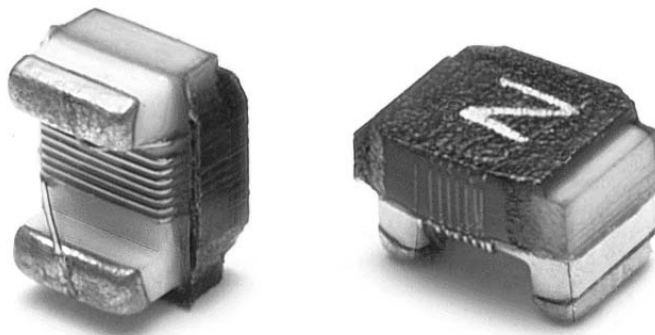


# *RF CHIP INDUCTORS*

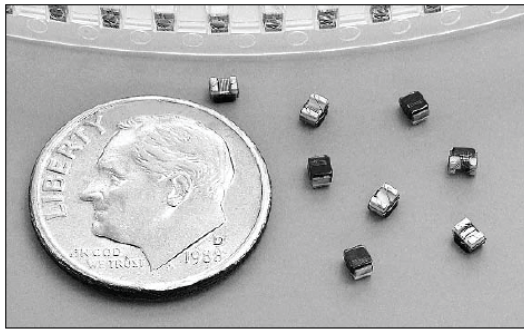
Wire Wound - 0402 Series









For More Information Please Visit: [Networking.PulseElectronics.com](http://Networking.PulseElectronics.com)

# WIRE WOUND RF CHIP INDUCTORS

## 0402CD SERIES



-  Wire wound ceramic core construction
-  High Q values
-  High self resonant frequency
-  Temperature Range  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
-  Industry 0402 (1005) size and surface mount land pattern
-  100% Tin Solder Termination

Electrical Specifications @ 25°C - Operating Temperature Range  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

Part Number <sup>6</sup> Tolerance +/-5%	Part Number <sup>6</sup> Tolerance +/-2%	Inductance <sup>1</sup> (nH)	Q <sup>2</sup> (MIN)	SRF <sup>3</sup> (MHz MIN)	Rdc <sup>4</sup> (Ω MAX)	I <sub>dc</sub> <sup>5</sup> (mA MAX)
PE-0402CD1N0JTT	N/A	1.0 @ 250MHz	13 @ 250MHz	>6000	0.045	1360
PE-0402CD1N2JTT	N/A	1.2 @ 250MHz	13 @ 250MHz	>6000	0.06	1300
PE-0402CD1N8JTT	N/A	1.8 @ 250MHz	16 @ 250MHz	>6000	0.07	1040
PE-0402CD2N0JTT	N/A	2.0 @ 250MHz	16 @ 250MHz	>6000	0.07	1040
PE-0402CD2N2JTT	N/A	2.2 @ 250MHz	18 @ 250MHz	>6000	0.07	960
PE-0402CD2N7JTT	N/A	2.7 @ 250MHz	18 @ 250MHz	>6000	0.12	860
PE-0402CD3N3JTT	N/A	3.3 @ 250MHz	20 @ 250MHz	>6000	0.066	840
PE-0402CD3N6JTT	N/A	3.6 @ 250MHz	20 @ 250MHz	>6000	0.066	840
PE-0402CD3N9JTT	N/A	3.9 @ 250MHz	20 @ 250MHz	5800	0.066	840
PE-0402CD4N7JTT	N/A	4.7 @ 250MHz	20 @ 250MHz	4775	0.13	640
PE-0402CD5N1JTT	N/A	5.1 @ 250MHz	23 @ 250MHz	5800	0.083	800
PE-0402CD5N6JTT	N/A	5.6 @ 250MHz	23 @ 250MHz	5800	0.083	760
PE-0402CD6N2JTT	N/A	6.2 @ 250MHz	23 @ 250MHz	5800	0.083	760
PE-0402CD6N8JTT	N/A	6.8 @ 250MHz	20 @ 250MHz	5800	0.083	680
PE-0402CD7N2JTT	N/A	7.2 @ 250MHz	25 @ 250MHz	5800	0.100	680
PE-0402CD7N5JTT	N/A	7.5 @ 250MHz	25 @ 250MHz	5800	0.104	680
PE-0402CD8N2JTT	N/A	8.2 @ 250MHz	25 @ 250MHz	4400	0.104	680
PE-0402CD100JTT	PE-0402CD100GTT	10.0 @ 250MHz	25 @ 250MHz	3900	0.195	480
PE-0402CD110JTT	N/A	11.0 @ 250MHz	21 @ 250MHz	3680	0.120	640
PE-0402CD120JTT	N/A	12.0 @ 250MHz	21 @ 250MHz	3600	0.120	640
PE-0402CD150JTT	PE-0402CD150GTT	15.0 @ 250MHz	26 @ 250MHz	3280	0.172	560
PE-0402CD160JTT	N/A	16.0 @ 250MHz	26 @ 250MHz	3100	0.22	560
PE-0402CD180JTT	N/A	18.0 @ 250MHz	26 @ 250MHz	3100	0.23	520
PE-0402CD190JTT	N/A	19.0 @ 250MHz	26 @ 250MHz	3040	0.202	480
PE-0402CD200JTT	PE-0402CD200GTT	20.0 @ 250MHz	26 @ 250MHz	3000	0.250	480
PE-0402CD220JTT	PE-0402CD220GTT	22.0 @ 250MHz	26 @ 250MHz	2800	0.300	400

(Continued on next page)

# WIRE WOUND RF CHIP INDUCTORS

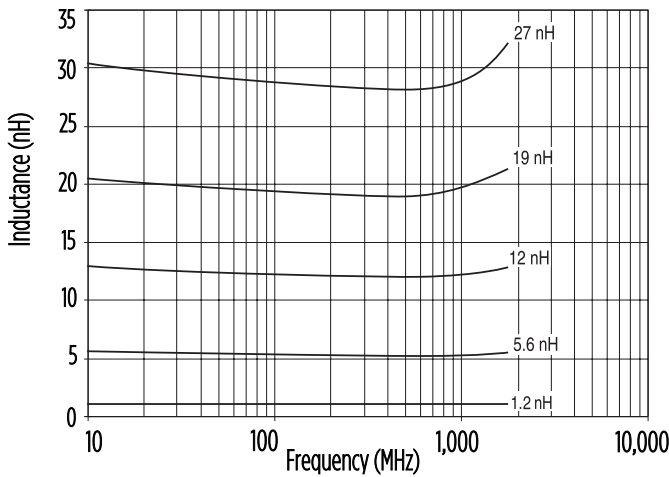
## 0402CD SERIES

Electrical Specifications @ 25°C - Operating Temperature Range -40°C to +125°C (continued)

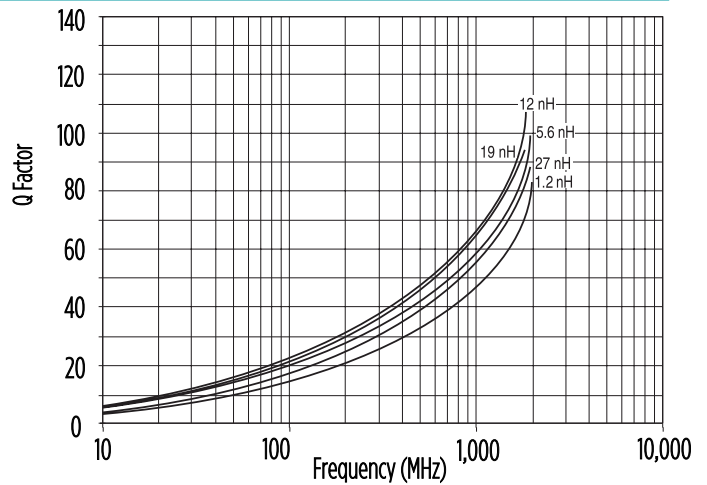
Part Number <sup>6</sup> Tolerance +/-5%	Part Number <sup>6</sup> Tolerance +/-2%	Inductance (nH)	Q <sup>2</sup> (MIN)	SRF <sup>3</sup> (MHz MIN)	Rdc <sup>4</sup> (Ω MAX)	I <sub>dc</sub> <sup>5</sup> (mA MAX)
PE-0402CD230JTT	N/A	23.0 @ 250MHz	26 @ 250MHz	2720	0.214	400
PE-0402CD240JTT	PE-0402CD240GTT	24.0 @ 250MHz	26 @ 250MHz	2700	0.30	400
PE-0402CD270JTT	PE-0402CD270GTT	27.0 @ 250MHz	26 @ 250MHz	2480	0.298	400
PE-0402CD330JTT	N/A	33.0 @ 250MHz	26 @ 250MHz	2350	0.35	400
PE-0402CD360JTT	PE-0402CD360GTT	36.0 @ 250MHz	26 @ 250MHz	2320	0.39	350
PE-0402CD390JTT	PE-0402CD390GTT	39.0 @ 250MHz	25 @ 250MHz	2100	0.55	320
PE-0402CD470JTT	N/A	47.0 @ 250MHz	20 @ 250MHz	2100	0.73	100
PE-0402CD560JTT	N/A	56.0 @ 250MHz	22 @ 250MHz	1750	0.97	100
PE-0402CD680JTT	N/A	68.0 @ 250MHz	18 @ 250MHz	1840	0.97	100
PE-0402CD820JTT	N/A	82.0 @ 250MHz	16 @ 250MHz	1680	1.25	100
PE-0402CD101JTT	N/A	100 @ 250MHz	16 @ 250MHz	1620	2.60	100
PE-0402CD121JTT	N/A	120 @ 250MHz	14 @ 250MHz	1520	2.70	90

- Notes:**
- Inductance measured using a HP4286A RF Impedance Analyzer. (Please note that inductance information is not stamped on part, because of the extremely small size).
  - Q measured using a HP4291A RF Impedance Analyzer with a HP16193A Test Fixture.
  - SRF measured using a HP8753C Network Analyzer.
  - RDC measured using a Valhalla Scientific model 4100 ATC Digital Ohmmeter.
  - Based on a 15°C maximum temperature rise.
  - Check ordered tolerance band carefully:  
To order a +/-2% tolerance band the ordering code ends with "GTT" while any +/-5% tolerance band ends with "JTT".

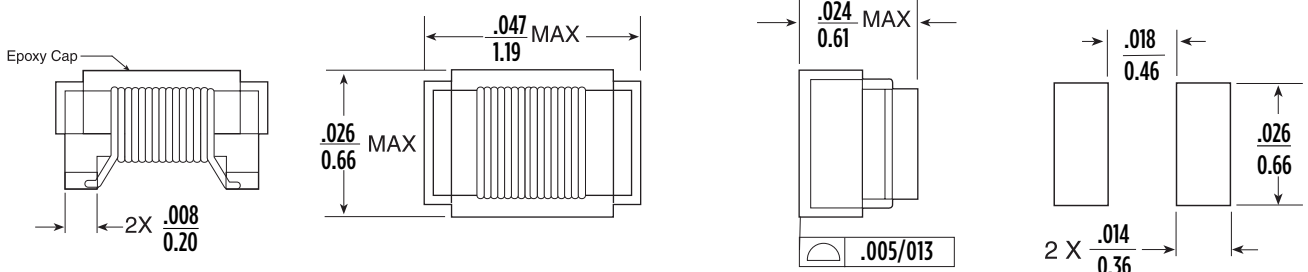
### Typical Inductance vs Frequency



### Typical Q vs Frequency



### Mechanical



### SUGGESTED PAD LAYOUT

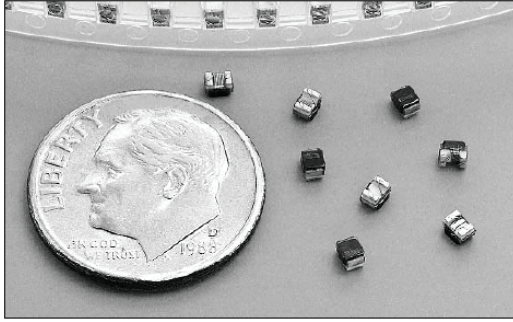
Dimensions:  $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified,  
all tolerances are  $\pm \frac{.010}{0.25}$

Weight .....0.002 grams

# WIRE WOUND RF CHIP INDUCTORS

## 0402FT SERIES



- Wire wound ferrite core construction
- High Impedance Values for suppression
- High self resonant frequency
- Temperature Range -40°C to +125°C
- Industry standard 0402 (1005) size and surface mount land pattern
- 100% Tin Solder Termination

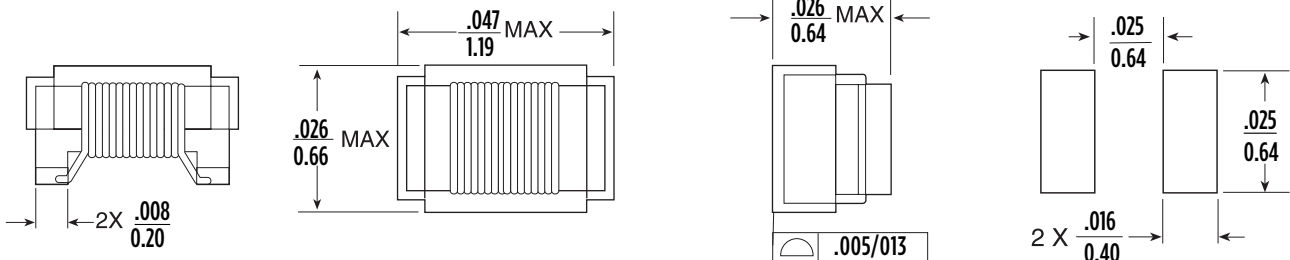
Electrical Specifications @ 25°C - Operating Temperature Range -40°C to +125°C

Part Number Tolerance +/-10%	Inductance <sup>1</sup> (nH)	Typical Impedance	SRF <sup>3</sup> (MHz MIN)	Rdc <sup>4</sup> (Ω MAX)	I <sub>dc</sub> <sup>5</sup> (mA MAX)
PE-0402FT220KTT	22.0 @ 7.9MHz	10 @ 100MHz	2500	0.065	1300
PE-0402FT330KTT	33.0 @ 7.9MHz	10 @ 100MHz	2300	0.06	1400
PE-0402FT390KTT	39.0 @ 7.9MHz	25 @ 100MHz	2200	0.115	830
PE-0402FT560KTT	56.0 @ 7.9MHz	30 @ 100MHz	1900	0.095	1000
PE-0402FT780KTT	78.0 @ 7.9MHz	30 @ 100MHz	1600	0.13	970
PE-0402FT101KTT	100 @ 7.9MHz	60 @ 100MHz	1400	0.16	900
PE-0402FT181KTT	180 @ 7.9MHz	75 @ 100MHz	1150	0.28	560
PE-0402FT221KTT	220 @ 7.9MHz	90 @ 100MHz	1150	0.53	380
PE-0402FT271KTT	270 @ 2.5MHz	100 @ 100MHz	860	0.55	360
PE-0402FT331KTT	330 @ 2.5MHz	110 @ 100MHz	820	0.56	350
PE-0402FT471KTT	470 @ 2.5MHz	120 @ 100MHz	650	0.73	310
PE-0402FT561KTT	560 @ 2.5MHz	140 @ 100MHz	600	0.92	200

- 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 HPI6193A Test Fixture.
  3. SRF measured using a HP8753C Network Analyzer.

4. RDC measured using a Valhalla Scientific model 4100 ATC Digital Ohmter.
5. Based on a 15°C maximum temperature rise.

### Mechanical



SUGGESTED PAD LAYOUT

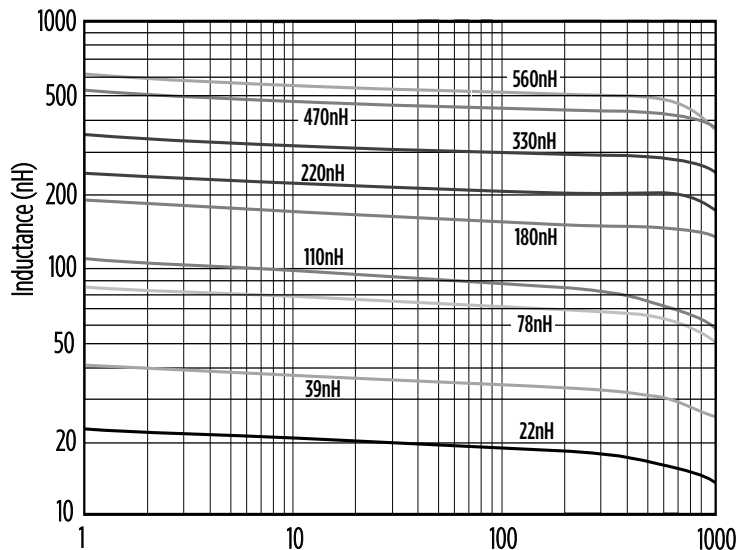
**Dimensions:** Inches  
mm

Unless otherwise specified,  
all tolerances are ± .010  
0.25

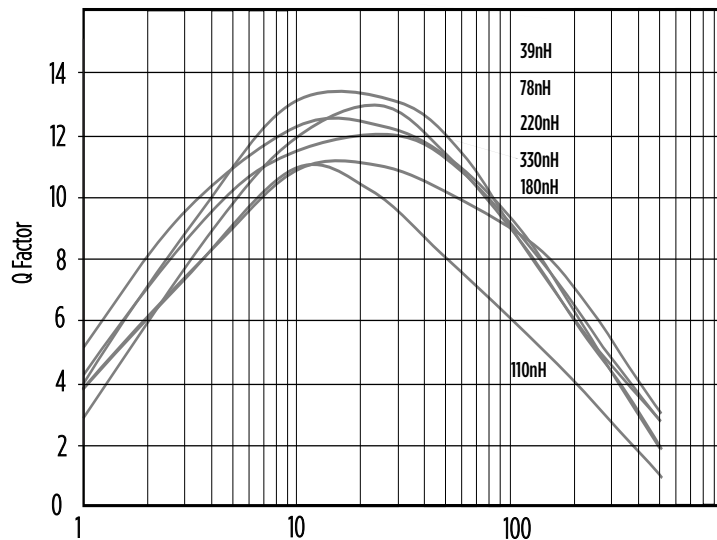
**Weight** .....0.002 grams

# WIRE WOUND RF CHIP INDUCTORS 0402FT SERIES

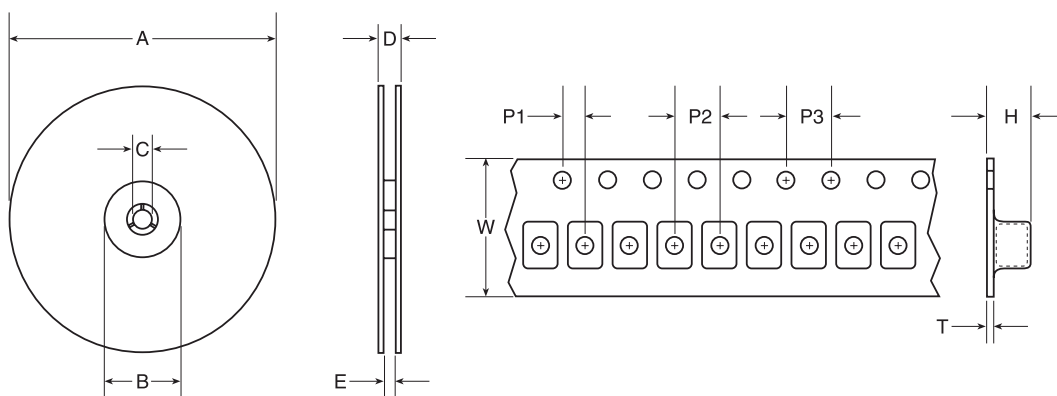
### Typical Inductance vs Frequency



### Typical Q vs Frequency



### Tape and Reel Specifications



Storage Temperature -40°C to +125°C

Series	Parts per Reel	Reels 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	0.60	0.3
0402FT												

**Notes:** 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 hold 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 contributes to a different length of tapes/reel per model.

# WIRE WOUND RF CHIP INDUCTORS

## PERFORMANCE TESTING

### Electrical Testing

<b>Storage and Operating Temperature Range:</b> -40°C 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 35% Q values shall not change by more than 310%
<b>Thermal:</b> -40°C to +85°C	Inductors are subjected to 30 cycles for 30 minutes at each extreme. Then tested at 25°C	
<b>Moisture Resistance 240 Hours at 70°C</b>	Inductors are subjected to 10 cycles of 24 hours at 90 to 95% relative humidity Then tested at 24°C	
<b>Operating Life</b>	Inductors are subjected to 1000 hours at 85°C with 85% Relative Humidity with the rated current applied	

### Mechanical Testing

<b>Temperature Range:</b>	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 35% Q values shall not change by more than 310%																												
<b>Recommended Solder Heat Resistance Profile</b>	<table border="1"> <caption>Recommended Solder Heat Resistance Profile Data</caption> <thead> <tr> <th>Time (Second)</th> <th>Temperature (C°)</th> </tr> </thead> <tbody> <tr><td>0</td><td>25</td></tr> <tr><td>25</td><td>35</td></tr> <tr><td>50</td><td>50</td></tr> <tr><td>75</td><td>75</td></tr> <tr><td>100</td><td>125</td></tr> <tr><td>125</td><td>150</td></tr> <tr><td>150</td><td>175</td></tr> <tr><td>175</td><td>200</td></tr> <tr><td>200</td><td>225</td></tr> <tr><td>225</td><td>250</td></tr> <tr><td>250</td><td>225</td></tr> <tr><td>275</td><td>175</td></tr> <tr><td>300</td><td>150</td></tr> </tbody> </table>		Time (Second)	Temperature (C°)	0	25	25	35	50	50	75	75	100	125	125	150	150	175	175	200	200	225	225	250	250	225	275	175	300	150
Time (Second)	Temperature (C°)																													
0	25																													
25	35																													
50	50																													
75	75																													
100	125																													
125	150																													
150	175																													
175	200																													
200	225																													
225	250																													
250	225																													
275	175																													
300	150																													

### Physical Specifications

<b>Vibration (Random)</b>	Samplers are subjected to random vibrations as per NAVMAT P9492	There shall be no deformation or change in appearance Inductance shall not change by more than 35% Q values shall not change by more than 310%
<b>Mechanical Shock</b>	Inductors are subjected to one half sine wave pulse (8700 g's for 0.3ms) in each directional axis for a total of 18 shocks	
<b>Moisture Resistance</b>	Reflow Inductors on to test pads using 63Sn/37Pb 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 gauge