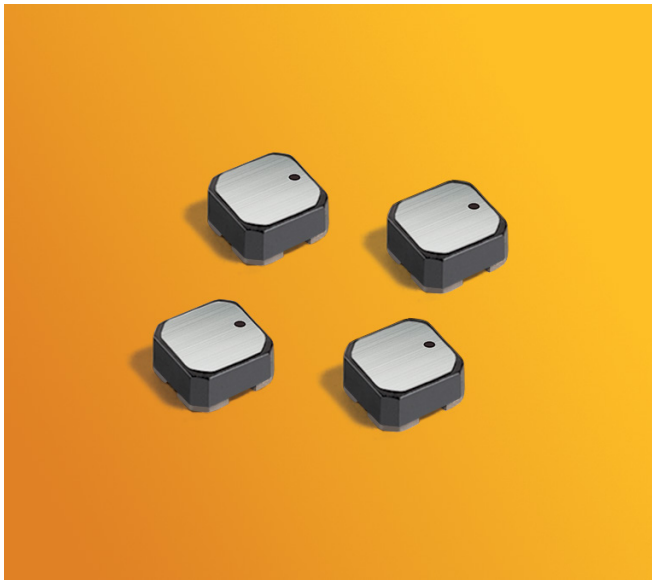
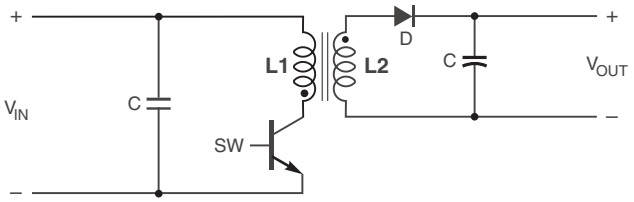
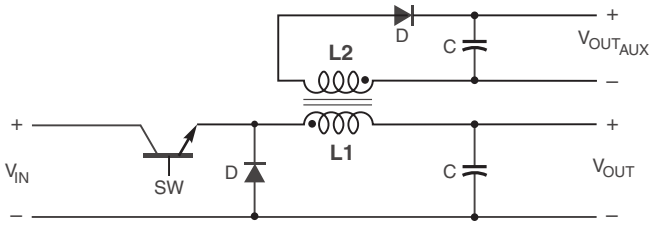
Coupled Inductors for Critical Applications ML412PJD



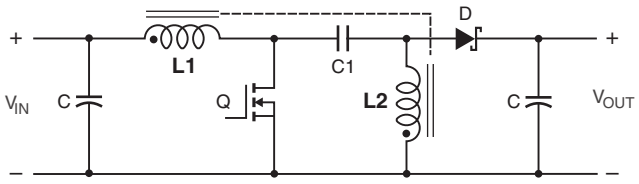
- Only 1.4 mm high and 3 mm square
- Ideal for use in flyback, multi-output buck, SEPIC and Zeta applications.
- High inductance, high efficiency and excellent current handling
- Can also be used as two single inductors connected in series or parallel or as a common mode choke.



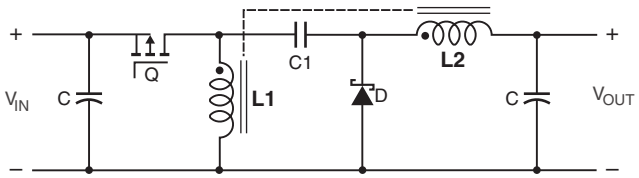
Typical Flyback Converter



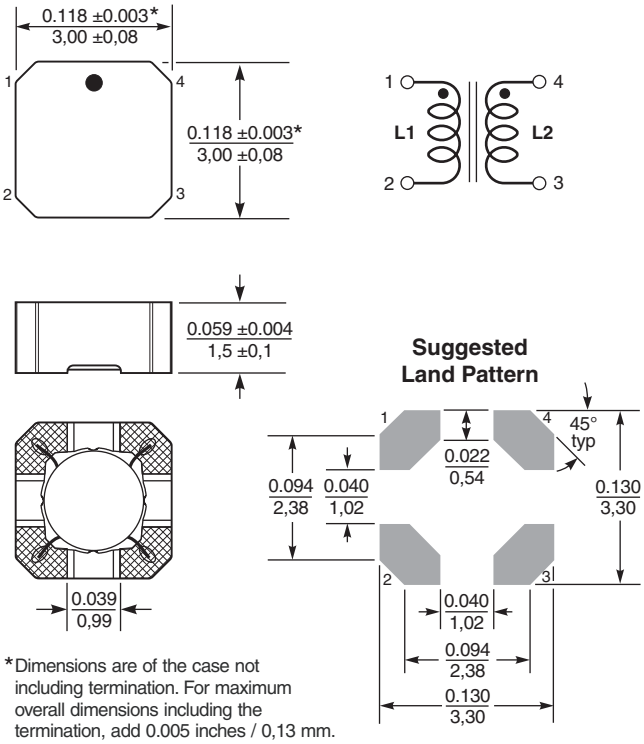
Typical Buck Converter with auxiliary output



Typical SEPIC schematic



Typical Zeta schematic



*Dimensions are of the case not including termination. For maximum overall dimensions including the termination, add 0.005 inches / 0,13 mm.

Dimensions are in inches / mm

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Document ML661-1 Revised 01/17/17

ML412PJD 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]
ML412PJD391NLZ	0.39 ±30%	0.071	289	0.89	0.08	3.2	3.3	3.4	1.45	2.05
ML412PJD561MLZ	0.56 ±20%	0.079	235	0.93	0.08	2.7	2.8	2.8	1.37	1.94
ML412PJD102MLZ	1.0 ±20%	0.129	160	0.95	0.09	2.0	2.1	2.2	1.08	1.52
ML412PJD152MLZ	1.5 ±20%	0.204	140	0.96	0.11	1.6	1.7	1.8	0.86	1.20
ML412PJD182MLZ	1.8 ±20%	0.273	135	0.96	0.13	1.5	1.6	1.6	0.78	1.10
ML412PJD222MLZ	2.2 ±20%	0.300	110	0.97	0.14	1.5	1.6	1.6	0.75	1.05
ML412PJD332MLZ	3.3 ±20%	0.337	90	0.98	0.16	1.0	1.1	1.2	0.67	0.94
ML412PJD472MLZ	4.7 ±20%	0.503	79	0.98	0.18	0.86	0.87	0.88	0.54	0.76
ML412PJD682MLZ	6.8 ±20%	0.622	58	0.98	0.22	0.77	0.78	0.79	0.49	0.69
ML412PJD103MLZ	10 ±20%	1.040	48	0.99	0.28	0.58	0.59	0.60	0.38	0.53
ML412PJD153MLZ	15 ±20%	1.420	35	0.99	0.37	0.49	0.50	0.51	0.32	0.46
ML412PJD183MLZ	18 ±20%	1.550	33	0.99	0.42	0.46	0.47	0.48	0.31	0.44
ML412PJD223MLZ	22 ±20%	1.89	30	0.99	0.48	0.42	0.43	0.44	0.28	0.40
ML412PJD333MLZ	33 ±20%	2.84	23	0.99	0.63	0.34	0.35	0.36	0.23	0.32
ML412PJD473MLZ	47 ±20%	4.03	17	0.99	0.81	0.28	0.29	0.30	0.19	0.27
ML412PJD683MLZ	68 ±20%	6.11	14	0.99	1.13	0.24	0.25	0.26	0.16	0.22
ML412PJD104MLZ	100 ±20%	8.54	11	0.99	1.50	0.20	0.21	0.22	0.13	0.19
ML412PJD124MLZ	120 ±20%	9.23	9.0	0.99	1.76	0.19	0.20	0.20	0.13	0.18
ML412PJD154MLZ	150 ±20%	12.40	8.0	0.99	2.22	0.16	0.17	0.18	0.11	0.16
ML412PJD184MLZ	180 ±20%	15.32	7.5	0.99	2.79	0.15	0.16	0.17	0.10	0.14
ML412PJD224MLZ	220 ±20%	18.56	6.0	0.99	3.56	0.13	0.14	0.15	0.09	0.13
ML412PJD334MLZ	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 **testing** codes:

   ML412PJD34MLZ

   Termination: **L** = RoHS compliant silver-palladium-platinum-glass frit.
   R = Matte tin over nickel over silver.
   Testing: **Z** = Unscreened
   H = Group A screening per Coilcraft CP-SA-10001
   N = Group A screening per Coilcraft CP-SA-10004
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 RoHS compliant, silver-palladium-platinum-glass frit. Other terminations available at additional cost.
Ambient temperature –55°C to +155°C with Irms current
Maximum part temperature +125°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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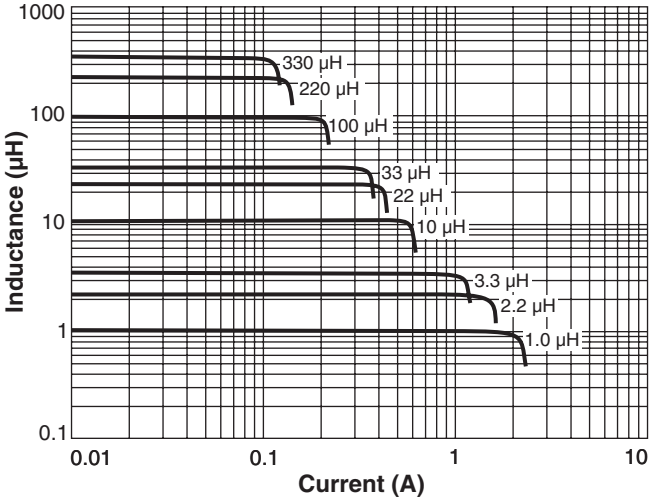
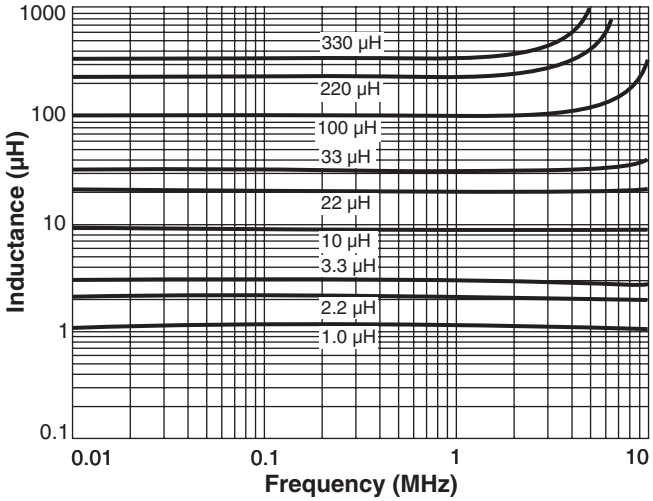
Document ML661-2 Revised 01/17/17

ML412PJD Series Coupled Inductors

Typical L vs Current



Typical L vs Frequency



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