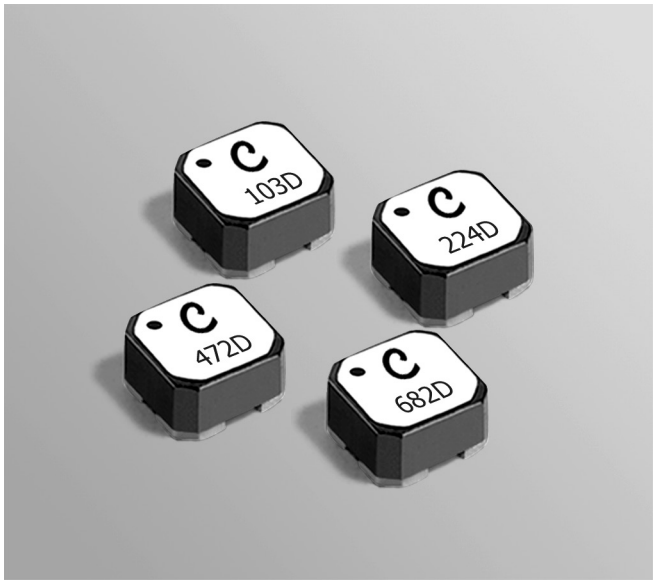
Miniature Transformers LPD5030V



Core material Ferrite

Core and winding loss Go to online calculator

Environmental RoHS compliant, halogen free

Terminations RoHS compliant matte tin over nickel over silver

Weight 210 – 225 mg

Ambient temperature –40°C to +85°C with (40°C rise) Irms current.

Maximum part temperature +125°C (ambient + temp rise).

Storage temperature Component: –40°C to +125°C.
Tape and reel packaging: –40°C to +80°C

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)

Failures in Time (FIT) / Mean Time Between Failures (MTBF) 38 per billion hours / 26,315,789 hours, calculated per Telcordia SR-332

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

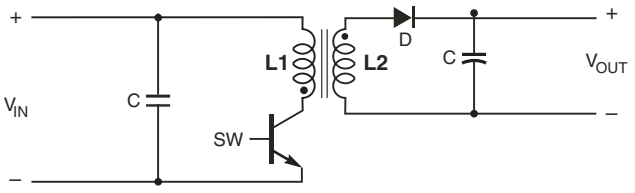
With 1500 Vdc (1000 Vrms) isolation and a small package size, the LPD5030V series is ideal for use in high density isolated circuit applications.

Functional Safety Listed by UL. Functional insulation class for TNV-1 to SELV applications. Functional insulation with a maximum 60 Vdc, 42.4 V peak input/output voltages with working voltages up to 210 Vdc. (Report #E219588-A6)

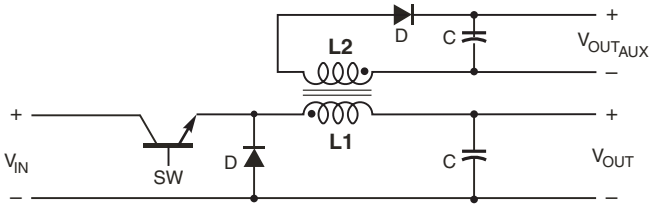
These miniature transformers provide tight coupling, high inductance and excellent current handling.

They can be used as

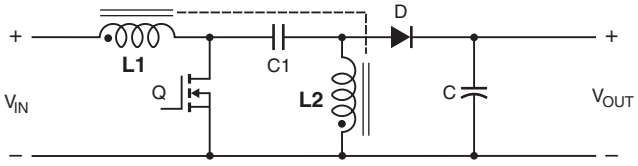
- Flyback transformers
- Coupled inductors in SEPIC applications
- Common mode filter chokes.



Typical Flyback Converter



Typical Buck Converter with auxiliary output



Typical SEPIC schematic
Refer to Application Note, Document 639,
"Selecting Coupled Inductors for SEPIC Applications"

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LPD5030V Transformers for Flyback Applications

Part number[1]	Inductance at 0 A[2] ±20% (µH)	Inductance at Ipk[3] ±20% (µH)	DCR imax[4] (Ohms)	Leakage inductance[5] typ (µH)	Isolation[6] (Vrms)	Turns ratio	Ipk[3] (A)
LPD5030V-472MR_	4.7	3.3	0.322	0.109	1000	1 : 1	1.90
LPD5030V-682MR_	6.8	4.7	0.395	0.109	1000	1 : 1	1.55
LPD5030V-103MR_	10	7.0	0.490	0.130	1000	1 : 1	1.30
LPD5030V-333MR_	33	23	0.895	0.195	1000	1 : 1	0.67
LPD5030V-154MR_	150	105	3.82	0.456	1000	1 : 1	0.31
LPD5030V-224MR_	220	154	5.25	0.541	1000	1 : 1	0.24

1. When ordering, please specify **packaging** code:

LPD5030V-224MRC

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

2. Inductance is for the primary, measured at 100 kHz, 0.1 Vrms, 0 Adc on an Agilent/HP 4284A LCR meter or equivalent.
3. Peak primary current drawn at minimum input voltage.
4. DCR is for each winding.
5. Leakage inductance is for the primary winding with the secondary windings shorted.
6. 1000 Vrms, one minute isolation (hipot) between windings. Designed to provide Functional Insulation only; does not protect against electrical shock; nor intended for the isolation of SELV circuits from Hazardous Voltage circuits.
7. Electrical specifications at 25°C.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

LPD5030V Coupled Inductors for SEPIC Applications

Part number[1]	Inductance[2] ±20% (µH)	DCR max[3] (Ohms)	SRF typ[4] (MHz)	Coupling coefficient typ	Leakage inductance[5] typ (µH)	Isolation[6] (Vrms)	Isat (A)[7] 10% drop	Isat (A)[7] 20% drop	Isat (A)[7] 30% drop	Irms (A) both windings[8]	Irms (A) one winding[9]
LPD5030V-472MR_	4.7	0.322	55.0	0.97	0.109	1000	1.45	1.70	1.90	0.65	0.92
LPD5030V-682MR_	6.8	0.395	49.9	0.97	0.109	1000	1.30	1.50	1.55	0.59	0.83
LPD5030V-103MR_	10	0.490	37.1	0.97	0.130	1000	1.10	1.20	1.30	0.54	0.76
LPD5030V-333MR_	33	0.895	19.2	0.98	0.195	1000	0.49	0.59	0.67	0.43	0.61
LPD5030V-154MR_	150	3.82	8.1	0.98	0.456	1000	0.25	0.29	0.31	0.18	0.25
LPD5030V-224MR_	220	5.25	6.5	>0.99	0.541	1000	0.16	0.21	0.24	0.16	0.22

1. When ordering, please specify **packaging** code:

LPD5030V-224MRC

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 C 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. 1000 Vrms, one minute isolation (hipot) between windings. Designed to provide Functional Insulation only; does not protect against electrical shock; nor intended for the isolation of SELV circuits from Hazardous Voltage circuits.
7. 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.
8. 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.
9. 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.
10. 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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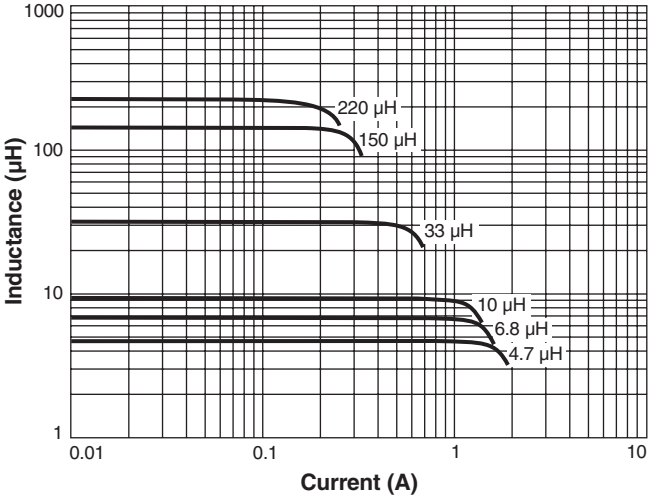
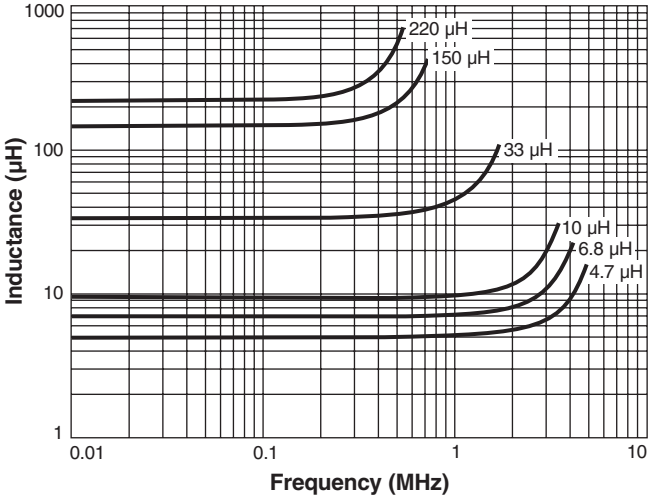
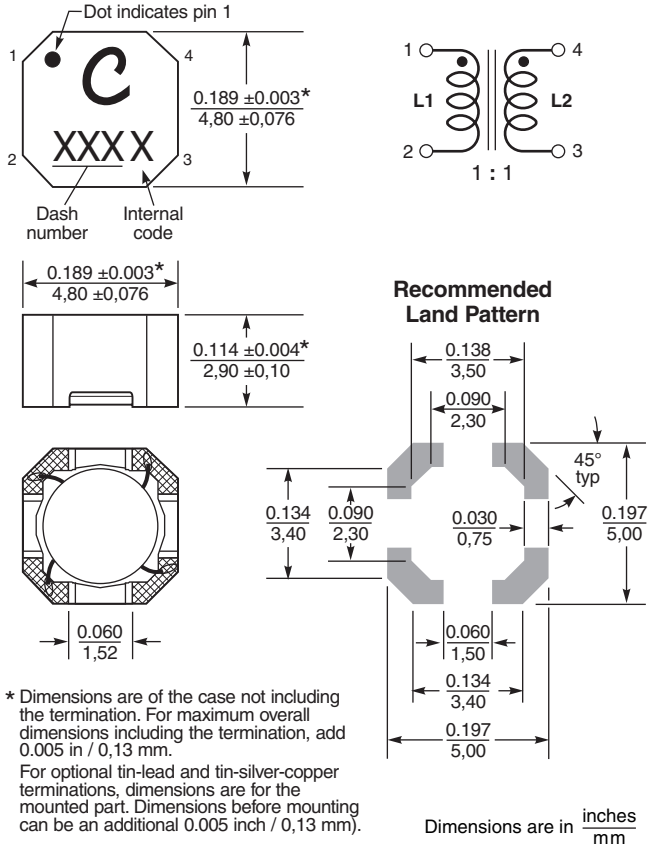
LPD5030V Miniature Transformers

Typical L vs Current



Typical L vs Frequency





* 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 inch / 0,13 mm).

Dimensions are in inches / mm

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