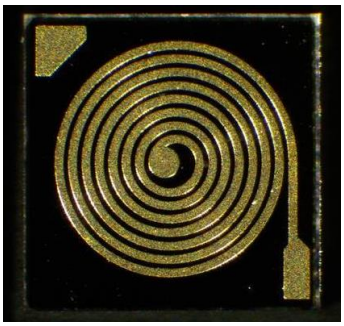
Thin Film Products

Spiral Inductors

PPI Spiral Inductors consist of a thin film gold spiral patterned on a substrate for use in a wide variety of uses, including storing electrical energy in the form of magnetic energy, in frequencies from DC to RF.

An optional polyimide coating over the coil is available for increased resistance to scratches or shorts. Non-conductive epoxy is recommended as a mounting method, backside metallization is also available. A second corner pad is provided for easy wire-bonding from the center pad for edge-contact mounting.



50x50 Spiral Inductor

Product Features

- Low Capacitance
- Less Resistive & Capacitive losses
- RoHS Compliant

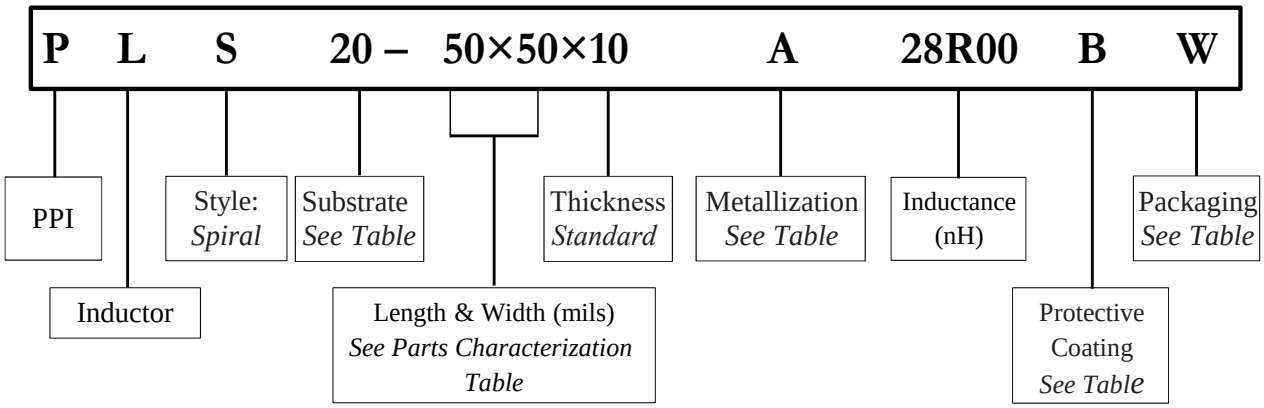
Applications

- Microwave Circuit Resonant elements
- Electrical Power & Electronic Devices

Functional Applications

- Choking, Blocking, Attenuating, or filtering/smoothing high frequency noise
- Storing & transferring energy in power converters
- Creates tuned oscillators or LC "tank" circuits
- Impedance matching

Part Numbering



Other inductance values, DC resistance values, substrates, geometries, metallizations, and custom inductors are available.

Substrate Materials

Code	Material	Thickness	Surface Finish	Dielectric Constant (@ 1MHz)	Coefficient of Thermal Expansion (x 10^6/ °C)	Thermal Conductivity (W/m*K)
35	Alumina (Al_2O_3)	0.005" - 0.010"	2µ" - 3µ"	9.9	7 (25°C to < 300°C)	26.9
20	Quartz (Fused Silica)	0.005" - 0.010"	60/40 Optical Polish	3.826	0.55 (25°C to < 1000°C)	1.38

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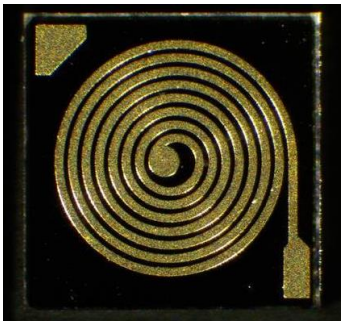
Parts Characterizations

Case Size (Mils)	Inductances	# of Turns	DC Resistance	Q (@ 200MHz)	Q (@ 500MHz)
25 x 25	1.2 nH	1.5	0.6Ω	3	7
25 x 25	2.0 nH	2.0	0.9Ω	3	8
25 x 25	3.0 nH	2.5	1.2Ω	4	9
30 x 30	4.4 nH	3.0	1.5Ω	4	10
30 x 30	6.0 nH	3.5	1.9Ω	4	11
30 x 30	7.9 nH	4.0	2.3Ω	4	11
40 x 40	10 nH	4.5	2.7Ω	5	12
40 x 40	13 nH	5.0	3.2Ω	5	12
40 x 40	16 nH	5.5	3.7Ω	5	13
40 x 40	19 nH	6.0	4.2Ω	6	13
40 x 40	23 nH	6.5	4.7Ω	6	14
50 x 50	28 nH	7.0	5.3Ω	7	14



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Metallizations

Code	Top Side		Bottom Side	
	Metallization	Attachement Options	Metallization	Attachement Options
A	Pd/Au	Wirebond, Non-Cond. Epoxy	–	–
D	Pd/Au	Wirebond Non-Cond. Epoxy	Ta/Pd/Au	Cond. Epoxy Non-Cond. Epoxy Eutectic Attach Solder

Other metallizations available. Please contact PPI.

Inductance Codes

Inductance (nH)
Digits 1-4 are significant figures
The "R" is used as a decimal point.
e.g. 28R0 = 28nH, 1R50 = 1.5nH

Inductance values are computed in free air, using a magnetic permeability for free air of $\mu = 4.0 \times 10^{-7}$. DC resistance is based on a gold metallization.

Protective Coating

Code	Polymide Coating
B	Without Coating
P	With Polymide Coating

Packaging

Code	Style
W	Waffle Pack (Standard)

Contact PPI for additional packaging options.

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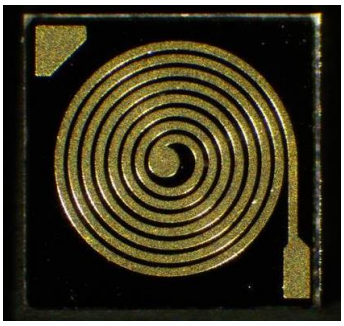
General Properties



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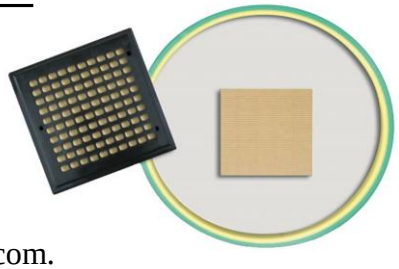
Operating Temperature	-55°C to +150°C
Storage Temperature	-65°C to +150°C
Operating Frequency	DC to 500 MHz
Insulation Resistance	$10^{12}\Omega$ · min at 25°C

Testing

Testing Performed	Specification / Standard
Visual Inspection	MIL-PRF-55342 MIL-STD-883
Mechanical Inspection	MIL-PRF-55342
DC Resistance	MIL-PRF-55342 MIL-STD-202
High Temperature Exposure	MIL-PRF-55342
Thermal Shock	MIL-PRF-55342 MIL-STD-202
Resistance to Bonding Exposure	MIL-PRF-55342
Wire Bonding Integrity	MIL-PRF-55342
Life Test	MIL-PRF-55342 MIL-STD-202



Performance Specifications

Additional sizes and custom inductors available. Please contact sales@passiveplus.com.