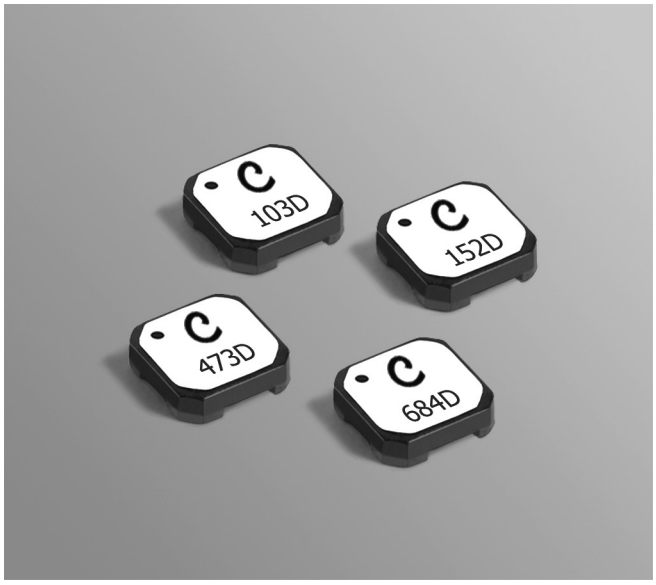
Coupled Inductors LPD5010

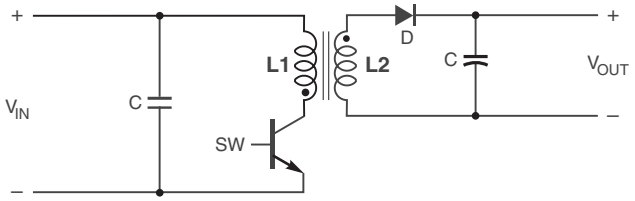
For Flyback, SEPIC, Zeta and other Applications



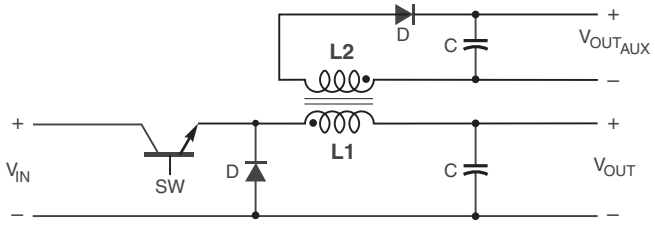
The LPD5010 coupled miniature shielded inductors are mere 1 mm high and 5 mm square. They are ideal for use in a variety of circuits including flyback, multi-output buck, SEPIC and Zeta.

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

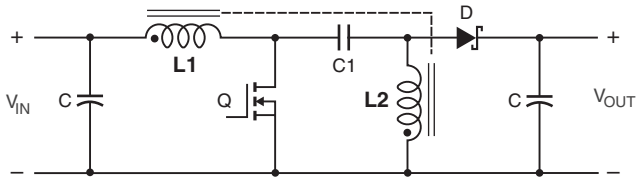
They can also be used as two single inductors connected in series or parallel or as a common mode choke.



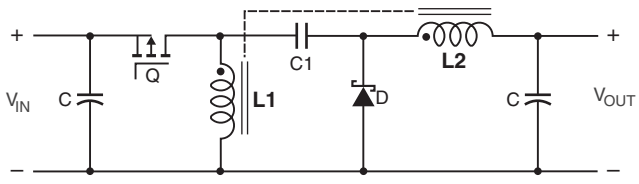
Typical Flyback Converter



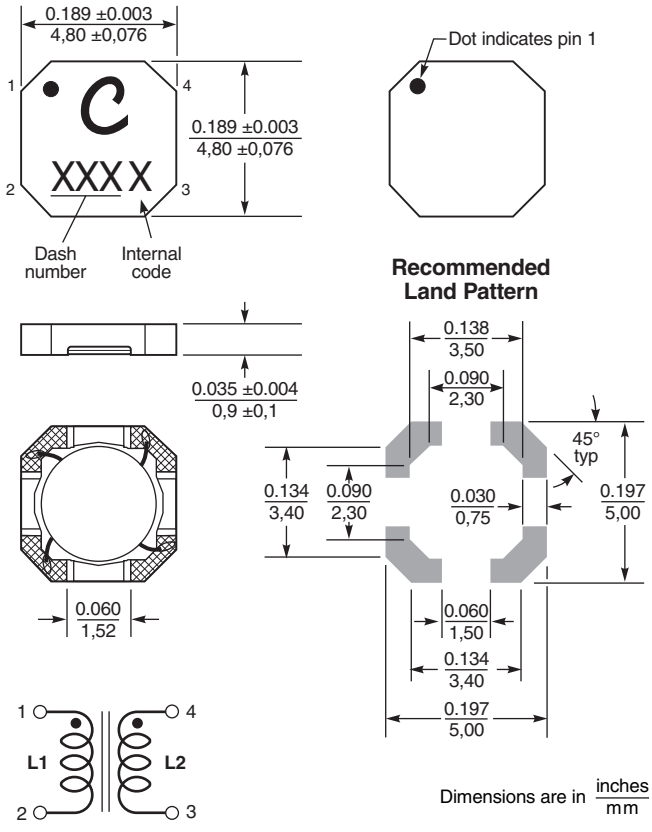
Typical Buck Converter with auxiliary output



Typical SEPIC schematic



Typical Zeta schematic



Dimensions are in inches / mm

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Coupled Inductors for SEPIC Applications – LPD5010 Series

Part number[1]	Inductance[2] ±20% (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]
LPD5010-681ME_	0.68	0.07	191	0.95	0.07	2.6	2.7	2.8	1.95	2.76
LPD5010-102ME_	1.0	0.10	150	0.95	0.09	2.1	2.1	2.2	1.50	2.12
LPD5010-152ME_	1.5	0.15	134	0.97	0.09	1.7	1.8	1.8	1.20	1.70
LPD5010-222ME_	2.2	0.20	108	0.97	0.11	1.5	1.6	1.6	1.10	1.56
LPD5010-332ME_	3.3	0.27	83	0.98	0.13	1.2	1.3	1.3	0.95	1.34
LPD5010-472ME_	4.7	0.40	68	0.98	0.15	0.98	1.0	1.1	0.75	1.06
LPD5010-562ME_	5.6	0.45	60	0.99	0.16	0.90	0.93	0.94	0.70	0.99
LPD5010-682ME_	6.8	0.53	55	0.99	0.19	0.83	0.86	0.87	0.60	0.85
LPD5010-822ME_	8.2	0.70	50	0.99	0.22	0.74	0.77	0.78	0.50	0.71
LPD5010-103ME_	10	0.78	46	0.99	0.27	0.67	0.69	0.70	0.50	0.71
LPD5010-153ME_	15	1.19	33	0.99	0.34	0.53	0.55	0.56	0.42	0.59
LPD5010-223ME_	22	1.58	26	0.99	0.40	0.45	0.47	0.48	0.35	0.49
LPD5010-333ME_	33	2.50	23	0.99	0.48	0.37	0.38	0.39	0.30	0.42
LPD5010-473ME_	47	3.48	17.0	0.99	0.63	0.31	0.32	0.33	0.25	0.35
LPD5010-683ME_	68	5.10	14.9	0.99	0.90	0.25	0.26	0.27	0.19	0.26
LPD5010-104ME_	100	8.0	11.2	0.99	1.39	0.21	0.22	0.22	0.15	0.21
LPD5010-154ME_	150	11.7	9.90	0.99	2.10	0.17	0.17	0.18	0.12	0.16
LPD5010-224ME_	220	15.2	8.05	0.99	3.02	0.14	0.15	0.15	0.11	0.15

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

LPD5010-224MEC

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 (1000 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 (3500 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.

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. Go to online calculator.

Core material Ferrite
Core and winding loss Go to online calculator
Weight 60 – 70 mg
Environmental RoHS compliant, halogen free
Terminations RoHS compliant 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. Tape and reel packaging: –40°C to +80°C
Winding to winding isolation 100 Vrms
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 1000/7″ reel; 3500/13″ reel Plastic tape: 12 mm wide, 0.3 mm thick, 8 mm pocket spacing, 1.02 mm pocket depth
Recommended pick and place nozzle OD: 5 mm; ID: ≤ 2.5 mm
PCB washing Tested with pure water or alcohol only. For other solvents, see Doc787_PCB_Washing.pdf.

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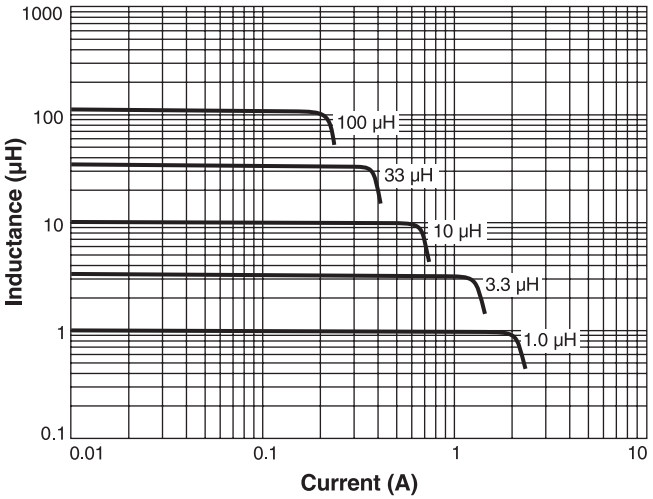
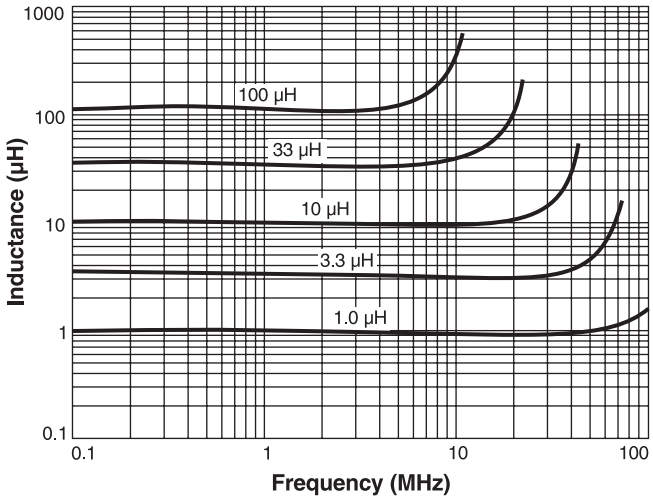
Coupled Inductors for SEPIC Applications – LPD5010 Series

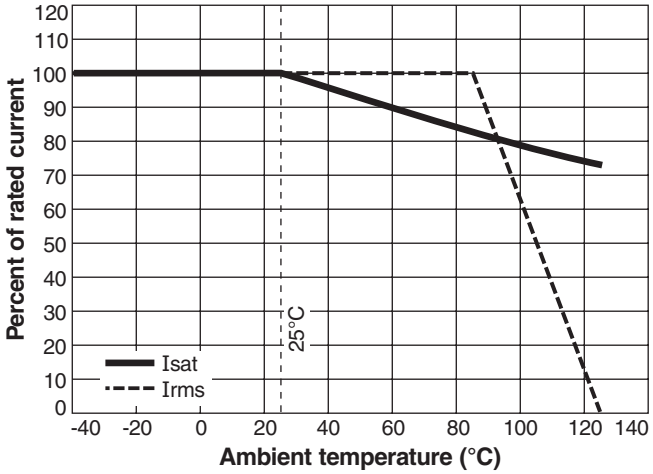
Typical L vs Current



Typical L vs Frequency



Typical Current Derating



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