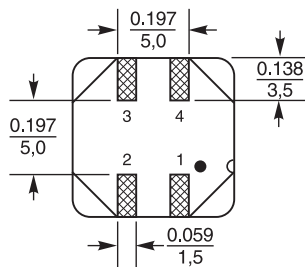
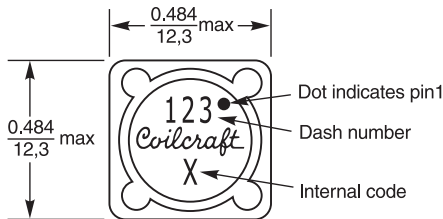
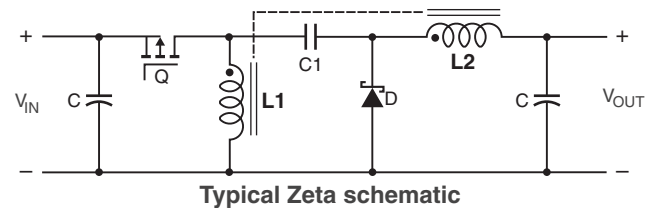
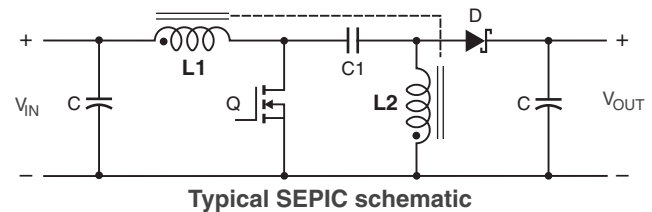
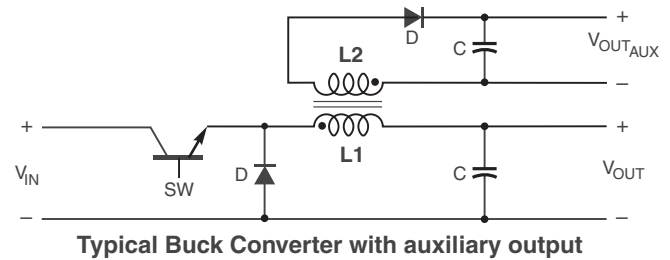
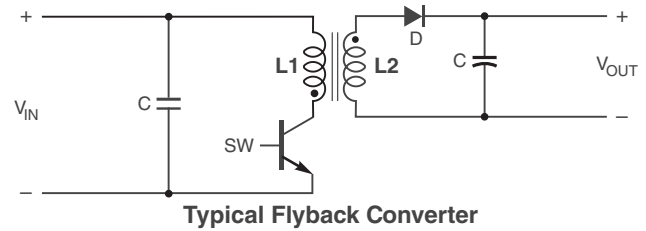


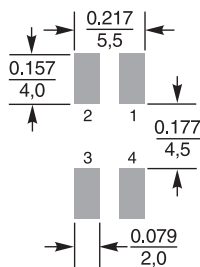
Shielded Coupled Inductors MSD1278H



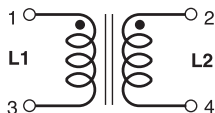
- Tight coupling ($k \geq 0.98$)
- 500 Vrms, one minute isolation (hipot) between primary and secondary
- Ideal for use in a variety of circuits including flyback, multi-output buck, SEPIC, Ćuk and Zeta.
- High efficiency and excellent current handling
- Can also be used as two single inductors connected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



Shielded Coupled Inductors – MSD1278H

| Part number ¹ | Inductance ² (μ H) | DCR max ³ (Ohms) | SRF typ ⁴ (MHz) | Coupling coefficient typ | Leakage L max ⁵ (μ H) | Isat (A) ⁶ | | | Irms (A) | |
|--------------------------|---------------------------------------|-----------------------------------|----------------------------------|--------------------------------|---|-----------------------|-------------|-------------|-------------------------------|-----------------------------|
| | | | | | | 10% drop | 20% drop | 30% drop | both windings ⁷ | one winding ⁸ |
| MSD1278H-472MED | 4.7 \pm 20% | 0.022 | 30 | 0.98 | 0.35 | 10.2 | 11.6 | 12.7 | 5.11 | 7.14 |
| MSD1278H-652MED | 6.5 \pm 20% | 0.025 | 26 | 0.98 | 0.38 | 9.2 | 10.4 | 11.5 | 4.80 | 6.74 |
| MSD1278H-822MED | 8.2 \pm 20% | 0.030 | 23 | 0.98 | 0.41 | 8.3 | 9.3 | 10.2 | 4.32 | 6.15 |
| MSD1278H-103MED | 10 \pm 20% | 0.036 | 20 | 0.98 | 0.46 | 7.1 | 8.0 | 8.8 | 4.01 | 5.56 |
| MSD1278H-123MED | 12 \pm 20% | 0.037 | 18 | 0.98 | 0.53 | 6.6 | 7.5 | 8.3 | 3.87 | 5.47 |
| MSD1278H-153MED | 15 \pm 20% | 0.048 | 16 | 0.99 | 0.55 | 6.0 | 6.8 | 7.5 | 3.42 | 4.77 |
| MSD1278H-183MED | 18 \pm 20% | 0.051 | 14 | 0.99 | 0.64 | 5.5 | 6.3 | 6.8 | 3.28 | 4.67 |
| MSD1278H-223MED | 22 \pm 20% | 0.068 | 12 | 0.99 | 0.72 | 5.1 | 5.6 | 6.2 | 2.88 | 4.06 |
| MSD1278H-273MED | 27 \pm 20% | 0.078 | 11 | 0.99 | 0.80 | 4.6 | 5.1 | 5.6 | 2.70 | 3.91 |
| MSD1278H-333MED | 33 \pm 20% | 0.086 | 10 | 0.99 | 0.85 | 4.2 | 4.6 | 5.1 | 2.54 | 3.66 |
| MSD1278H-393MED | 39 \pm 20% | 0.110 | 8.7 | 0.99 | 1.0 | 3.8 | 4.3 | 4.7 | 2.22 | 3.12 |
| MSD1278H-473MED | 47 \pm 20% | 0.127 | 8.1 | 0.99 | 1.1 | 3.6 | 3.9 | 4.4 | 2.10 | 2.94 |
| MSD1278H-563MED | 56 \pm 20% | 0.140 | 7.5 | 0.99 | 1.3 | 3.3 | 3.6 | 4.0 | 1.98 | 2.75 |
| MSD1278H-683MED | 68 \pm 20% | 0.155 | 7.0 | 0.99 | 1.4 | 3.0 | 3.2 | 3.6 | 1.91 | 2.65 |
| MSD1278H-823MED | 82 \pm 20% | 0.206 | 6.3 | 0.99 | 1.6 | 2.7 | 2.9 | 3.3 | 1.63 | 2.34 |
| MSD1278H-104KED | 100 \pm 10% | 0.230 | 5.5 | >0.99 | 1.8 | 2.4 | 2.6 | 3.0 | 1.53 | 2.25 |
| MSD1278H-124KED | 120 \pm 10% | 0.307 | 4.8 | 0.99 | 2.0 | 2.2 | 2.4 | 2.7 | 1.33 | 1.87 |
| MSD1278H-154KED | 150 \pm 10% | 0.355 | 4.4 | >0.99 | 2.2 | 2.0 | 2.2 | 2.4 | 1.26 | 1.79 |
| MSD1278H-184KED | 180 \pm 10% | 0.470 | 4.2 | >0.99 | 2.5 | 1.8 | 2.0 | 2.2 | 1.07 | 1.54 |
| MSD1278H-224KED | 220 \pm 10% | 0.540 | 3.8 | >0.99 | 2.8 | 1.6 | 1.8 | 2.0 | 1.00 | 1.41 |
| MSD1278H-274KED | 270 \pm 10% | 0.735 | 3.2 | >0.99 | 3.1 | 1.5 | 1.6 | 1.8 | 0.87 | 1.25 |
| MSD1278H-334KED | 330 \pm 10% | 0.815 | 2.8 | 0.99 | 3.4 | 1.3 | 1.4 | 1.6 | 0.83 | 1.16 |
| MSD1278H-394KED | 390 \pm 10% | 0.910 | 2.7 | >0.99 | 3.6 | 1.2 | 1.3 | 1.5 | 0.79 | 1.12 |
| MSD1278H-474KED | 470 \pm 10% | 1.185 | 2.3 | >0.99 | 4.2 | 1.1 | 1.2 | 1.4 | 0.68 | 0.95 |
| MSD1278H-564KED | 560 \pm 10% | 1.350 | 2.2 | >0.99 | 4.6 | 1.0 | 1.1 | 1.3 | 0.64 | 0.90 |
| MSD1278H-684KED | 680 \pm 10% | 1.780 | 1.8 | >0.99 | 5.0 | 0.9 | 1.0 | 1.1 | 0.61 | 0.79 |
| MSD1278H-824KED | 820 \pm 10% | 2.000 | 1.7 | >0.99 | 5.5 | 0.82 | 0.92 | 1.0 | 0.51 | 0.74 |
| MSD1278H-105KED | 1000 \pm 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)

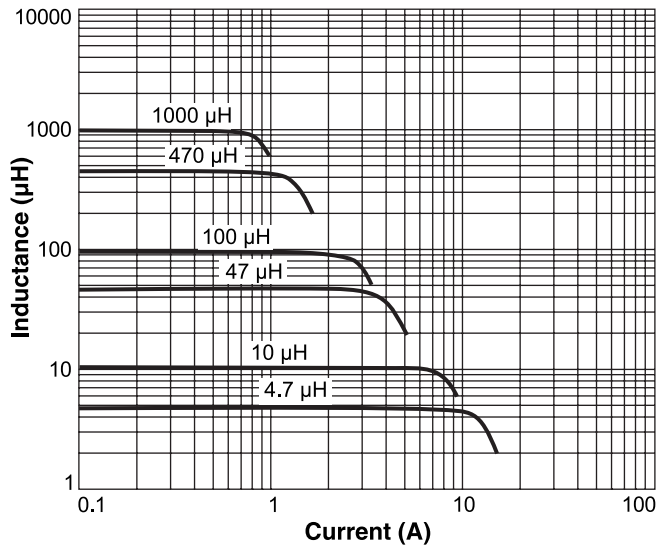
Packaging 500/13" reel; Plastic tape: 24 mm wide, 0.5 mm thick, 16 mm pocket spacing, 8.7 mm pocket depth

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

