NEW!

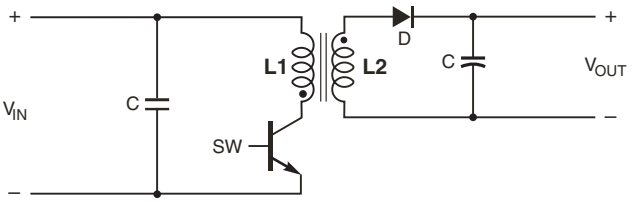
Coupled Inductors – MSD1260T

For high temperature applications

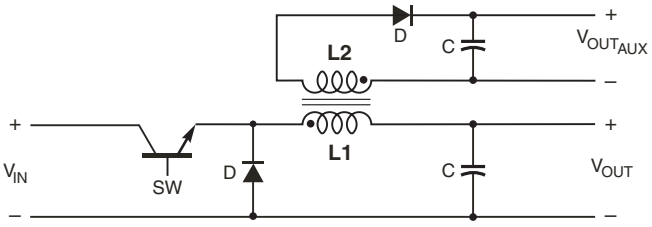
The MSD1260T series of shielded coupled inductors was designed specifically for high temperature applications – up to 125°C ambient.

Tight coupling (k ≥ 0.94) and 500 V isolation make them ideal for use in a variety of circuits including flyback, multi-output buck and SEPIC. These parts provide high inductance, high efficiency and excellent current handling.

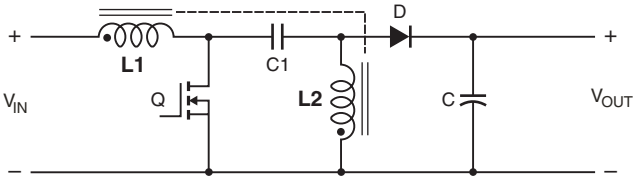
They can also be used as two single inductors connected in series or parallel or as a common mode choke.



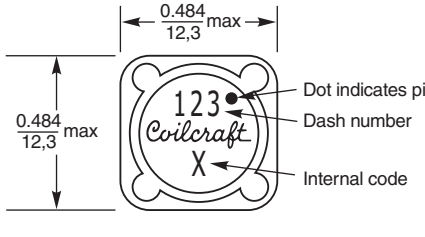
Typical Flyback Converter

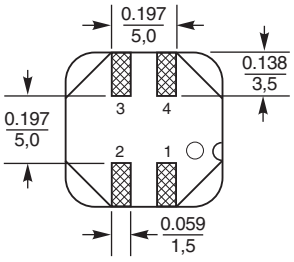


Typical Buck Converter with auxiliary output

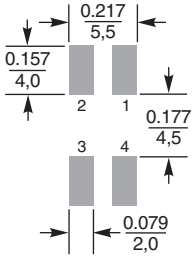


Typical SEPIC schematic



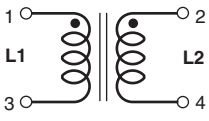


Recommended Land Pattern



* For optional tin-lead and tin-silver-copper terminations, dimensions are for the mounted part. Dimensions before mounting can be an additional 0.012 inch (0,3 mm).

Dimensions are in inches / mm



Core material Ferrite

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

Weight: 2.8 – 3.2 g

Ambient temperature –40°C to +125°C with Irms current, +125°C to +165°C with derated current

Storage temperature Component: –40°C to +165°C. Packaging: –40°C to +80°C

Winding-to-winding and winding-to-core isolation 500 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)

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

Packaging 500/13″ reel; Plastic tape: 24 mm wide, 0.35 mm thick, 16 mm pocket spacing, 6.6 mm pocket depth

PCB washing Only pure water or alcohol recommended

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Document 703-1 Revised 01/13/12

NEW!

High Temperature Coupled Inductors – MSD1260T

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	20% drop	30% drop	Irms (A) both windings[7]	one winding[8]
MSD1260T-332ML_	3.3 ±20%	0.020	52.0	0.97	0.20	11.50	12.90	14.10	3.60	6.10
MSD1260T-472ML_	4.7 ±20%	0.036	38.0	0.98	0.20	9.00	10.18	11.08	3.16	4.47
MSD1260T-562ML_	5.6 ±20%	0.040	30.0	0.98	0.20	8.00	9.06	9.84	3.00	4.24
MSD1260T-682ML_	6.8 ±20%	0.048	27.0	0.98	0.24	7.00	8.00	8.64	2.75	3.88
MSD1260T-822ML_	8.2 ±20%	0.052	26.0	0.98	0.25	6.44	7.38	7.98	2.63	3.72
MSD1260T-103ML_	10 ±20%	0.060	22.0	0.99	0.26	5.40	6.32	6.88	2.45	3.46
MSD1260T-123ML_	12 ±20%	0.074	20.0	0.99	0.28	5.30	6.18	6.70	2.21	3.12
MSD1260T-153ML_	15 ±20%	0.085	18.0	0.99	0.32	4.60	5.30	5.80	2.06	2.92
MSD1260T-183ML_	18 ±20%	0.097	16.0	0.99	0.40	4.50	5.22	5.68	1.93	2.73
MSD1260T-223ML_	22 ±20%	0.116	15.0	0.98	0.67	4.00	4.62	5.02	1.76	2.49
MSD1260T-273ML_	27 ±20%	0.124	13.0	0.99	0.50	3.60	4.14	4.50	1.70	2.41
MSD1260T-333ML_	33 ±20%	0.134	12.4	0.99	0.65	3.30	3.80	4.14	1.64	2.32
MSD1260T-393ML_	39 ±20%	0.142	12.0	0.99	1.09	3.00	3.48	3.82	1.59	2.25
MSD1260T-473ML_	47 ±20%	0.174	11.6	0.99	0.80	2.70	3.12	3.40	1.44	2.03
MSD1260T-563ML_	56 ±20%	0.198	10.5	0.99	0.75	2.50	2.90	3.14	1.35	1.91
MSD1260T-683ML_	68 ±20%	0.216	10.0	>0.99	0.57	2.30	2.66	2.88	1.29	1.83
MSD1260T-823ML_	82 ±20%	0.274	8.6	0.99	1.52	2.10	2.40	2.60	1.15	1.62
MSD1260T-104ML_	100 ±20%	0.322	7.8	0.99	1.41	1.90	2.18	2.38	1.06	1.50
MSD1260T-124KL_	120 ±10%	0.418	6.8	0.99	1.34	1.60	1.84	2.04	0.93	1.31
MSD1260T-154KL_	150 ±10%	0.476	6.4	0.99	1.52	1.50	1.76	1.92	0.87	1.23
MSD1260T-184KL_	180 ±10%	0.536	6.1	0.99	1.80	1.40	1.64	1.78	0.82	1.16
MSD1260T-224KL_	220 ±10%	0.691	5.5	>0.99	1.60	1.30	1.48	1.60	0.72	1.02
MSD1260T-274KL_	270 ±10%	0.806	4.3	>0.99	2.23	1.10	1.30	1.40	0.67	0.95
MSD1260T-334KL_	330 ±10%	1.09	4.0	>0.99	2.39	1.00	1.16	1.26	0.57	0.81
MSD1260T-394KL_	390 ±10%	1.20	3.6	>0.99	3.72	0.950	1.11	1.23	0.55	0.77
MSD1260T-474KL_	470 ±10%	1.59	3.0	>0.99	2.89	0.900	0.994	1.09	0.48	0.67
MSD1260T-564KL_	560 ±10%	1.81	2.8	>0.99	2.55	0.800	0.908	0.948	0.45	0.63
MSD1260T-684KL_	680 ±10%	2.06	2.6	>0.99	5.76	0.700	0.804	0.874	0.42	0.59
MSD1260T-824KL_	820 ±10%	2.65	2.5	>0.99	2.86	0.640	0.732	0.802	0.37	0.52
MSD1260T-105KL_	1000 ±10%	3.06	2.4	>0.99	4.32	0.590	0.674	0.728	0.34	0.49

1. When ordering, please specify **termination** and **packaging** codes:

   MSD1260T-105KLD

   Termination: **L** = RoHS compliant matte tin over nickel over phos bronze.
   Special order: **T** = RoHS tin-silver-copper (95.5/4/0.5) or **S** = non-RoHS tin-lead (63/37).

   Packaging: **D** = 13″ machine-ready reel. EIA-481 embossed plastic tape (500 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.
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 (Δt) = Winding power loss $\times \frac{55.6°C}{W}$

$\Delta t = (I_{L1}^2 + I_{L2}^2) \times \text{DCR} \times \frac{55.6°C}{W}$

Example 1. MSD1260T-153ML (Equal current in each winding)
Winding power loss = $(2.06^2 + 2.06^2) \times 0.085 = 0.721$ W

$\Delta t = 0.721 \text{ W} \times \frac{55.6°C}{W} = 40°C$

Example 2. MSD1260T-153ML ($I_{L1} = 2.4$ A, $I_{L2} = 1.3$ A)
Winding power loss = $(2.4^2 + 1.3^2) \times 0.085 = 0.633$ W

$\Delta t = 0.633 \text{ W} \times \frac{55.6°C}{W} = 35.2°C$

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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UK +44-1236-730595 sales@coilcraft-europe.com
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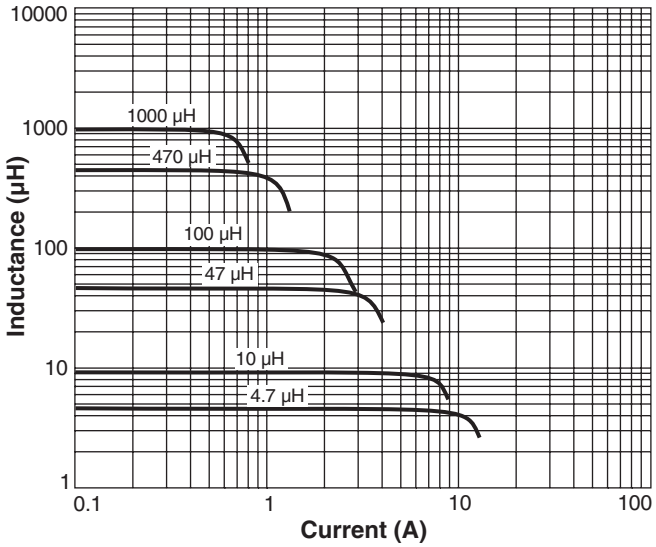
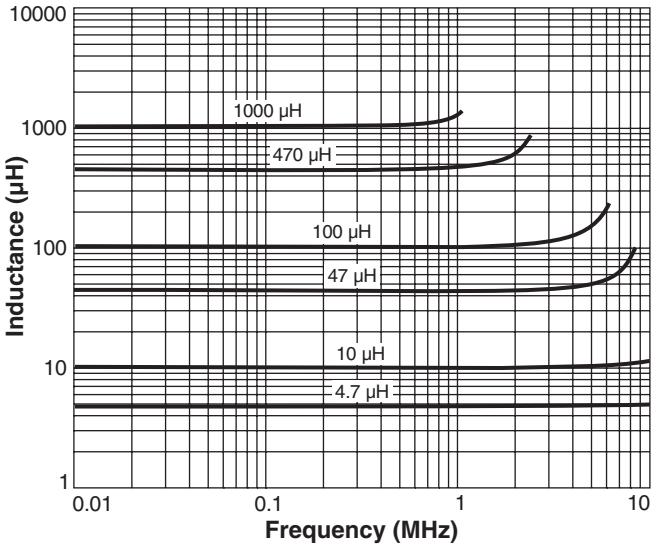
High Temperature Coupled Inductors – MSD1260T

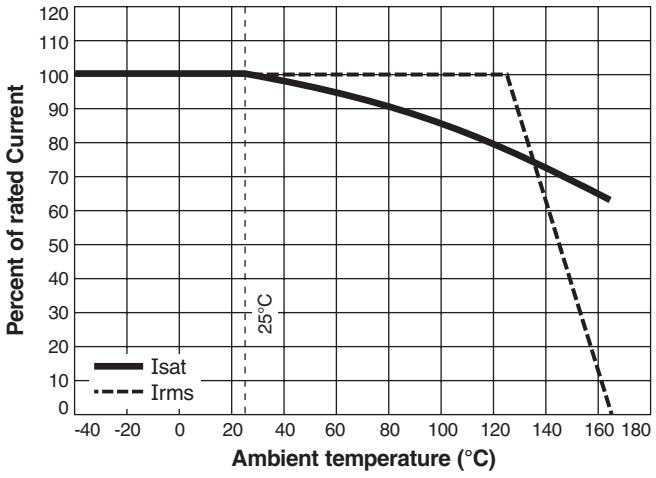
Typical L vs Current



Typical L vs Frequency



Current Derating



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www.coilcraft.com

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China +86-21-6218 8074 sales@coilcraft.com.cn
Singapore + 65-6484 8412 sales@coilcraft.com.sg

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9