High Reliability Coupled Inductors MS612PND



Dot indicates pin1

Dash number

Internal code

0.157

4,0

ref

2

0.308 ±0.010* 7.8 ±0.25

0.138

3.5

ref

0.484

123

Coilcraft

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C

<u>0.0</u>59 ret

1.5

02

L2

0.484

0.197 ref

re 5.0

10

L1

3 (

Dimensions are in inches

50

0.197

max 12,3

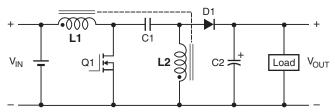
max 12,3

The MS612PND series of coupled inductors was designed for high temperature applications – up to 155°C. Tin-lead (Sn-Pb) terminations are used for the best possible board adhesion.

The excellent coupling coefficient ($k \ge 0.98$) makes it ideal for use in SEPIC applications. In SEPIC topologies, the required inductance for each winding in a coupled inductor is half the value needed for two separate inductors, allowing selection of a part with lower DCR and higher current handling.

These inductors provide high inductance, high efficiency, excellent current handling and 500 V isolation in a verv rugged part. They are well suited for use as VRM inductors in high-current DC-DC and VRM/VRD controllers.

They can also be used as two single inductors connected in series or parallel, as a common mode choke or as a 1:1 transformer.



Typical SEPIC schematic Refer to Application Note, Document 639, "Selecting Coupled Inductors for SEPIC Applications"

Core material Ferrite

Core and winding loss Go to online calculator

Terminations Tin-lead (63/37) over tin over nickel over phos bronze Weight: 3.8 g - 4.6 g

Ambient temperature -55°C to +105°C with Irms current

Maximum part temperature +155°C (ambient + temp rise).

Storage temperature Component: -55C to +155°C. Tape and reel packaging: -55°C to +80°C

Resistance to soldering heat Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)

Winding-to-winding and winding-to-core isolation 500 Vrms

Enhanced crush-resistant packaging 500/13" reel; Plastic tape: 24 mm wide, 0.4 mm thick, 16 mm pocket spacing, 8.1 mm pocket depth



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0.217 ref

5.5

0.177 ref

4.5

A

0.079 ref

2.0

Suggested

Land Pattern

* Dimensions are for the mounted part.

Dimensions before mounting can be an additional 0.012 inch (0,3 mm).

Fax 847-639-1508 Email cps@coilcraft.com www.coilcraft-cps.com

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This product may not be used in medical or high risk applications without prior Coilcraft approval. Specifications subject to change without notice. Please check our web site for latest information.

MS612PND Series (1278)

					Coupling	Leakage		Isat(A)⁵		Irms(A)	
		DCR max ³ (Ohms)	<u>SRF(</u> min	MHz) ⁴ typ	coefficient typ	Ltyp (µH)	10% drop	20% drop	30% drop	both windings ⁶	one winding ⁷
4.7 ±20%		0.040	26.0	33.0	0.98	0.22	13.90	15.20	16.36	3.16	4.47
5.6 ±20%		0.046	24.0	30.0	0.98	0.23	13.38	14.86	15.74	2.87	4.06
6.8 ±20%		0.048	18.0	23.0	0.98	0.22	12.10	13.56	14.20	2.81	3.98
8.2		0.055	16.0	20.0	0.98		10.30	11.52	12.20	2.76	3.90
10	±20%	0.058	14.0	17.0	0.98	0.34	8.80	10.00	10.66	2.56	3.62
12	±20%	0.062	12.0	15.0	0.98	0.36	8.20	9.18	9.74	2.48	3.50
15	±20%	0.072	10.0	13.0	0.99	0.41	7.40	8.36	9.03	2.30	3.25
18	±20%	0.080	9.6	12.0	0.99	0.37	6.50	7.38	7.86	2.18	3.08
22	±20%	0.096	8.8	11.0	0.99	0.41	6.00	6.80	7.26	1.99	2.81
27	±20%	0.120	8.0	10.0	0.99	0.43	5.80	6.56	7.02	1.78	2.52
33	±20%	0.150	7.6	9.5	0.99	0.56	5.50	6.10	6.52	1.59	2.25
39	±20%	0.161	6.8	8.5	0.99	0.64	4.70	5.26	5.60	1.54	2.18
47	±20%	0.180	6.0	7.5	0.99	0.70	3.70	4.34	4.60	1.45	2.05
56	±20%	0.190	5.6	7.0	0.99	0.76	3.60	4.18	4.50	1.41	2.00
68	±20%	0.210	5.2	6.5	0.99	0.88	3.50	4.04	4.32	1.35	1.90
82	±20%	0.280	4.0	5.0	0.99	0.85	3.30	3.72	4.02	1.16	1.65
100	±20%	0.300	3.6	4.5	>0.99	0.90	2.80	3.24	3.46	1.13	1.59
120	±10%	0.410	3.4	4.3	0.99	1.31	2.60	2.94	3.16	0.96	1.36
150	±10%	0.460	3.3	4.1	>0.99	1.46	2.20	2.54	2.70	0.91	1.29
180	±10%	0.510	3.2	4.0	>0.99	0.93	2.10	2.42	2.58	0.86	1.22
220	±10%	0.690	2.7	3.4	>0.99	1.54	1.90	2.16	2.28	0.74	1.05
270	±10%	0.900	2.5	3.1	>0.99	1.17	1.70	1.94	2.10	0.65	0.92
330	±10%	1.02	2.3	2.9	0.99	4.14	1.50	1.70	1.84	0.61	0.86
390	±10%	1.12	2.2	2.7	>0.99	1.64	1.40	1.60	1.70	0.58	0.82
470	±10%	1.53	1.8	2.2	>0.99	0.25	1.30	1.50	1.60	0.50	0.70
560	±10%	1.69	1.6	2.0	>0.99	2.68	1.20	1.34	1.46	0.47	0.67
680	±10%	2.29	1.4	1.7	>0.99	2.11	1.00	1.08	1.22	0.41	0.58
820	±10%	2.55	1.1	1.4	>0.99	2.39	0.900	1.04	1.18	0.39	0.55
1000	±10%	2.87	1.0	1.3	>0.99	4.28	0.850	0.948	1.05	0.37	0.52
	(μ 4.1 5.6 6.8 8.2 10 12 15 18 22 27 33 39 47 56 68 82 100 120 150 180 220 270 330 390 470 560 680 820	$\begin{array}{cccc} 5.6 \pm 20\% \\ 6.8 \pm 20\% \\ 8.2 \pm 20\% \\ 10 & \pm 20\% \\ 11 & \pm 20\% \\ 15 & \pm 20\% \\ 27 & \pm 20\% \\ 27 & \pm 20\% \\ 27 & \pm 20\% \\ 33 & \pm 20\% \\ 39 & \pm 20\% \\ 47 & \pm 20\% \\ 68 & \pm 20\% \\ 68 & \pm 20\% \\ 68 & \pm 20\% \\ 120 & \pm 10\% \\ 120 & \pm 10\% \\ 150 & \pm 10\% \\ 150 & \pm 10\% \\ 180 & \pm 10\% \\ 220 & \pm 10\% \\ 330 & \pm 10\% \\ 390 & \pm 10\% \\ 390 & \pm 10\% \\ 390 & \pm 10\% \\ 680 & \pm 10\% \\ 680 & \pm 10\% \\ 820 & \pm 10$	(μ H)(Ohms)4.7 ±20%0.0405.6 ±20%0.0486.8 ±20%0.0488.2 ±20%0.05510 ±20%0.05812 ±20%0.06215 ±20%0.07218 ±20%0.08022 ±20%0.09627 ±20%0.12033 ±20%0.16147 ±20%0.18056 ±20%0.21082 ±20%0.280100 ±20%0.300120 ±10%0.410150 ±10%0.460180 ±10%0.510220 ±10%0.690270 ±10%1.02390 ±10%1.12470 ±10%1.69680 ±10%2.29820 ±10%2.55	(μH) (Ohms)min4.7 ±20%0.04026.05.6 ±20%0.04624.06.8 ±20%0.04818.08.2 ±20%0.05516.010 ±20%0.05814.012 ±20%0.06212.015 ±20%0.07210.018 ±20%0.0809.622 ±20%0.0968.827 ±20%0.1507.639 ±20%0.1616.847 ±20%0.1806.056 ±20%0.1905.668 ±20%0.2105.282 ±20%0.2804.0100 ±20%0.3003.6120 ±10%0.4603.3180 ±10%0.5103.2220 ±10%0.6902.7270 ±10%0.9002.5330 ±10%1.022.3390 ±10%1.122.2470 ±10%1.691.6680 ±10%2.291.4820 ±10%2.551.1	(μ H)(Ohms)mintyp4.7 ±20%0.04026.033.05.6 ±20%0.04624.030.06.8 ±20%0.04818.023.08.2 ±20%0.05516.020.010 ±20%0.05814.017.012 ±20%0.06212.015.015 ±20%0.07210.013.018 ±20%0.0809.612.022 ±20%0.0968.811.027 ±20%0.1507.69.539 ±20%0.1616.88.547 ±20%0.1806.07.556 ±20%0.2105.26.582 ±20%0.2804.05.0100 ±20%0.3003.64.5120 ±10%0.4103.44.3150 ±10%0.4603.34.1180 ±10%0.5103.24.0220 ±10%0.6902.73.4270 ±10%1.022.32.9390 ±10%1.122.22.7470 ±10%1.691.62.0680 ±10%2.291.41.7820 ±10%2.551.11.4	Inductance (μ H)DCR max3 (Ohms)SRF (MHz)4 mincoefficient typ4.7 ±20%0.04026.033.00.985.6 ±20%0.04624.030.00.986.8 ±20%0.04818.023.00.988.2 ±20%0.05516.020.00.9810 ±20%0.05814.017.00.9812 ±20%0.06212.015.00.9815 ±20%0.07210.013.00.9918 ±20%0.0809.612.00.9922 ±20%0.0968.811.00.9927 ±20%0.1208.010.00.9933 ±20%0.1616.88.50.9933 ±20%0.1616.88.50.9968 ±20%0.2105.26.50.9968 ±20%0.2804.05.00.99100 ±20%0.3003.64.5>0.99100 ±20%0.3003.64.5>0.99120 ±10%0.4103.44.30.99120 ±10%0.6902.73.4>0.99180 ±10%0.5103.24.0>0.99330 ±10%1.022.32.90.99330 ±10%1.122.22.7>0.99360 ±10%1.691.62.0>0.99360 ±10%2.291.41.7>0.99680 ±10%2.551.11.4>0.99	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$

1. When ordering, please specify testing code:

MS612PND105KSŻ

Testing: Z = Unscreened

- H = Group A screening per Coilcraft CP-SA-10001
- T = Screening per MIL-STD-981
- U = Screening per EEE-INST-002
- F = Screening per ESCC 3201

All screening performed to the document's latest revision Custom screening also available

- 2. Inductance shown for each winding, measured at 100 kHz, 0.1 Vrms, 0 Adc on an Agilent/HP 4284A LCR meter or equivalent. When leads are connected in parallel, inductance is the same value. When leads are connected in series, inductance is four times the value.
- DCR is for each winding. When leads are connected in parallel, DCR is half the value. When leads are connected in series, DCR is twice the value.
- SRF measured using an Agilent/HP 4191A or equivalent. When leads are connected in parallel, SRF is the same value.
- DC current at 25°C that causes the specified inductance drop from its value without current. It is the sum of the current flowing in both windings.
- Equal current when applied to each winding simultaneously that causes a 40°C temperature rise from 25°C ambient. See temperature rise calculation.
- Maximum current when applied to one winding that causes a 40°C temperature rise from 25°C ambient. See temperature rise calculation.
 Electrical specifications at 25°C.

Refer to Doc 639 "Selecting Coupled Inductors for SEPIC Applications." Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

Coupled Inductor Core and Winding Loss Calculator

This web-based utility allows you to enter frequency, peak-to-peak (ripple) current, and Irms current to predict temperature rise and overall losses, including core loss. Go to online calculator.

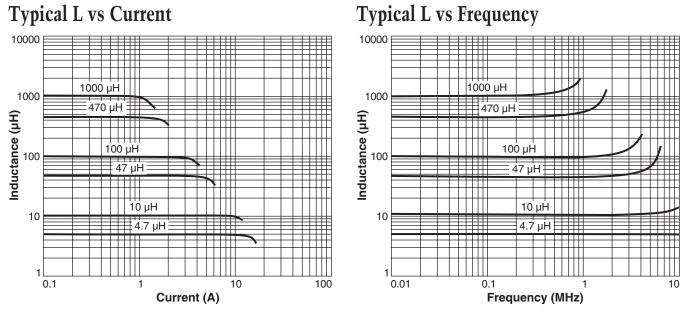
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MS612PND Series (1278)

Typical L vs Current



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