

**PRELIMINARY**

# Military Grade 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:** 2.8 g – 3.3 g

**Ambient temperature** –55°C to +105°C with I<sub>rms</sub> current, +105°C to +155°C with derated current

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

Part number <sup>1</sup>	Inductance <sup>2</sup> (µH)	DCR <sup>3</sup> (mOhms)		SRF typ <sup>4</sup> (MHz)	Isat (A) <sup>5</sup>			Irms (A) <sup>6</sup>	
		typ	max		10% drop	20% drop	30% drop	20°C rise	40°C rise
MS590PNB102NLZ	1.0±30%	5.8	6.5	100	19.12	21.18	22.76	6.00	8.00
MS590PNB152NLZ	1.5±30%	8.8	9.8	80.0	14.44	16.40	17.64	5.30	7.60
MS590PNB222NLZ	2.2±30%	11.5	12.8	55.0	12.32	14.00	15.08	5.20	7.30
MS590PNB332NLZ	3.3±30%	12.6	14.0	42.0	10.88	12.22	13.12	5.00	7.00
MS590PNB472MLZ	4.7±20%	13.9	15.5	38.0	9.92	11.10	12.00	4.50	7.00
MS590PNB562MLZ	5.6±20%	14.9	16.6	30.0	8.54	9.60	10.38	4.00	6.40
MS590PNB682MLZ	6.8±20%	16.6	18.5	27.0	7.80	8.80	9.44	3.80	5.90
MS590PNB822MLZ	8.2±20%	20.2	22.5	26.0	6.44	7.38	7.98	3.40	4.80
MS590PNB103MLZ	10±20%	21.5	23.9	22.0	6.00	6.92	7.48	3.00	4.00
MS590PNB123MLZ	12±20%	24.5	27.3	20.0	5.68	6.56	7.08	2.80	3.70
MS590PNB153MLZ	15±20%	30.7	34.2	18.0	5.34	6.04	6.54	2.60	3.50
MS590PNB183MLZ	18±20%	35.4	39.4	16.0	4.82	5.54	6.00	2.50	3.30
MS590PNB223MLZ	22±20%	36.6	40.7	15.0	4.42	5.04	5.44	2.30	3.10
MS590PNB273MLZ	27±20%	51.3	57.0	13.0	3.78	4.32	4.68	2.10	2.90
MS590PNB333MLZ	33±20%	54.9	61.0	12.4	3.50	4.00	4.34	2.00	2.70
MS590PNB393MLZ	39±20%	58.0	64.5	12.0	3.32	3.80	4.14	1.90	2.60
MS590PNB473MLZ	47±20%	80.1	89.0	11.6	2.84	3.26	3.54	1.85	2.50
MS590PNB563MLZ	56±20%	82.5	91.7	10.5	2.64	3.04	3.28	1.75	2.40
MS590PNB683MLZ	68±20%	94.5	105.0	10.0	2.46	2.82	3.04	1.70	2.30
MS590PNB823MLZ	82±20%	131.6	146.3	8.6	2.24	2.54	2.74	1.60	2.20
MS590PNB104MLZ	100±20%	141.8	157.6	7.8	2.06	2.34	2.54	1.50	2.10
MS590PNB124KLZ	120±10%	193.3	214.8	6.8	1.84	2.08	2.28	1.38	1.85
MS590PNB154KLZ	150±10%	215.4	239.4	6.4	1.64	1.90	2.06	1.20	1.66
MS590PNB184KLZ	180±10%	254.2	282.5	6.1	1.46	1.70	1.84	1.14	1.58
MS590PNB224KLZ	220±10%	314.1	349.0	5.5	1.30	1.48	1.60	1.00	1.42
MS590PNB274KLZ	270±10%	368.8	409.8	4.3	1.18	1.38	1.48	0.90	1.45
MS590PNB334KLZ	330±10%	481.3	534.8	4.0	1.04	1.20	1.30	0.84	1.16
MS590PNB394KLZ	390±10%	517.5	575.0	3.6	1.00	1.16	1.28	0.78	1.08
MS590PNB474KLZ	470±10%	721.2	801.4	3.0	0.906	1.00	1.10	0.70	0.96
MS590PNB564KLZ	560±10%	773.1	859.0	2.8	0.872	0.980	1.02	0.64	0.88
MS590PNB684KLZ	680±10%	867.6	964.0	2.6	0.782	0.886	0.956	0.58	0.80
MS590PNB824KLZ	820±10%	1158	1287	2.5	0.692	0.784	0.854	0.53	0.73

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

**MS590PNB824KLZ**

**Testing:** **Z** = Coilcraft Critical Products Environmental Stress Conditions Testing.

**H** = Coilcraft Qual + Coilcraft Hi-Rel Burn-in

**P** = Coilcraft Qual + MIL-STD-981 Class S Group A screening

**N** = Coilcraft Qual + MIL-STD-981 Class B Group A screening

**C** = Coilcraft Qual + MIL-STD-981 Class S Group A screening + MIL-STD-981 Class S Group B qualification

**W** = Coilcraft Qual + MIL-STD-981 Class B Group A screening + MIL-STD-981 Class S Group B qualification

2. Inductance tested at 100 kHz, 0.1 V<sub>rms</sub>, 0 A<sub>DC</sub> 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 and a Coilcraft SMD-D test fixture.

5. DC current at which the inductance drops the specified amount from its value without current.

6. Current that causes the specified temperature rise from 25°C ambient.

7. Electrical specifications at 25°C.

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

**Coilcraft** **CPS**  
CRITICAL PRODUCTS & SERVICES

These parts are preproduction products for electrical evaluation only.  
Specification subject to change without notice.

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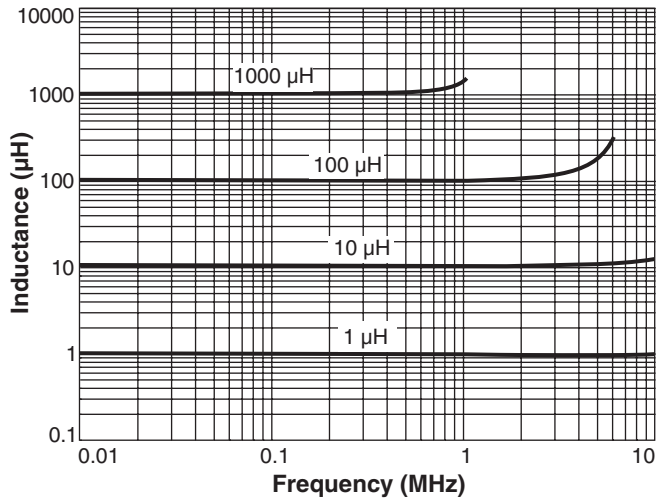
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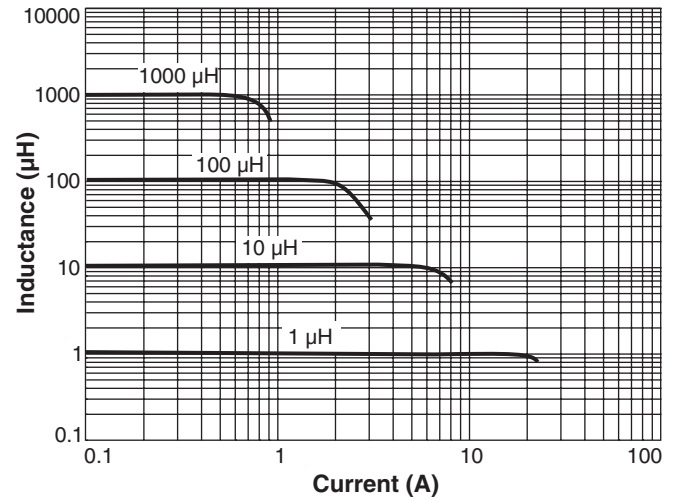
**PRELIMINARY**

# MS590PNB Series

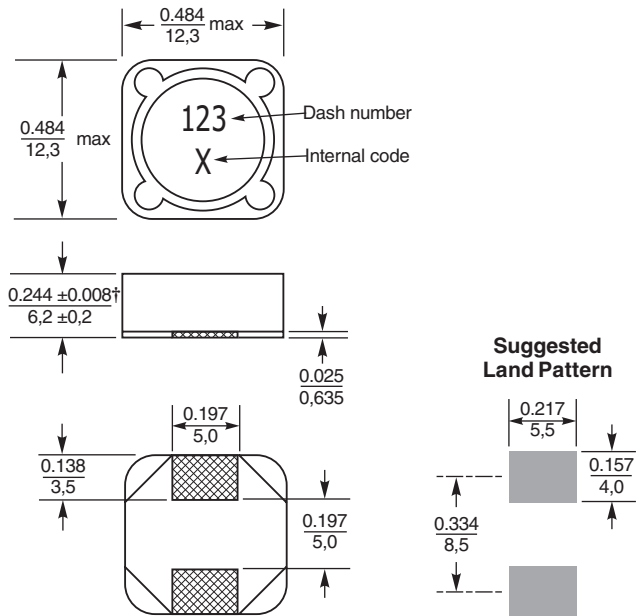
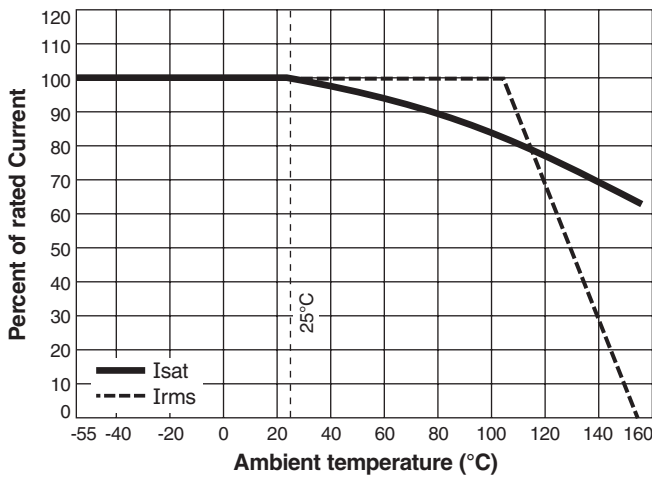
## Typical L vs Frequency



## Typical L vs Current



## Current Derating



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

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