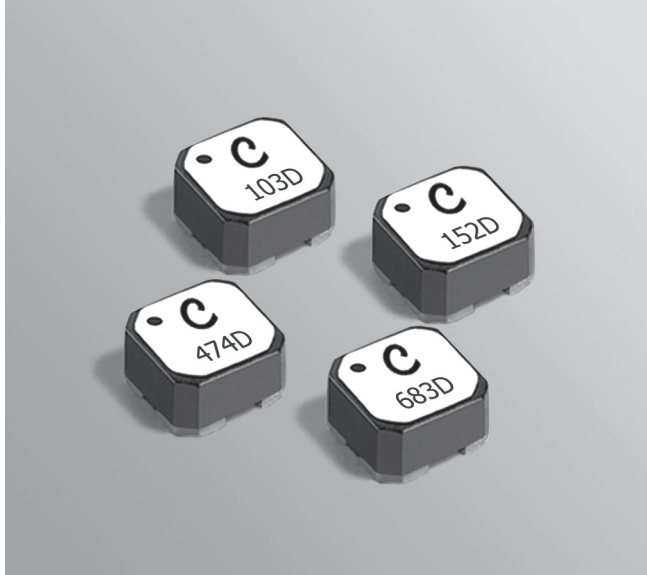




NEW!

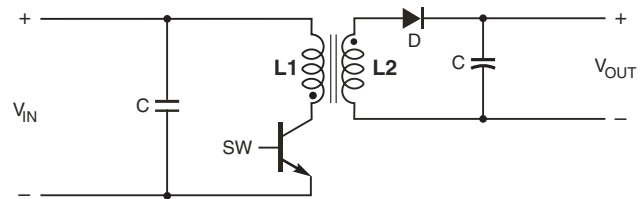
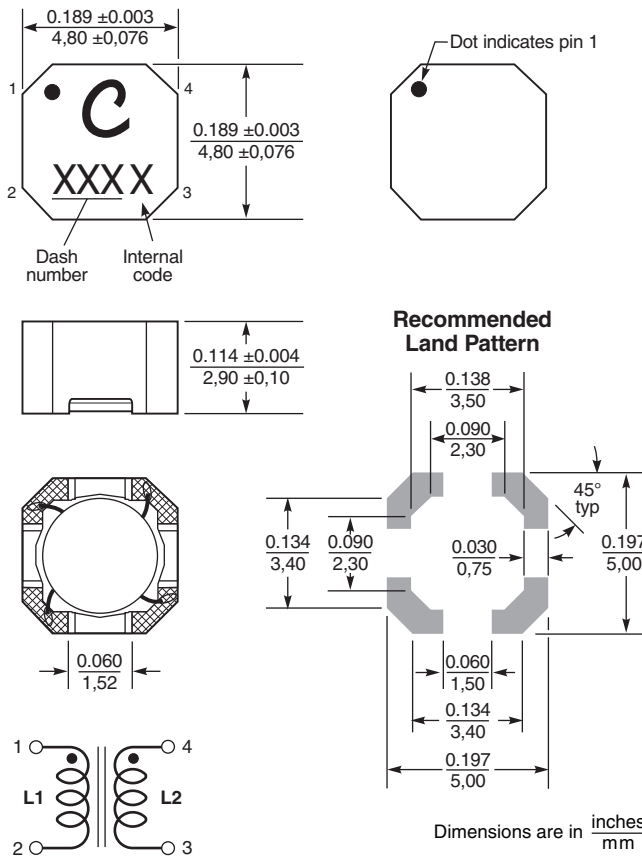
Coupled Inductors – LPD5030 For Flyback, SEPIC and other Applications



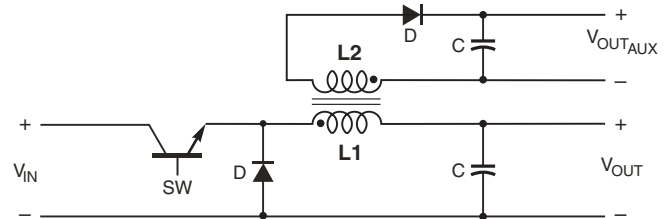
The LPD5030 coupled miniature shielded inductors are only 3 mm high and 5 mm square. They are ideal for use in a variety of circuits including flyback, multi-output buck and SEPIC.

These inductors provide high inductance, high efficiency and excellent current handling in a rugged, low cost part.

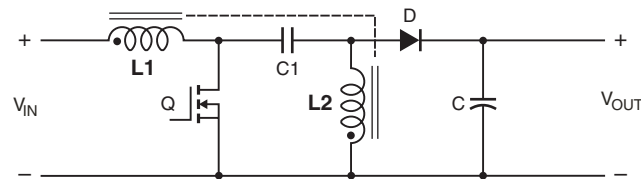
They can also be used as two single inductors connected in series or parallel or as a common mode choke.



Typical Flyback Converter



Typical Buck Converter with auxiliary output



Typical SEPIC schematic

- Core material** Ferrite
- Core and winding loss** See www.coilcraft.com/coupledloss
- Weight** 210 – 225 mg
- Terminations** RoHS compliant, halogen free silver-palladium-platinum-glass frit. Other terminations available at additional cost.
- Ambient temperature** -40°C to +85°C with I_{rms} current, +85°C to +125°C with derated current
- Storage temperature** Component: -40°C to +125°C. Packaging: -40°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)
- Mean Time Between Failures (MTBF)** 26,315,789 hours
- Packaging** 750/7" reel; 2500/13" reel Plastic tape: 12 mm wide, 0.32 mm thick, 8 mm pocket spacing, 3.1 mm pocket depth
- Recommended pick and place nozzle OD:** 5 mm; ID: ≤ 2.5 mm
- PCB washing** Only pure water or alcohol recommended



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


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Coupled Inductors for SEPIC Applications – LPD5030 Series

Part number ¹	Inductance ² (μ H)	DCR max ³ (Ohms)	SRF typ ⁴ (MHz)	Coupling coefficient typ	Leakage L typ ⁵ (μ H)	Isat (A) ⁶			Irms (A)	
						10% drop	20% drop	30% drop	both windings ⁷	one winding ⁸
LPD5030-102NE_	1.0 \pm 30%	0.042	156	0.95	0.09	4.6	4.8	5.0	2.60	3.68
LPD5030-152ME_	1.5 \pm 20%	0.048	123	0.97	0.09	3.9	4.2	4.3	2.20	3.11
LPD5030-222ME_	2.2 \pm 20%	0.067	78.0	0.98	0.10	3.1	3.3	3.4	2.15	3.04
LPD5030-332ME_	3.3 \pm 20%	0.077	65.0	0.98	0.10	2.5	2.7	2.8	1.85	2.62
LPD5030-472ME_	4.7 \pm 20%	0.111	53.0	0.99	0.11	2.1	2.2	2.2	1.45	2.05
LPD5030-562ME_	5.6 \pm 20%	0.125	48.0	0.99	0.11	2.0	2.0	2.1	1.35	1.91
LPD5030-682ME_	6.8 \pm 20%	0.159	43.0	0.99	0.12	1.8	1.9	1.9	1.20	1.70
LPD5030-103ME_	10 \pm 20%	0.210	31.0	0.99	0.13	1.3	1.3	1.3	1.05	1.48
LPD5030-153ME_	15 \pm 20%	0.298	25.0	0.99	0.15	1.2	1.4	1.4	0.85	1.20
LPD5030-223ME_	22 \pm 20%	0.452	19.0	>0.99	0.17	1.0	1.1	1.1	0.70	0.99
LPD5030-333ME_	33 \pm 20%	0.565	15.0	>0.99	0.20	0.80	0.84	0.85	0.60	0.85
LPD5030-473ME_	47 \pm 20%	0.806	12.6	>0.99	0.24	0.65	0.69	0.72	0.50	0.71
LPD5030-683ME_	68 \pm 20%	1.13	10.0	>0.99	0.29	0.50	0.54	0.55	0.46	0.64
LPD5030-104ME_	100 \pm 20%	1.79	8.32	>0.99	0.37	0.47	0.54	0.56	0.35	0.49
LPD5030-154ME_	150 \pm 20%	2.43	6.80	>0.99	0.46	0.38	0.43	0.45	0.31	0.43
LPD5030-224ME_	220 \pm 20%	3.30	5.55	>0.99	0.54	0.31	0.35	0.36	0.26	0.37
LPD5030-334ME_	330 \pm 20%	5.36	4.05	>0.99	0.65	0.25	0.25	0.32	0.20	0.28
LPD5030-474ME_	470 \pm 20%	7.51	3.35	>0.99	0.76	0.21	0.24	0.26	0.17	0.23
LPD5030-684ME_	680 \pm 20%	10.8	2.78	>0.99	0.89	0.17	0.20	0.21	0.14	0.19
LPD5030-105ME_	1000 \pm 20%	16.5	2.24	>0.99	1.20	0.15	0.17	0.17	0.11	0.15

1. Please specify **termination** and **packaging** codes:

LPD5030-105MEC

Termination: E = RoHS compliant, halogen free silver-palladium-platinum-glass frit.

Special order:

T = RoHS tin-silver-copper (95.5/4/0.5) or

S = non-RoHS tin-lead (63/37).

Packaging: C = 7" machine-ready reel. EIA-481 embossed plastic tape (750 parts per full reel).

B = Less than full reel. In tape, but not machine ready. To have a leader and trailer added (\$25 charge), use code letter D instead.

D = 13" machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked (2500 parts per full reel).

- 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 which the inductance drops the specified amount 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.

Temperature rise calculation based on specified Irms

Winding power loss = $(I_{L1}^2 + I_{L2}^2) \times \text{DCR}$ in Watts (W)

Temperature rise = Winding power loss $\times \frac{90^\circ\text{C}}{\text{W}}$

Examples for LPD5030-472ME:

Equal current in each winding (1.4 A):

Winding power loss = $(1.4^2 + 1.4^2) \times 0.111 = 0.435 \text{ W}$

Temperature rise = $0.435 \text{ W} \times \frac{90^\circ\text{C}}{\text{W}} = 39.2^\circ\text{C}$

Unequal current ($I_{L1} = 1.8 \text{ A}$, $I_{L2} = 0.8 \text{ A}$):

Winding power loss = $(1.8^2 + 0.8^2) \times 0.111 = 0.431 \text{ W}$

Temperature rise = $0.431 \text{ W} \times \frac{90^\circ\text{C}}{\text{W}} = 38.8^\circ\text{C}$

Coupled Inductor Core and Winding Loss Calculator

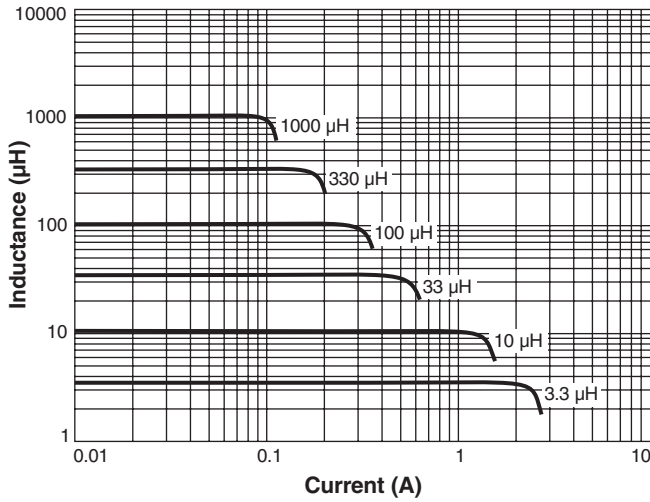
This web-based utility allows you to enter frequency, peak-to-peak (ripple) current, and Irms current to predict temperature rise and overall losses, including core loss. Visit www.coilcraft.com/coupledloss.



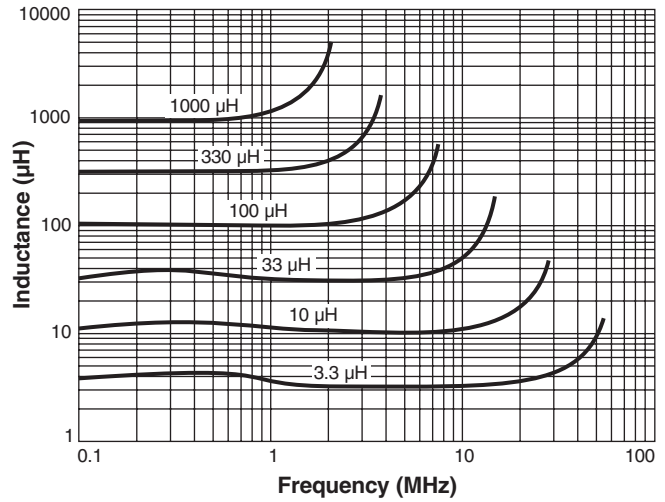
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Coupled Inductors for SEPIC Applications – LPD5030 Series

Typical L vs Current



Typical L vs Frequency



Typical Current Derating

