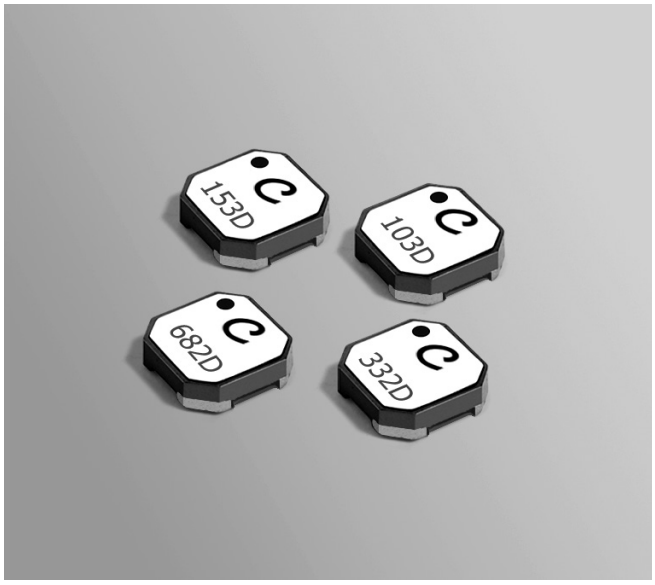
RoHS/ REACH COMPLIANT

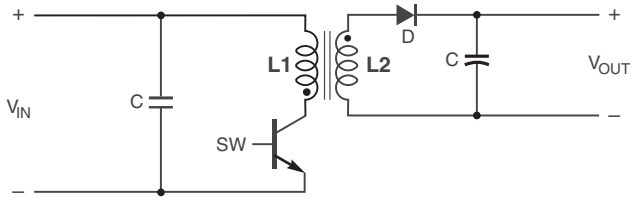
Halogen Free

AEC Q200 +125°C

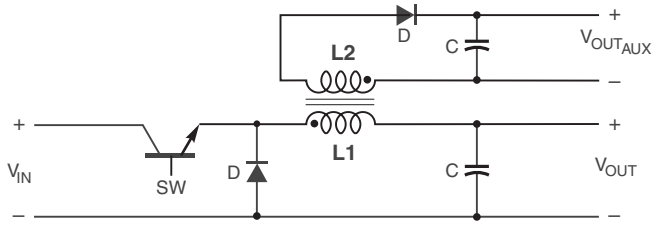
Shielded Coupled Inductors LPD4012



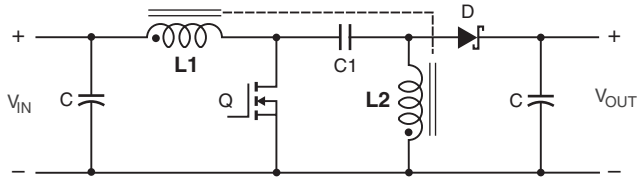
- Only 1.1 mm high and 4 mm square
- Ideal for use in flyback, multi-output buck and SEPIC applications.
- High inductance, high efficiency and excellent current handling
- Can also be used as two single inductors connected in series or parallel or as a common mode choke.
- AEC-Q200 Grade 1 (–40°C to +125°C)



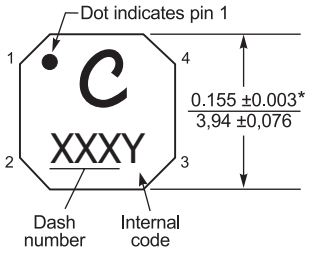
Typical Flyback Converter

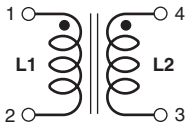


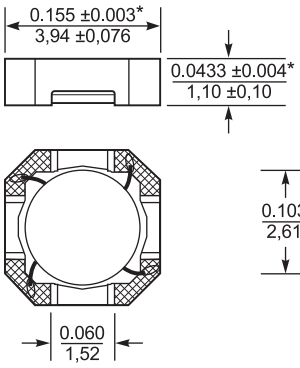
Typical Buck Converter with auxiliary output



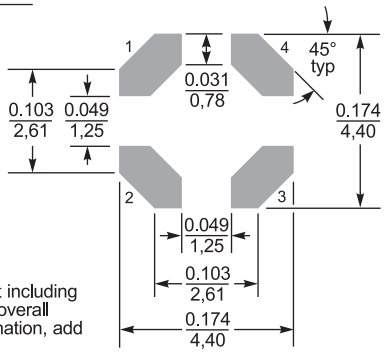
Typical SEPIC schematic







Recommended Land Pattern



* Dimensions are of the case not including the termination. For maximum overall dimensions including the termination, add 0.005 in / 0.13 mm.

For optional tin-lead and tin-silver-copper terminations, dimensions are for the mounted part. Dimensions before mounting can be an additional 0.005 in / 0.13 mm.

Dimensions are in inches / mm

Core material Ferrite

Core and winding loss Go to online calculator

Weight 54 – 64 mg

Environmental RoHS compliant, halogen free

Terminations RoHS compliant matte tin over nickel over silver. Other terminations available at additional cost.

Ambient temperature –40°C to +125°C with (40°C rise) Irms current.

Maximum part temperature +165°C (ambient + temp rise).

Storage temperature Component: –40°C to +165°C. Tape and reel packaging: –40°C to +80°C

Winding to winding isolation 100 Vrms, one minute

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; 3500/13″ reel Plastic tape: 12 mm wide, 0.25 mm thick, 8 mm pocket spacing, 1.45 mm pocket depth

Recommended pick and place nozzle OD: 4 mm; ID: ≤2 mm

PCB washing Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See Doc787_PCB_Washing.pdf.

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Document 580-1 Revised 09/15/21

Coupled Inductors for SEPIC Applications – LPD4012 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]
LPD4012-331NR_	0.33 ±30%	0.042	255	0.94	0.06	5.2	5.4	5.6	1.87	2.65
LPD4012-561NR_	0.56 ±30%	0.087	185	0.95	0.08	3.7	3.8	3.9	1.30	1.84
LPD4012-821NR_	0.82 ±30%	0.100	130	0.97	0.09	3.2	3.3	3.4	1.21	1.72
LPD4012-152NR_	1.5 ±30%	0.185	86	0.97	0.11	2.50	2.81	2.91	1.15	1.62
LPD4012-222NR_	2.2 ±30%	0.235	70	0.98	0.14	2.30	2.40	2.50	0.95	1.35
LPD4012-332NR_	3.3 ±30%	0.320	48	0.98	0.16	1.80	1.90	2.00	0.75	1.06
LPD4012-472MR_	4.7 ±20%	0.500	39	0.98	0.18	1.70	1.80	1.90	0.65	0.92
LPD4012-562MR_	5.6 ±20%	0.620	32	0.99	0.20	1.60	1.70	1.80	0.55	0.78
LPD4012-682MR_	6.8 ±20%	0.530	31	0.99	0.22	1.20	1.52	1.63	0.60	0.86
LPD4012-822MR_	8.2 ±20%	0.600	29	0.99	0.24	1.10	1.20	1.30	0.55	0.78
LPD4012-103MR_	10 ±20%	0.750	25	0.99	0.26	0.98	1.00	1.10	0.50	0.71
LPD4012-153MR_	15 ±20%	1.13	21	0.99	0.30	0.90	0.92	0.94	0.43	0.60
LPD4012-223MR_	22 ±20%	1.63	15	0.99	0.34	0.70	0.82	0.84	0.34	0.48
LPD4012-333MR_	33 ±20%	1.83	12	>0.99	0.41	0.37	0.57	0.58	0.31	0.44
LPD4012-473MR_	47 ±20%	2.52	8.8	>0.99	0.51	0.33	0.39	0.40	0.28	0.39
LPD4012-683MR_	68 ±20%	3.23	7.8	>0.99	0.66	0.27	0.36	0.37	0.25	0.36
LPD4012-823MR_	82 ±20%	3.66	7.3	>0.99	0.75	0.27	0.27	0.29	0.23	0.31
LPD4012-104MR_	100 ±20%	4.76	6.1	>0.99	0.86	0.22	0.28	0.29	0.20	0.27
LPD4012-124MR_	120 ±20%	5.54	5.3	>0.99	0.98	0.21	0.26	0.27	0.19	0.27
LPD4012-154MR_	150 ±20%	6.90	4.6	>0.99	1.19	0.18	0.26	0.27	0.17	0.23
LPD4012-184MR_	180 ±20%	8.75	4.1	>0.99	1.40	0.16	0.21	0.23	0.14	0.18
LPD4012-224MR_	220 ±20%	11.24	3.3	>0.99	1.66	0.15	0.16	0.17	0.12	0.17
LPD4012-334MR_	330 ±20%	17.00	2.8	>0.99	2.45	0.13	0.16	0.16	0.10	0.14

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

LPD4012-334MRC

Termination: **R** = RoHS compliant, matte tin over nickel over silver. Special order: **Q** = RoHS tin-silver-copper (95.5/4/0.5) or **P** = non-RoHS tin-lead (63/37).

Packaging: **C** = 7″ machine-ready reel. EIA-481 embossed plastic tape (1000 parts per full reel). Quantities less than full reel available: in tape (not machine ready) or with leader and trailer ($25 charge).

B = Less than full reel. In an effort to simplify our part numbering system, Coilcraft is eliminating the need for multiple packaging codes. When ordering, simply change the last letter of your part number from B to C.

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 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. Go to online calculator.

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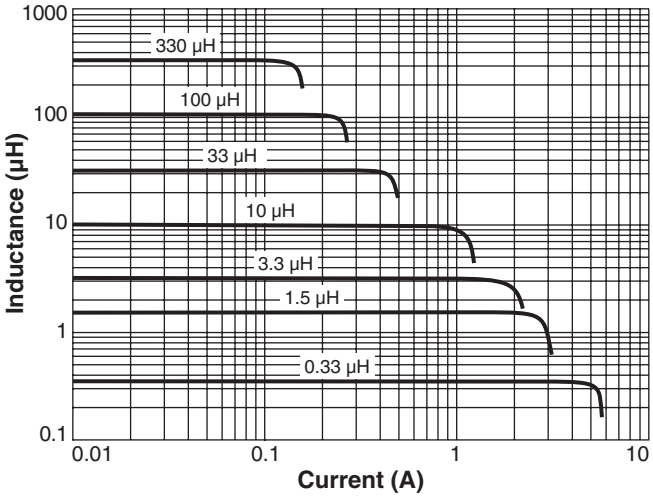
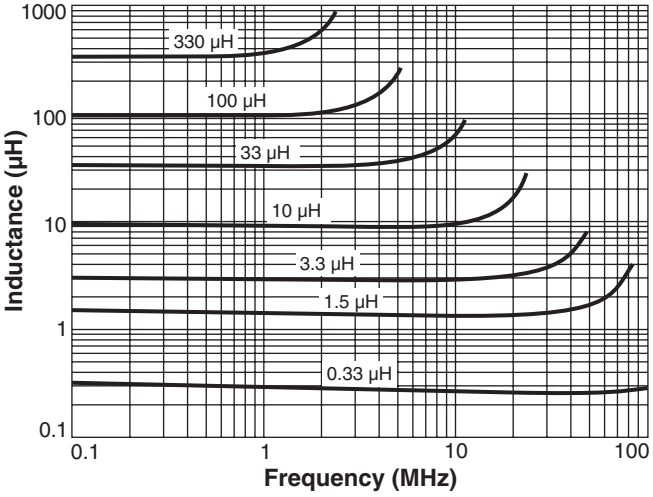
Document 580-2 Revised 09/15/21

Coupled Inductors for SEPIC Applications – LPD4012 Series

Typical L vs Current



Typical L vs Frequency



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