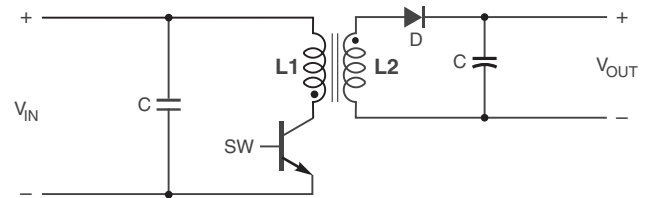


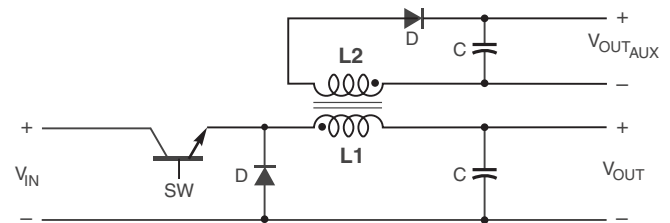
# Coupled Inductors for Critical Applications ML412PJD



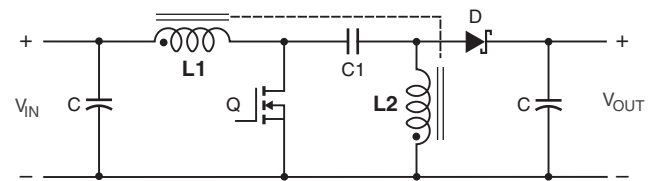
- Only 1.4 mm high and 3 mm square
- Ideal for use in flyback, multi-output buck, SEPIC and Zeta applications.
- High inductance, high efficiency and excellent current handling
- Can also be used as two single inductors connected in series or parallel or as a common mode choke.



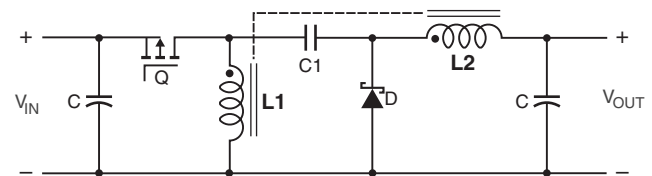
Typical Flyback Converter



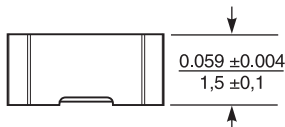
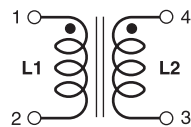
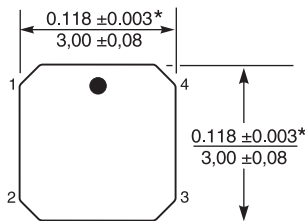
Typical Buck Converter with auxiliary output



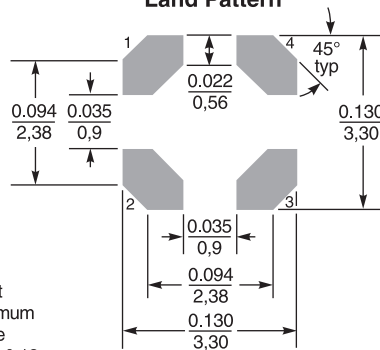
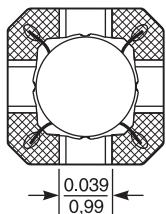
Typical SEPIC schematic



Typical Zeta schematic



Suggested Land Pattern



\*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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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.

# ML412PJD Series Coupled Inductors

Part number <sup>1</sup>	Inductance <sup>2</sup> ( $\mu$ H)	DCR max <sup>3</sup> (Ohms)	SRF typ <sup>4</sup> (MHz)	Coupling coefficient typ	Leakage L typ <sup>5</sup> ( $\mu$ H)	Isat (A) <sup>6</sup>			Irms (A)	
						10% drop	20% drop	30% drop	both windings <sup>7</sup>	one winding <sup>8</sup>
ML412PJD391NLZ	0.39 $\pm$ 30%	0.071	289	0.89	0.08	3.2	3.3	3.4	1.45	2.05
ML412PJD561MLZ	0.56 $\pm$ 20%	0.079	235	0.93	0.08	2.7	2.8	2.8	1.37	1.94
ML412PJD102MLZ	1.0 $\pm$ 20%	0.129	160	0.95	0.09	2.0	2.1	2.2	1.08	1.52
ML412PJD152MLZ	1.5 $\pm$ 20%	0.204	140	0.96	0.11	1.6	1.7	1.8	0.86	1.20
ML412PJD182MLZ	1.8 $\pm$ 20%	0.273	135	0.96	0.13	1.5	1.6	1.6	0.78	1.10
ML412PJD222MLZ	2.2 $\pm$ 20%	0.300	110	0.97	0.14	1.5	1.6	1.6	0.75	1.05
ML412PJD332MLZ	3.3 $\pm$ 20%	0.337	90	0.98	0.16	1.0	1.1	1.2	0.67	0.94
ML412PJD472MLZ	4.7 $\pm$ 20%	0.503	79	0.98	0.18	0.86	0.87	0.88	0.54	0.76
ML412PJD682MLZ	6.8 $\pm$ 20%	0.622	58	0.98	0.22	0.77	0.78	0.79	0.49	0.69
ML412PJD103MLZ	10 $\pm$ 20%	1.040	48	0.99	0.28	0.58	0.59	0.60	0.38	0.53
ML412PJD153MLZ	15 $\pm$ 20%	1.420	35	0.99	0.37	0.49	0.50	0.51	0.32	0.46
ML412PJD183MLZ	18 $\pm$ 20%	1.550	33	0.99	0.42	0.46	0.47	0.48	0.31	0.44
ML412PJD223MLZ	22 $\pm$ 20%	1.89	30	0.99	0.48	0.42	0.43	0.44	0.28	0.40
ML412PJD333MLZ	33 $\pm$ 20%	2.84	23	0.99	0.63	0.34	0.35	0.36	0.23	0.32
ML412PJD473MLZ	47 $\pm$ 20%	4.03	17	0.99	0.81	0.28	0.29	0.30	0.19	0.27
ML412PJD683MLZ	68 $\pm$ 20%	6.11	14	0.99	1.13	0.24	0.25	0.26	0.16	0.22
ML412PJD104MLZ	100 $\pm$ 20%	8.54	11	0.99	1.50	0.20	0.21	0.22	0.13	0.19
ML412PJD124MLZ	120 $\pm$ 20%	9.23	9.0	0.99	1.76	0.19	0.20	0.20	0.13	0.18
ML412PJD154MLZ	150 $\pm$ 20%	12.40	8.0	0.99	2.22	0.16	0.17	0.18	0.11	0.16
ML412PJD184MLZ	180 $\pm$ 20%	15.32	7.5	0.99	2.79	0.15	0.16	0.17	0.10	0.14
ML412PJD224MLZ	220 $\pm$ 20%	18.56	6.0	0.99	3.56	0.13	0.14	0.15	0.09	0.13
ML412PJD334MLZ	330 $\pm$ 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:

**ML412PJD34MLZ**

**Termination:** L = RoHS compliant silver-palladium-platinum-glass frit.  
R = Matte tin over nickel over silver.

**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)

- Screening performed to the document's latest revision.
- Custom testing also available.
- Country of origin restrictions available; prefix option G.

- 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.
- Leakage Inductance is for L1 and is measured with L2 shorted
- 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. This information is for reference only and does not represent absolute maximum ratings.
- 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.
- 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 +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:  $\leq$  1.5 mm



CRITICAL PRODUCTS & SERVICES

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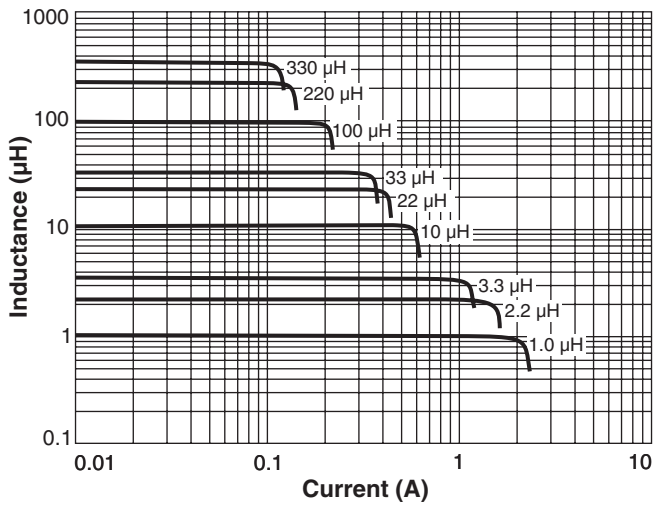
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This product may not be used in medical or high risk applications without prior Coilcraft approval. Specifications subject to change without notice. Please check our web site for latest information.

# ML412PJD Series Coupled Inductors

## Typical L vs Current



## Typical L vs Frequency

