

# High Reliability Power Inductors MS590PNB



- High current, low DCR shielded power inductors
- High temperature materials allow operation in ambient temperatures up to 155°C.
- Tin-lead (Sn-Pb) terminations for the best possible board adhesion

**Core material** Ferrite

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

**Weight:** 2.1 g – 3.7 g

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

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

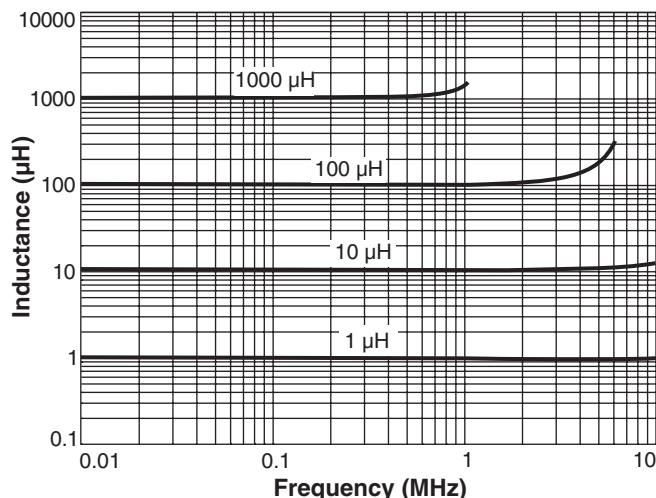
**Storage temperature** Component: –55°C to +155°C.  
Tape and reel packaging: –55°C to +80°C

**Resistance to soldering heat** Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

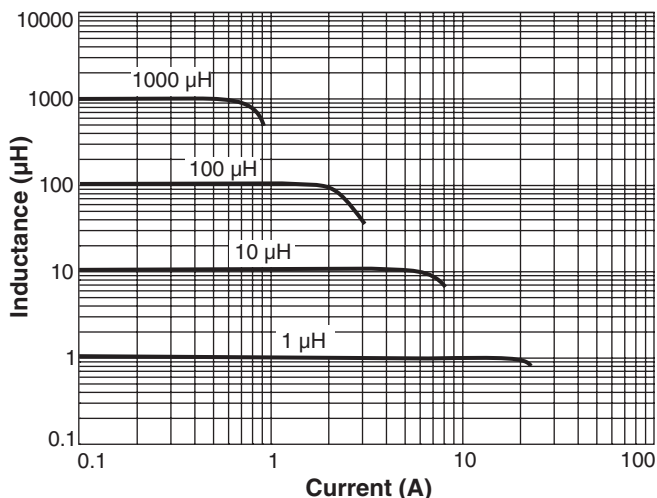
**Moisture Sensitivity Level (MSL)** 1 (unlimited floor life at <30°C / 85% relative humidity)

**Enhanced crush-resistant packaging** 500/13" reel; Plastic tape: 24 mm wide, 0.35 mm thick, 16 mm pocket spacing, 6.6 mm pocket depth

## Typical L vs Frequency



## Typical L vs Current



# MS590PNB Series

Part number <sup>1</sup>	Inductance <sup>2</sup> ( $\mu$ H)	DCR <sup>3</sup> (mOhms)		SRF <sup>4</sup> (MHz)		Isat (A) <sup>5</sup>			Irms (A) <sup>6</sup>	
		typ	max	min	typ	10% drop	20% drop	30% drop	20°C rise	40°C rise
MS590PNB102NSZ	1.0 $\pm$ 30%	5.8	6.5	70	100	19.12	21.18	22.76	6.00	8.00
MS590PNB152NSZ	1.5 $\pm$ 30%	8.8	9.8	56	80.0	14.44	16.40	17.64	5.30	7.60
MS590PNB222NSZ	2.2 $\pm$ 30%	11.5	12.8	39	55.0	12.32	14.00	15.08	5.20	7.30
MS590PNB332NSZ	3.3 $\pm$ 30%	12.6	14.0	29	42.0	10.88	12.22	13.12	5.00	7.00
MS590PNB472MSZ	4.7 $\pm$ 20%	13.9	15.5	27	38.0	9.92	11.10	12.00	4.50	7.00
MS590PNB562MSZ	5.6 $\pm$ 20%	14.9	16.6	21	30.0	8.54	9.60	10.38	4.00	6.40
MS590PNB682MSZ	6.8 $\pm$ 20%	16.6	18.5	19.0	27.0	7.80	8.80	9.44	3.80	5.90
MS590PNB822MSZ	8.2 $\pm$ 20%	20.2	22.5	18.0	26.0	6.44	7.38	7.98	3.40	4.80
MS590PNB103MSZ	10 $\pm$ 20%	21.5	23.9	15.0	22.0	6.00	6.92	7.48	3.00	4.00
MS590PNB123MSZ	12 $\pm$ 20%	24.5	27.3	14.0	20.0	5.68	6.56	7.08	2.80	3.70
MS590PNB153MSZ	15 $\pm$ 20%	30.7	34.2	12.6	18.0	5.34	6.04	6.54	2.60	3.50
MS590PNB183MSZ	18 $\pm$ 20%	35.4	39.4	11.2	16.0	4.82	5.54	6.00	2.50	3.30
MS590PNB223MSZ	22 $\pm$ 20%	36.6	40.7	10.5	15.0	4.42	5.04	5.44	2.30	3.10
MS590PNB273MSZ	27 $\pm$ 20%	51.3	57.0	9.0	13.0	3.78	4.32	4.68	2.10	2.90
MS590PNB333MSZ	33 $\pm$ 20%	54.9	61.0	8.7	12.4	3.50	4.00	4.34	2.00	2.70
MS590PNB393MSZ	39 $\pm$ 20%	58.0	64.5	8.4	12.0	3.32	3.80	4.14	1.90	2.60
MS590PNB473MSZ	47 $\pm$ 20%	80.1	89.0	8.0	11.6	2.84	3.26	3.54	1.85	2.50
MS590PNB563MSZ	56 $\pm$ 20%	82.5	91.7	7.3	10.5	2.64	3.04	3.28	1.75	2.40
MS590PNB683MSZ	68 $\pm$ 20%	94.5	105.0	7.0	10.0	2.46	2.82	3.04	1.70	2.30
MS590PNB823MSZ	82 $\pm$ 20%	131.6	146.3	6.0	8.6	2.24	2.54	2.74	1.60	2.20
MS590PNB104MSZ	100 $\pm$ 20%	141.8	157.6	5.5	7.8	2.06	2.34	2.54	1.50	2.10
MS590PNB124KSZ	120 $\pm$ 10%	193.3	214.8	4.8	6.8	1.84	2.08	2.28	1.38	1.85
MS590PNB154KSZ	150 $\pm$ 10%	215.4	239.4	4.5	6.4	1.64	1.90	2.06	1.20	1.66
MS590PNB184KSZ	180 $\pm$ 10%	254.2	282.5	4.3	6.1	1.46	1.70	1.84	1.14	1.58
MS590PNB224KSZ	220 $\pm$ 10%	314.1	349.0	3.9	5.5	1.30	1.48	1.60	1.00	1.42
MS590PNB274KSZ	270 $\pm$ 10%	368.8	409.8	3.0	4.3	1.18	1.38	1.48	0.90	1.45
MS590PNB334KSZ	330 $\pm$ 10%	481.3	534.8	2.8	4.0	1.04	1.20	1.30	0.84	1.16
MS590PNB394KSZ	390 $\pm$ 10%	517.5	575.0	2.5	3.6	1.00	1.16	1.28	0.78	1.08
MS590PNB474KSZ	470 $\pm$ 10%	721.2	801.4	2.1	3.0	0.906	1.00	1.10	0.70	0.96
MS590PNB564KSZ	560 $\pm$ 10%	773.1	859.0	2.0	2.8	0.872	0.980	1.02	0.64	0.88
MS590PNB684KSZ	680 $\pm$ 10%	867.6	964.0	1.8	2.6	0.782	0.886	0.956	0.58	0.80
MS590PNB824KSZ	820 $\pm$ 10%	1158	1287	1.7	2.5	0.692	0.784	0.854	0.53	0.73
MS590PNB105KSZ	1000 $\pm$ 10%	1273	1415	1.6	2.4	0.588	0.672	0.726	0.48	0.68

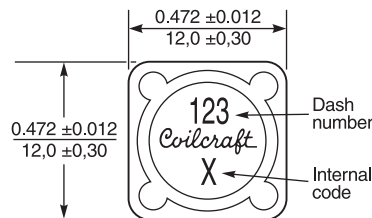
1. When ordering, please specify **screening** code:

## MS590PNB105KSZ

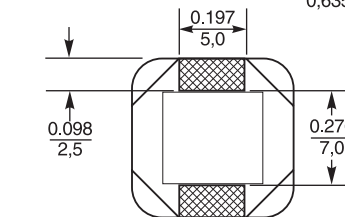
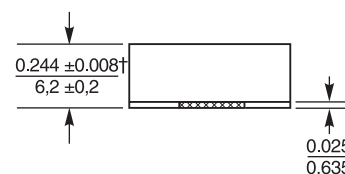
- Screening:**
- Z** = Unscreened
  - H** = Coilcraft CP-SA-10001 Group A
  - G** = Coilcraft CP-SA-10001 Group A (SLDC Option A)
  - D** = Coilcraft CP-SA-10001 Group A (SLDC Option B)
  - 1** = EEE-INST-002 (Family 1) Level 1
  - 2** = EEE-INST-002 (Family 1) Level 2
  - 3** = EEE-INST-002 (Family 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 tested at 100 kHz, 0.1 Vrms, 0 Adc using an Agilent/HP 4263B LCR meter or equivalent.
3. DCR measured on a micro-ohmmeter and a Coilcraft CCF858 test fixture.
4. SRF measured using an Agilent/HP 8753D network analyzer.
5. DC current at 25°C that causes the specified inductance drop from its value without current.
6. Current that causes the specified temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.
7. Electrical specifications at 25°C.

Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

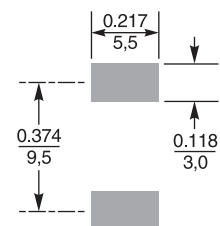


Parts manufactured prior to September 2011 may have a different part marking.



† Height dimension is after mounting. For maximum height dimension before mounting, add 0.006 in / 0.152 mm.

## Suggested Land Pattern



Dimensions are in  $\frac{\text{inches}}{\text{mm}}$

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