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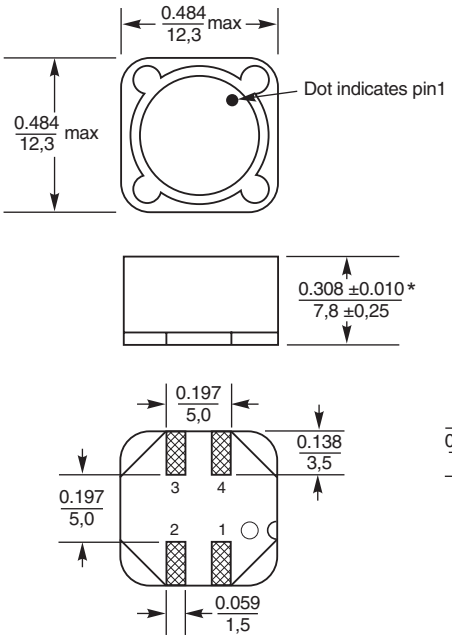
Outgassing Compliant Coupled Inductors AE612PND

The AE612PND series of shielded coupled inductors was designed with special materials that pass NASA low outgassing specifications and allow use in high temperature applications – up to 155°C. Tin-lead (Sn-Pb) terminations are used for the best possible board adhesion.

They offer excellent coupling coefficient (k ≥ 0.98) and can be used in SEPIC applications. In SEPIC topologies, the required inductance for each winding 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 very rugged part. They are well suited for use as VRM inductors in high-current DC-DC and VRM/VRD controllers.

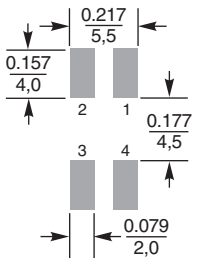
They can also be used as two single inductors connected in series or parallel, as a common mode choke or as a 1 : 1 transformer.

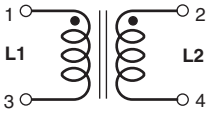


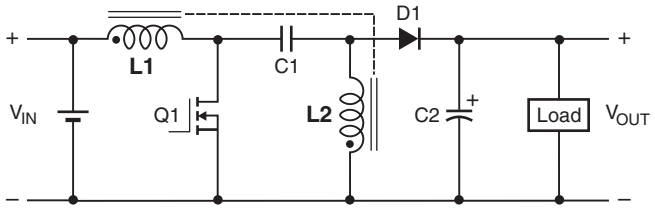
*Dimensions are for the mounted part. Dimensions before mounting can be an additional 0.006 inch (0,152 mm).

Dimensions are in inches / mm

Suggested Land Pattern







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. 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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AE612PND Series (1278)

Part number[1]	Inductance[2] (µH)	DCR max[3] (Ohms)	SRF (MHz)[4] min	SRF (MHz)[4] typ	Coupling coefficient typ	Leakage L typ (µH)	Isat (A)[5] 10% drop	Isat (A)[5] 20% drop	Isat (A)[5] 30% drop	Irms (A) both windings[6]	Irms (A) one winding[7]
AE612PND472MSZ	4.7 ±20%	0.040	26.0	33.0	0.98	0.22	13.90	15.20	16.36	3.16	4.47
AE612PND562MSZ	5.6 ±20%	0.046	24.0	30.0	0.98	0.23	13.38	14.86	15.74	2.87	4.06
AE612PND682MSZ	6.8 ±20%	0.048	18.0	23.0	0.98	0.22	12.10	13.56	14.20	2.81	3.98
AE612PND822MSZ	8.2 ±20%	0.055	16.0	20.0	0.98	0.34	10.30	11.52	12.20	2.76	3.90
AE612PND103MSZ	10 ±20%	0.058	14.0	17.0	0.98	0.34	8.80	10.00	10.66	2.56	3.62
AE612PND123MSZ	12 ±20%	0.062	12.0	15.0	0.98	0.36	8.20	9.18	9.74	2.48	3.50
AE612PND153MSZ	15 ±20%	0.072	10.0	13.0	0.99	0.41	7.40	8.36	9.03	2.30	3.25
AE612PND183MSZ	18 ±20%	0.080	9.6	12.0	0.99	0.37	6.50	7.38	7.86	2.18	3.08
AE612PND223MSZ	22 ±20%	0.096	8.8	11.0	0.99	0.41	6.00	6.80	7.26	1.99	2.81
AE612PND273MSZ	27 ±20%	0.120	8.0	10.0	0.99	0.43	5.80	6.56	7.02	1.78	2.52
AE612PND333MSZ	33 ±20%	0.150	7.6	9.5	0.99	0.56	5.50	6.10	6.52	1.59	2.25
AE612PND393MSZ	39 ±20%	0.161	6.8	8.5	0.99	0.64	4.70	5.26	5.60	1.54	2.18
AE612PND473MSZ	47 ±20%	0.180	6.0	7.5	0.99	0.70	3.70	4.34	4.60	1.45	2.05
AE612PND563MSZ	56 ±20%	0.190	5.6	7.0	0.99	0.76	3.60	4.18	4.50	1.41	2.00
AE612PND683MSZ	68 ±20%	0.210	5.2	6.5	0.99	0.88	3.50	4.04	4.32	1.35	1.90
AE612PND823MSZ	82 ±20%	0.280	4.0	5.0	0.99	0.85	3.30	3.72	4.02	1.16	1.65
AE612PND104MSZ	100 ±20%	0.300	3.6	4.5	>0.99	0.90	2.80	3.24	3.46	1.13	1.59
AE612PND124KSZ	120 ±10%	0.410	3.4	4.3	0.99	1.31	2.60	2.94	3.16	0.96	1.36
AE612PND154KSZ	150 ±10%	0.460	3.3	4.1	>0.99	1.46	2.20	2.54	2.70	0.91	1.29
AE612PND184KSZ	180 ±10%	0.510	3.2	4.0	>0.99	0.93	2.10	2.42	2.58	0.86	1.22
AE612PND224KSZ	220 ±10%	0.690	2.7	3.4	>0.99	1.54	1.90	2.16	2.28	0.74	1.05
AE612PND274KSZ	270 ±10%	0.900	2.5	3.1	>0.99	1.17	1.70	1.94	2.10	0.65	0.92
AE612PND334KSZ	330 ±10%	1.02	2.3	2.9	0.99	4.14	1.50	1.70	1.84	0.61	0.86
AE612PND394KSZ	390 ±10%	1.12	2.2	2.7	>0.99	1.64	1.40	1.60	1.70	0.58	0.82
AE612PND474KSZ	470 ±10%	1.53	1.8	2.2	>0.99	0.25	1.30	1.50	1.60	0.50	0.70
AE612PND564KSZ	560 ±10%	1.69	1.6	2.0	>0.99	2.68	1.20	1.34	1.46	0.47	0.67
AE612PND684KSZ	680 ±10%	2.29	1.4	1.7	>0.99	2.11	1.00	1.08	1.22	0.41	0.58
AE612PND824KSZ	820 ±10%	2.55	1.1	1.4	>0.99	2.39	0.900	1.04	1.18	0.39	0.55
AE612PND105KSZ	1000 ±10%	2.87	1.0	1.3	>0.99	4.28	0.850	0.948	1.05	0.37	0.52

1. When ordering, please specify **testing** code:

   AE612PND105KSZ

   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.
3. 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.
4. SRF measured using an Agilent/HP 4191A or equivalent. When leads are connected in parallel, SRF is the same value.
5. 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.
6. Equal current when applied to each winding simultaneously that causes a 40°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.
7. Maximum current when applied to one winding that causes a 40°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.
8. 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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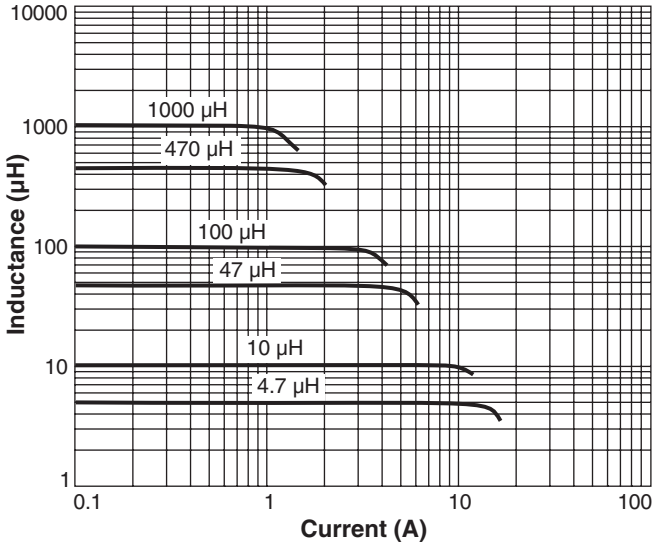
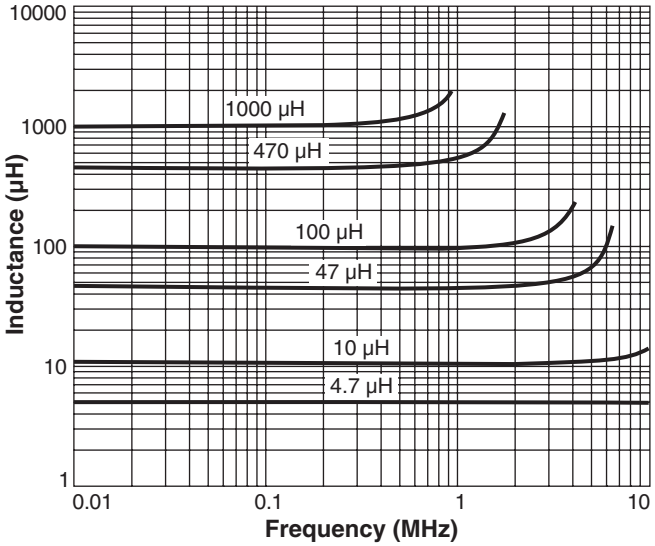
AE612PND Series (1278)

Typical L vs Current



Typical L vs Frequency



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