

# MCQ1V1608

## Multilayer high Q chip inductor



### Product features

- 0603 (1608 metric) package
- Multilayer monolithic construction yields high reliability
- Inductance range from 0.047  $\mu\text{H}$  to 3.9  $\mu\text{H}$
- Moisture sensitivity level (MSL): 1

### Applications

- Industrial connectivity (IoT)
- Wireless communications
- Bluetooth
- WiFi
- Antenna
- Machine-to-machine (M2M)
- Mobile phones
- Wearable devices
- Wireless LAN
- Computing/gaming consoles
- Broadband components
- RF transceiver modules

### Environmental compliance and general specifications

- Operating temperature range: -40  $^{\circ}\text{C}$  to +85  $^{\circ}\text{C}$  (ambient plus self-temperature rise)



Product specifications

Part number <sup>4</sup>	Ls Tolerance (%)	Ls <sup>1</sup> (μH)	Q minimum	DCR (Ω) @ +25 °C maximum	Test frequency <sup>2</sup> (MHz)	Test voltage <sup>2</sup> (mV)	SRF (MHz) minimum	Rated I <sup>3</sup> (mA) maximum
MCQ1V1608-R047-R	±10	0.047	15	0.2	50	50	260	50
MCQ1V1608-R056-R	±10	0.056	15	0.2	50	50	260	50
MCQ1V1608-R068-R	±10	0.068	15	0.2	50	50	250	50
MCQ1V1608-R082-R	±10	0.082	15	0.2	50	50	245	50
MCQ1V1608-R100-R	±10	0.10	20	0.25	25	50	240	50
MCQ1V1608-R120-R	±10	0.12	20	0.3	25	50	205	50
MCQ1V1608-R150-R	±10	0.15	20	0.3	25	50	180	50
MCQ1V1608-R180-R	±10	0.18	20	0.3	25	50	165	50
MCQ1V1608-R220-R	±10	0.22	20	0.4	25	50	150	50
MCQ1V1608-R270-R	±10	0.27	20	0.45	25	50	136	50
MCQ1V1608-R330-R	±10	0.33	20	0.5	25	50	125	50
MCQ1V1608-R390-R	±10	0.39	20	0.6	25	50	110	50
MCQ1V1608-R470-R	±10	0.47	20	0.7	25	50	105	50
MCQ1V1608-R560-R	±10	0.56	20	0.7	25	50	95	50
MCQ1V1608-R680-R	±10	0.68	20	0.9	25	50	90	50
MCQ1V1608-R820-R	±10	0.82	20	1.0	25	50	85	50
MCQ1V1608-1R0-R	±10	1.0	25	0.5	10	50	75	25
MCQ1V1608-1R2-R	±10	1.2	25	0.55	10	50	65	25
MCQ1V1608-1R5-R	±10	1.5	25	0.7	10	50	60	25
MCQ1V1608-1R8-R	±10	1.8	25	0.75	10	50	55	25
MCQ1V1608-2R2-R	±10	2.2	25	0.8	10	50	50	25
MCQ1V1608-2R7-R	±10	2.7	25	0.9	10	50	45	15
MCQ1V1608-3R3-R	±10	3.3	25	1.0	10	50	40	15
MCQ1V1608-3R9-R	±10	3.9	25	1.3	10	50	35	15

1. Ls = Inductance

2. Ls and Q test voltage and frequency

3. Rated I: Current rating for an approximate self-temperature rise of 40 °C or less.

4. Part Number Definition: MCQ1V1608-xxx-R

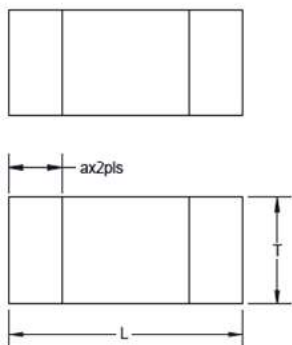
MCQ1V1608 – Product code and size

xxx= inductance value in μH, R= decimal point,

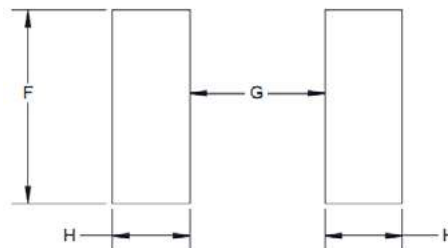
If no R is present then last character equals number of zeros

-R suffix = RoHS compliant

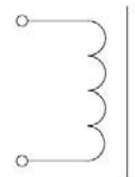
**Mechanical parameters, schematic, pad layout (mm)**



**Recommended pad layout**



**Schematic**



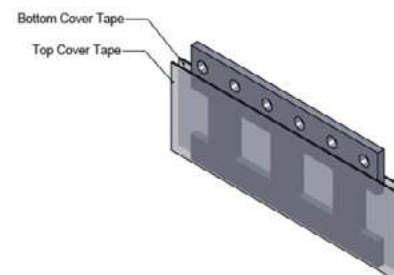
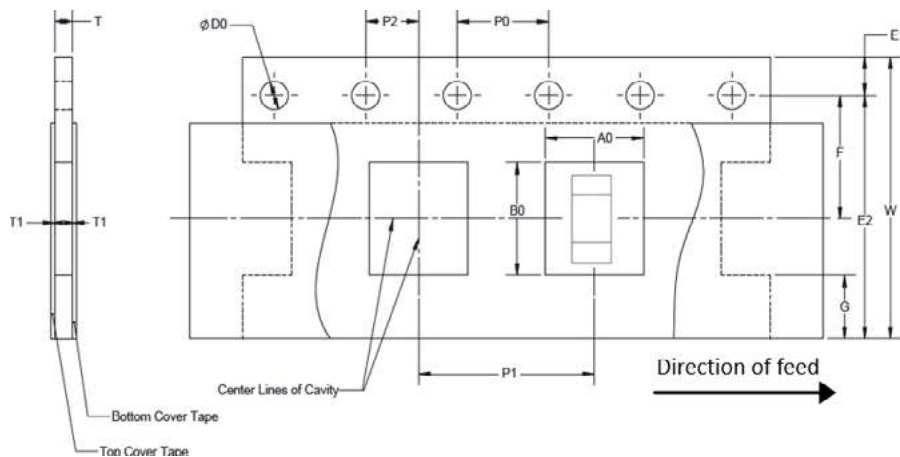
Part Number	L	W	T	a	F	G	H
MCQ1V1608-xxx-R	1.60 ±0.20	0.80 ±0.20	0.80 ±0.20	0.30 ±0.20	1.20 ref	0.40 ref	0.90 ref

Part marking: No marking  
All soldering surfaces to be coplanar within 0.1 millimeters  
Tolerances are ±0.1 millimeters unless stated otherwise  
Pad layout dimensions are reference only  
Traces or vias underneath the inductor is not recommended

**Packaging information (mm)**

Drawing not to scale

Supplied in tape and reel packaging, 4000 parts per 7" diameter reel

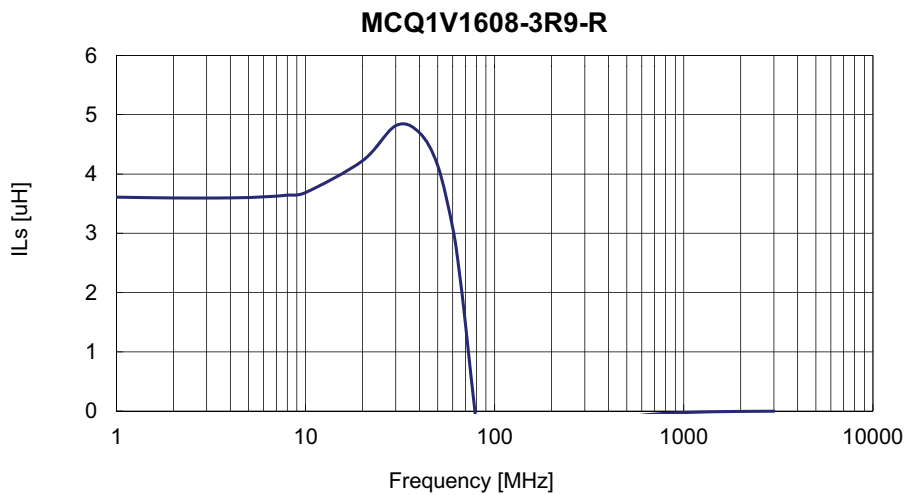
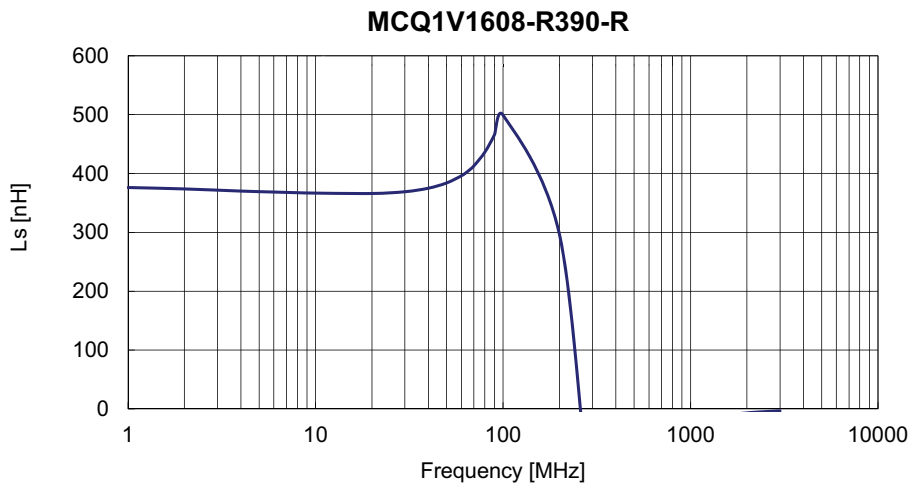
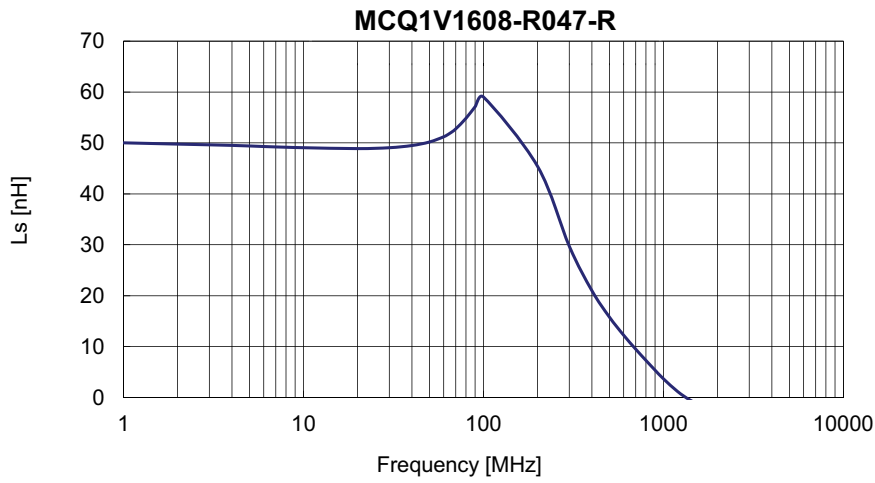


W±0.2	8.00
F±0.1	3.50
E1±0.2	1.75
E2 Min	na
P0±0.2	4.00
P1±0.2	4.00
P2±0.1	2.00
D0±0.1	1.55
A0	1.1±0.2
B0	1.9±0.2
T	0.95±0.1
T1 Max	na

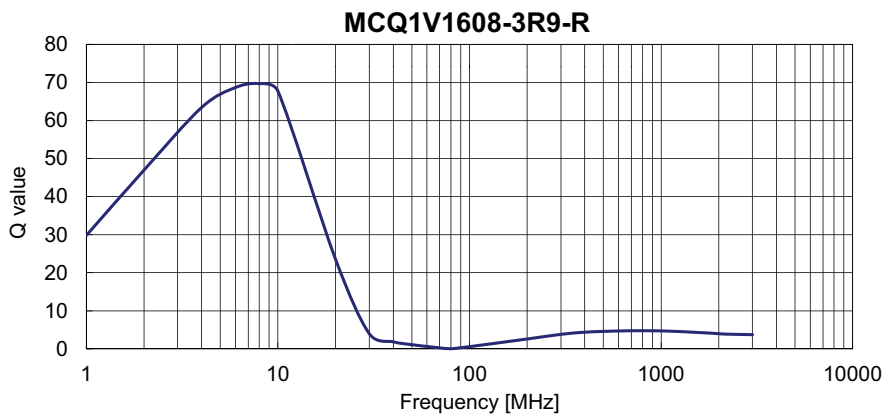
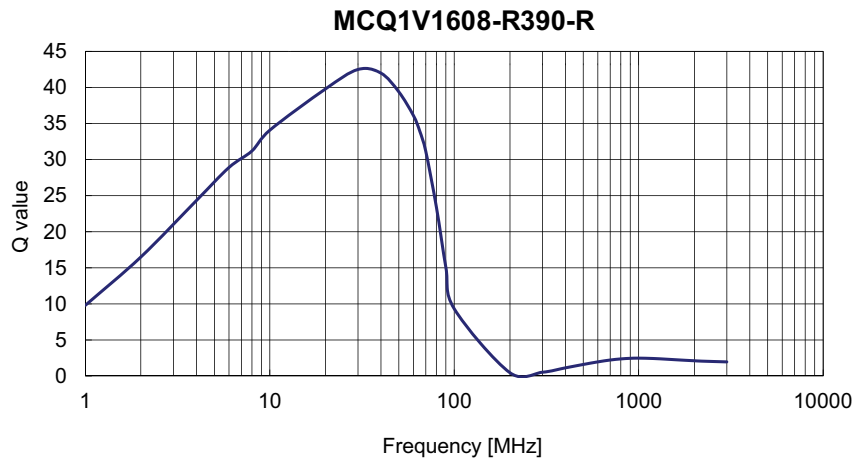
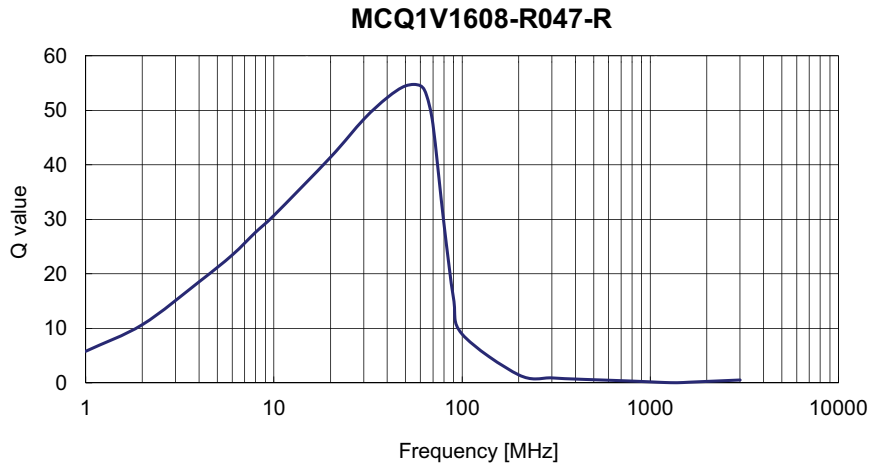
**Qualification testing**

No.	Test item	Sample size (pcs)	Test condition	Acceptable value/range
1	External visual	72		No physical damage
2	Physical dimension	72	Specification	Spec
3	Initial electrical test	72	Specification	User spec
4	Solderability	6	+245 °C±5 °C, dipping 5±1 s	>95% solder coverage
5	Resistance to soldering heat	6	+260 ±5 °C for 10±1 s	1. $\Delta L/L < \pm 20\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage
6	Terminal strength (SMD)	6	Force of 5N for 10±1 s	No physical damage No electrical performance test
7	Low temperature exposure	6	-40 °C for 1000 hours	1. $\Delta L/L < \pm 10\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage
8	Bending strength	6	Appendix 2 note: 2 mm, hold time 30 s (minimum)	No physical damage No electrical performance test
9	Drop	6	Drop 10 times to a concrete floor from a height of 1 m	1. $\Delta L/L < \pm 10\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage
10	Vibration	6	Amplitude modulation: 1.5 mm Test time: A period of 2 hours in each of 3 mutually perpendicular directions Test from 10 Hz to 55 Hz to 10 Hz for 1min	1. $\Delta L/L < \pm 10\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage
11	High temperature exposure	6	+85 °C for 1000 hours	1. $\Delta L/L < \pm 10\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage
12	Biased humidity	6	1000 hours +60 °C/90% to 95%RH unpowered	1. $\Delta L/L < \pm 10\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage
13	Operational life	12	+85 °C at Rated current for 1000 hours	1. $\Delta L/L < \pm 10\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage
14	Temperature cycling	6	32 cycles (-40 °C to +85 °C), dwell time 30 minutes	1. $\Delta L/L < \pm 10\%$ 2. $\Delta Q/Q < \pm 30\%$ 3. No physical damage

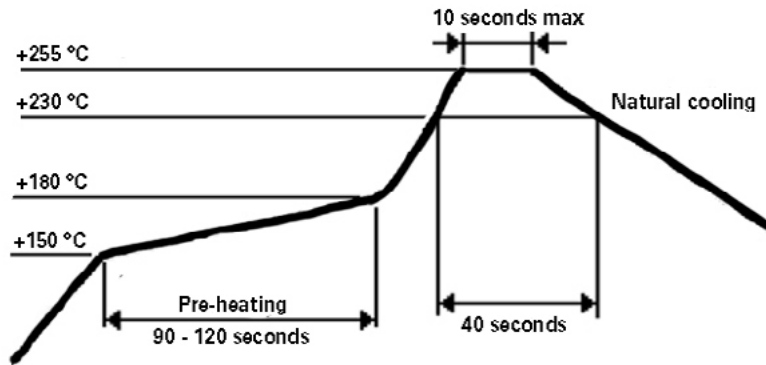
**Ls (Inductance) vs frequency**



**Q vs frequency**



**Solder reflow profile**



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