

# High-Reliability Chip Inductors MS413RAD

This robust version of Coilcraft's standard 1008HQ series features high temperature materials that allow operation in ambient temperatures up to 155°C. The tin-lead (Sn-Pb) terminations ensure the best possible board adhesion.

Part number <sup>1</sup>	Inductance <sup>3</sup> (nH)	Percent tolerance	Q min <sup>4</sup>	SRF min <sup>5</sup> (GHz)	DCR max <sup>6</sup> (mOhms)	I <sub>max</sub> (A)
MS413RAD3N0_SZ <sup>2</sup>	3.0 @ 50 MHz	5	57 @ 1000 MHz	>5.00	38	1.8
MS413RAD4N1_SZ	4.1 @ 50 MHz	5	75 @ 1000 MHz	>5.00	50	1.8
MS413RAD7N8_SZ <sup>2</sup>	7.8 @ 50 MHz	5	51 @ 500 MHz	3.80	50	1.6
MS413RAD10N_SZ	10 @ 50 MHz	5,2	60 @ 500 MHz	3.20	60	1.5
MS413RAD12N_SZ	12 @ 50 MHz	5,2	57 @ 500 MHz	2.40	60	1.5
MS413RAD18N_SZ	18 @ 50 MHz	5,2	62 @ 350 MHz	2.10	70	1.4
MS413RAD22N_SZ	22 @ 50 MHz	5,2	62 @ 350 MHz	2.05	70	1.4
MS413RAD33N_SZ	33 @ 50 MHz	5,2	49 @ 150 MHz	1.70	90	1.2
MS413RAD36N_SZ	36 @ 50 MHz	5,2	57 @ 150 MHz	1.40	90	1.1
MS413RAD39N_SZ	39 @ 50 MHz	5,2	45 @ 150 MHz	1.30	90	1.1
MS413RAD47N_SZ	47 @ 50 MHz	5,2,1	45 @ 150 MHz	1.45	120	0.95
MS413RAD56N_SZ	56 @ 50 MHz	5,2,1	43 @ 150 MHz	1.08	120	0.95
MS413RAD68N_SZ	68 @ 50 MHz	5,2,1	54 @ 150 MHz	1.15	130	0.85
MS413RAD82N_SZ	82 @ 50 MHz	5,2,1	54 @ 150 MHz	1.06	160	0.80
MS413RADR10_SZ	100 @ 50 MHz	5,2,1	51 @ 150 MHz	0.82	160	0.80

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

**MS313RADR10JSZ**

**Tolerance:** F = 1% G = 2% J = 5%

- Part is wound on low profile coilform.
  - Inductance measured using a Coilcraft SMD-A fixture in an Agilent/HP 4286A impedance analyzer or equivalent with Coilcraft-provided correlation pieces.
  - Q measured using an Agilent/HP 4291A with an Agilent/HP 16197A test fixture or equivalents.
  - SRF measured using an Agilent/HP 8753ES network analyzer or equivalent and a Coilcraft SMD-D test fixture.
  - DCR measured on a Keithley 580 micro-ohmmeter or equivalent and a Coilcraft CCF858 test fixture.
  - Electrical specifications at 25°C.
- Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

**Core material** Ceramic

**Terminations** Tin-lead (63/37) over silver-platinum-glass frit

**Ambient temperature** -55°C to +125°C with I<sub>max</sub> 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

**Temperature Coefficient of Inductance (TCL)** +25 to +155 ppm/°C

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

**Enhanced crush-resistant packaging** 2000/7" reel

Standard height parts: Plastic tape: 8 mm wide, 0.23 mm thick, 4 mm pocket spacing, 1.8 mm pocket depth

Low profile parts: Plastic tape: 8 mm wide, 0.3 mm thick, 4 mm pocket spacing, 1.6 mm pocket depth



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1102 Silver Lake Road  
Cary, IL 60013  
Phone 800-981-0363

Fax 847-639-1508  
Email [cps@coilcraft.com](mailto:cps@coilcraft.com)  
[www.coilcraft-cps.com](http://www.coilcraft-cps.com)

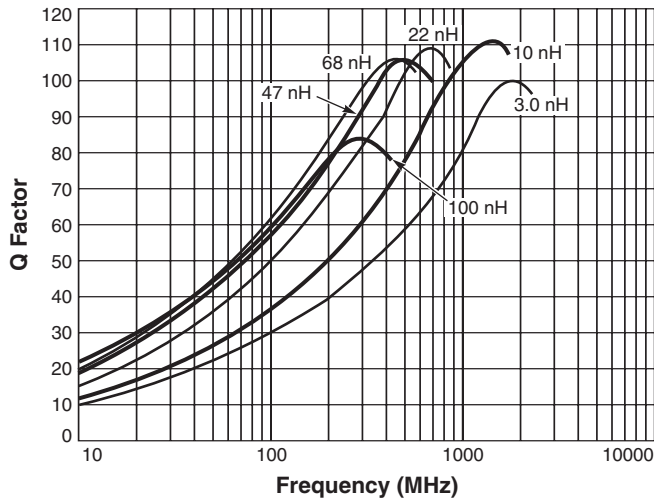
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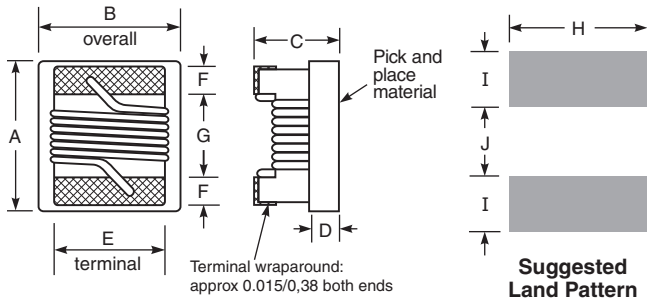
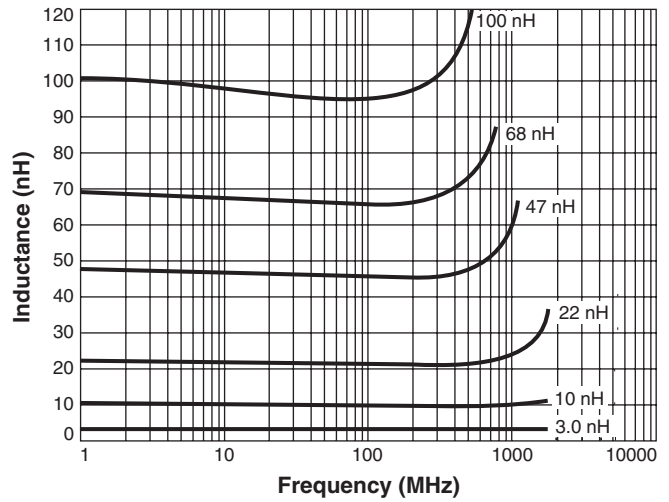
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**PRECISION** REPEATABLE  
MEASUREMENTS  
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# MS413RAD Series (1008)

## Typical Q vs Frequency



## Typical L vs Frequency



A	B	C	D	E	F	G	H	I	J
max	max	max*	ref						
0.115	0.110	0.080	0.020	0.080	0.020	0.060	0.100	0.040	0.050
2,92	2,79	2,03	0,51	2,03	0,51	1,52	2,54	1,02	1,27

\*Low profile parts: 0.050/1,27

Note: Dimensions are before solder application. For maximum overall dimensions including solder, add 0.0025 in / 0,064 mm to **B** and 0.006 in / 0,15 mm to **A** and **C**.



CRITICAL PRODUCTS & SERVICES

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1102 Silver Lake Road  
Cary, IL 60013  
Phone 800-981-0363

Fax 847-639-1508  
Email cps@coilcraft.com  
www.coilcraft-cps.com

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