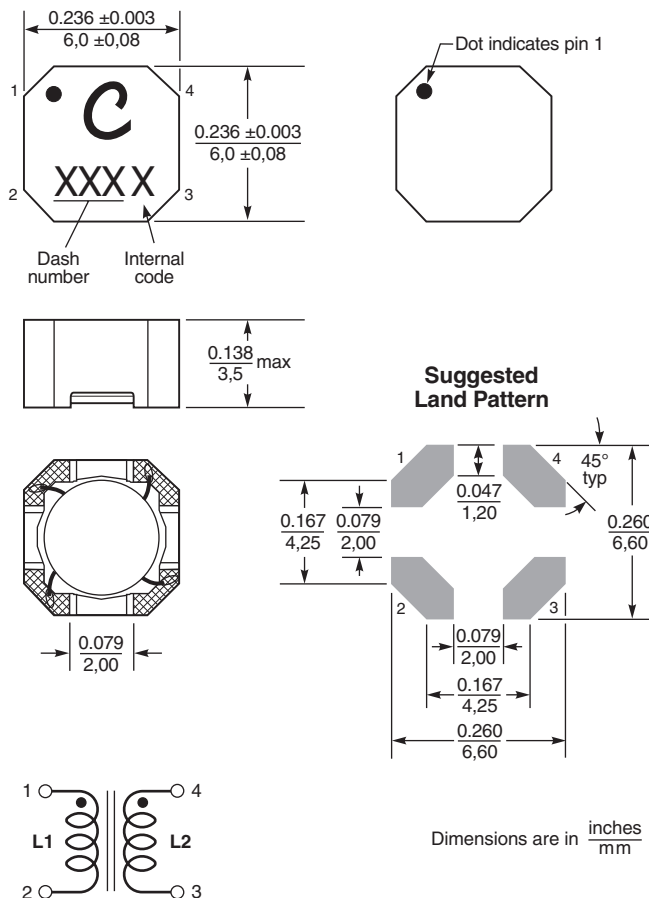
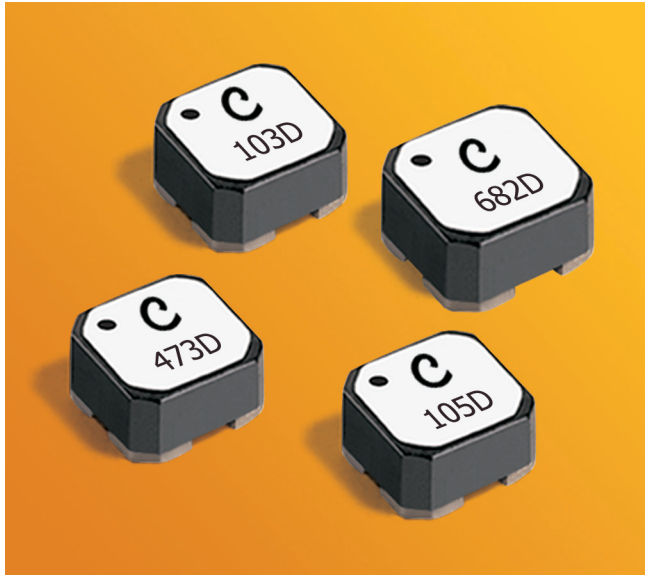


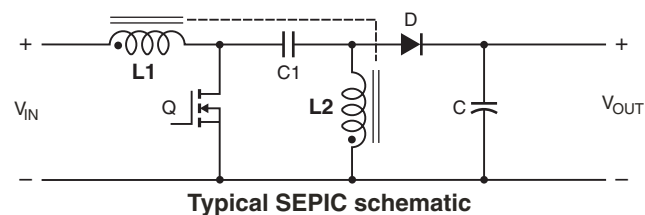
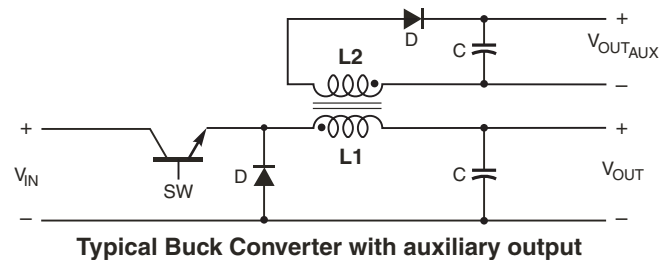
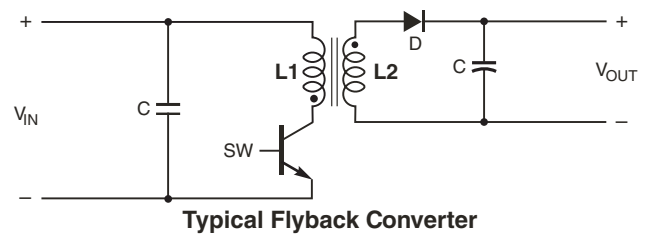
Coupled Inductors for Critical Applications



Tight coupling ($k \geq 0.97$) makes the ST512PJD series of coupled inductors ideal for use in a variety of circuits including flyback, multi-output buck and SEPIC.

These coupled miniature shielded inductors are 3.5 mm high and 6.0 mm square. They provide high inductance, high efficiency and excellent current handling in low cost part.

They can be used as two single inductors connected in series or parallel, as a common mode choke or as a 1 : 1 transformer.



Core material Ferrite

Weight 420 – 480 mg

Terminations RoHS compliant, halogen free silver-palladium-platinum-glass frit. Other terminations available at additional cost.

Ambient temperature -40°C to $+85^{\circ}\text{C}$ with I_{rms} current, $+85^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ with derated current

Storage temperature Component: -55°C to $+125^{\circ}\text{C}$.

Tape and reel packaging: -55°C to $+80^{\circ}\text{C}$

Winding to winding isolation 100 V

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)

Packaging 750 per 7" reel Plastic tape: 12 mm wide, 0.32 mm thick, 8 mm pocket spacing, 3.1 mm pocket depth

Recommended pick and place nozzle OD: 5 mm; ID: ≤ 2.5 mm

Coilcraft CPS

CRITICAL PRODUCTS & SERVICES

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

ST512PJD Series Coupled Inductors

Part number ¹	Inductance ² ±20% (μH)	DCR max ³ (Ohms)	SRF typ ⁴ (MHz)	Coupling coefficient typ	Leakage ⁵ L typ (μH)	Isat (A) ⁶			Irms (A)	
						10% drop	20% drop	30% drop	both windings ⁷	one winding ⁸
ST512PJD682MLZ	6.8	0.108	31	0.99	0.10	2.80	3.00	3.12	1.60	2.26
ST512PJD103MLZ	10	0.140	26	0.99	0.12	2.50	2.70	2.80	1.40	1.98
ST512PJD223MLZ	22	0.300	15	>0.99	0.15	1.50	1.67	1.73	0.85	1.20
ST512PJD473MLZ	47	0.620	9.7	>0.99	0.21	0.90	0.98	0.99	0.60	0.85
ST512PJD474MLZ	470	3.50	3.0	>0.99	0.61	0.18	0.22	0.23	0.25	0.35
ST512PJD105MLZ	1000	7.00	1.9	>0.99	1.05	0.12	0.14	0.15	0.15	0.21
ST512PJD155MLZ	1500	10.8	1.5	>0.99	1.70	0.10	0.12	0.13	0.14	0.20
ST512PJD205MLZ	2000	16.0	1.3	>0.99	2.10	0.08	0.11	0.12	0.11	0.16

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

ST512PJD105MLZ

Termination: L = RoHS compliant silver-palladium-platinum-glass frit.
Special order: T = RoHS tin-silver-copper (95.5/4/0.5)
or S = non-RoHS tin-lead (63/37).

Testing: Z = COTS
H = Screening per Coilcraft CPSA-10001

- 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. See temperature rise calculation.
- Maximum current when applied to one winding that causes a 40°C temperature rise from 25°C ambient. See temperature rise calculation.
- Electrical specifications at 25°C.

Temperature rise calculation based on specified Irms

Winding power loss = $(I_{L1}^2 + I_{L2}^2) \times \text{DCR in Watts (W)}$

Temperature rise = Winding power loss $\times \frac{92.5^\circ\text{C}}{\text{W}}$

Examples for ST512PJD223MLZ:

Equal current in each winding (0.80 A):

Winding power loss = $(0.80^2 + 0.80^2) \times 0.30 = 0.384 \text{ W}$

Temperature rise = $0.384 \text{ W} \times \frac{92.5^\circ\text{C}}{\text{W}} = 35.5^\circ\text{C}$

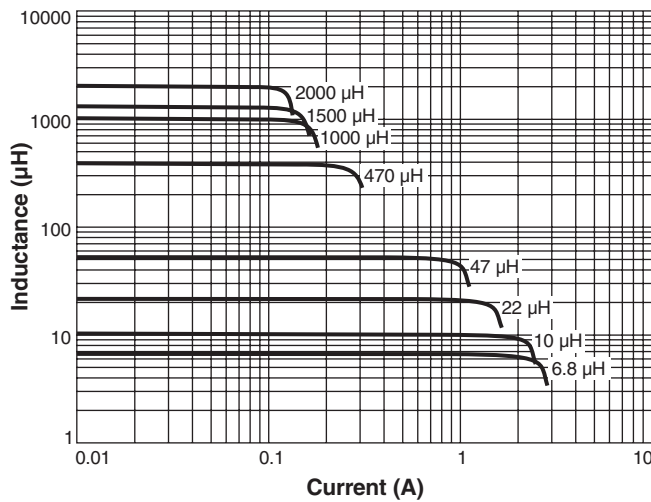
Unequal current ($I_{L1} = 1.1 \text{ A}$, $I_{L2} = 0.45 \text{ A}$):

Winding power loss = $(1.1^2 + 0.45^2) \times 0.30 = 0.424 \text{ W}$

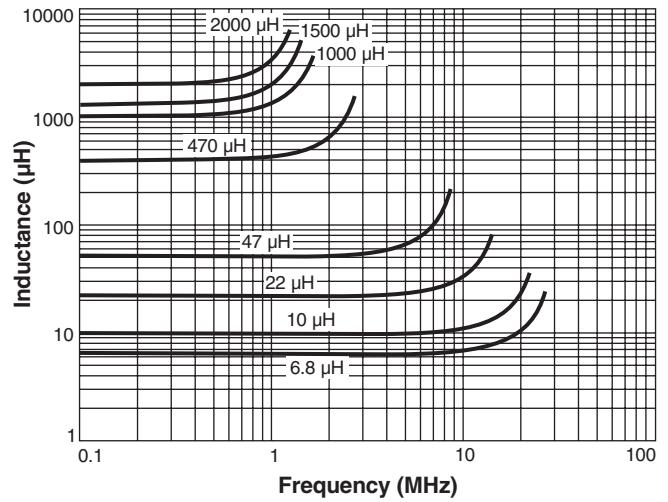
Temperature rise = $0.424 \text{ W} \times \frac{92.5^\circ\text{C}}{\text{W}} = 39.2^\circ\text{C}$

ST512PJD Series Coupled Inductors

L vs Current



L vs Frequency



Typical Current Derating

