# MCB and MHC Series

# Chip Ferrite Bead for Automotive Applications

# Qualified based on AEC-Q200

## ■ Explanation of Part Number

| MCB | 1608 | W | 12 | 1 | H | B | P | - |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

1. Series Name
2. Size Code: the first two digitals : length(mm), the last two digitals : width(mm)
3. W : for Automotive
4. Impedance(Ω) ± 25%
5. Fixed Decimal Point

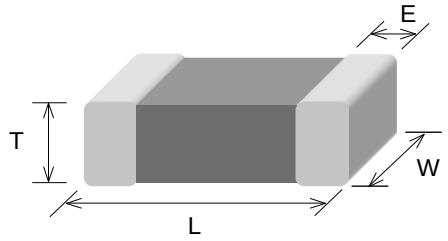
(ex：121=120Ω)

6. Rated Current Code

| | | | | | | |
|---|---|---|---|---|---|---|
| A=50mA | B=80mA | C=100mA | D=150mA | E=200mA | F=300mA | G=400mA |
| H=500mA | I=600mA | J=700mA | K=800mA | L=1000mA | M=1500mA | N=2000mA |
| P=2500mA | Q=3000mA | R=4000mA | U=5000mA | W=6000mA | | |

7. Soldering: Green Parts: B— Lead-Free for whole chip
8. Packaging: P - Embossed paper tape, 7" reel.
   E - Embossed plastic tape, 7" reel.
9. Material Code

## ■ Construction and Dimension




Unit: mm

| TYPE | 1005 (EIA0402) | 1608 (EIA 0603) | 2012 (EIA 0805) | 3216 (EIA 1206) | 4516 (EIA 1806) |
|---|---|---|---|---|---|
| L | 1.00±0.10 | 1.60±0.15 | 2.00±0.20 | 3.20±0.20 | 4.50±0.25 |
| W | 0.50±0.10 | 0.80±0.15 | 1.25±0.20 | 1.60±0.20 | 1.60±0.20 |
| T | 0.50±0.10 | 0.80±0.15 | 0.90±0.20 | 1.10±0.20 | 1.60±0.20 |
| E | 0.25±0.10 | 0.30±0.20 | 0.50±0.30 | 0.50±030 | 0.60±0.40 |

## ■ Chip Ferrite Bead

| Part No. | Impedance(Ω) +/-25% | Test Freq.(MHz) | DCR(Ω) (Max.) | Rated Current (mA) |
|---|---|---|---|---|
| **MCB1005 Series** | | | | |
| MCB1005W121HBP | 120 | 100 | 0.25 | 500 |
| MCB1005W241FBP | 240 | 100 | 0.35 | 300 |
| MCB1005W601EBPB | 600 | 100 | 0.65 | 200 |
| MCB1005W102EBP | 1000 | 100 | 1.00 | 200 |
| MCB1005W102EBPB | 1000 | 100 | 0.90 | 200 |
| MCB1005W182EBPB | 1800 | 100 | 1.40 | 200 |
| **MCB1608 Series** | | | | |
| MCB1608W121HBP | 120 | 100 | 0.18 | 500 |
| MCB1608W221HBP | 220 | 100 | 0.25 | 500 |
| MCB1608W471HBP | 470 | 100 | 0.35 | 500 |
| MCB1608W601HBP | 600 | 100 | 0.38 | 500 |
| MCB1608W102GBP | 1000 | 100 | 0.50 | 400 |
| MCB1608W182ABP | 1800 | 100 | 1.50 | 50 |
| MCB1608W222ABP | 2200 | 100 | 1.50 | 50 |
| MCB1608W252ABP | 2500 | 100 | 1.50 | 50 |
| **MCB2012 Series** | | | | |
| MCB2012W121EBP | 120 | 100 | 0.15 | 200 |
| MCB2012W151EBP | 150 | 100 | 0.15 | 200 |
| MCB2012W221EBP | 220 | 100 | 0.20 | 200 |
| MCB2012W601EBP | 600 | 100 | 0.30 | 200 |
| MCB2012W102EBP | 1000 | 100 | 0.45 | 200 |
| **MCB3216 Series** | | | | |
| MCB3216W601EBE | 600 | 100 | 0.90 | 200 |

## ■ Chip Ferrite Bead For High Speed

| Part No. | Impedance(Ω) +/-25% | Test Freq.(MHz) | DCR(Ω) (Max.) | Rated Current (mA) |
|---|---|---|---|---|
| **MCB1005 Series** | | | | |
| MCB1005W750FBPH | 75 | 100 | 0.40 | 300 |
| **MCB1608 Series** | | | | |
| MCB1608W750HBPH | 75 | 100 | 0.30 | 500 |
| **MCB1608 Series** | | | | |
| MCB1608W121EBPH | 120 | 100 | 0.40 | 200 |
| MCB1608W241EBPH | 240 | 100 | 0.45 | 200 |
| MCB1608W601EBPH | 600 | 100 | 0.65 | 200 |
| MCB1608W102CBPH | 1000 | 100 | 0.85 | 100 |
| **MCB2012 Series** | | | | |
| MCB2012W121EBPH | 120 | 100 | 0.25 | 200 |
| MCB2012W151EBPH | 150 | 100 | 0.25 | 200 |
| MCB2012W221EBPH | 220 | 100 | 0.25 | 200 |
| MCB2012W601EBPH | 600 | 100 | 0.35 | 200 |
| MCB2012W222EBPH | 2200 | 100 | 0.60 | 200 |

## ■ High Current Chip Ferrite Bead

| Part No. | Impedance(Ω) +/-25% | Test Freq.(MHz) | DCR(Ω) (Max.) | Rated Current (mA) |
|---|---|---|---|---|
| **MHC1005 Series** | | | | |
| MHC1005W100LBP | 10 | 100 | 0.05 | 1000 |
| **MHC1608 Series** | | | | |
| MHC1608W300LBP | 30 | 100 | 0.05 | 1000 |
| MHC1608W600LBP | 60 | 100 | 0.10 | 1000 |
| MHC1608W121NBP | 120 | 100 | 0.05 | 2000 |
| MHC1608W181MBP | 180 | 100 | 0.09 | 1500 |
| MHC1608W221MBP | 220 | 100 | 0.10 | 1500 |
| MHC1608W301MBP | 300 | 100 | 0.15 | 1500 |
| MHC1608W471LBP | 470 | 100 | 0.20 | 1000 |

## ■ High Current Chip Ferrite Bead

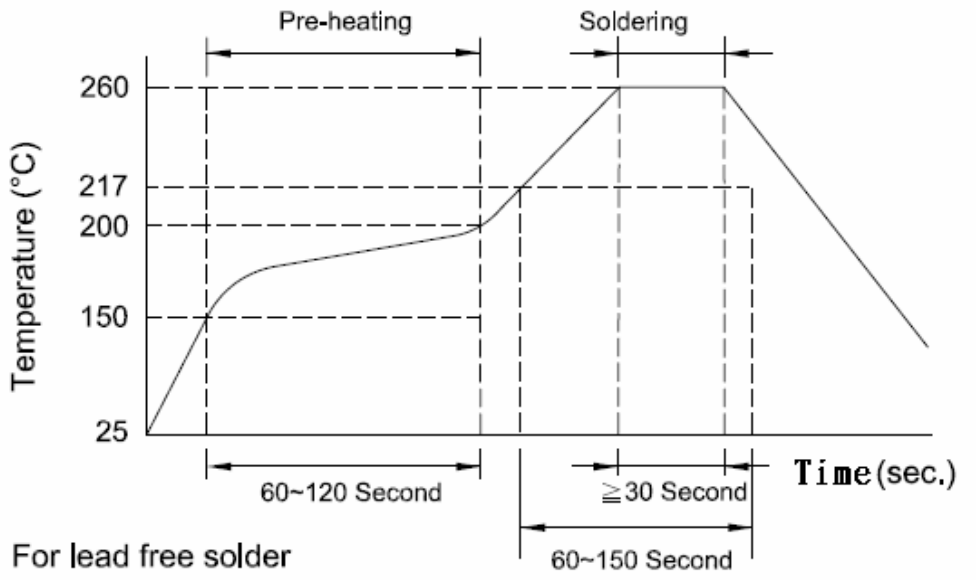
| Part No. | Impedance(Ω) +/-25% | Test Freq.(MHz) | DCR(Ω) (Max.) | Rated Current (mA) |
|---|---|---|---|---|
| **MHC2012 Series** | | | | |
| MHC2012W310QBP | 31 | 100 | 0.015 | 3000 |
| MHC2012W600QBP | 60 | 100 | 0.026 | 3000 |
| MHC2012W221NBP | 220 | 100 | 0.050 | 2000 |
| MHC2012W331MBP | 330 | 100 | 0.090 | 1500 |
| **MHC3216 Series** | | | | |
| MHC3216W500QBE | 50 | 100 | 0.025 | 3000 |
| MHC3216W121QBE | 120 | 100 | 0.025 | 3000 |
| MHC3216W601MBE | 600 | 100 | 0.090 | 1500 |
| **MHC4516 Series** | | | | |
| MHC4516W600WBE | 60 | 100 | 0.010 | 6000 |

** Above For special part number which is not shown in the above table, please refer to appendix.

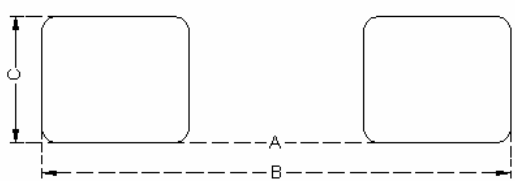
## ■ Test Instruments

- TEST LEVEL: 250 mV
- Agilent 4291B RF IMPEDANCE / MATERIAL ANALYZER
- Agilent 4338B MILLIOHMMETER
- HP6632B SYSTEM DC POWER SUPPLY

## ■ Recommended Soldering Conditions



## ■ Land Patterns for Reflow Soldering




## ■ Solder Land Information

Unit: mm (inches)

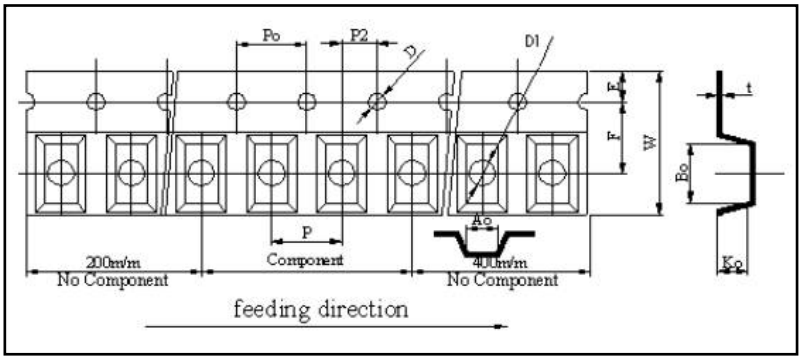
| Size | A | B | C |
|---|---|---|---|
| 1005 | 0.4 ～ 0.6<br>(0.015 ～ 0.023) | 1.6 ～ 2.6<br>(0.063 ～ 0.102) | 0.4 ～ 0.7<br>(0.016 ～ 0.027) |
| 1608 | 0.5 ～ 0.7<br>(0.019 ～ 0.027) | 2.1 ～ 3.1<br>(0.083 ～ 0.122) | 0.65 ～ 0.95<br>(0.026 ～ 0.037) |
| 2012 | 1.0 ～ 1.2<br>(0.039 ～ 0.047) | 3.0 ～ 4.0<br>(0.118 ～ 0.157) | 0.8 ～ 1.1<br>(0.031 ～ 0.043) |
| 3216 | 2.0 ～ 2.4<br>(0.079 ～ 0.094) | 4.2 ～ 5.2<br>(0.165 ～ 0.204) | 1.0 ～ 1.4<br>(0.039 ～ 0.055) |
| 4516 | 3.4 ～ 3.7<br>(0.133 ～0.145) | 6.3 ～ 7.3<br>(0.248 ～ 0.287) | 1.3 ～ 1.7<br>(0.051 ～ 0.067) |

## ■ General Technical Data

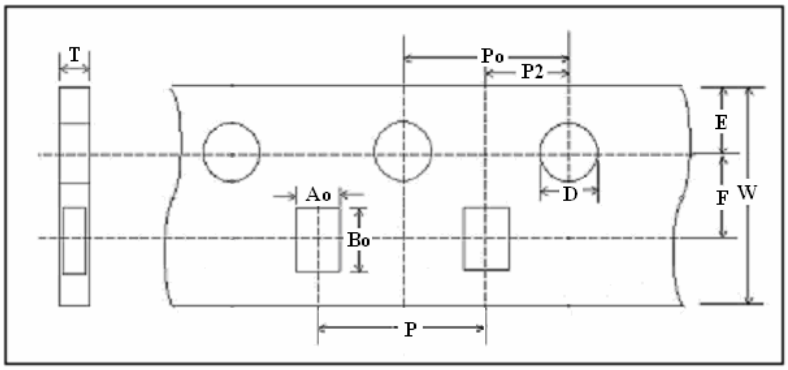
Storage temperature range : - 20℃ ~ +60℃
Operating temperature range : - 55℃ ~ +125℃
Storage Condition : Less than 40℃ and 70% RH
Storage Time: 6 months(Size:1005)
12 months(Size:1608 above)
Soldering method: Reflow or Wave Soldering

## ■ Tape and Reel Specifications

### Plastic Carrier




### Paper Carrier



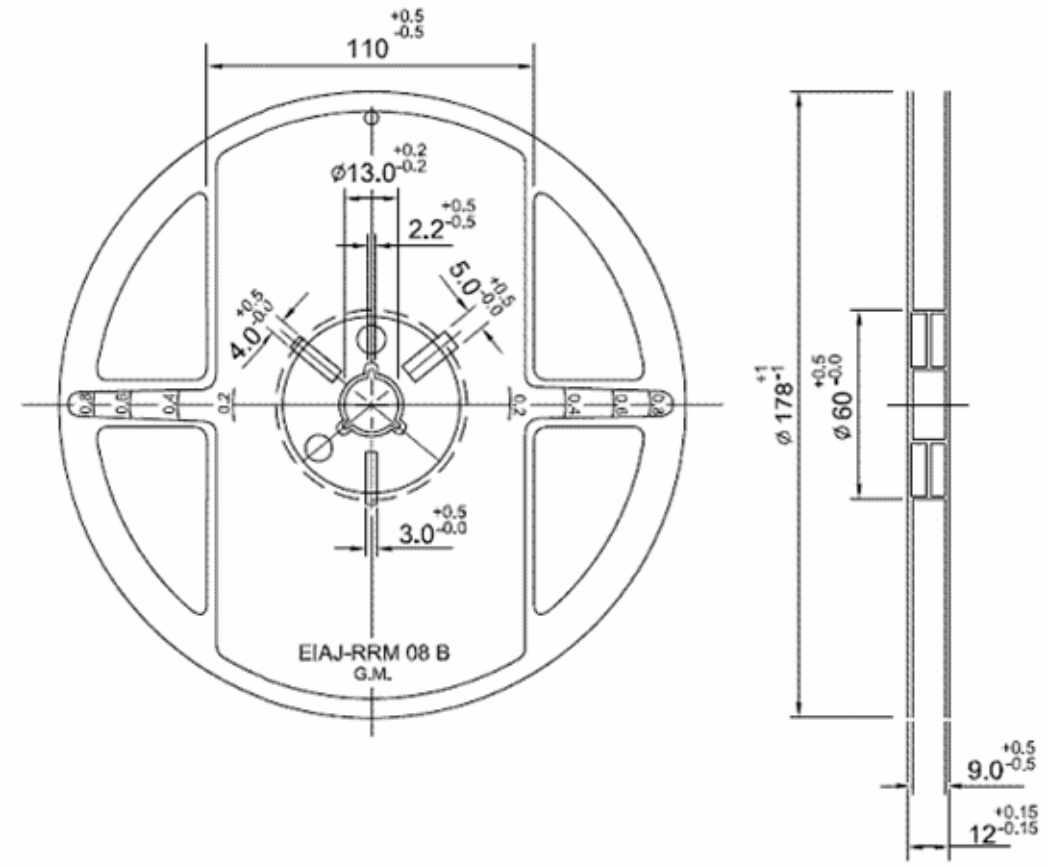

## ■ Taping Dimensions

Unit: mm

| Size | 4516 | 3216 | 2012 | 1608 | 1005 |
|---|---|---|---|---|---|
| Symbol | PLASTIC | PLASTIC | PAPER | PAPER | PAPER |
| W | 11.7~12.3 | 7.90~8.30 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 |
| P | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 |
| E | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.05 |
| F | 5.50±0.05 | 3.50±0.05 | 3.50±0.10 | 3.50±0.10 | 3.50±0.05 |
| D | 1.55±0.05 | 1.55±0.05 | 1.56±0.10 | 1.56±0.10 | 1.55±0.05 |
| D1 | 1.50~1.75 | 0.95~1.20 | NA | NA | NA |
| Po | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 |
| Po10 | 40.0±0.20 | 40.0±0.20 | 40.0±0.20 | NA | NA |
| P2 | 2.00±0.05 | 2.00±0.05 | 2.00±0.10 | 2.00±0.10 | 2.00±0.05 |
| Ao | 1.83±0.10 | 1.85±0.10 | 1.50±0.05 | 1.05±0.05 | 0.62±0.03 |
| Bo | 4.85±0.10 | 3.43±0.10 | 2.30±0.05 | 1.85±0.05 | 1.12±0.03 |
| Ko(T) | 1.83±0.10 | 1.22±0.10 | 0.95±0.05 | 0.95±0.05 | 0.60±0.03 |
| t | 0.29±0.10 | 0.25±0.10 | NA | NA | NA |

## ■ Reel Dimensions

Unit: mm




| Reel Packaging Quantity | | | | | | |
|---|---|---|---|---|---|---|
| **PART SIZE (EIA SIZE)** | | **1005 (0402)** | **1608 (0603)** | **2012 (0805)** | **3216 (1206)** | **4516 (1806)** |
| 7” REEL | Qty. (pcs) | 10,000 | 4,000 | 4,000 | 3,000 | 2,000 |