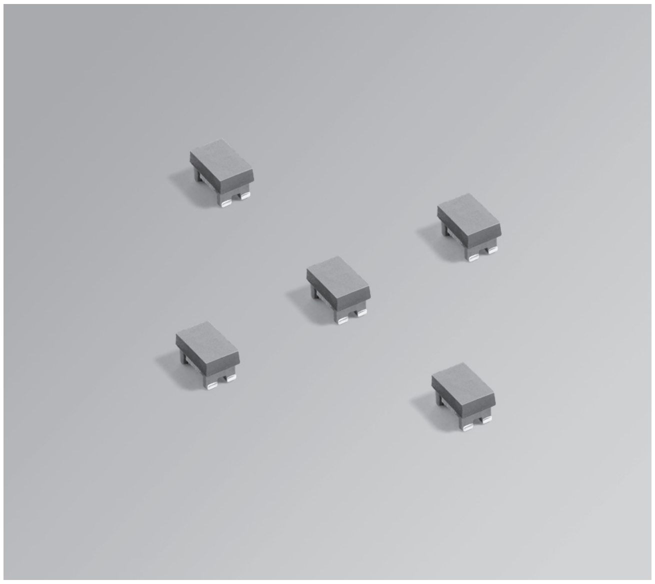
NEW!

Coupled Chip Inductors – PFD2015

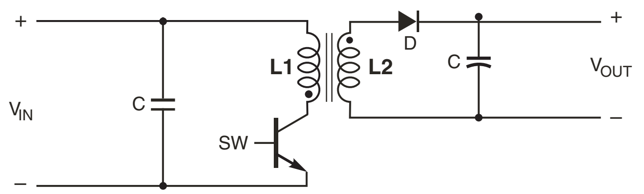
For Flyback and SEPIC applications



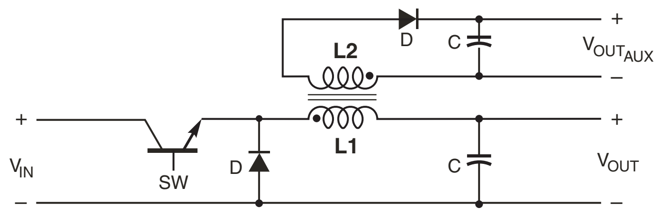
With a footprint of 2.2 × 1.45 mm, the PFD2015 is Coilcraft's smallest shielded coupled inductor. It is ideal for use in a variety of circuits including flyback, multi-output buck and SEPIC.

These inductors provide high efficiency and excellent current handling for parts this small.

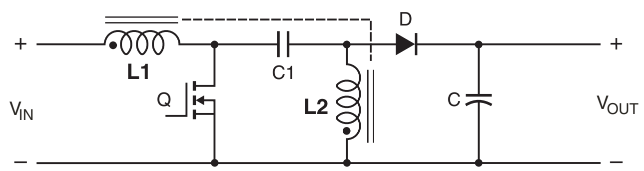
They can also be used as two single inductors connected in series or parallel, as common mode chokes or as wideband transformers.



Typical Flyback Converter

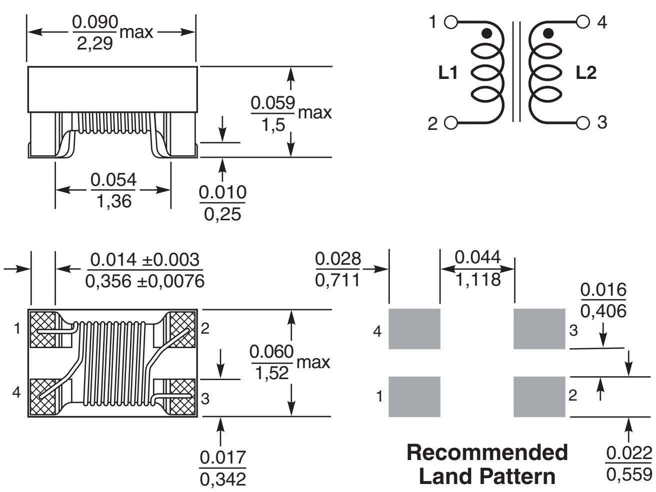


Typical Buck Converter with auxiliary output



Typical SEPIC schematic

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



Dimensions are in inches / mm

Core material Ferrite

Environmental RoHS compliant, halogen free

Weight 13 – 23 mg

Terminations RoHS compliant silver-palladium-platinum-glass frit.

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 250 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)

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

Packaging 2000/7″ reel; 7500/13″ reel Plastic tape: 8 mm wide, 0.23 mm thick, 4 mm pocket spacing, 1.63 mm pocket depth

PCB washing Only pure water or alcohol recommended

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PFD2015 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)	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]
PFD2015-102ME_	1.0	0.165	380	0.95	0.065	0.85	1.10	1.30	0.800	1.13
PFD2015-122ME_	1.2	0.175	310	0.97	0.071	0.80	1.05	1.20	0.750	1.06
PFD2015-182ME_	1.8	0.294	265	0.97	0.110	0.70	0.85	1.00	0.490	0.690
PFD2015-272ME_	2.7	0.477	220	0.97	0.162	0.65	0.82	0.88	0.410	0.580
PFD2015-332ME_	3.3	0.670	180	0.97	0.200	0.57	0.71	0.77	0.370	0.525
PFD2015-472ME_	4.7	1.00	160	0.97	0.285	0.44	0.55	0.60	0.260	0.370
PFD2015-682ME_	6.8	1.75	130	0.97	0.415	0.37	0.42	0.47	0.187	0.265
PFD2015-822ME_	8.2	2.50	125	0.97	0.500	0.35	0.38	0.42	0.150	0.210
PFD2015-103ME_	10	3.40	110	0.97	0.590	0.30	0.34	0.37	0.130	0.185

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

   PFD2015-103MEC

   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/HP8753 or equivalent. When leads are connected in parallel, SRF is the same value.
5. Leakage inductance is for the primary winding with the secondary windings 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 estimated 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 estimate based on specified Irms

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

Temperature rise = Winding power loss $\times \frac{275°C}{W}$

Examples for PFD2015-182ML:

Equal current in each winding (0.47 A):

Winding power loss = $(0.47^2 + 0.47^2) \times 0.294 = 0.13$ W

Temperature rise = $0.13\ W \times \frac{275°C}{W} = 35.8°C$

Unequal current (I_{L1} = 0.60 A, I_{L2} = 0.25 A):

Winding power loss = $(0.60^2 + 0.25^2) \times 0.294 = 0.124$ W

Temperature rise = $0.124\ W \times \frac{275°C}{W} = 34.1°C$

PFD2015 Coupled Inductors for Flyback applications

Part number[1]	Inductance at 0 A[2] ±20% (µH)	Inductance at Ipk A[3] ±20% (µH)	DCR max (Ohms)	Leakage inductance[4] typ (µH)	Turns ratio	Ipk[3] (A)
PFD2015-102ME_	1.0	0.70	0.165	0.065	1 : 1	1.30
PFD2015-122ME_	1.2	0.84	0.175	0.071	1 : 1	1.20
PFD2015-182ME_	1.8	1.26	0.294	0.110	1 : 1	1.00
PFD2015-272ME_	2.7	1.89	0.477	0.162	1 : 1	0.88
PFD2015-332ME_	3.3	2.37	0.670	0.200	1 : 1	0.77
PFD2015-472ME_	4.7	3.29	1.00	0.285	1 : 1	0.60
PFD2015-682ME_	6.8	1.76	1.75	0.415	1 : 1	0.47
PFD2015-822ME_	8.2	5.74	2.50	0.500	1 : 1	0.42
PFD2015-103ME_	10	7.00	3.33	0.590	1 : 1	0.37

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

   PFD2015-103MEC

   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 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. Leakage inductance is for the primary winding with the secondary windings shorted.
5. Electrical specifications at 25°C.

Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

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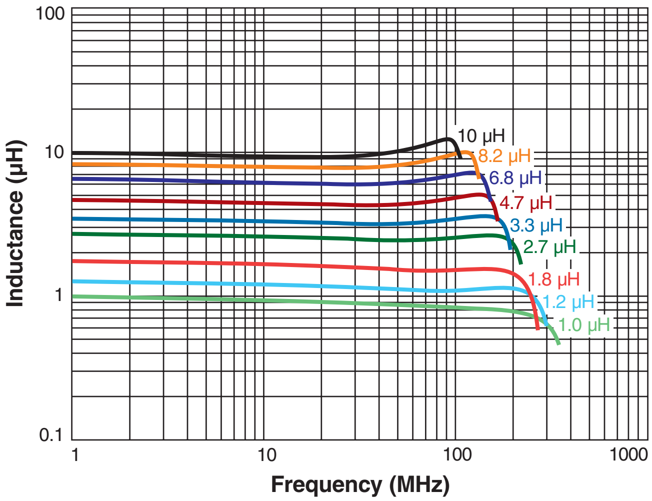
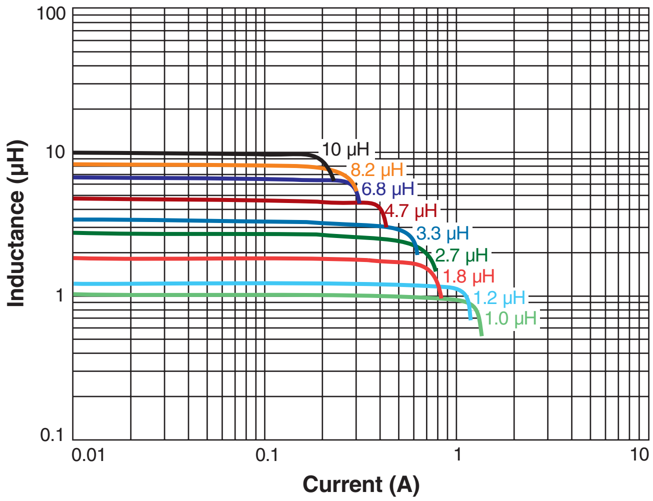
RoHS Halogen Free

PFD2015 Coupled Inductors for Flyback, SEPIC and other applications

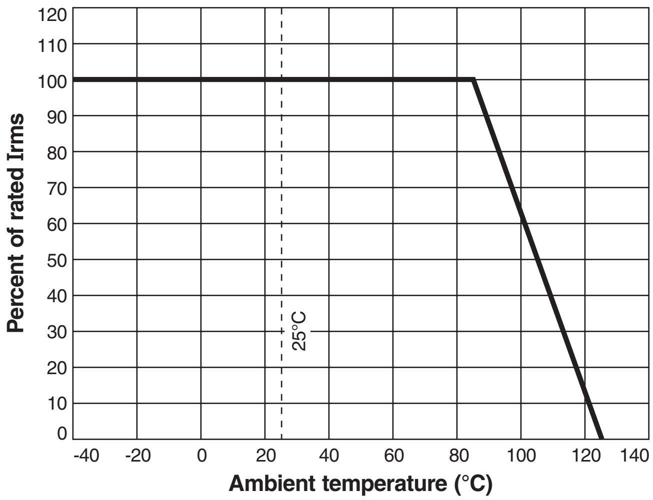
L vs Frequency



L vs Current



Typical Current Derating



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