

# High-Reliability Chip Inductors ML413RAD

This robust version of Coilcraft's standard 1008HQ series features high temperature materials that allow operation in ambient temperatures up to 155°C.

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)
ML413RAD3N0_LZ <sup>2</sup>	3.0 @ 50 MHz	5	57 @ 1000 MHz	>5.00	38	1.8
ML413RAD4N1_LZ	4.1 @ 50 MHz	5	75 @ 1000 MHz	>5.00	50	1.8
ML413RAD7N8_LZ <sup>2</sup>	7.8 @ 50 MHz	5	51 @ 500 MHz	3.80	50	1.6
ML413RAD10N_LZ	10 @ 50 MHz	5,2	60 @ 500 MHz	3.20	60	1.5
ML413RAD12N_LZ	12 @ 50 MHz	5,2	57 @ 500 MHz	2.40	60	1.5
ML413RAD18N_LZ	18 @ 50 MHz	5,2	62 @ 350 MHz	2.10	70	1.4
ML413RAD22N_LZ	22 @ 50 MHz	5,2	62 @ 350 MHz	2.05	70	1.4
ML413RAD33N_LZ	33 @ 50 MHz	5,2	49 @ 150 MHz	1.70	90	1.2
ML413RAD36N_LZ	36 @ 50 MHz	5,2	57 @ 150 MHz	1.40	90	1.1
ML413RAD39N_LZ	39 @ 50 MHz	5,2	45 @ 150 MHz	1.30	90	1.1
ML413RAD47N_LZ	47 @ 50 MHz	5,2,1	45 @ 150 MHz	1.45	120	0.95
ML413RAD56N_LZ	56 @ 50 MHz	5,2,1	43 @ 150 MHz	1.08	120	0.95
ML413RAD68N_LZ	68 @ 50 MHz	5,2,1	54 @ 150 MHz	1.15	130	0.85
ML413RAD82N_LZ	82 @ 50 MHz	5,2,1	54 @ 150 MHz	1.06	160	0.80
ML413RADR10_LZ	100 @ 50 MHz	5,2,1	51 @ 150 MHz	0.82	160	0.80

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

**ML313RADR10JLZ**

**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** Silver-palladium-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

**COILCRAFT** ACCURATE  
**PRECISION** REPEATABLE  
MEASUREMENTS  
SEE WEB SITE **TEST FIXTURES**

Document ML190-1 Revised 05/11/16

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.



CRITICAL PRODUCTS & SERVICES

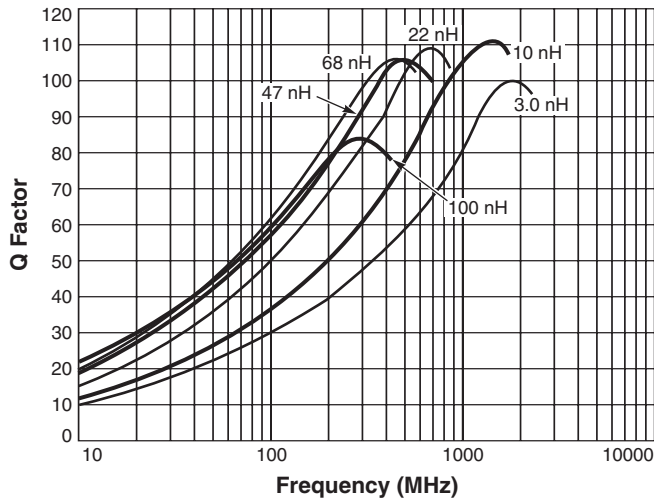
© Coilcraft, Inc. 2016

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

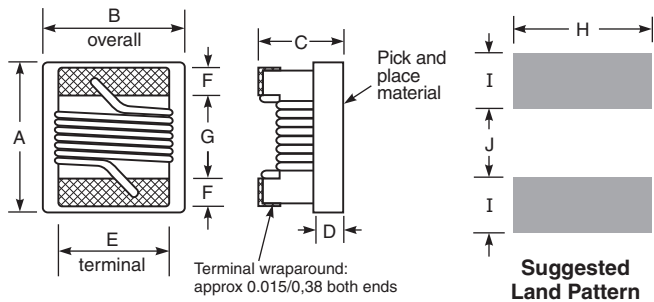
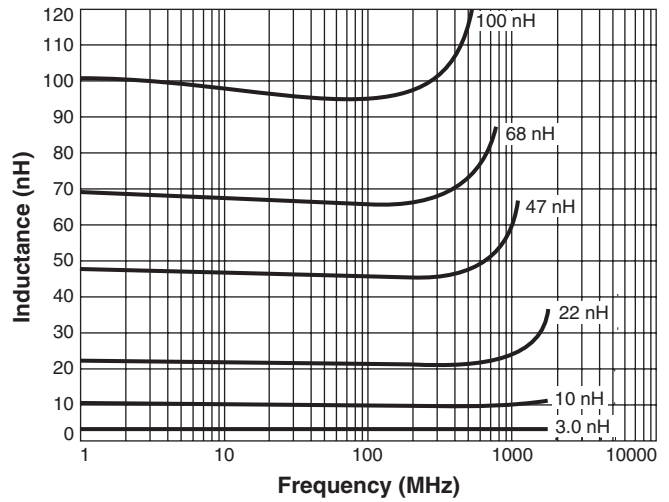
Fax 847-639-1508  
Email cps@coilcraft.com  
www.coilcraft-cps.com

# ML413RAD 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



CRITICAL PRODUCTS & SERVICES

© Coilcraft, Inc. 2016

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

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

Document ML190-2 Revised 05/11/16

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.