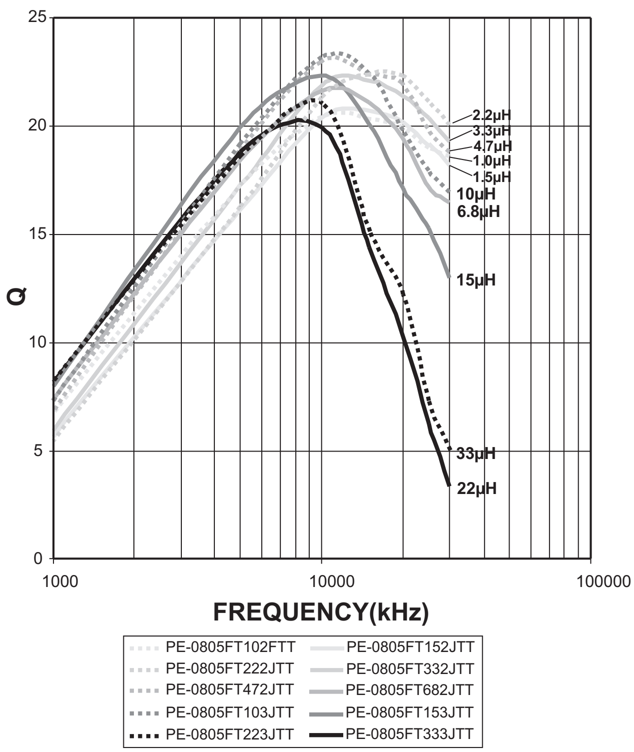
Part Number	Inductance [1] (µH)	Tolerance	Q [2] (MIN)	SRF [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)	Part Code
PE-0805FT102KTT	1.0 @ 7.96 MHz	+/-10%, +/- 5%	15 @ 7.96 MHz	63	1.20	245	A
PE-0805FT152KTT	1.5 @ 7.96 MHz	+/-10%, +/- 5%	15 @ 7.96 MHz	60	1.45	225	B
PE-0805FT222KTT	2.2 @ 7.96 MHz	+/-10%, +/- 5%	15 @ 7.96 MHz	58	1.80	200	C
PE-0805FT332KTT	3.3 @ 7.96 MHz	+/-10%, +/- 5%	15 @ 7.96 MHz	50	2.30	175	D
PE-0805FT472KTT	4.7 @ 7.96 MHz	+/-10%, +/- 5%	15 @7.96 MHz	43	2.80	140	E
PE-0805FT682KTT	6.8 @ 7.96 MHz	+/-10%, +/- 5%	15 @ 7.96 MHz	36	3.40	115	F
PE-0805FT103KTT	10 @ 2.52 MHz	+/-10%, +/- 5%	10 @ 2.52 MHz	30	4.70	98	G
PE-0805FT153KTT	15 @ 2.52 MHz	+/-10%, +/- 5%	10 @ 2.52 MHz	23	6.50	80	H
PE-0805FT223KTT	22 @ 2.52 MHz	+/-10%, +/- 5%	10 @ 2.52 MHz	20	8.0	68	J
PE-0805FT333KTT	33 @ 2.52 MHz	+/-10%, +/- 5%	10 @ 2.52 MHz	17	10.7	60	K
PE-0805FT473KTT	47 @ 2.52 MHz	+/-10%, +/- 5%	10 @ 2.52 MHz	14	11.9	55	L
PE-0805FT683KTT	68 @ 2.52 MHz	+/-10%, +/- 5%	8 @ 2.52 MHz	11	13.6	49	M

NOTES:

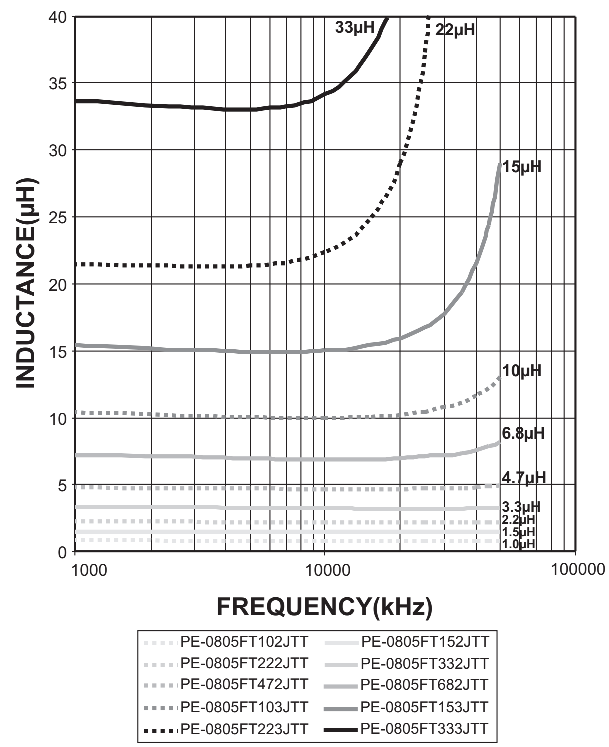
1. Inductance measured using a HP4286A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15ºC maximum temperature rise.
6. Sample Kit Part Number: **PE-0805FTKIT-T**

WIRE-WOUND RF CHIP INDUCTORS - 0805FT SERIES

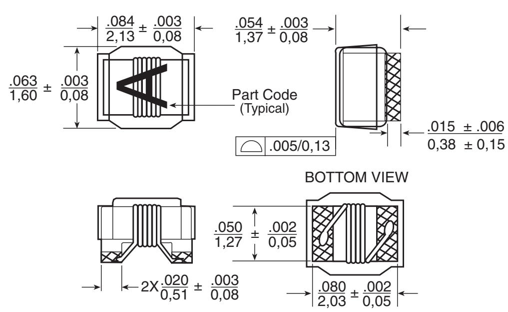
Typical Q vs. Frequency

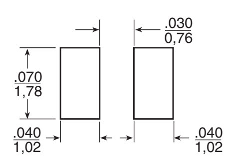


Typical Inductance vs. Frequency



Mechanical





Weight . . . . 0.012 grams
Tape & Reel 2000/reel
Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND RF CHIP INDUCTORS - 1008CD SERIES

Pulse
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- Wirewound ceramic core construction
- High Q values and high self-resonant frequency
- Tin/lead terminations
- Industry standard 1008 (2520) surface mount land pattern
- See page 3 for Competition Cross Reference

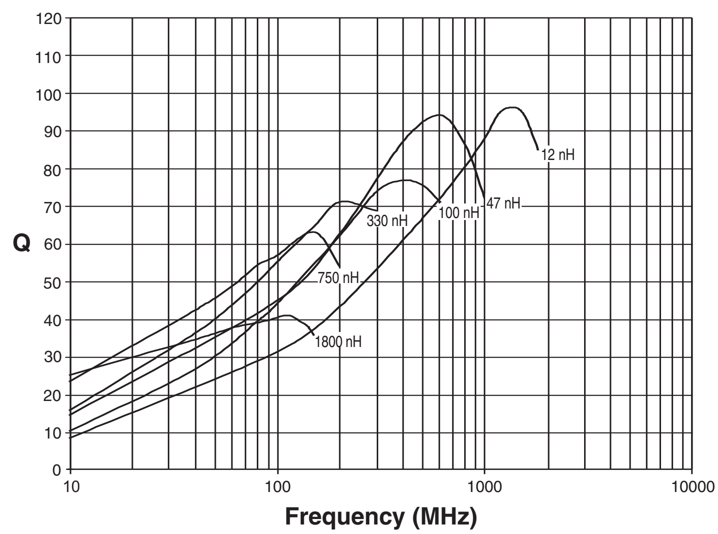
Electrical Specifications @ 25°C

Part Number	Inductance [1] (nH)	Standard Tolerance	Optional Tolerance	Q [2] (MIN)	SRF [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)
PE-1008CD040KTT [9]	4.7 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	50 @ 500 MHz	6000	0.15	600
PE-1008CD080KTT [9]	8.2 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	50 @ 500 MHz	5000	0.22	600
PE-1008CD100KTT	10 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	50 @ 500 MHz	4100	0.08	1000
PE-1008CD120KTT	12 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	50 @ 500 MHz	3300	0.09	1000
PE-1008CD150KTT	15 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	50 @ 500 MHz	2500	0.10	1000
PE-1008CD180KTT	18 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	50 @ 350 MHz	2500	0.11	1000
PE-1008CD220KTT	22 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	55 @ 350 MHz	2400	0.12	1000
PE-1008CD270KTT	27 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	55 @ 350 MHz	1600	0.13	1000
PE-1008CD330KTT	33 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	60 @ 350 MHz	1600	0.14	1000
PE-1008CD390KTT	39 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	60 @ 350 MHz	1500	0.15	1000
PE-1008CD470KTT	47 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	65 @ 350 MHz	1500	0.16	1000
PE-1008CD560KTT	56 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	65 @ 350 MHz	1300	0.18	1000
PE-1008CD680KTT	68 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	65 @ 350 MHz	1300	0.20	1000
PE-1008CD820KTT	82 @ 50 MHz	± 10% (K)	± 5% (J), ± 2% (G)	60 @ 350 MHz	1000	0.22	1000
PE-1008CD101KTT	100 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	60 @ 350 MHz	1000	0.56	650
PE-1008CD121KTT	120 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	60 @ 350 MHz	950	0.63	650
PE-1008CD151KTT	150 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	850	0.70	580
PE-1008CD181KTT	180 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	750	0.77	620
PE-1008CD221KTT	220 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	700	0.84	500
PE-1008CD271KTT	270 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	600	0.91	500
PE-1008CD331KTT	330 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	570	1.05	450
PE-1008CD391KTT	390 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	500	1.12	470
PE-1008CD471KTT	470 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	450	1.19	470
PE-1008CD561KTT	560 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	415	1.33	400
PE-1008CD621KTT	620 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	375	1.40	300
PE-1008CD681KTT	680 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	375	1.47	400
PE-1008CD751KTT	750 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	360	1.54	360
PE-1008CD821KTT	820 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	45 @ 100 MHz	350	1.61	400
PE-1008CD911KTT	910 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	35 @ 50 MHz	320	1.68	380
PE-1008CD102KTT	1000 @ 25 MHz	± 10% (K)	± 5% (J), ± 2% (G)	35 @ 50 MHz	290	1.75	370
PE-1008CD122KTT	1200 @ 7.9 MHz	± 10% (K)	± 5% (J), ± 2% (G)	35 @ 50 MHz	250	2.00	310
PE-1008CD152KTT	1500 @ 7.9 MHz	± 10% (K)	± 5% (J), ± 2% (G)	28 @ 50 MHz	200	2.30	330
PE-1008CD182KTT	1800 @ 7.9 MHz	± 10% (K)	± 5% (J), ± 2% (G)	28 @ 50 MHz	160	2.60	300
PE-1008CD222KTT	2200 @ 7.9 MHz	± 10% (K)	± 5% (J), ± 2% (G)	28 @ 50 MHz	160	2.80	280
PE-1008CD272KTT	2700 @ 7.9 MHz	± 10% (K)	± 5% (J), ± 2% (G)	22 @ 25 MHz	140	3.20	290
PE-1008CD332KTT	3300 @ 7.9 MHz	± 10% (K)	± 5% (J), ± 2% (G)	22 @ 25 MHz	110	3.40	290
PE-1008CD392KTT	3900 @ 7.9 MHz	± 10% (K)	± 5% (J), ± 2% (G)	20 @ 25 MHz	100	3.60	260
PE-1008CD472KTT	4700 @ 7.9 MHz	± 10% (K)	± 5% (J)	20 @ 25 MHz	90	4.00	260
PE-1008CD562KTT	5600 @ 7.9 MHz	± 10% (K)	± 5% (J)	20 @ 25 MHz	70	4.50	240

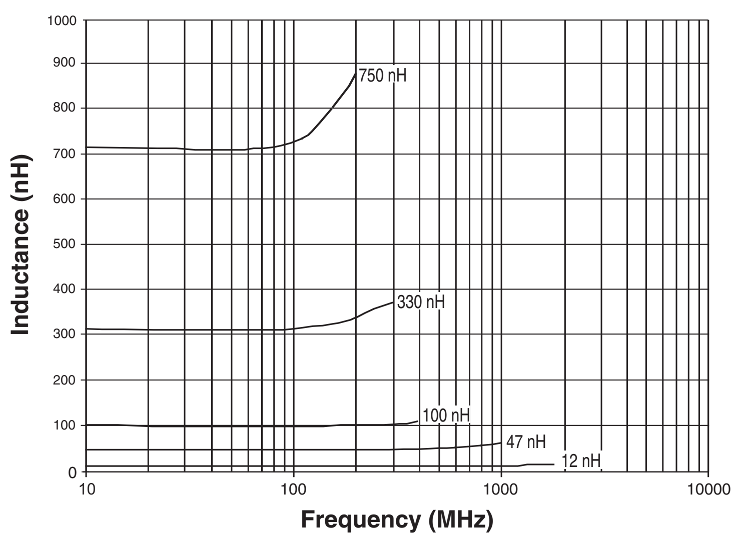
Notes:
1. Inductance measured using a HP4286A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15°C maximum temperature rise.
6. Sample Kit Part Number: **PE-1008CDKIT-T**
7. Component Weight: 0.032 grams typical.
8. These components are 0.055" in height.

WIRE-WOUND RF CHIP INDUCTORS - 1008CD SERIES

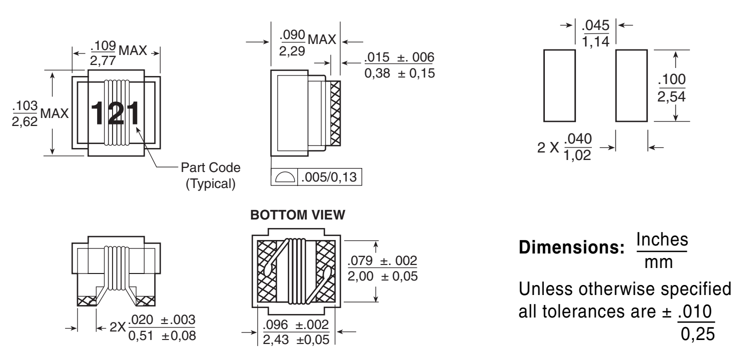
Typical Q vs Frequency



Typical Inductance vs Frequency



Mechanical

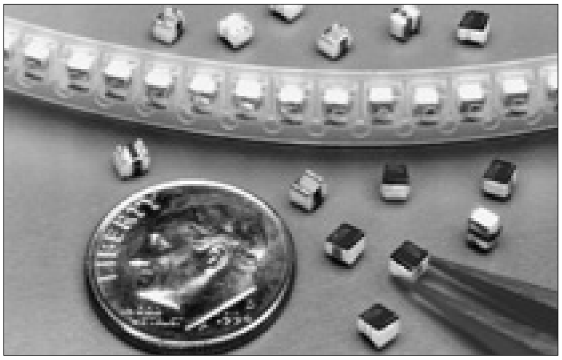


Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND RF CHIP INDUCTORS - 1008CM SERIES

Pulse
A TECHNITROL COMPANY



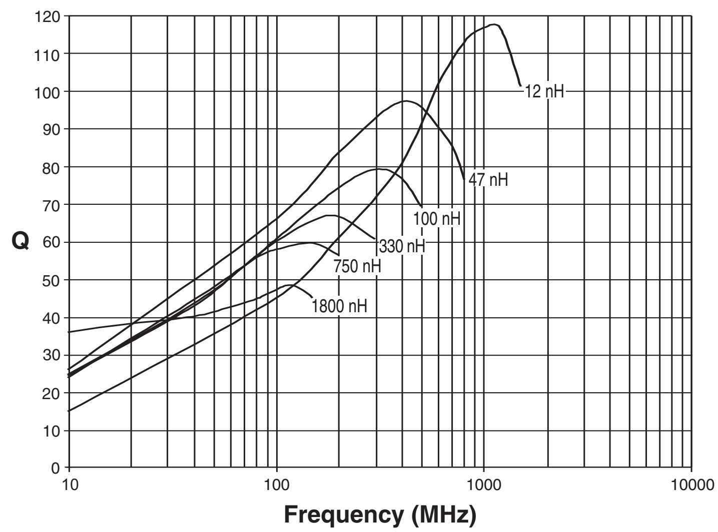
- Wirewound ceramic core construction
- High Q values
- High self resonant frequency
- Tin/lead terminations
- Industry standard 1008 (2520) surface mount land pattern
- See page 3 for Competition Cross Reference

Electrical Specifications @ 25°C

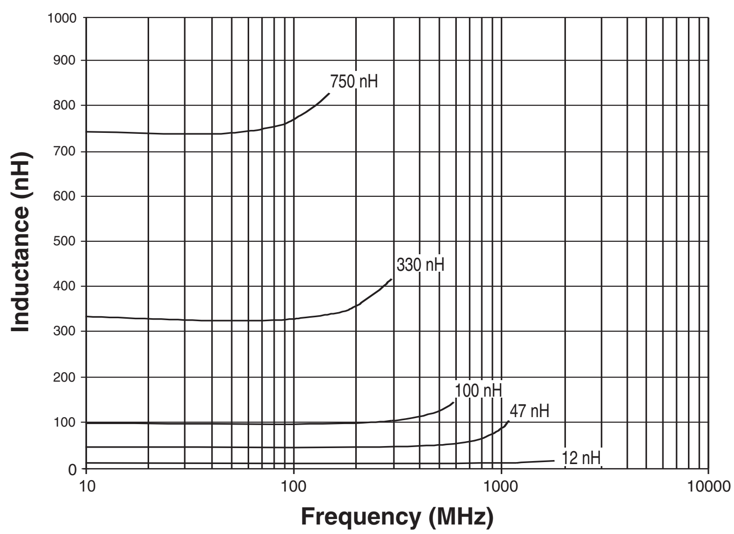
Part Number	Inductance [1] (nH)	Standard Tolerance	Optional Tolerances	Q [2] (MIN)	SRF Min [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)
PE-1008CM040MTT	4.7 @ 50 MHz	±10% (K)	±20% (M)	60 @ 1500 MHz	6000	0.025	1000
PE-1008CM080MTT	8.2 @ 50 MHz	±10% (K)	±20% (M)	60 @ 1500 MHz	6000	0.050	1000
PE-1008CM100KTT	10 @ 50 MHz	±10% (K)	±5% (J)	50 @ 500 MHz	5000	0.090	1000
PE-1008CM120KTT	12 @ 50 MHz	±10% (K)	±5% (J)	65 @ 500 MHz	2300	0.090	1000
PE-1008CM150KTT	15 @ 50 MHz	±10% (K)	±5% (J)	55 @ 500 MHz	1850	0.190	1000
PE-1008CM180KTT	18 @ 50 MHz	±10% (K)	±5% (J)	55 @ 350 MHz	2200	0.060	1000
PE-1008CM220KTT	22 @ 50 MHz	±10% (K)	±5% (J)	55 @ 350 MHz	1800	0.090	1000
PE-1008CM270KTT	27 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 350 MHz	1500	0.090	1000
PE-1008CM330KTT	33 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 350 MHz	1800	0.180	800
PE-1008CM390KTT	39 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	70 @ 350 MHz	1400	0.120	1000
PE-1008CM470KTT	47 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	70 @ 350 MHz	1200	0.075	1000
PE-1008CM560KTT	56 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 350 MHz	1150	0.120	1000
PE-1008CM680KTT	68 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	70 @ 350 MHz	1100	0.070	1000
PE-1008CM820KTT	82 @ 50 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	65 @ 350 MHz	950	0.140	950
PE-1008CM101KTT	100 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	65 @ 350 MHz	900	0.150	650
PE-1008CM121KTT	120 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	60 @ 350 MHz	825	0.220	650
PE-1008CM151KTT	150 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	625	0.160	580
PE-1008CM181KTT	180 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	650	0.250	620
PE-1008CM221KTT	220 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	625	0.240	500
PE-1008CM271KTT	270 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	45 @ 100 MHz	525	0.500	500
PE-1008CM331KTT	330 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	500	0.800	450
PE-1008CM371KTT	370 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	490	0.750	430
PE-1008CM391KTT	390 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	475	0.750	425
PE-1008CM401KTT	400 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	470	0.750	420
PE-1008CM471KTT	470 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	450	0.700	350
PE-1008CM561KTT	560 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	50 @ 100 MHz	425	0.800	350
PE-1008CM621KTT	620 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	45 @ 100 MHz	375	1.900	200
PE-1008CM681KTT	680 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	45 @ 100 MHz	375	2.300	200
PE-1008CM751KTT	750 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	45 @ 100 MHz	350	1.600	200
PE-1008CM821KTT	820 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 100 MHz	325	3.300	200
PE-1008CM911KTT	910 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 50 MHz	300	2.100	200
PE-1008CM102KTT	1000 @ 25 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 50 MHz	300	1.700	200
PE-1008CM122KTT	1200 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 50 MHz	250	3.000	200
PE-1008CM152KTT	1500 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 50 MHz	200	3.800	150
PE-1008CM182KTT	1800 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	40 @ 50 MHz	150	4.000	150
PE-1008CM222KTT	2200 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	30 @ 25 MHz	80	4.400	150
PE-1008CM272KTT	2700 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	30 @ 25 MHz	90	7.000	150
PE-1008CM332KTT	3300 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	25 @ 15 MHz	40	7.800	150
PE-1008CM392KTT	3900 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	20 @ 15 MHz	35	8.300	135
PE-1008CM472KTT	4700 @ 10 MHz	±10% (K)	±5% (J), ±2% (G), ±1% (F)	16 @ 15 MHz	25	6.000	150

Notes:
1. Inductance measured using a HP4191A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15°C maximum temperature rise.
6. Component Weight: 0.032 grams typical.

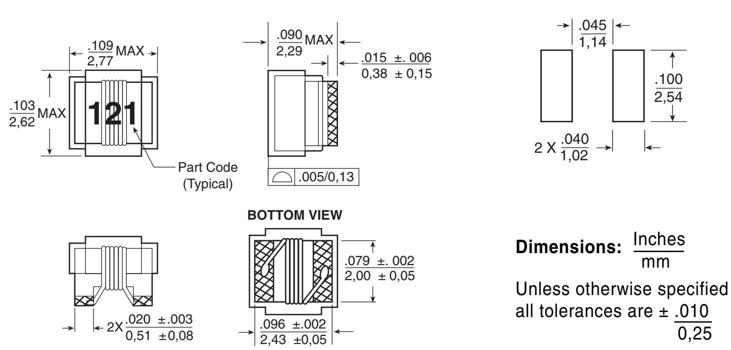
Typical Q vs Frequency



Typical Inductance vs Frequency



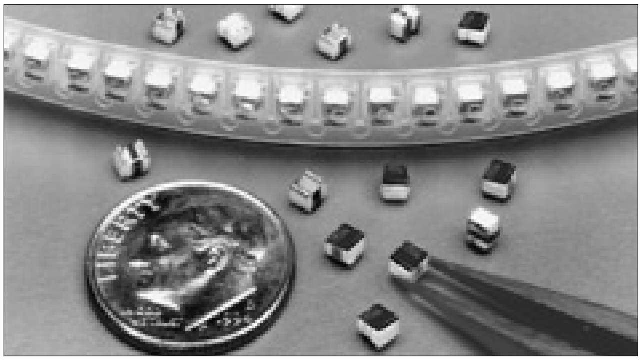
Mechanical



Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND RF CHIP INDUCTORS - 1008CQ SERIES



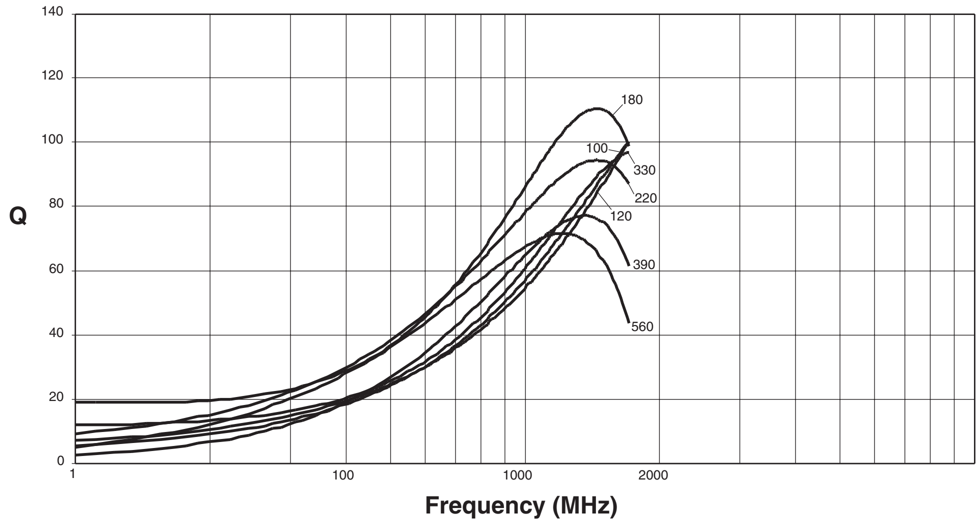
- Wirewound ceramic core construction
- High Q and high Idc values
- High self resonant frequency
- Tin/lead terminations
- Industry standard 1008 (2520) surface mount land pattern
- Refer to page 3 for Competition Cross Reference

Electrical Specifications @ 25°C							
Part Number	Inductance [1] (nH)	Standard Tolerance	Optional Tolerances	Q [2] (MIN)	SRF Min [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)
PE-1008CQ3N0KTT	3.0 @ 50 MHz	±10% (K)	±5% (J)	70 @ 1500 MHz	6000	0.04	1600
PE-1008CQ4N1KTT	4.1 @ 50 MHz	±10% (K)	±5% (J)	75 @ 1500 MHz	6000	0.05	1600
PE-1008CQ7N8KTT	7.8 @ 50 MHz	±10% (K)	±5% (J)	75 @ 1500 MHz	3800	0.05	1600
PE-1008CQ100KTT	10 @ 50 MHz	±10% (K)	±5% (J)	60 @ 500 MHz	3600	0.06	1600
PE-1008CQ120KTT	12 @ 50 MHz	±10% (K)	±5% (J)	70 @ 500 MHz	2800	0.06	1500
PE-1008CQ180KTT	18 @ 50 MHz	±10% (K)	±5% (J)	62 @ 350 MHz	2700	0.07	1400
PE-1008CQ220KTT	22 @ 50 MHz	±10% (K)	±5% (J)	62 @ 350 MHz	2050	0.07	1400
PE-1008CQ330KTT	33 @ 50 MHz	±10% (K)	±5% (J)	75 @ 350 MHz	1700	0.09	1300
PE-1008CQ390KTT	39 @ 50 MHz	±10% (K)	±5% (J)	75 @ 350 MHz	1300	0.09	1300
PE-1008CQ470KTT	47 @ 50 MHz	±10% (K)	±5% (J)	75 @ 350 MHz	1450	0.12	1200
PE-1008CQ560KTT	56 @ 50 MHz	±10% (K)	±5% (J)	75 @ 350 MHz	1230	0.12	1200
PE-1008CQ680KTT	68 @ 50 MHz	±10% (K)	±5% (J)	80 @ 350 MHz	1150	0.13	1100
PE-1008CQ820KTT	82 @ 50 MHz	±10% (K)	±5% (J)	80 @ 350 MHz	1060	0.16	1100
PE-1008CQ101KTT	100 @ 50 MHz	±10% (K)	±5% (J)	62 @ 350 MHz	820	0.16	1000
PE-1008CQ221KTT	220 @ 50 MHz	±10% (K)	±5% (J)	56 @ 350 MHz	680	0.18	900

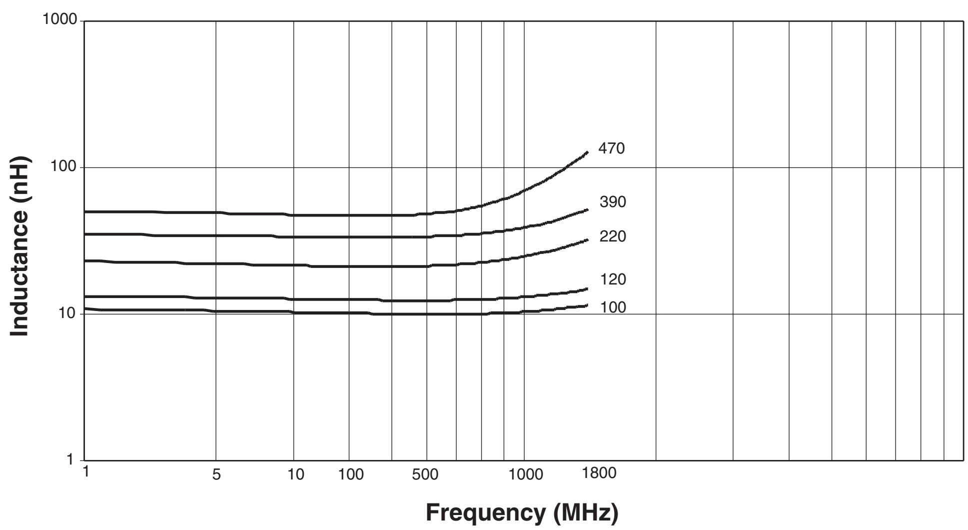
Notes:
1. Inductance measured using a HP4191A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15°C maximum temperature rise.
6. Component Weight: 0.032 grams typical.

WIRE-WOUND RF CHIP INDUCTORS - 1008CQ SERIES

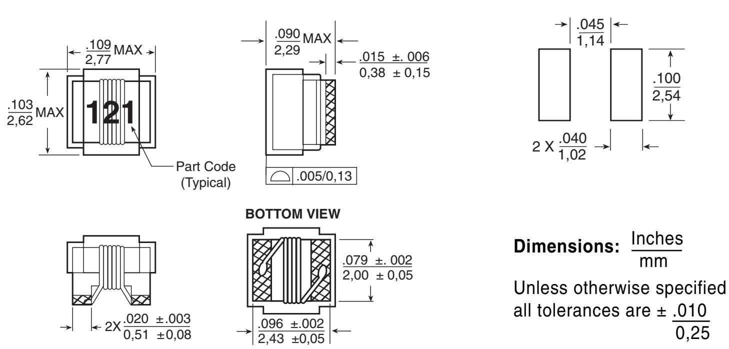
Typical Q vs Frequency



Typical Inductance vs Frequency



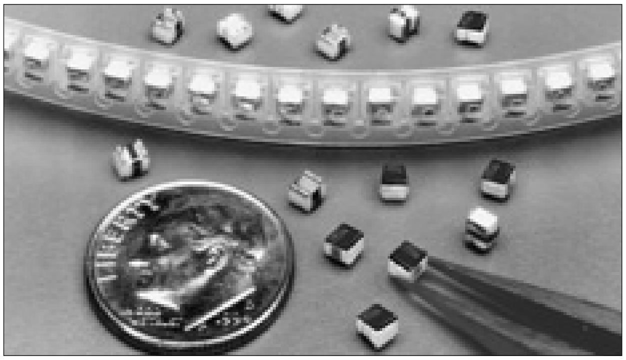
Mechanical



Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND RF CHIP INDUCTORS - 1008FD SERIES



- Wirewound ferrite core construction
- High Inductance value and low Rdc
- Tin/lead terminations
- Industry standard 1008 (2520) surface mount land pattern
- Refer to page 3 for Competition Cross Reference

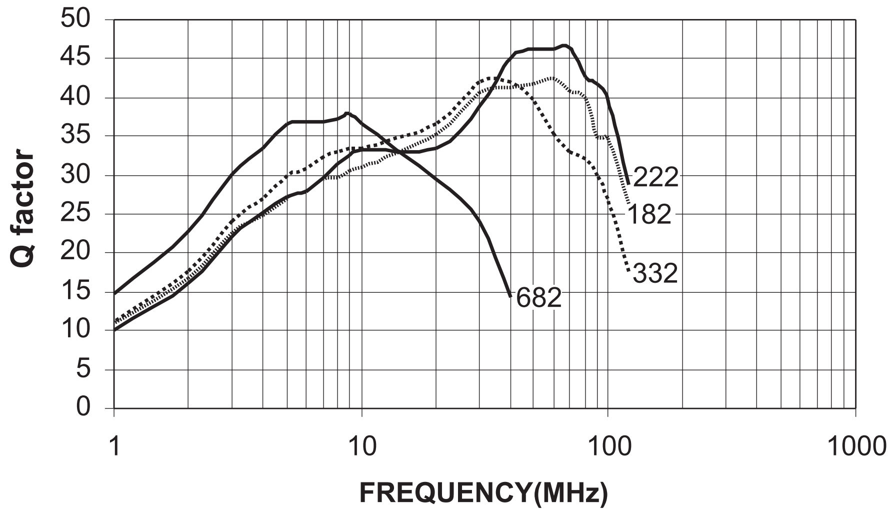
Electrical Specifications @ 25°C

Part Number	Inductance [1] (µH)	Standard Tolerance	Optional Tolerances	Q [2] (MIN)	SRF Min [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)
PE-1008FD151KTT	0.15 @ 25 MHz	± 10%	± 5%	45 @ 100 MHz	500.0	0.35	750
PE-1008FD181KTT	0.18 @ 25 MHz	± 10%	± 5%	45 @ 100 MHz	500.0	0.40	750
PE-1008FD331KTT	0.33 @ 25 MHz	± 10%	± 5%	45 @ 100 MHz	500.0	0.50	700
PE-1008FD122KTT	1.20 @ 7.9 MHz	± 10%	± 5%	48 @ 50 MHz	210.0	0.68	650
PE-1008FD152KTT	1.50 @ 7.9 MHz	± 10%	± 5%	41 @ 50 MHz	190.0	0.76	630
PE-1008FD182KTT	1.80 @ 7.9 MHz	± 10%	± 5%	39 @ 50 MHz	170.0	0.84	600
PE-1008FD222KTT	2.20 @ 7.9 MHz	± 10%	± 5%	34 @ 50 MHz	150.0	1.10	520
PE-1008FD272KTT	2.70 @ 7.9 MHz	± 10%	± 5%	34 @ 50 MHz	135.0	1.28	490
PE-1008FD332KTT	3.30 @ 7.9 MHz	± 10%	± 5%	32 @ 50 MHz	120.0	1.46	450
PE-1008FD392KTT	3.90 @ 7.9 MHz	± 10%	± 5%	32 @ 7.9 MHz	105.0	1.56	420
PE-1008FD472KTT	4.70 @ 7.9 MHz	± 10%	± 5%	31 @ 7.9 MHz	90.0	1.68	400
PE-1008FD562KTT	5.60 @ 7.9 MHz	± 10%	± 5%	31 @ 7.9 MHz	80.0	1.82	380
PE-1008FD682KTT	6.80 @ 7.9 MHz	± 10%	± 5%	31 @ 7.9 MHz	70.0	2.00	360
PE-1008FD822KTT	8.20 @ 7.9 MHz	± 10%	± 5%	23 @ 7.9 MHz	65.0	2.65	330
PE-1008FD103KTT	10.00 @ 7.9 MHz	± 10%	± 5%	31 @ 7.9 MHz	60.0	2.95	300

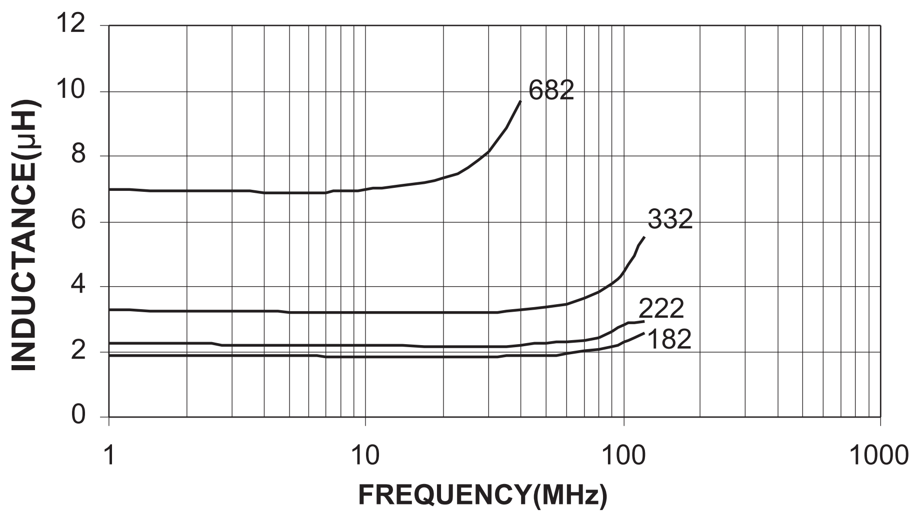
Notes:
1. Inductance measured using a HP4191A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15ºC maximum temperature rise.
6. Component Weight: 0.032 grams typical.
7. Sample Kit Part Number: **PE-1008FDKIT-T**

WIRE-WOUND RF CHIP INDUCTORS - 1008FD SERIES

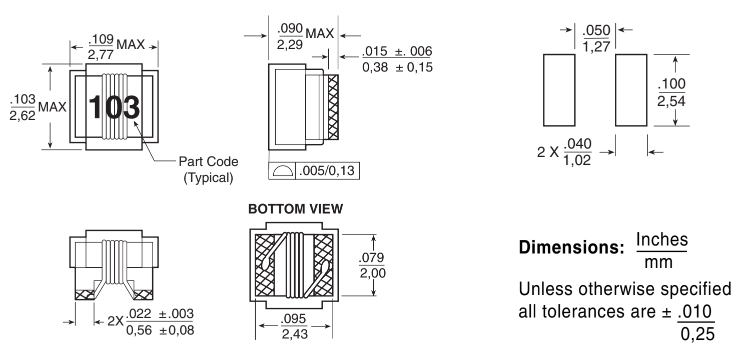
Typical Q vs Frequency



Typical Inductance vs Frequency



Mechanical

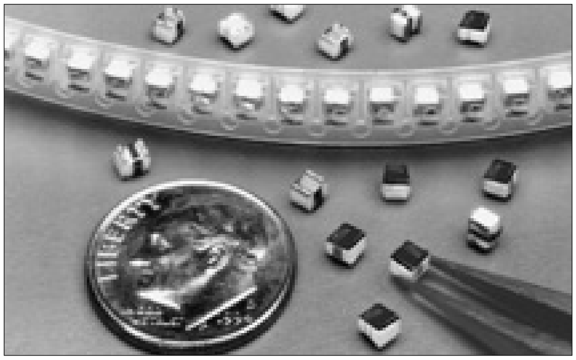


Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND RF CHIP INDUCTORS - 1210FT SERIES

Pulse
A TECHNITROL COMPANY



- Wirewound ferrite core construction
- High Inductance value and low Rdc
- Tin/lead terminations
- Industry standard 1210 (3225) SMT land pattern
- Refer to page 3 for Competition Cross Reference

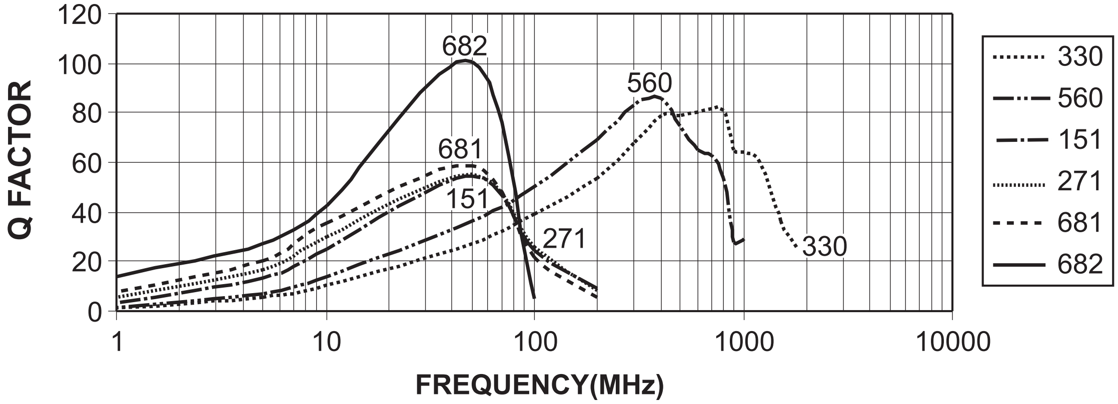
Electrical Specifications @ 25°C

Part Number	Inductance[1] (µH)	Standard Tolerance	Optional Tolerances	Q[2] (MIN)	SRF Min[3] (MHz MIN)	R_{DC}[4] (Ω MAX)	I_{DC}[5] (mA MAX)
PE-1210FT100KTT	0.010 @ 100 MHz	± 10%	± 5%	15 @ 100 MHz	2500	0.13	450
PE-1210FT120KTT	0.012 @ 100 MHz	± 10%	± 5%	17 @ 100 MHz	2300	0.14	450
PE-1210FT150KTT	0.015 @ 100 MHz	± 10%	± 5%	19 @ 100 MHz	2100	0.16	450
PE-1210FT180KTT	0.018 @ 100 MHz	± 10%	± 5%	21 @ 100 MHz	1900	0.18	450
PE-1210FT220KTT	0.022 @ 100 MHz	± 10%	± 5%	23 @ 100 MHz	1700	0.20	450
PE-1210FT270KTT	0.027 @ 100 MHz	± 10%	± 5%	23 @ 100 MHz	1500	0.22	450
PE-1210FT330KTT	0.033 @ 100 MHz	± 10%	± 5%	25 @ 100 MHz	1400	0.24	450
PE-1210FT390KTT	0.039 @ 100 MHz	± 10%	± 5%	25 @ 100 MHz	1300	0.27	450
PE-1210FT470KTT	0.047 @ 100 MHz	± 10%	± 5%	26 @ 100 MHz	1200	0.30	450
PE-1210FT560KTT	0.056 @ 100 MHz	± 10%	± 5%	26 @ 100 MHz	1100	0.33	450
PE-1210FT680KTT	0.068 @ 100 MHz	± 10%	± 5%	27 @ 100 MHz	1000	0.36	450
PE-1210FT820KTT	0.082 @ 100 MHz	± 10%	± 5%	27 @ 100 MHz	900	0.40	450
PE-1210FT101KTT	0.100 @ 100 MHz	± 10%	± 5%	28 @ 100 MHz	700	0.44	450
PE-1210FT121KTT	0.120 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	500	0.22	450
PE-1210FT151KTT	0.150 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	450	0.25	450
PE-1210FT181KTT	0.180 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	400	0.28	450
PE-1210FT221KTT	0.220 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	350	0.32	450
PE-1210FT271KTT	0.270 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	320	0.36	450
PE-1210FT331KTT	0.330 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	300	0.40	450
PE-1210FT391KTT	0.390 @ 25.2MHz	± 10%	± 5%	30 @ 25.2 MHz	250	0.45	450
PE-1210FT471KTT	0.470 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	220	0.50	450
PE-1210FT561KTT	0.560 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	180	0.55	450
PE-1210FT681KTT	0.680 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	160	0.60	450
PE-1210FT821KTT	0.820 @ 25.2 MHz	± 10%	± 5%	30 @ 25.2 MHz	140	0.65	450
PE-1210FT102KTT	1.000 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	120	0.70	400
PE-1210FT122KTT	1.200 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	100	0.75	390
PE-1210FT152KTT	1.500 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	85	0.85	370
PE-1210FT182KTT	1.800 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	80	0.90	350
PE-1210FT222KTT	2.200 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	75	1.00	320
PE-1210FT272KTT	2.700 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	70	1.10	290
PE-1210FT332KTT	3.300 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	60	1.20	260
PE-1210FT392KTT	3.900 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	55	1.30	250
PE-1210FT472KTT	4.700 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	50	1.50	224
PE-1210FT562KTT	5.600 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	45	1.60	204
PE-1210FT682KTT	6.800 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	40	1.80	180
PE-1210FT822KTT	8.200 @ 7.96 MHz	± 10%	± 5%	30 @ 7.96 MHz	35	2.00	170
PE-1210FT103KTT	10.000 @ 2.52 MHz	± 10%	± 5%	30 @ 2.52 MHz	30	2.10	150
PE-1210FT123KTT	12.000 @ 2.52 MHz	± 10%	± 5%	30 @ 2.52 MHz	20	2.50	140

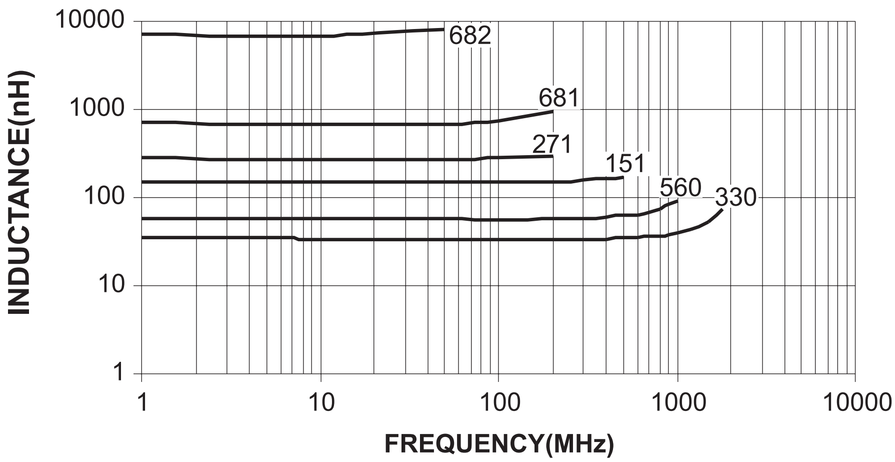
Notes:
1. Inductance measured using a HP4286A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15ºC maximum temperature rise.
6. Sample Kit Part Number: **PE-1210FT KIT-T**.
7. Component Weight: 0.045 grams typical.
8. These components are 0.0944” in height.

WIRE-WOUND RF CHIP INDUCTORS - 1210FT SERIES

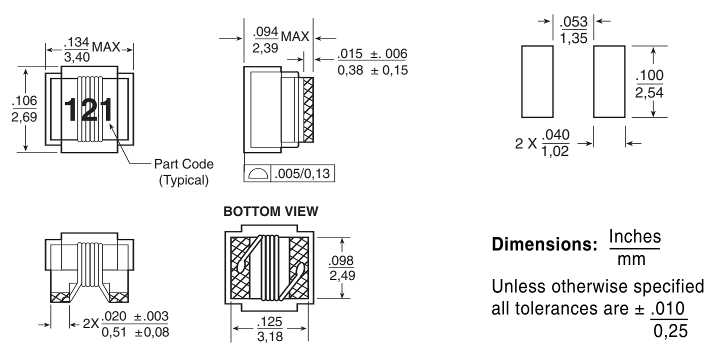
Typical Q vs Frequency



Typical Inductance vs Frequency



Mechanical

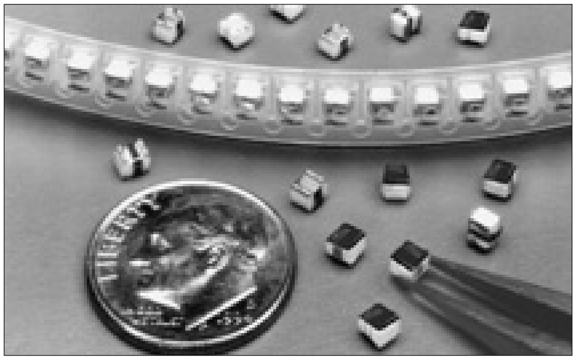


Dimensions: Inches/mm

Unless otherwise specified all tolerances are ± .010/0,25

WIRE-WOUND RF CHIP INDUCTORS - 1206CD SERIES

Pulse
A TECHNITROL COMPANY



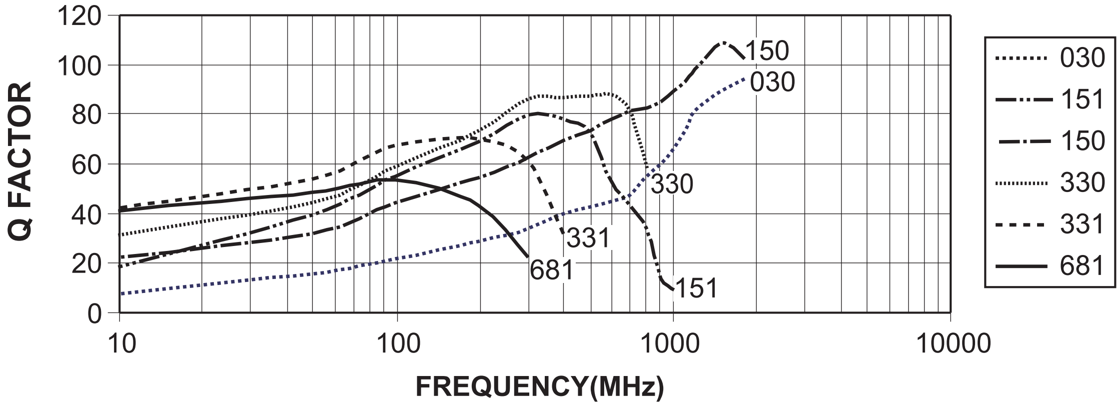
- Wirewound ceramic core construction
- High Inductance value and high self resonant frequency
- Tin/lead terminations
- Industry standard 1206 (3216) SMT land pattern
- Refer to page 3 for Competition Cross Reference

Electrical Specifications @ 25°C

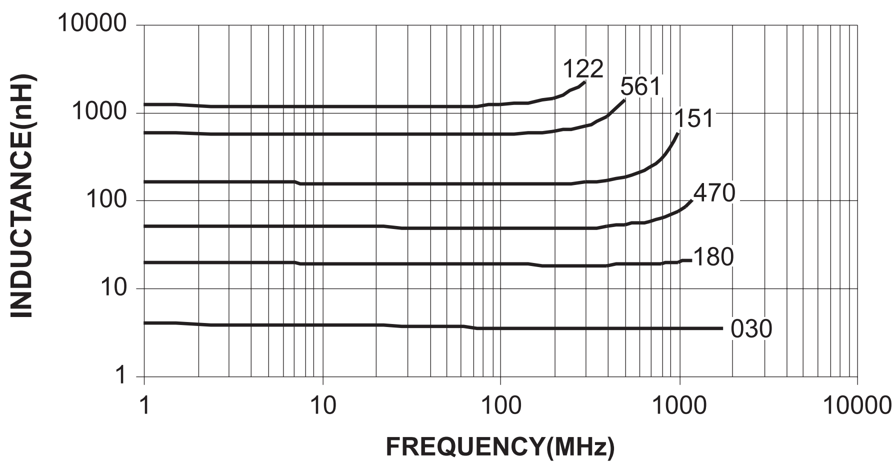
Part Number	Inductance [1] (nH)	Standard Tolerance	Optional Tolerances	Q [2] (MIN)	SRF Min [3] (MHz MIN)	R_{DC} [4] (Ω MAX)	I_{DC} [5] (mA MAX)
PE-1206CD030KTT	3.3 @ 100 MHz	± 10%	± 20%, ± 5%	30 @ 300 MHz	6200	0.05	1000
PE-1206CD060KTT	6.8 @ 100 MHz	± 10%	± 20%, ± 5%	30 @ 300 MHz	5500	0.07	1000
PE-1206CD100XTT	10 @ 100 MHz	± 10%	± 20%, ± 5%	40 @ 300 MHz	4000	0.08	1000
PE-1206CD120XTT	12 @ 100 MHz	± 10%	± 20%, ± 5%	40 @ 300 MHz	3200	0.08	1000
PE-1206CD150XTT	15 @ 100 MHz	± 10%	± 20%, ± 5%	40 @ 300 MHz	3200	0.10	1000
PE-1206CD180XTT	18 @ 100 MHz	± 10%	± 20%, ± 5%	50 @ 300 MHz	2800	0.10	1000
PE-1206CD220XTT	22 @ 100 MHz	± 10%	± 20%, ± 5%	50 @ 300 MHz	2200	0.10	1000
PE-1206CD270XTT	27 @ 100 MHz	± 10%	± 20%, ± 5%	50 @ 300 MHz	1800	0.11	1000
PE-1206CD330XTT	33 @ 100 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	1800	0.11	1000
PE-1206CD390XTT	39 @ 100 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	1800	0.12	1000
PE-1206CD470XTT	47 @ 100 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	1500	0.13	1000
PE-1206CD560XTT	56 @ 100 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	1450	0.14	1000
PE-1206CD680XTT	68 @ 100 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	1200	0.26	900
PE-1206CD820XTT	82 @ 100 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	1200	0.21	900
PE-1206CD101XTT	100 @ 100 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	1100	0.26	850
PE-1206CD121XTT	120 @ 100 MHz	± 10%	± 20%, ± 5%	60 @ 300 MHz	1100	0.26	800
PE-1206CD151XTT	150 @ 100 MHz	± 10%	± 20%, ± 5%	60 @ 300 MHz	950	0.31	750
PE-1206CD181XTT	180 @ 50 MHz	± 10%	± 20%, ± 5%	60 @ 300 MHz	900	0.43	700
PE-1206CD221XTT	220 @ 50 MHz	± 10%	± 20%, ± 5%	60 @ 300 MHz	760	0.50	670
PE-1206CD271XTT	270 @ 50 MHz	± 10%	± 20%, ± 5%	55 @ 300 MHz	730	0.56	630
PE-1206CD331XTT	330 @ 50 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	650	0.62	590
PE-1206CD391XTT	390 @ 50 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	600	0.75	530
PE-1206CD471XTT	470 @ 50 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	550	1.30	490
PE-1206CD561XTT	560 @ 35 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	470	1.34	460
PE-1206CD681XTT	680 @ 35 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	450	1.58	430
PE-1206CD821XTT	820 @ 35 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	420	1.82	400
PE-1206CD102XTT	1000 @ 35 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	400	2.80	320
PE-1206CD122XTT	1200 @ 35 MHz	± 10%	± 20%, ± 5%	45 @ 150 MHz	380	3.20	300

Notes:
1. Inductance measured using a HP4286A RF Impedance Analyzer.
2. Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
3. SRF measured using a HP8753C Network Analyzer.
4. R_{DC} measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
5. Based on a 15°C maximum temperature rise.
6. Sample Kit Part Number: **PE-1206CD KIT-T**
7. Component Weight: 0.035 grams typical.
8. These components are 0.060" in height.

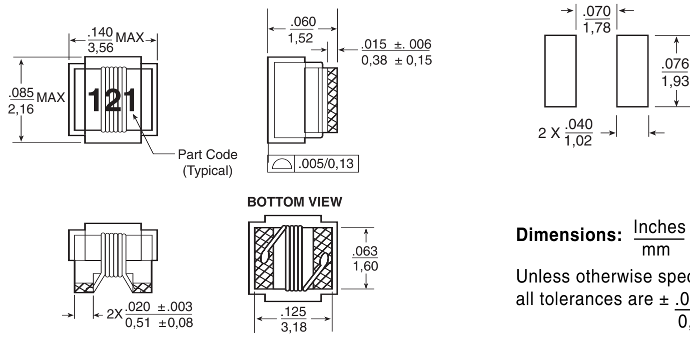
Typical Q vs Frequency



Typical Inductance vs Frequency



Mechanical



Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25

WIRE-WOUND
RF CHIP INDUCTORS
Application Notes

Pulse
A TECHNITROL COMPANY

The Basics of Wire-Wound Chip Inductors

Pulse currently supplies high quality magnetic products to companies such as 3COM, Cisco, Ericsson, Intel, Marconi, Nokia and Nortel and has been active in the field of RF engineering, since the launch of its first wire-wound 1008 chip product in 1982. Pulse now offers five ranges of wire-wound chip from 0402 to 1210 (see table 1.0 below): the "CD Range" with 100% compatibility to other market leaders, and the "CM and CQ ranges" with improved electrical performance with a Ceramic core construction; the FD and FT series with a Ferrite core construction.

In recent years, Pulse has leveraged its strength within the Telecoms and Networking industry to extend its product range to encompass RF products for the Cable Modem, CATV, MMDS and TETRA markets. Pulse now also offers Wide Bandwidth RF Transformers, Splitter Combiners, Couplers, Diplexers, Low Pass Filters and High Power Impedance Matching Transformers. To explore the complete range of RF products, visit the Pulse website:
http://www.pulseeng.com./Products/finder/rf_hfc_cable.htm for cable products *and*
http://www.pulseeng.com/scripts/finder/rfind/mcis.cfm for RF chip inductors.

Pulse Part No.	Inductance Range (nH)	Number of Values	Tolerance Range	Availability
PE-0402CD	1.0 ~ 120	28	5 & 10%	In Mass Production
PE-0603CD	1.8 ~ 390	32	2, 5, 10 & 20%	In Mass Production
PE-0805CD	3.3 ~ 1500	32	1, 2, 5, 10 & 20%	In Mass Production
PE-0805CM	3.3 ~ 680	25	1, 2, 5, & 10%	In Mass Production
PE-0805FT	1000 ~ 68000	12	5 & 10%	In Mass Production
PE-1008CD	4.7 ~ 5600	39	2, 5 & 10%	In Mass Production
PE-1008CM	4.7 ~ 4700	40	1, 2, 5, 10 & 20%	In Mass Production
PE-1008CQ	3.0 ~ 220	13	5 & 10%	In Mass Production
PE-1008FD	150 ~ 10000	15	5 & 10%	In Mass Production
PE-1210FT	10 ~ 12000	38	5 & 10%	In Mass Production
PE-1206CD	3.3 ~ 1200	28	5 & 10%	In Mass Production

Table 1.0 Pulse Chip Inductor Product Range

Competing Chip Inductor Types

Capacitor and resistors are available in a wide variety of sizes and component values and it is possible to purchase almost any value, tolerance or other rating. Inductors, on the other hand, are not so readily available and engineers may find it necessary to wind their own inductors to get a specific value of inductance.

There are mainly 3 varieties of inductor in common use today and they are wire-wound, multi-layer and drum core chip inductors. The primary differences between these competing types are the core material used to enhance the inductance of coil and the construction method. Wire is wound around a ceramic or ferrite bobbin or in the case of multi-layer the coil is formed by interconnecting layers of conductive material printed on a ceramic substrate.

Table 2.0 indicates that the performance merits of wire-wound inductors versus the alternative multi-layer and drum core platforms. If price were the only consideration then, of course, there would be no market available for wire-wound chip inductors. But price is not the only consideration, since RF engineers must also consider the needs of the application in terms of Q factor, Idc (maximum current carrying capacity). Rdc (resistance at dc), Tolerance and SRF (self-resonant or series resonant frequency.

SMT	Technology	Material Substrate	Q Factor	SRF	Idc	Tolerance
Chip Inductor	Wire-wound	Ceramic	High	High	High	Good
Chip Inductor	Wire-wound	Ferrite	Low	Low	High	Poor
Multi-layer	Printed	Ceramic	Low	Low	Low	Poor
Drum Core	Wire-wound	Ferrite	Low	Low	Low	Poor

Table 2.0 Summary of Chip Inductor Relative Performance

WIRE-WOUND
RF CHIP INDUCTORS
Application Notes

The Inductor Basics

An inductor is formed by winding a wire around a ceramic or ferrite core to increase the magnetic flux linkage between the turns of the coil. The majority of high frequency inductors above 50MHz are formed on a ceramic bobbin or substrate. Nonmagnetic cores (ceramic cores) have the opposite effect to a magnetic core in that they reduce instead of increase the inductance of the coil. Ceramic cores are mainly used to reduce the RF core losses as the high frequency currents mainly flow near the surface of the conductor. The resistance that a conductor offers to the high frequency alternating current is much greater than the resistance of the same conductor to direct current (dc) and is known as the skin effect. The skin effect is a characteristic of conductors that carry alternating current and is much more pronounced in coils than in straight conductors.

Skin effect causes the current in the conductor to be much denser near the surface of the conductor than at its centre. Consequentially, as the instantaneous value of the alternating current changes the inductance of a conductor in its interior is much greater than the instantaneous inductance near its surface. The result is more current flows near the surface or "skin" of the conductor than at its centre. Since the inductance of the coil increases proportionally to the increasing frequency, the skin effect also increases as the frequency is increased.

Another source of loss is the dielectric material used to form the body of the inductor. There is no perfect insulator and so dielectric losses can not be avoided at very high frequencies. Dielectric losses, like skin effect also tend to increase the effective resistance of a coil at high frequencies.

Whilst there is no perfect component compared to a resistor or capacitor, inductors are probably the component most prone to changing its performance over frequency. Figure 1.0 illustrates what a real world inductor looks like at RF frequencies and the resultant equivalent circuit.

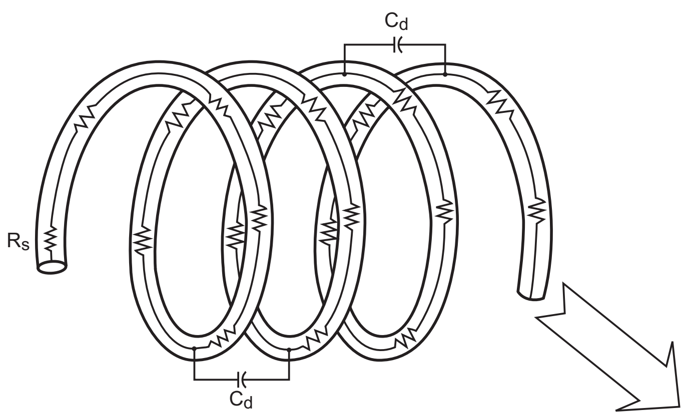


Fig. 1.0 A
Distributed Capacitance and
Series Resistance in an Inductor

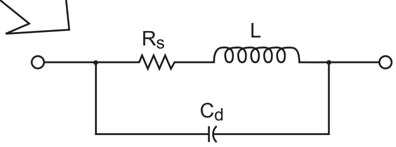


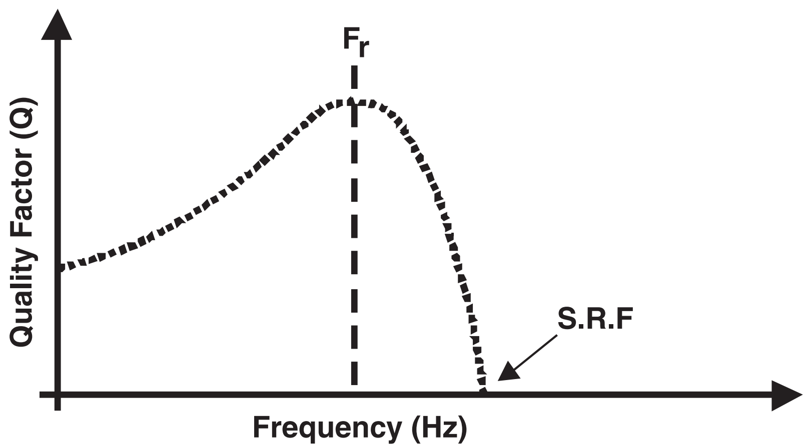
Fig. 1.0 B
Equivalent Circuit
of an Inductor

Fig. 1.0 A shows how capacitive coupling (Cd) can occur between two wires, when the wires are placed in close proximity to one another and only separated by a dielectric. The resistance (Rs) is a representation of the wire resistance that exists in a wire. **Fig. 1.0 B** shows a representation of the lumped resistive, capacitive and inductive component elements of an inductor.

The Inductor Basics *(continued)*

The effect of Cd can have a dramatic effect upon the impedance of the inductor as illustrated in Fig 2.0, because "fringe" effects become dominant at high frequencies. At low frequencies the inductor's reactance parallels that of an ideal inductor. With increasing frequency the reactance of the inductor departs from the ideal curve and increases at a much faster rate until it reaches a peak value at the inductor's parallel resonant frequency (Fr). Above Fr the inductor's reactance begins to decrease with increasing frequency and thus the inductor begins to look like a capacitor. The series resistance (Rs) of the coil prevents the impedance of the inductor from reaching infinity at resonance (Fr). Another effect of Rs is to broaden the resonant peak of the impedance curve at Fr.

Comparisons made between inductors at near to Fr will produce an inaccurate representation of the inductor's performance. This can lead to problems in the end application since the performance of one inductor to another may vary quite markedly since the performance of the inductor is dominated by the parasitic content (distributed capacitance Cd) of the inductor.



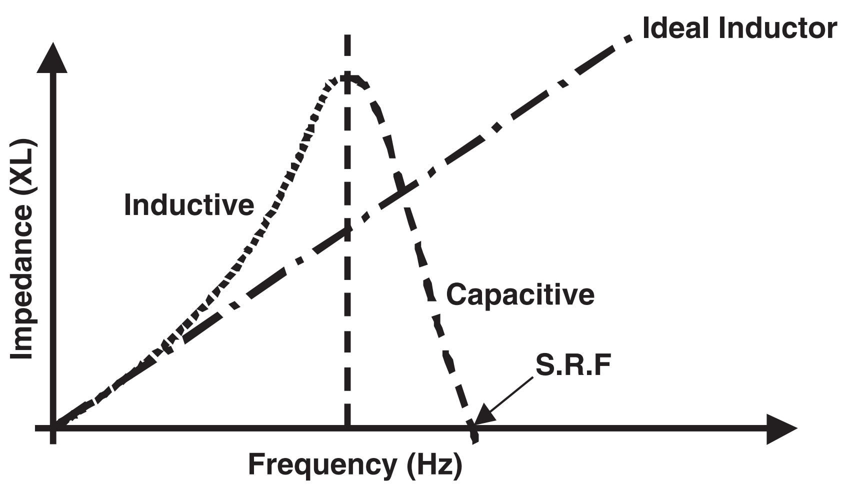


Fig. 2.0 Impedance and Inductance Characteristic of a Real World Inductor

Q factor / SRF

The ratio of an inductor's reactance (XL) to its series resistance (Rs) is often used as measure of the quality factor of the inductor. The larger the ratio, the better the inductor. The quality factor of an inductor is often referred to as the Q of the inductor. If the inductor were constructed from a perfect conductor (zero loss), its Q would be infinite. Of course this is impossible, and so the Q of an inductor will always have some finite value.

The Q factor, Fr and SRF of an inductor are directly linked to one another. If the test frequency is near Fr or SRF, the inductor results may be misleading by very wide margins, since the result is dominated by distributed capacitance reactance. To overcome this problem, the test frequency of the inductor is normally located at a point on the inductor's curve where the reactance of the inductor approaches that of an ideal inductor, so that component to component variations are kept to a minimum since the parasitic contribution is also at a minimum. To overcome this problem, RF engineers should select an inductor with the highest test frequency possible to guarantee the quality of the inductor.

At low frequencies, the Q of an inductor is very good because the only resistance in the winding is the dc resistance of the wire which is very small (Fig. 2.0). As mentioned earlier, as the frequency increases, the skin effect increases to degrade the Q of the inductor. At low frequencies, the Q increases directly inline with the reactance (XL) since the skin effect has not become noticeable. The Q continues to rise, but as the frequency approaches Fr, the skin effect starts to become a dominant, reducing the rate of increase. At Fr, the series resistance and reactance are increasing at the same rate. Above Fr, the distributed capacitance Cd and skin effect of the winding combine together to decrease the Q of the inductor to zero at SRF.

Understanding Inductor Curves

RF design engineers require inductors to meet the following requirements:

1. Low cost
2. Compatibility to the competition
   Q, SRF and useable frequency range => competition
3. Component to component variation small
4. Performance approachs that of an ideal inductor
   High Q (low series resistance)
   High SRF (low distributed capacitance)

	Ideal Inductor		Real World Inductor	
Distributed Capacitance	Cd = 0	Infinite SRF	Cd = Min	High SRF High Fr
Series resistor	Rs = 0	Infinite Q	Rs = Min	High Q High Fr

3.0 Characteristics of a Real World Inductor Vs Ideal Inductor

Determining the Inductor Equivalent Circuit

To determine the inductor equivalent circuit, an RF engineer must deduce the value of Rs and Cd from the curves supplied by the inductor manufacturer. To do this, the following equations can be used. Of course, the values deduced only apply at one specific frequency. The recommended frequency at which the inductor is used within the application should be an order of magnitude (÷ 10) below the SRF, and preferably not near than ½ Fr.

Equation 1: $Fc < \frac{SRF}{10}$ and/or $< \frac{FR}{2}$

Equation 2: $Rs = \frac{XL}{Q} = \frac{2 * \pi * Fc * L}{Q}$

Equation 3: $Cd = \frac{1}{(2 * \pi * SRF)2 * L}$

Where:
Fc = Centre frequency of application / intended operation
SRF = Series resonant or self resonant frequency of the inductor
π = 3.14159
L = Inductor value

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