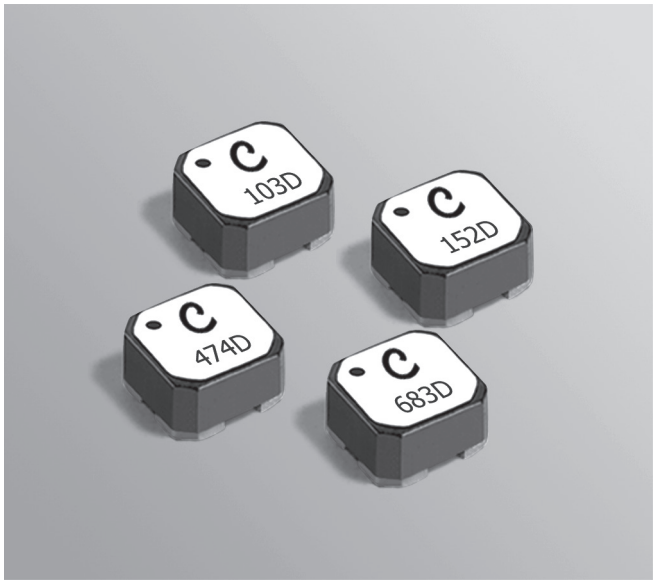
NEW!

Coupled Inductors – LPD5030

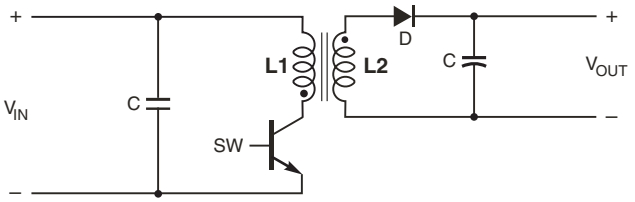
For Flyback, SEPIC and other Applications



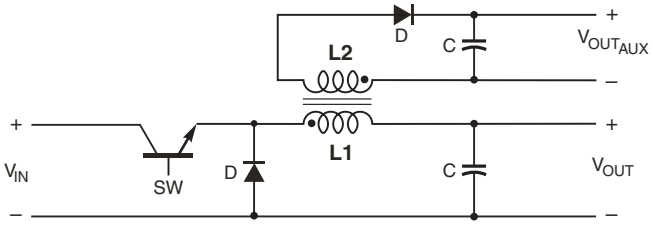
The LPD5030 coupled miniature shielded inductors are only 3 mm high and 5 mm square. They are ideal for use in a variety of circuits including flyback, multi-output buck and SEPIC.

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

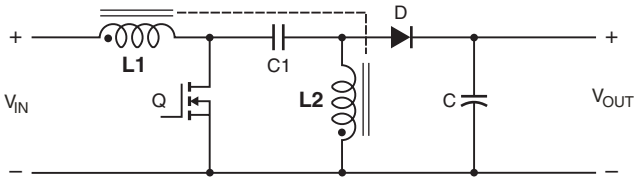
They can also be used as two single inductors connected in series or parallel or as a common mode choke.



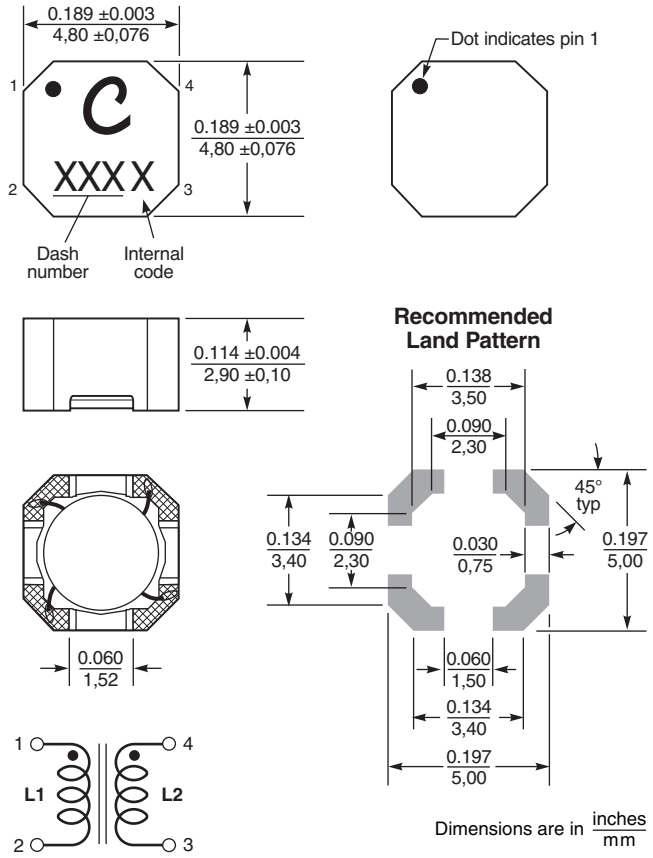
Typical Flyback Converter



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 Irms 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

Coilcraft
www.coilcraft.com

US +1-847-639-6400 sales@coilcraft.com
UK +44-1236-730595 sales@coilcraft-europe.com
Taiwan +886-2-2264 3646 sales@coilcraft.com.tw
China +86-21-6218 8074 sales@coilcraft.com.cn
Singapore + 65-6484 8412 sales@coilcraft.com.sg

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Coupled Inductors for SEPIC Applications – LPD5030 Series

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

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 which the inductance drops the specified amount 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. See temperature rise calculation.
8. Maximum current when applied to one winding that causes a 40°C temperature rise from 25°C ambient. See temperature rise calculation.
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.

Temperature rise calculation based on specified Irms

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

Temperature rise = Winding power loss $\times \frac{90°C}{W}$

Examples for LPD5030-472ME:

Equal current in each winding (1.4 A):

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

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

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

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

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

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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US +1-847-639-6400 sales@coilcraft.com
UK +44-1236-730595 sales@coilcraft-europe.com
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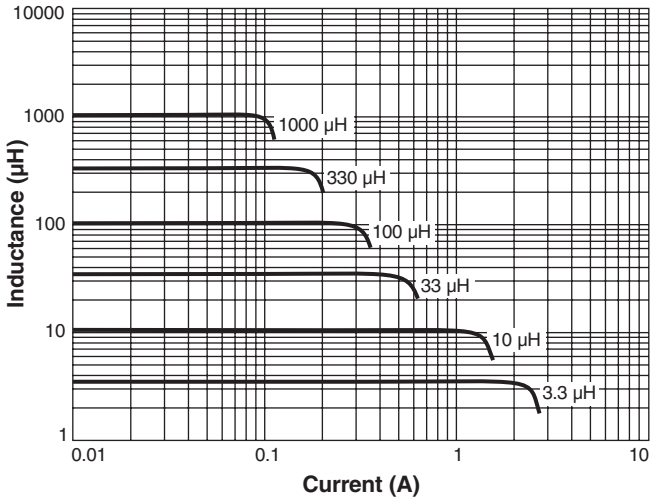
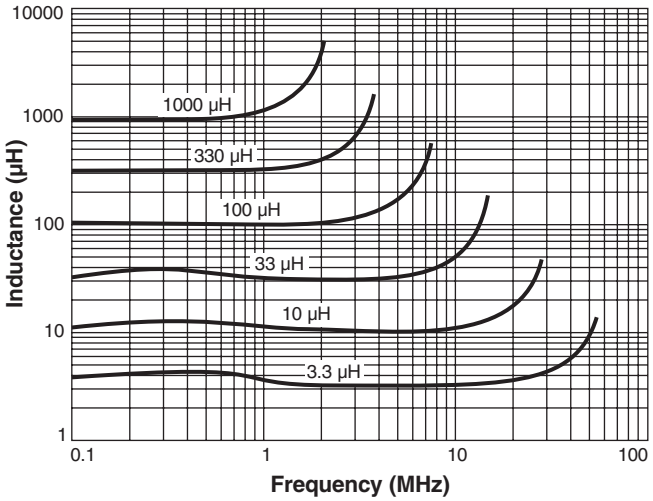
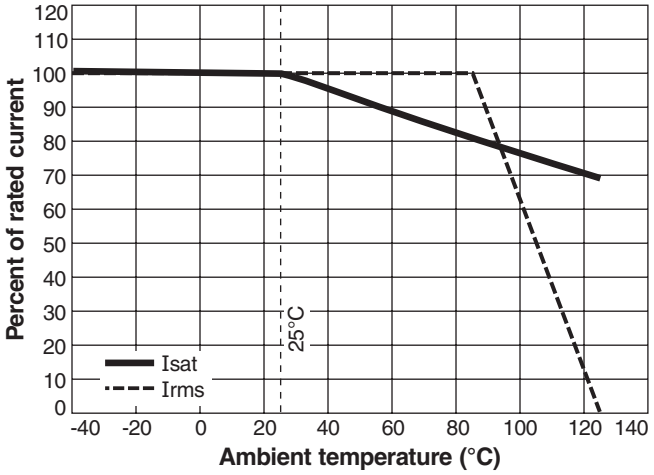
Typical L vs Current



Typical L vs Frequency



Typical Current Derating



Coilcraft®
www.coilcraft.com

US +1-847-639-6400 sales@coilcraft.com
UK +44-1236-730595 sales@coilcraft-europe.com
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China +86-21-6218 8074 sales@coilcraft.com.cn
Singapore + 65-6484 8412 sales@coilcraft.com.sg

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