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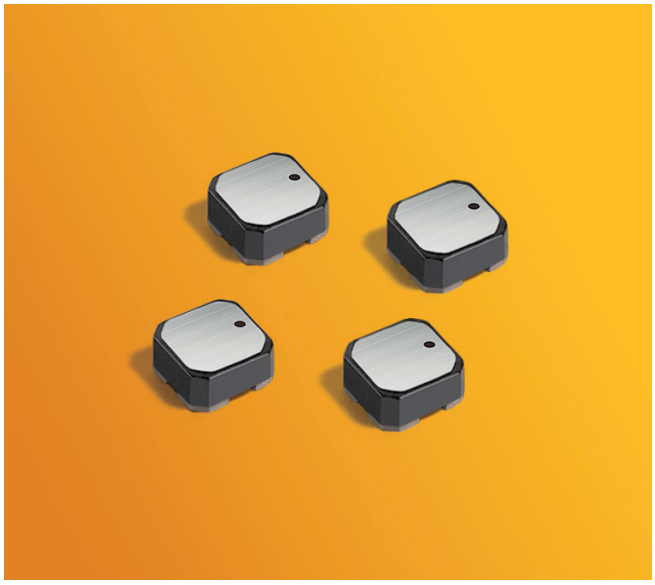
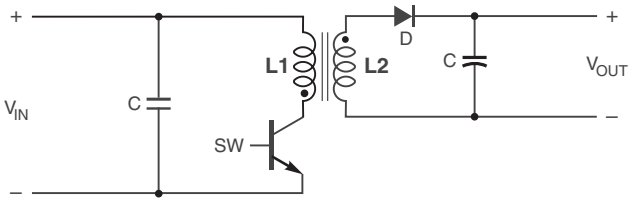
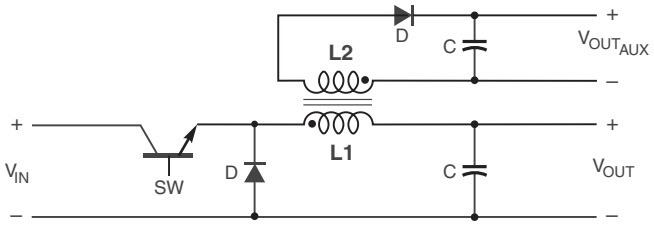
Coupled Inductors for Critical Applications AE412PJD



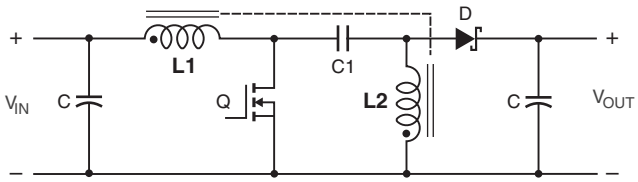
- Only 1.4 mm high and 3 mm square
- Ideal for use in flyback, multi-output buck, SEPIC and Zeta applications.
- High inductance, high efficiency and excellent current handling
- Can also be used as two single inductors connected in series or parallel or as a common mode choke.



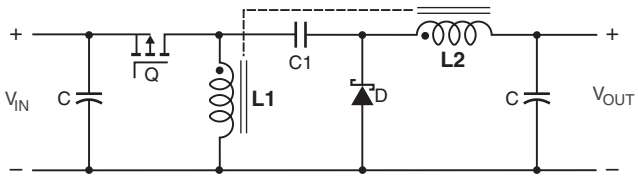
Typical Flyback Converter



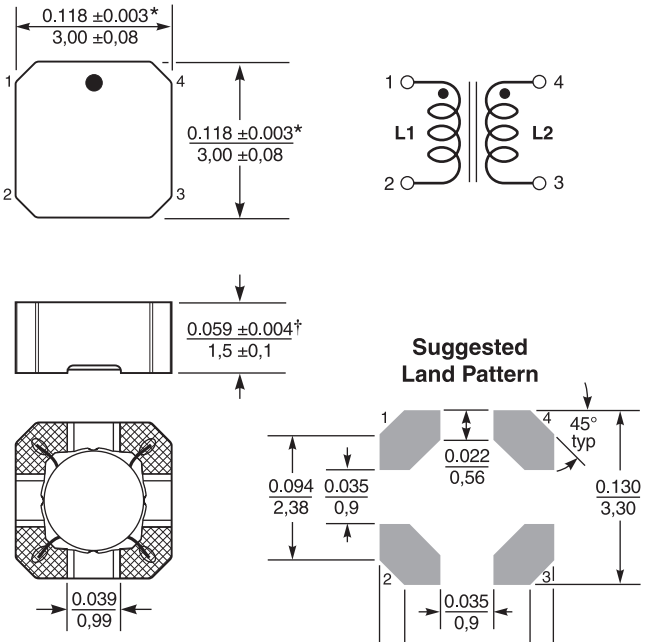
Typical Buck Converter with auxiliary output



Typical SEPIC schematic



Typical Zeta schematic



*Dimensions are of the case not including termination. For maximum overall dimensions including the termination, add 0.010 inches / 0,254 mm.

†Height dimension is after mounting. For maximum height dimension before mounting, add 0.006 in / 0,152 mm.

Dimensions are in inches / mm

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Document AE661-1 Revised 04/12/23

AE412PJD Series Coupled Inductors

Part number[1]	Inductance[2] (µH)	DCR max[3] (Ohms)	SRF typ[4] (MHz)	Coupling coefficient typ	Leakage L typ[5] (µH)	Isat (A)[6] 10% drop	Isat (A)[6] 20% drop	Isat (A)[6] 30% drop	Irms (A) both windings[7]	Irms (A) one winding[8]
AE412PJD391NPZ	0.39 ±30%	0.071	289	0.89	0.08	3.2	3.3	3.4	1.45	2.05
AE412PJD561MPZ	0.56 ±20%	0.079	235	0.93	0.08	2.7	2.8	2.8	1.37	1.94
AE412PJD102MPZ	1.0 ±20%	0.129	160	0.95	0.09	2.0	2.1	2.2	1.08	1.52
AE412PJD152MPZ	1.5 ±20%	0.204	140	0.96	0.11	1.6	1.7	1.8	0.86	1.20
AE412PJD182MPZ	1.8 ±20%	0.273	135	0.96	0.13	1.5	1.6	1.6	0.78	1.10
AE412PJD222MPZ	2.2 ±20%	0.300	110	0.97	0.14	1.5	1.6	1.6	0.75	1.05
AE412PJD332MPZ	3.3 ±20%	0.337	90	0.98	0.16	1.0	1.1	1.2	0.67	0.94
AE412PJD472MPZ	4.7 ±20%	0.503	79	0.98	0.18	0.86	0.87	0.88	0.54	0.76
AE412PJD682MPZ	6.8 ±20%	0.622	58	0.98	0.22	0.77	0.78	0.79	0.49	0.69
AE412PJD103MPZ	10 ±20%	1.040	48	0.99	0.28	0.58	0.59	0.60	0.38	0.53
AE412PJD153MPZ	15 ±20%	1.420	35	0.99	0.37	0.49	0.50	0.51	0.32	0.46
AE412PJD183MPZ	18 ±20%	1.550	33	0.99	0.42	0.46	0.47	0.48	0.31	0.44
AE412PJD223MPZ	22 ±20%	1.89	30	0.99	0.48	0.42	0.43	0.44	0.28	0.40
AE412PJD333MPZ	33 ±20%	2.84	23	0.99	0.63	0.34	0.35	0.36	0.23	0.32
AE412PJD473MPZ	47 ±20%	4.03	17	0.99	0.81	0.28	0.29	0.30	0.19	0.27
AE412PJD683MPZ	68 ±20%	6.11	14	0.99	1.13	0.24	0.25	0.26	0.16	0.22
AE412PJD104MPZ	100 ±20%	8.54	11	0.99	1.50	0.20	0.21	0.22	0.13	0.19
AE412PJD124MPZ	120 ±20%	9.23	9.0	0.99	1.76	0.19	0.20	0.20	0.13	0.18
AE412PJD154MPZ	150 ±20%	12.40	8.0	0.99	2.22	0.16	0.17	0.18	0.11	0.16
AE412PJD184MPZ	180 ±20%	15.32	7.5	0.99	2.79	0.15	0.16	0.17	0.10	0.14
AE412PJD224MPZ	220 ±20%	18.56	6.0	0.99	3.56	0.13	0.14	0.15	0.09	0.13
AE412PJD334MPZ	330 ±20%	27.70	5.0	0.99	5.18	0.11	0.12	0.12	0.07	0.10

1. When ordering, please specify **termination** and **screening** codes:

AE412PJD334MPZ

Termination: **P** = Tin-lead (63/37) over tin over nickel.
R = Matte tin over nickel over silver-platinum glass frit
Q = Tin-silver-copper (95.5/4/0.5) over tin over nickel over silver-platinum-glass frit.

Screening: **Z** = Unscreened
Y = Unscreened (SLDC Option A)
W = Unscreened (SLDC Option B)
H = Coilcraft CP-SA-10001 Group A
G = Coilcraft CP-SA-10001 Group A (SLDC Option A)
D = Coilcraft CP-SA-10001 Group A (SLDC Option B)
1 = EEE-INST-002 (Family 1) Level 1
2 = EEE-INST-002 (Family 1) Level 2
3 = EEE-INST-002 (Family 1) Level 3
4 = MIL-STD-981 (Family 04) Class B
5 = MIL-STD-981 (Family 04) Class S
F = ESCC3201 (F4 operational life performed at 105°C)

- Screening performed to the document's latest revision.
- Lot qualification (Group B) available.
- Testing T and U have been replaced with more detailed codes 4, 5, and 1, 2, 3, respectively. Codes T and U can still be used, if necessary. Custom testing also available.
- Country of origin restrictions available; prefix options G or F.

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. Leakage Inductance is for L1 and is measured with L2 shorted
6. 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.
7. 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.
8. 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.
9. 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.

Core material Ferrite
Core and winding loss
Weight 48 – 66 mg
Terminations Tin-lead (63/37) over tin over nickel. Other terminations available at additional cost.
Ambient temperature –55°C to +105°C with Irms current
Maximum part temperature +155°C (ambient + temp rise).
Storage temperature Component: –55°C to +155°C. Packaging: –55°C to +80°C
Winding to winding isolation 100 V
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)
Packaging 1000/7″ reel Plastic tape: 12 mm wide, 0.26 mm thick, 8 mm pocket spacing, 1.65 mm pocket depth
Recommended pick and place nozzle OD: 3 mm; ID: ≤1.5 mm

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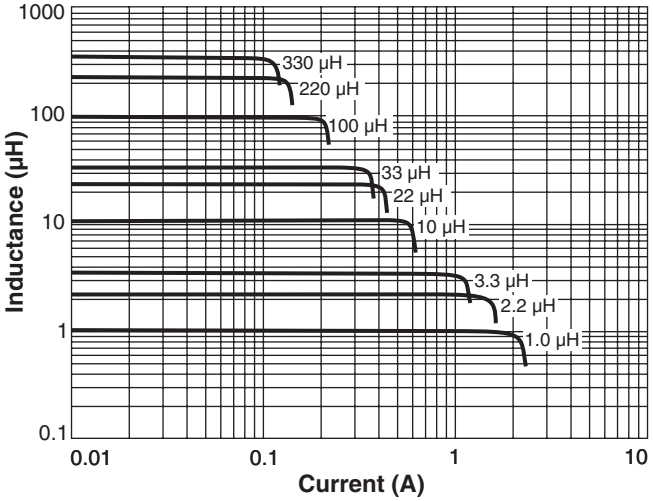
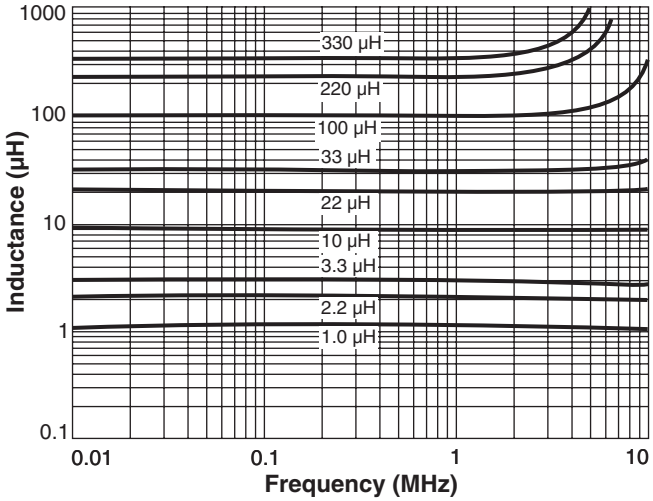
AE412PJD Series Coupled Inductors

Typical L vs Current



Typical L vs Frequency



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