

Coupled Inductors MSD1514



Core material Ferrite

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

Environmental RoHS compliant, halogen free

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

Weight: 9.0 – 11.8 g

Ambient temperature -40°C to $+85^{\circ}\text{C}$ with (40°C rise) Irms current.

Maximum part temperature $+125^{\circ}\text{C}$ (ambient + temp rise).

Storage temperature Component: -40°C to $+125^{\circ}\text{C}$.

Tape and reel packaging: -40°C to $+80^{\circ}\text{C}$

Winding-to-winding isolation 500 Vrms, one minute

Resistance to soldering heat Max three 40 second reflows at $+260^{\circ}\text{C}$, parts cooled to room temperature between cycles

Moisture Sensitivity Level (MSL) 1 (unlimited floor life at $<30^{\circ}\text{C}$ / 85% relative humidity)

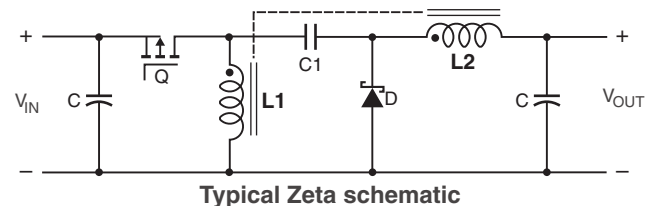
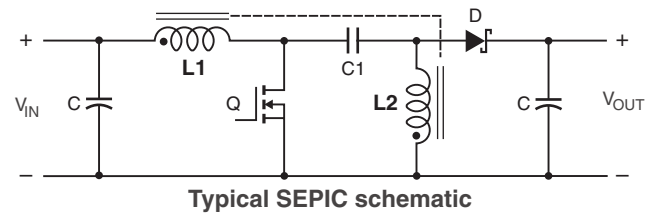
Failures in Time (FIT) / Mean Time Between Failures (MTBF)

38 per billion hours / 26,315,789 hours, calculated per Telcordia SR-332

Packaging 175/13" reel; Plastic tape: 32 mm wide, 0.5 mm thick, 24 mm pocket spacing, 14.3 mm pocket depth

PCB washing Tested with pure water or alcohol only. For other solvents, see [Doc787_PCB_Washing.pdf](#).

- Excellent coupling coefficient ($k \geq 0.97$)
- Ideal for use in a variety of circuits including flyback, multi-output buck, SEPIC, Zeta, and Ćuk.
- High inductance, high efficiency and excellent current handling.
- In SEPIC topologies, the required inductance for each winding is half the value needed for two separate inductors, allowing selection of a part with lower DCR and higher current handling.





MSD1514 Coupled Inductors

| Part number ¹ | Inductance ² (μ H) | DCR (Ohms) ³ | | SRF typ ⁴ (MHz) | Coupling coefficient typ | Leakage inductance typ (μ H) | Isat (A) ⁵ | | | Irms (A) | |
|--------------------------|---------------------------------------|-------------------------|-------|----------------------------------|--------------------------------|---|-----------------------|-------------|-------------|-------------------------------|-----------------------------|
| | | typ | max | | | | 10% drop | 20% drop | 30% drop | both windings ⁶ | one winding ⁷ |
| MSD1514-252ME_ | 2.5 \pm 20% | 0.010 | 0.012 | 34.0 | 0.97 | 0.20 | 25.0 | 28.0 | 30.5 | 5.1 | 7.8 |
| MSD1514-472ME_ | 4.7 \pm 20% | 0.012 | 0.014 | 25.0 | 0.98 | 0.20 | 19.5 | 21.8 | 23.7 | 4.5 | 7.6 |
| MSD1514-103ME_ | 10 \pm 20% | 0.015 | 0.018 | 16.5 | 0.99 | 0.40 | 13.4 | 15.0 | 16.2 | 4.0 | 6.8 |
| MSD1514-123ME_ | 12 \pm 20% | 0.018 | 0.022 | 14.5 | 0.99 | 0.40 | 12.2 | 13.7 | 14.8 | 3.7 | 6.6 |
| MSD1514-153ME_ | 15 \pm 20% | 0.024 | 0.028 | 11.0 | >0.99 | 0.42 | 10.9 | 12.2 | 13.3 | 3.4 | 5.8 |
| MSD1514-223ME_ | 22 \pm 20% | 0.031 | 0.036 | 10.0 | >0.99 | 0.45 | 9.00 | 10.1 | 11.0 | 3.0 | 5.1 |
| MSD1514-273ME_ | 27 \pm 20% | 0.034 | 0.039 | 8.50 | >0.99 | 0.45 | 8.14 | 9.13 | 9.90 | 2.95 | 4.7 |
| MSD1514-333ME_ | 33 \pm 20% | 0.045 | 0.052 | 7.20 | >0.99 | 0.45 | 7.40 | 8.20 | 9.00 | 2.55 | 3.9 |
| MSD1514-473ME_ | 47 \pm 20% | 0.065 | 0.075 | 5.60 | >0.99 | 0.55 | 6.20 | 6.90 | 7.50 | 2.20 | 3.45 |
| MSD1514-683ME_ | 68 \pm 20% | 0.078 | 0.090 | 5.20 | >0.99 | 0.55 | 5.10 | 5.70 | 6.20 | 2.00 | 3.20 |
| MSD1514-104KE_ | 100 \pm 10% | 0.115 | 0.126 | 3.80 | >0.99 | 0.55 | 4.20 | 4.75 | 5.15 | 1.65 | 2.50 |
| MSD1514-224KE_ | 220 \pm 10% | 0.261 | 0.287 | 2.30 | >0.99 | 0.70 | 2.85 | 3.20 | 3.50 | 1.10 | 1.70 |
| MSD1514-334KE_ | 330 \pm 10% | 0.334 | 0.367 | 2.10 | >0.99 | 0.80 | 2.33 | 2.61 | 2.83 | 0.98 | 1.55 |
| MSD1514-474KE_ | 470 \pm 10% | 0.500 | 0.550 | 1.65 | >0.99 | 1.2 | 1.95 | 2.20 | 2.40 | 0.77 | 1.30 |
| MSD1514-105KE_ | 1000 \pm 10% | 1.12 | 1.25 | 1.10 | >0.99 | 2.0 | 1.34 | 1.50 | 1.63 | 0.55 | 0.77 |

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

MSD1514-105KED

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

Packaging: **D** = 13" machine-ready reel. EIA-481 embossed plastic tape (175 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.

- 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.
- 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.
[Click for temperature derating information.](#)
- Maximum current when applied to one winding that causes a 40°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.
[Click for temperature derating information.](#)
- 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.](#)



MSD1514 Coupled Inductors

Typical L vs Current



Typical L vs Frequency



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 $\frac{\text{inches}}{\text{mm}}$



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