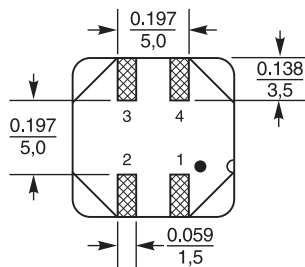
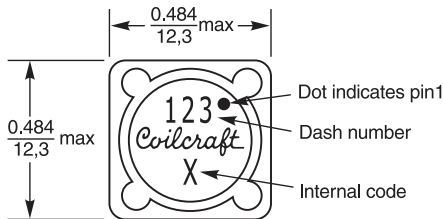
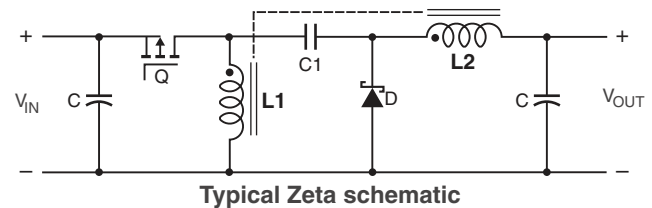
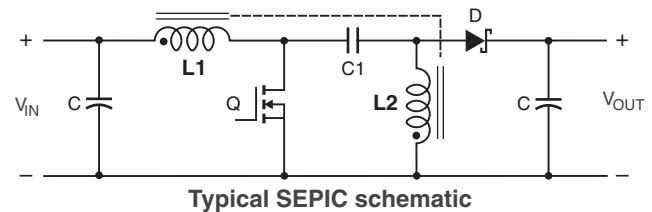
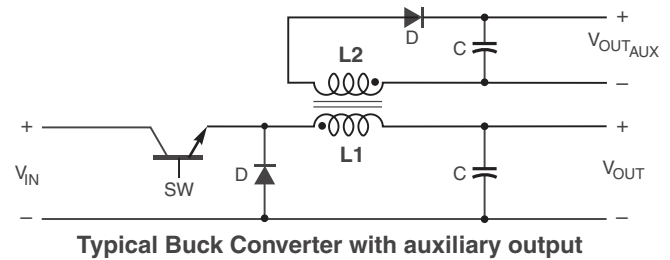
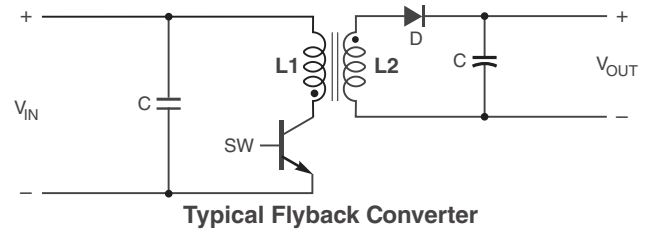


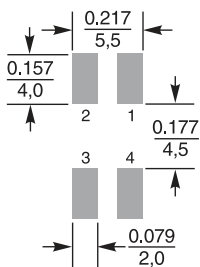
# Shielded Coupled Inductors MSD1278H



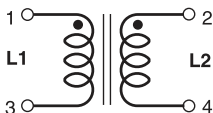
- Tight coupling ( $k \geq 0.98$ )
- 500 Vrms, one minute isolation (hipot) between primary and secondary
- Ideal for use in a variety of circuits including flyback, multi-output buck, SEPIC, Ćuk and Zeta.
- High efficiency and excellent current handling
- Can also be used as two single inductors connected in series or parallel, as a common mode choke or as a 1 : 1 transformer.
- AEC-Q200 Grade 1 ( $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ )



**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



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Document 1681-1 Revised 07/07/21

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This product may not be used in medical or high risk applications without prior Coilcraft approval. Specification subject to change without notice. Please check web site for latest information.

# Shielded Coupled Inductors – MSD1278H



Part number <sup>1</sup>	Inductance <sup>2</sup> ( $\mu$ H)	DCR max <sup>3</sup> (Ohms)	SRF typ <sup>4</sup> (MHz)	Coupling coefficient typ	Leakage L max <sup>5</sup> ( $\mu$ H)	Isat (A) <sup>6</sup>			Irms (A)	
						10% drop	20% drop	30% drop	both windings <sup>7</sup>	one winding <sup>8</sup>
MSD1278H-472MED	4.7±20%	0.022	30	0.98	0.35	10.2	11.6	12.7	5.11	7.14
MSD1278H-652MED	6.5±20%	0.025	26	0.98	0.38	9.2	10.4	11.5	4.80	6.74
MSD1278H-822MED	8.2±20%	0.030	23	0.98	0.41	8.3	9.3	10.2	4.32	6.15
MSD1278H-103MED	10 ±20%	0.036	20	0.98	0.46	7.1	8.0	8.8	4.01	5.56
MSD1278H-123MED	12 ±20%	0.037	18	0.98	0.53	6.6	7.5	8.3	3.87	5.47
MSD1278H-153MED	15 ±20%	0.048	16	0.99	0.55	6.0	6.8	7.5	3.42	4.77
MSD1278H-183MED	18 ±20%	0.051	14	0.99	0.64	5.5	6.3	6.8	3.28	4.67
MSD1278H-223MED	22 ±20%	0.068	12	0.99	0.72	5.1	5.6	6.2	2.88	4.06
MSD1278H-273MED	27 ±20%	0.078	11	0.99	0.80	4.6	5.1	5.6	2.70	3.91
MSD1278H-333MED	33 ±20%	0.086	10	0.99	0.85	4.2	4.6	5.1	2.54	3.66
MSD1278H-393MED	39 ±20%	0.110	8.7	0.99	1.0	3.8	4.3	4.7	2.22	3.12
MSD1278H-473MED	47 ±20%	0.127	8.1	0.99	1.1	3.6	3.9	4.4	1.47	2.94
MSD1278H-563MED	56 ±20%	0.140	7.5	0.99	1.3	3.3	3.6	4.0	1.98	2.75
MSD1278H-683MED	68 ±20%	0.155	7.0	0.99	1.4	3.0	3.2	3.6	1.91	2.65
MSD1278H-823MED	82 ±20%	0.206	6.3	0.99	1.6	2.7	2.9	3.3	1.63	2.34
MSD1278H-104KED	100 ±10%	0.230	5.5	>0.99	1.8	2.4	2.6	3.0	1.53	2.25
MSD1278H-124KED	120 ±10%	0.307	4.8	0.99	2.0	2.2	2.4	2.7	1.33	1.87
MSD1278H-154KED	150 ±10%	0.355	4.4	>0.99	2.2	2.0	2.2	2.4	1.26	1.79
MSD1278H-184KED	180 ±10%	0.470	4.2	>0.99	2.5	1.8	2.0	2.2	1.07	1.54
MSD1278H-224KED	220 ±10%	0.540	3.8	>0.99	2.8	1.6	1.8	2.0	1.00	1.41
MSD1278H-274KED	270 ±10%	0.735	3.2	>0.99	3.1	1.5	1.6	1.8	0.87	1.25
MSD1278H-334KED	330 ±10%	0.815	2.8	0.99	3.4	1.3	1.4	1.6	0.83	1.16
MSD1278H-394KED	390 ±10%	0.910	2.7	>0.99	3.6	1.2	1.3	1.5	0.79	1.12
MSD1278H-474KED	470 ±10%	1.185	2.3	>0.99	4.2	1.1	1.2	1.4	0.68	0.95
MSD1278H-564KED	560 ±10%	1.350	2.2	>0.99	4.6	1.0	1.1	1.3	0.64	0.90
MSD1278H-684KED	680 ±10%	1.780	1.8	>0.99	5.0	0.9	1.0	1.1	0.61	0.79
MSD1278H-824KED	820 ±10%	2.000	1.7	>0.99	5.5	0.82	0.92	1.0	0.51	0.74
MSD1278H-105KED	1000 ±10%	2.350	1.6	>0.99	5.8	0.75	0.83	0.92	0.49	0.69

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

## MSD1278H-105KED

**Termination:** **E** = RoHS compliant matte tin over nickel over phosphor 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). Quantities less than full reel available: in tape (not machine ready) or with leader and trailer (\$25 charge).

- 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.
  - 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.
  - SRF measured using an Agilent/HP 4191A or equivalent. When leads are connected in parallel, SRF is the same value.
  - Leakage inductance is for L1 and is measured with L2 shorted.
  - 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.
  - Equal current when applied to each winding simultaneously that causes a 40°C temperature rise from 25°C ambient.
  - Maximum current when applied to one winding that causes a 40°C temperature rise from 25°C ambient.
  - 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.](#)

**Core material** Ferrite

**Core and winding loss** [Go to online calculator](#)

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

**Weight:** 3.7 – 4.4 g

**Ambient temperature** –40°C to +125°C with 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** 500 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)

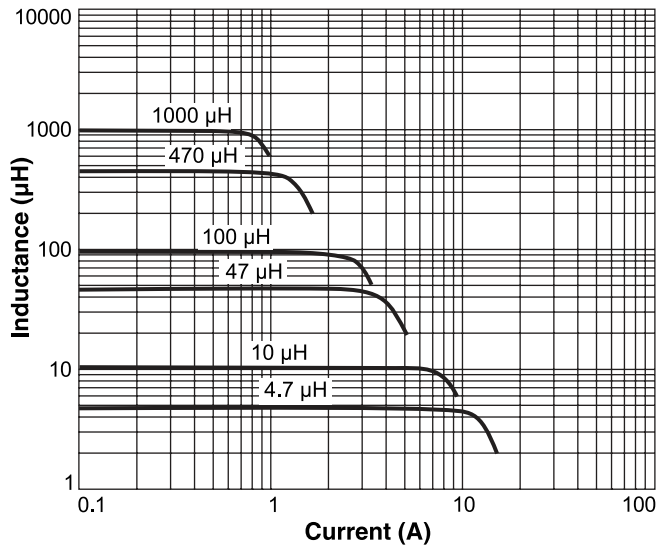
**Packaging** 500/13" reel; Plastic tape: 24 mm wide, 0.5 mm thick, 16 mm pocket spacing, 8.7 mm pocket depth

**PCB washing** Tested with pure water or alcohol only. For other solvents, see [Doc787\\_PCB\\_Washing.pdf](#).



# Shielded Coupled Inductors – MSD1278H

## Typical L vs Current



## Typical L vs Frequency

