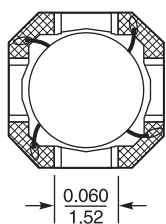
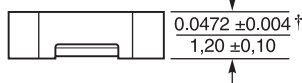
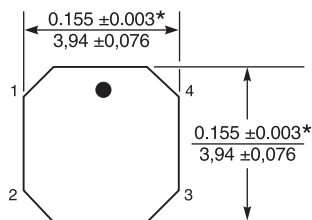
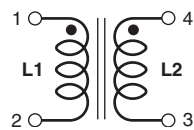


# High-Reliability Coupled Inductors MS416PJD

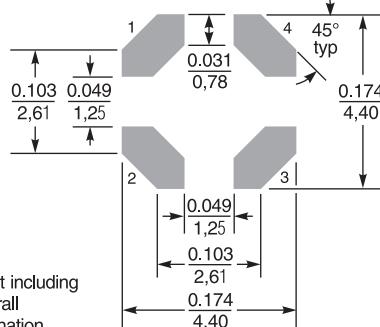


\*Dimensions are of the case not including termination. For maximum overall dimensions including the termination, add 0.010 in / 0,254 mm.

† Height dimension is after mounting. For maximum height dimension before mounting, add 0.006 in / 0,152 mm.

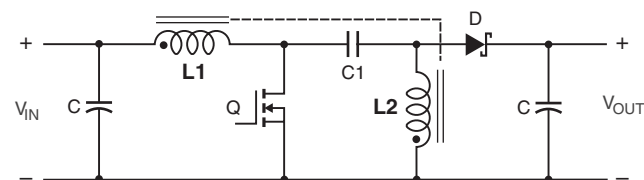
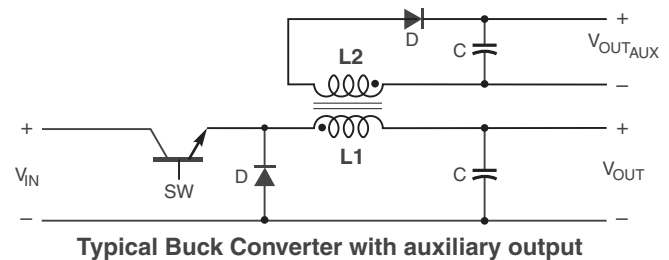
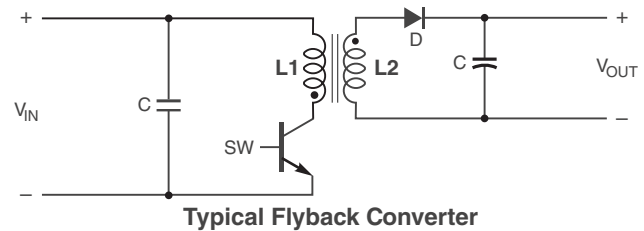


## Suggested Land Pattern



Dimensions are in inches/mm

- Only 1.1 mm high and 4 mm square
- Tin-lead (Sn-Pb) termination for the best possible board adhesion
- Ideal for use in flyback, multi-output buck and SEPIC applications.
- High inductance, high efficiency and excellent current handling
- Can also be used as two single inductors connected in series or parallel or as a common mode choke.



**Core material** Ferrite

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

**Weight** 60 – 81 mg

**Terminations** Tin-lead (63/37) over tin over nickel.

**Ambient temperature** -55°C to +105°C with Irms current

**Maximum part temperature** 155°C (ambient + temp rise)

**Storage temperature** Component: -55°C to +155°C.

Tape and reel packaging: -55°C to +80°C

**Winding to winding isolation** 100 V

**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)

**Enhanced crush-resistant packaging** 1000/7" reel

Plastic tape: 12 mm wide, 0.25 mm thick, 8 mm pocket spacing, 1.32 mm pocket depth

**Recommended pick and place nozzle** OD: 4 mm; ID: ≤2 mm

# MS416PJD Series (4012)

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 typ <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>
MS416PJD331NSZ	0.33 $\pm$ 30%	0.042	255	0.94	0.06	5.2	5.4	5.6	2.13	3.01
MS416PJD561NSZ	0.56 $\pm$ 30%	0.087	185	0.95	0.08	3.7	3.8	3.9	1.48	2.09
MS416PJD821NSZ	0.82 $\pm$ 30%	0.100	130	0.97	0.09	3.2	3.3	3.4	1.38	1.95
MS416PJD152NSZ	1.5 $\pm$ 30%	0.185	86	0.97	0.11	2.50	2.81	2.91	1.01	1.43
MS416PJD222NSZ	2.2 $\pm$ 30%	0.235	70	0.98	0.14	2.30	2.40	2.50	0.90	1.27
MS416PJD332NSZ	3.3 $\pm$ 30%	0.320	48	0.98	0.16	1.80	1.90	2.00	0.77	1.09
MS416PJD472MSZ	4.7 $\pm$ 20%	0.500	39	0.98	0.18	1.60	1.70	1.80	0.62	0.87
MS416PJD562MSZ	5.6 $\pm$ 20%	0.620	32	0.99	0.20	1.50	1.60	1.60	0.55	0.78
MS416PJD682MSZ	6.8 $\pm$ 20%	0.530	31	0.99	0.22	1.20	1.52	1.63	0.60	0.85
MS416PJD822MSZ	8.2 $\pm$ 20%	0.600	29	0.99	0.24	1.10	1.20	1.30	0.56	0.80
MS416PJD103MSZ	10 $\pm$ 20%	0.750	25	0.99	0.26	0.98	1.00	1.10	0.50	0.71
MS416PJD153MSZ	15 $\pm$ 20%	1.13	21	0.99	0.30	0.90	0.92	0.94	0.41	0.58
MS416PJD223MSZ	22 $\pm$ 20%	1.63	15	0.99	0.34	0.70	0.82	0.84	0.34	0.48
MS416PJD333MSZ	33 $\pm$ 20%	1.83	12	>0.99	0.41	0.37	0.57	0.58	0.32	0.46
MS416PJD473MSZ	47 $\pm$ 20%	2.52	8.8	>0.99	0.51	0.33	0.39	0.40	0.27	0.39
MS416PJD683MSZ	68 $\pm$ 20%	3.23	7.8	>0.99	0.66	0.27	0.36	0.37	0.24	0.34
MS416PJD823MSZ	82 $\pm$ 20%	3.66	7.3	>0.99	0.75	0.27	0.27	0.29	0.23	0.32
MS416PJD104MSZ	100 $\pm$ 20%	4.75	6.1	>0.99	0.86	0.22	0.28	0.29	0.20	0.28
MS416PJD124MSZ	120 $\pm$ 20%	5.54	5.3	>0.99	0.98	0.21	0.26	0.27	0.19	0.26
MS416PJD154MSZ	150 $\pm$ 20%	6.90	4.6	>0.99	1.19	0.18	0.26	0.27	0.17	0.23
MS416PJD184MSZ	180 $\pm$ 20%	8.75	4.1	>0.99	1.40	0.16	0.21	0.23	0.15	0.21
MS416PJD224MSZ	220 $\pm$ 20%	11.24	3.3	>0.99	1.66	0.15	0.16	0.17	0.13	0.18
MS416PJD334MSZ	330 $\pm$ 20%	17.00	2.8	>0.99	2.45	0.13	0.16	0.16	0.11	0.15

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

## MS416PJD334MSZ

- Screening:** Z = Unscreened  
H = Coilcraft CP-SA-10001 Group A  
1 = EEE-INST-002 (Family 1) Level 1  
2 = EEE-INST-002 (Family 1) Level 2  
3 = EEE-INST-002 (Family 1) Level 3  
4 = MIL-STD-981 (Family 04) Class B  
5 = MIL-STD-981 (Family 04) Class S  
F = ESCC3201 (F4 operational life performed at 105°C)
- Screening performed to the document's latest revision.
  - Lot qualification (Group B) available.
  - Testing T and U have been replaced with more detailed codes 4, 5, and 1, 2, 3, respectively. Codes T and U can still be used, if necessary. Custom testing also available.
  - Country of origin restrictions available; prefix options G or F.

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.

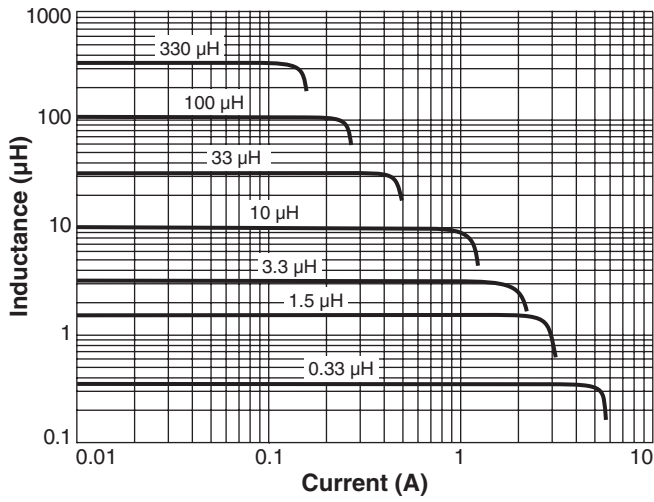
4. SRF measured using an Agilent/HP 4191A or equivalent. When leads are connected in parallel, SRF is the same value.
5. Leakage Inductance is for L1 and is measured with L2 shorted.
6. DC current, at which the inductance drops the specified amount from its value without current. It is the sum of the 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.  
[Calculate temperature rise.](#)
8. 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.  
[Calculate temperature rise.](#)
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.

### 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.](#)

# MS416PJD Series (4012)

## Typical L vs Current



## Typical L vs Frequency

