

# MFBW1V1608

## Multilayer chip ferrite bead



### Product features

- 0603 (1608 metric) package
- High impedance values
- Multilayer monolithic construction yields high reliability
- Impedance range from 0  $\Omega$  to 2000  $\Omega$

### 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: -55 °C to +125 °C (ambient plus self-temperature rise)



**Product specifications**

| Part number <sup>3</sup> | Impedance tolerance | Impedance (Ω) | DCR (Ω) maximum @ +25 °C | Test frequency <sup>1</sup> (MHz) | Test voltage <sup>1</sup> (mV) | Rated current <sup>2</sup> (mA) maximum |
|--------------------------|---------------------|---------------|--------------------------|-----------------------------------|--------------------------------|---|
| MFBW1V1608-000-R         | 0~15 Ω              | 0             | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-050-R         | 0~15 Ω              | 5             | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-070-R         | 0~11 Ω              | 7             | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-090-R         | 5~13 Ω              | 9             | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-110-R         | 7~15 Ω              | 11            | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-150-R         | 9~21 Ω              | 15            | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-190-R         | 12~25 Ω             | 19            | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-260-R         | ±25%                | 26            | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-300-R         | ±25%                | 30            | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-310-R         | ±25%                | 31            | 0.08                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-500-R         | ±25%                | 50            | 0.12                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-600-R         | ±25%                | 60            | 0.12                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-700-R         | ±25%                | 70            | 0.15                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-800-R         | ±25%                | 80            | 0.15                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-101-R         | ±25%                | 100           | 0.15                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-121-R         | ±25%                | 120           | 0.15                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-151-R         | ±25%                | 150           | 0.20                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-181-R         | ±25%                | 180           | 0.20                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-221-R         | ±25%                | 220           | 0.20                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-301-R         | ±25%                | 300           | 0.25                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-501-R         | ±25%                | 500           | 0.30                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-601-R         | ±25%                | 600           | 0.30                     | 100                               | 50                             | 1000                                    |
| MFBW1V1608-801-R         | ±25%                | 800           | 0.55                     | 100                               | 50                             | 500                                     |
| MFBW1V1608-102-R         | ±25%                | 1000          | 0.55                     | 100                               | 50                             | 500                                     |
| MFBW1V1608-122-R         | ±25%                | 1200          | 0.65                     | 100                               | 50                             | 500                                     |
| MFBW1V1608-152-R         | ±25%                | 1500          | 0.75                     | 100                               | 50                             | 400                                     |
| MFBW1V1608-182-R         | ±25%                | 1800          | 0.75                     | 100                               | 50                             | 400                                     |
| MFBW1V1608-202-R         | ±25%                | 2000          | 0.90                     | 100                               | 50                             | 400                                     |

1. Impedance test frequency and voltage.

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

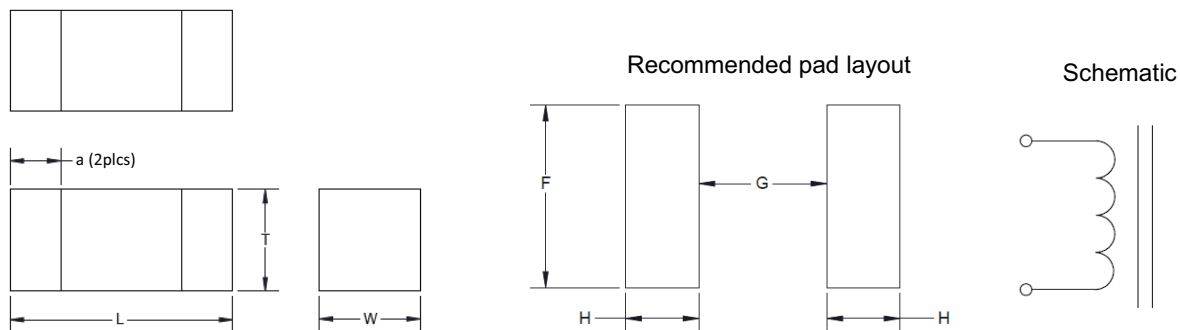
3. Part number definition: MFBW1V1608-xxx-R

MFBW1V1608 = Product code and size

xxx = Impedance value in Ω, last character equals number of zeros

-R suffix = RoHS compliant

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



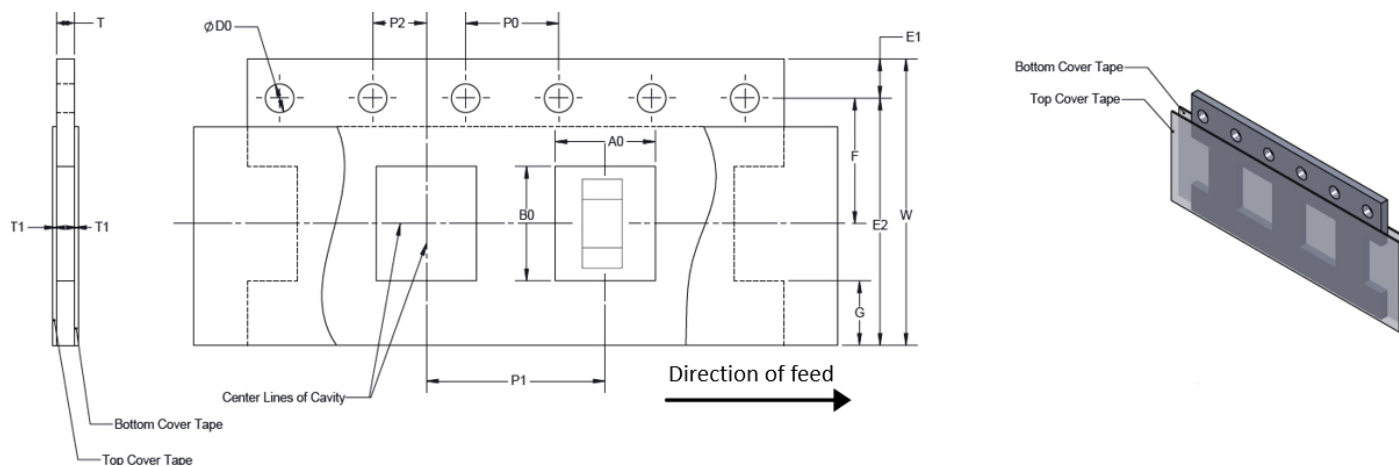
| Part number      | L        | W         | T         | a         | F        | G        | H        |
|------------------|----------|-----------|-----------|-----------|----------|----------|----------|
| MFBW1V1608-xxx-R | 1.6 ±0.2 | 0.80 ±0.2 | 0.80 ±0.2 | 0.30 ±0.2 | 1.20 ref | 0.40 ref | 0.90 ref |

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

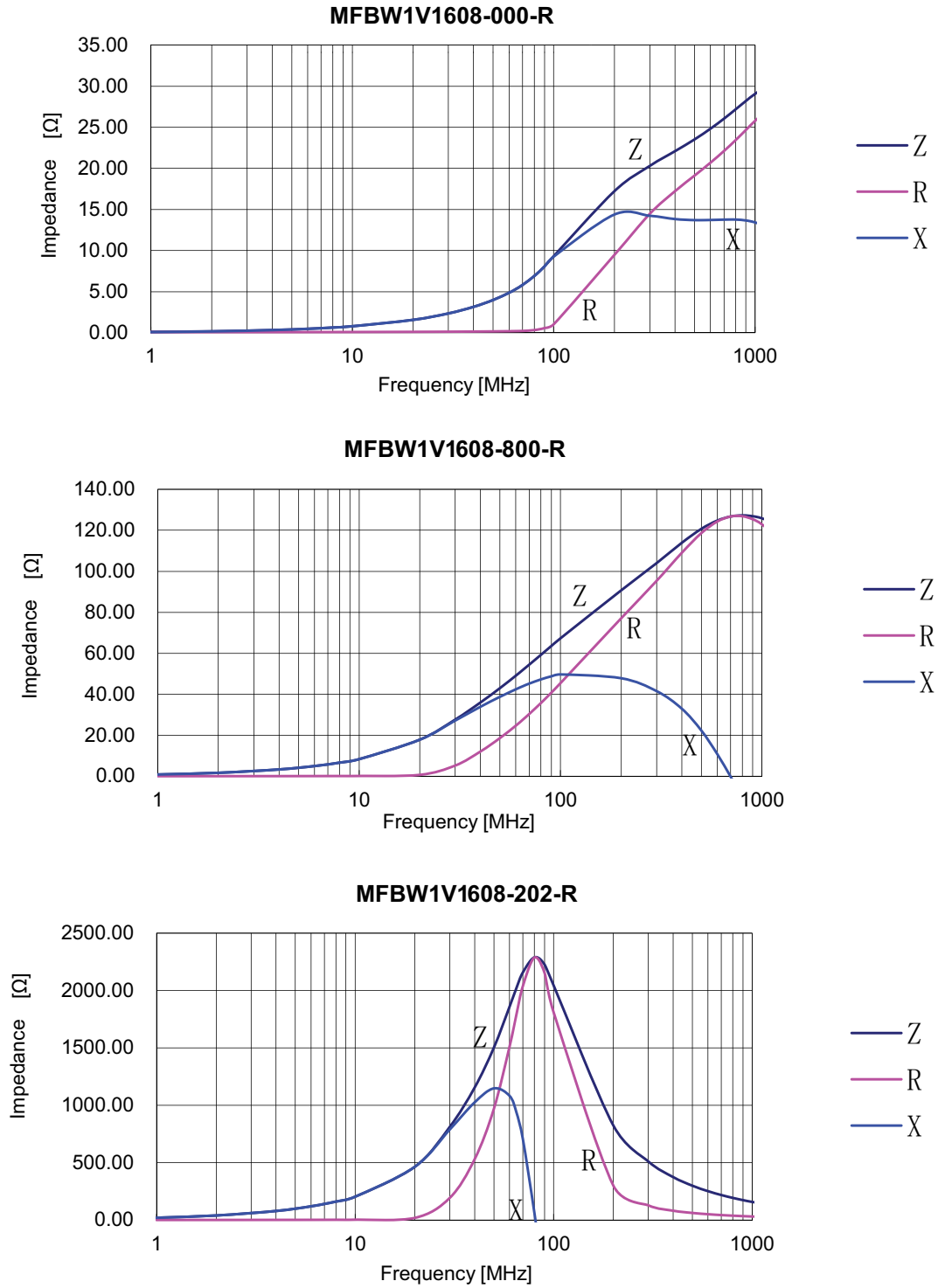


|        |          |
|--------|----------|
| W±0.2  | 8.00     |
| F±0.1  | 3.50     |
| E1±0.2 | 1.75     |
| E2 Min | na       |
| P0±0.2 | 4.00     |
| P1±0.2 | 4.00     |
| P2±0.1 | 2.00     |
| D0±0.1 | 1.55     |
| A0     | 1.1±0.2  |
| B0     | 1.9±0.2  |
| T      | 0.95±0.1 |
| T1 Max | na 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

**Qualification testing**

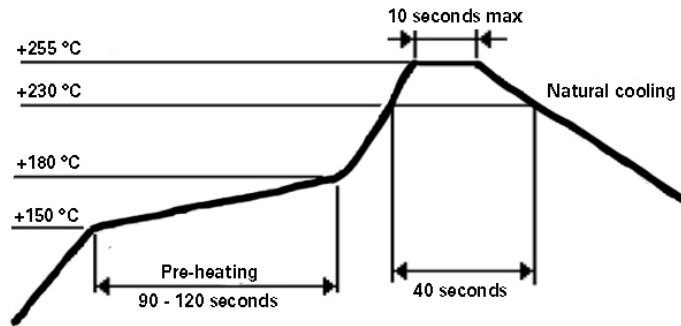
| <b>No.</b> | <b>Test item</b>             | <b>Sample size (pcs)</b> | <b>Test condition</b>   | <b>Acceptable value/range</b>                        |
|------------|------------------------------|--------------------------|---|--|
| 1          | External visual              | 72                       | Specification   | No physical damage                                   |
| 2          | Physical dimension           | 72                       | Specification   | Specification  |
| 3          | Initial electrical test      | 72                       | Specification   | User specification                                   |
| 4          | Solderability                | 6                        | +245 °C ±5 °C, dipping 5 ±1s  | >95% solder coverage                                 |
| 5          | Resistance to soldering heat | 6                        | +260 ±5 °C for 10 ±1 s  | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |
| 6          | Terminal strength (SMD)      | 6                        | Force of 5 N for 10 ±1 s  | No physical damage<br>No electrical performance test |
| 7          | Low temperature exposure     | 6                        | -55 °C for 1000 hours   | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |
| 8          | Bending strength             | 6                        | Appendix 2 note: 2 mm, hold time 30 s (minimum)   | No physical damage<br>No electrical performance test |
| 9          | Drop                         | 6                        | Drop 10 times to a concrete floor from a height of 1 m  | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |
| 10         | Vibration                    | 6                        | Amplitude modulation: 1.5 mm<br>Test time: A period of 2 hours in each of 3 mutually perpendicular directions<br>Test from 10 Hz to 55 Hz to 10 Hz for 1 minute | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |
| 11         | High temperature exposure    | 6                        | +125 °C for 1000 hours  | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |
| 12         | Biased humidity              | 6                        | 1000 hours +60 °C/90% to 95% RH unpowered   | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |
| 13         | Operational life             | 12                       | +85 °C at rated current for 1000 hours  | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |
| 14         | Temperature cycling          | 6                        | 32 cycles (-55 °C to +125 °C), dwell time 30 minutes  | 1. $\Delta Z/Z < \pm 30\%$<br>2. No physical damage  |

Impedance vs frequency



Z= impedance, R= resistance, X= reactance

**Solder reflow profile**



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