RoHS COMPLIANT

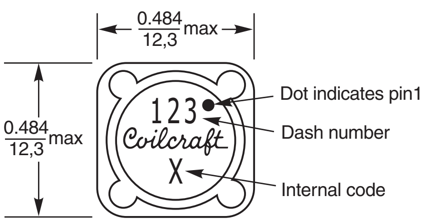
Coupled Inductors – MSD1278

For Flyback, SEPIC and other Applications

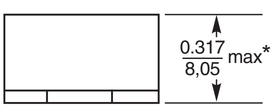
Tight coupling (k ≥ 0.98) and 500 V isolation make the MSD1278 series of shielded coupled inductors ideal for use in a variety of circuits including flyback, multi-output buck and SEPIC.

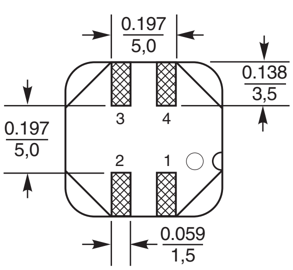
These inductors provide high inductance, high efficiency and excellent current handling in a rugged, low cost part.

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

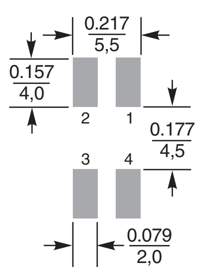


Parts manufactured prior to Sept. 2007 were marked with only the dash number.



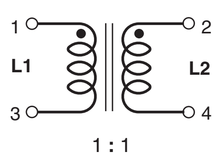


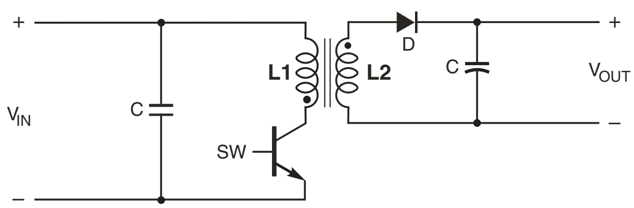
Recommended Land Pattern



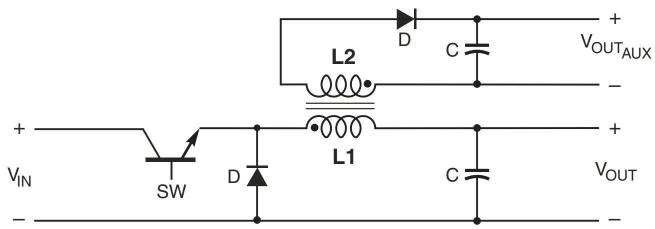
* For optional tin-lead and tin-silver-copper terminations, dimensions are for the mounted part. Dimensions before mounting can be an additional 0.012 inch (0,3 mm).

Dimensions are in inches / mm

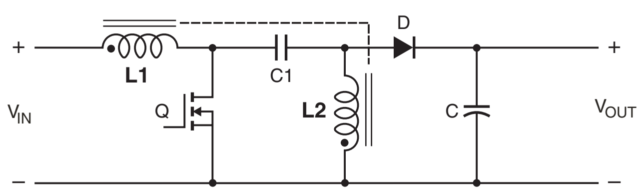




Typical Flyback Converter



Typical Buck Converter with auxiliary output



Typical SEPIC schematic

Designer's Kit C400 contains 3 each of all values.
Core material Ferrite
Terminations RoHS compliant matte tin over nickel over phos bronze. Other terminations available at additional cost.
Weight: 3.7 – 4.4 g
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 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, 0.4 mm thick, 16 mm pocket spacing, 8.1 mm pocket depth
PCB washing Only pure water or alcohol recommended

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Coupled Inductors – MSD1278 Series

Part number[1]	Inductance[2] (µH)	DCR max[3] (Ohms)	SRF typ[4] (MHz)	Coupling coefficient typ	Leakage inductance[5] typ (µH)	Isat[6] (A)	Irms (A) both windings[7]	Irms (A) one winding[8]
MSD1278-472ML_	4.7 ±20%	0.038	32.0	0.98	0.22	14.9	3.16	4.47
MSD1278-562ML_	5.6 ±20%	0.046	25.0	0.98	0.23	13.4	2.87	4.06
MSD1278-682ML_	6.8 ±20%	0.048	24.0	0.98	0.22	13.1	2.81	3.98
MSD1278-822ML_	8.2 ±20%	0.050	18.0	0.98	0.34	10.8	2.76	3.90
MSD1278-103ML_	10 ±20%	0.058	16.5	0.98	0.34	10.5	2.56	3.62
MSD1278-123ML_	12 ±20%	0.062	14.5	0.98	0.36	9.6	2.48	3.50
MSD1278-153ML_	15 ±20%	0.072	11.8	0.99	0.41	9.1	2.30	3.25
MSD1278-183ML_	18 ±20%	0.080	10.5	0.99	0.37	8.0	2.18	3.08
MSD1278-223ML_	22 ±20%	0.096	9.0	0.99	0.41	6.8	1.99	2.81
MSD1278-273ML_	27 ±20%	0.120	8.4	0.99	0.43	6.5	1.78	2.52
MSD1278-333ML_	33 ±20%	0.150	7.6	0.99	0.56	5.6	1.59	2.25
MSD1278-393ML_	39 ±20%	0.160	6.5	0.99	0.64	5.5	1.54	2.18
MSD1278-473ML_	47 ±20%	0.180	6.0	0.99	0.70	5.2	1.45	2.05
MSD1278-563ML_	56 ±20%	0.190	5.6	0.99	0.76	4.5	1.41	2.00
MSD1278-683ML_	68 ±20%	0.210	5.0	0.99	0.88	4.1	1.35	1.90
MSD1278-823ML_	82 ±20%	0.280	4.1	0.99	0.85	3.8	1.16	1.65
MSD1278-104ML_	100 ±20%	0.300	3.6	>0.99	0.90	3.4	1.13	1.59
MSD1278-124KL_	120 ±10%	0.410	3.2	0.99	1.31	3.2	0.96	1.36
MSD1278-154KL_	150 ±10%	0.460	3.0	>0.99	1.46	2.8	0.91	1.29
MSD1278-184KL_	180 ±10%	0.510	2.7	>0.99	0.93	2.5	0.86	1.22
MSD1278-224KL_	220 ±10%	0.690	2.5	>0.99	1.54	2.3	0.74	1.05
MSD1278-274KL_	270 ±10%	0.900	2.1	>0.99	1.17	2.1	0.65	0.92
MSD1278-334KL_	330 ±10%	1.02	2.0	0.99	4.14	1.9	0.61	0.86
MSD1278-394KL_	390 ±10%	1.12	1.8	>0.99	1.64	1.7	0.58	0.82
MSD1278-474KL_	470 ±10%	1.43	1.6	>0.99	0.25	1.6	0.50	0.70
MSD1278-564KL_	560 ±10%	1.69	1.5	>0.99	2.68	1.5	0.47	0.67
MSD1278-684KL_	680 ±10%	2.29	1.4	>0.99	2.11	1.3	0.41	0.58
MSD1278-824KL_	820 ±10%	2.55	1.3	>0.99	2.39	1.2	0.39	0.55
MSD1278-105KL_	1000 ±10%	2.83	1.1	>0.99	4.28	1.1	0.37	0.52

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

   MSD1278-105KLD

   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 30% (typ) 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 $\times \frac{52.6°C}{W}$

$$\Delta t = (I_{L1}^2 + I_{L2}^2) \times DCR \times \frac{52.6°C}{W}$$

Example 1. MSD1278-153ML (Equal current in each winding)
Winding power loss = $(2.3^2 + 2.3^2) \times 0.072 = 0.761$ W

$$\Delta t = 0.761\ W \times \frac{52.6°C}{W} = 40°C$$

Example 2. MSD1278-153ML ($I_{L1} = 2.4$ A, $I_{L2} = 1.3$ A)
Winding power loss = $(2.4^2 + 1.3^2) \times 0.072 = 0.536$ W

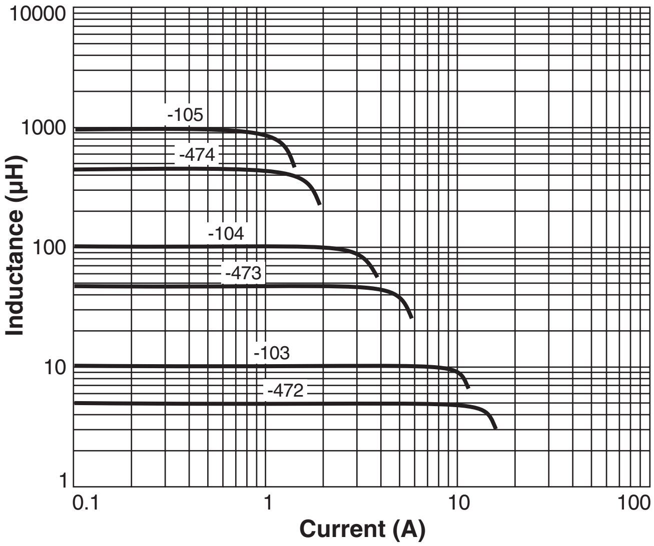
$$\Delta t = 0.536\ W \times \frac{52.6°C}{W} = 28.2°C$$

Coupled Inductor Core and Winding Loss Calculator

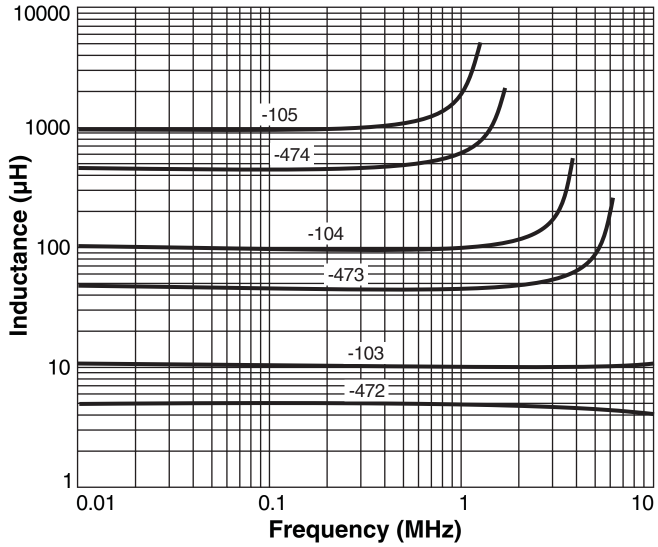
This web-based utility allows you to enter frequency, peak-to-peak (ripple) current, and Irms current to predict temperature rise and overall losses, including core loss. Visit www.coilcraft.com/coupledloss.

Coupled Inductors – MSD1278 Series

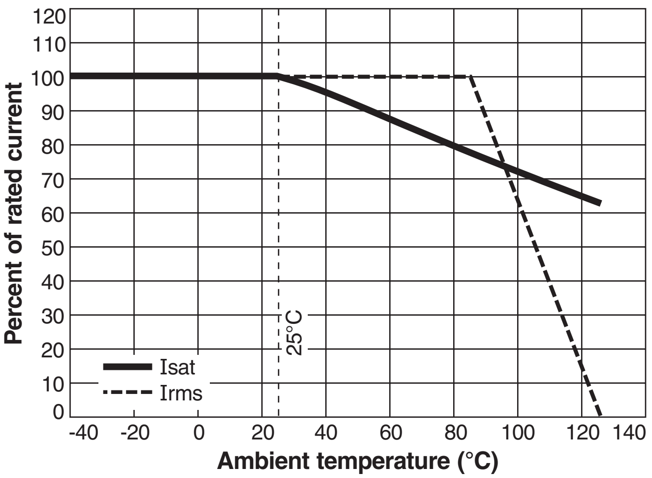
Typical L vs Current



Typical L vs Frequency



Current Derating



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Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.

Как с нами связаться

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