

## MCB 1005-4532 S Series

# Specification

<b>Product Name</b>	<b>Chip Ferrite Bead</b>
<b>Series</b>	<b>MCB S Series</b>
<b>Size</b>	<b>EIAJ 1005-4532</b>



## Chip Ferrite Bead (MCB S Series) Engineering Spec.

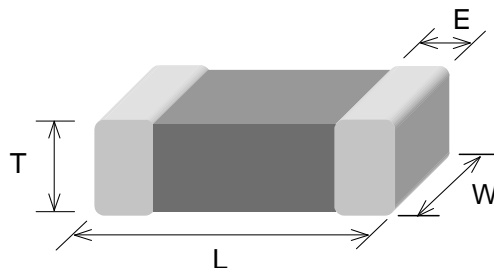
### ■ FEATURES

- Monolithic inorganic material construction
- Closed magnetic circuit avoids crosstalk
- SMD Type & suitable for reflow and wave soldering
- Available in various sizes
- Excellent solderability and heat resistance
- High reliability
- Effectively filtering capability over a wide range of frequency

### ■ APPLICATIONS

Filtering between analog and digital circuitry, clock generation circuitry, I/O interconnects, isolation between RF noisy circuits and logic devices susceptible to functional degradation, power supply filtering to prevent conducted RF energy from corrupting the power generation circuitry, high frequency EMI prevention of computer, printers, VCRs, TVs and portable telephones

### ■ SHAPES AND DIMENSIONS



Unit: mm

TYPE	1005 (EIA 0402)	1608 (EIA 0603)	2012 (EIA 0805)	3216 (EIA 1206)	3225 (EIA 1210)	4516 (EIA 1806)	4532 (EIA 1812)
L	1.00±0.10	1.60±0.15	2.00±0.20	3.20±0.20	3.20±0.20	4.50±0.25	4.50±0.25
W	0.50±0.10	0.80±0.15	1.25±0.20	1.60±0.20	2.50±0.20	1.60±0.20	3.20±0.25
T	0.50±0.10	0.80±0.15	0.90±0.20	1.10±0.20	1.30±0.20	1.60±0.20	1.50±0.25
E	0.25±0.10	0.30±0.20	0.50±0.30	0.50±0.30	0.50±0.30	0.60±0.40	0.60±0.40

## ■ PART NUMBER CODE

MCB 1608   S   60   1   E   B   P  
 1        2        3        4        5        6        7        8

1 Series Name

2 Size Code: the first two digitals : length(mm), the last two digitals : width(mm)

3 Material Code

4 Impedance( $\Omega$ )  $\pm$  25% } (ex : 121=120 $\Omega$ )

5 Fixed Decimal Point

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	

7 Soldering : Green Parts: A— Soldering Lead-Free   B— Lead-Free for whole chip

8 Packaging: P - Embossed paper tape, 7" reel.

E - Embossed plastic tape, 7" reel.

## ■ PART NUMBER AND CHARACTERISTICS TABLE

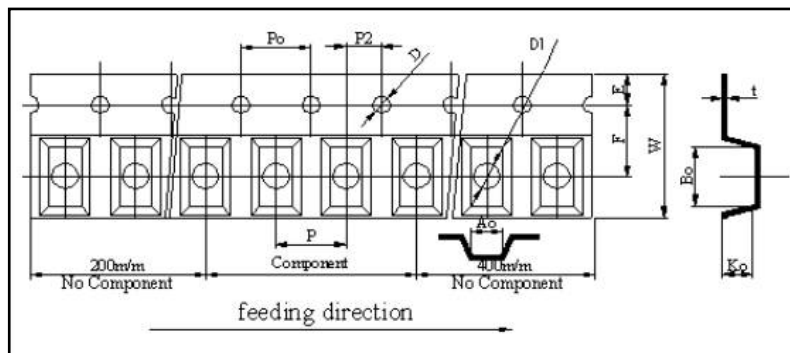
Part No.	Impedance( $\Omega$ ) +/-25%	Test Freq.(MHz)	DCR( $\Omega$ ) (Max.)	Rated Current (mA)
MCB1005-S Series				
MCB1005S100FBP	10	100	0.10	300
MCB1005S200FBP	20	100	0.20	300
MCB1005S300FBP	30	100	0.25	300
MCB1005S400FBP	40	100	0.30	300
MCB1005S600FBP	60	100	0.35	300
MCB1005S700FBP	70	100	0.35	300
MCB1005S121FBP	120	100	0.40	300
MCB1005S241EBP	240	100	0.70	200
MCB1005S301EBP	300	100	0.80	200
MCB1005S471EBP	470	100	1.00	200
MCB1005S601FBP	600	100	1.00	300
MCB1005S102EBP	1000	100	1.50	200
MCB1608-S Series				
MCB1608S100IBP	10	100	0.05	600
MCB1608S300IBP	30	100	0.08	600

Part No.	Impedance( $\Omega$ ) +/-25%	Test Freq.(MHz)	DCR( $\Omega$ ) (Max.)	Rated Current (mA)
<b>MCB1608-S Series</b>				
MCB1608S600IBP	60	100	0.10	600
MCB1608S800IBP	80	100	0.10	600
MCB1608S121IBP	120	100	0.15	600
MCB1608S181FBP	180	100	0.30	300
MCB1608S221FBP	220	100	0.30	300
MCB1608S301FBP	300	100	0.35	300
MCB1608S471FBP	470	100	0.40	300
MCB1608S601EBP	600	100	0.45	200
MCB1608S102CBP	1000	100	0.60	100
<b>MCB2012-S Series</b>				
MCB2012S300KBP	30	100	0.05	800
MCB2012S400KBP	40	100	0.05	800
MCB2012S600KBP	60	100	0.15	800
MCB2012S800KBP	80	100	0.15	800
MCB2012S121KBP	120	100	0.15	800
MCB2012S221HBP	220	100	0.20	500
MCB2012S301HBP	300	100	0.20	500
MCB2012S601HBP	600	100	0.30	500
MCB2012S102FBP	1000	100	0.35	300
MCB2012S202EBP	2000	100	0.50	200
<b>MCB3216-S Series</b>				
MCB3216S310KBE	31	100	0.05	800
MCB3216S500KBE	50	100	0.08	800
MCB3216S700KBE	70	100	0.10	800
MCB3216S121IBE	120	100	0.15	600
MCB3216S601HBE	600	100	0.30	500
MCB3216S102HBE	1000	100	0.40	500
MCB3216S122HBE	1200	100	0.40	500
MCB3216S152EBE	1500	50	0.50	200
MCB3216S202EBE	2000	30	0.50	200
<b>MCB3225-S Series</b>				
MCB3225S600KBE	60	100	0.30	800
MCB3225S900KBE	90	100	0.30	800

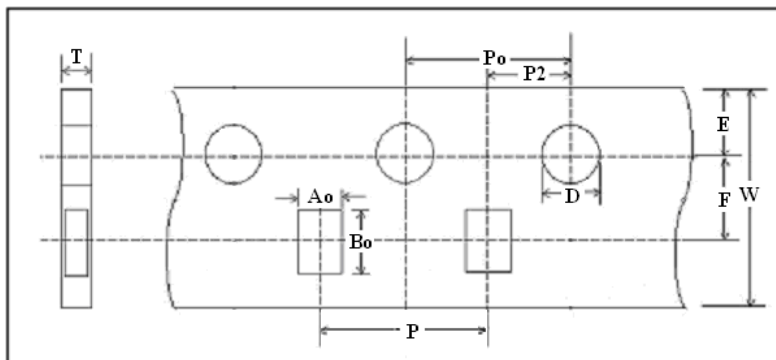
Part No.	Impedance( $\Omega$ ) +/-25%	Test Freq.(MHz)	DCR( $\Omega$ ) (Max.)	Rated Current (mA)
<b>MCB4516-S Series</b>				
MCB4516S800KBE	80	100	0.10	800
MCB4516S151KBE	150	100	0.30	800
<b>MCB4532-S Series</b>				
MCB4532S700KBE	70	100	0.40	800
MCB4532S800KBE	80	100	0.40	800
MCB4532S121KBE	120	100	0.40	800
<b>Test Instruments :</b>	<ul style="list-style-type: none"> <li>•Test Level : 250 mV</li> <li>•HP4291B RF IMPEDANCE / MATERIAL ANALYZER</li> <li>•HP4338A/B MILLIOHMMETER</li> <li>•Agilent 8720ES S-PARAMETER NETWORK ANALYZER</li> <li>•HP6632B SYSTEM DC POWER SUPPLY</li> </ul>			

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

## ■ TAPE AND REEL SPECIFICATIONS PLASTIC CARRIER



## PAPER CARRIER



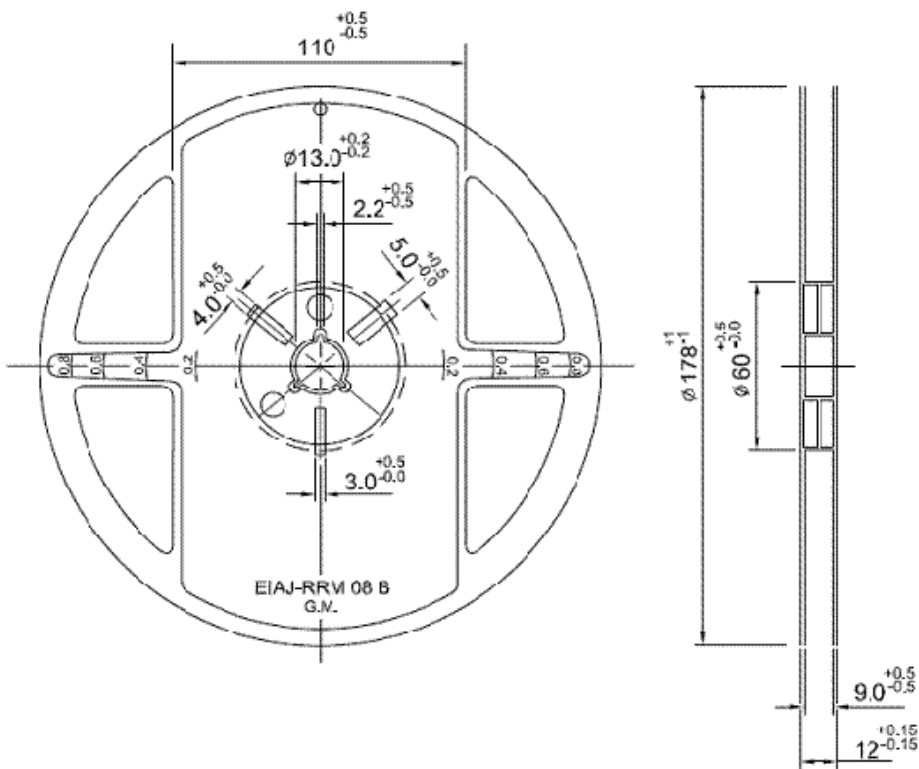
## ■ TAPING DIMENSIONS

Unit: mm

Size	4532	4516	3225	3216	2012	1608	1005
Symbol	PLASTIC	PLASTIC	PLASTIC	PLASTIC	PAPER	PAPER	PAPER
W	12.0±0.10	11.7~12.3	7.70~8.30	7.90~8.30	8.00±0.10	8.00±0.10	8.00±0.10
P	8.00±0.10	4.00±0.10	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±0.10	1.75±0.10	1.75±0.05
F	5.50±0.05	5.50±0.05	3.50±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	1.55±0.05	1.55±0.05	1.56±0.10	1.56±0.10	1.55±0.05
D1	1.50~1.75	1.50~1.75	0.95~1.20	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	4.00±0.10	4.00±0.10
Po10	40.0±0.20	40.0±0.20	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±0.05	2.00±0.05	2.00±0.10	2.00±0.10	2.00±0.05
Ao	3.66±0.10	1.83±0.10	2.57±0.10	1.85±0.10	1.50±0.05	1.05±0.05	0.62±0.03
Bo	4.95±0.10	4.85±0.10	3.40±0.10	3.43±0.10	2.30±0.05	1.85±0.05	1.12±0.03
Ko(T)	1.83±0.10	1.83±0.10	1.32±0.10	1.22±0.10	0.95±0.05	0.95±0.05	0.60±0.03
t	0.23±0.10	0.29±0.10	0.25±0.10	0.25±0.10	NA	NA	NA

## ■ REEL DIMENSIONS

Unit: mm

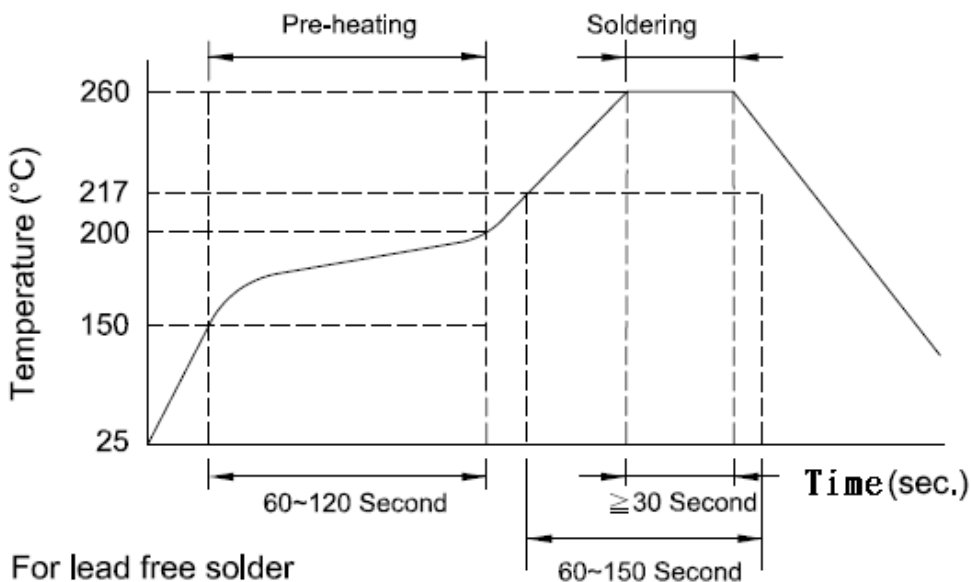


Reel Packaging Quantity								
PART SIZE (EIA SIZE)		1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
7" REEL	Qty. (pcs)	10,000	4,000	4,000	3,000	2,000	2,000	1,000

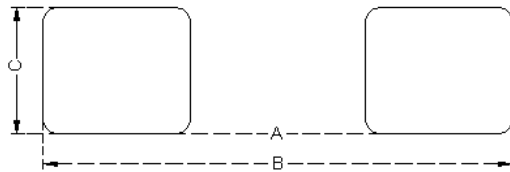
**The Contents of a box :**

- 4532 (1812): 4 reels / inner box ;
- 4516 (1806): 4 reels / inner box ;
- 3225 (1210): 5 reels / inner box ;
- 3216 (1206): 5 reels / inner box ;
- 2012 (0805): 5 reels / inner box ;
- 1608 (0603): 5 reels / inner box ;
- 1005 (0402): 5 reels / inner box .

**RECOMMENDED SOLDERING CONDITIONS**



■ **LAND PATTERNS FOR REFLOW SOLDERING**



■ **SOLDER LAND INFORMATION**

Unit: mm (inches)

Size	A	B	C
1005	0.4 ~ 0.6 (0.015 ~ 0.023)	1.6 ~ 2.6 (0.063 ~ 0.102)	0.4 ~ 0.7 (0.016 ~ 0.027)
1608	0.5 ~ 0.7 (0.019 ~ 0.027)	2.1 ~ 3.1 (0.083 ~ 0.122)	0.65 ~ 0.95 (0.026 ~ 0.037)
2012	1.0 ~ 1.2 (0.039 ~ 0.047)	3.0 ~ 4.0 (0.118 ~ 0.157)	0.8 ~ 1.1 (0.031 ~ 0.043)
3216	2.0 ~ 2.4 (0.079 ~ 0.094)	4.2 ~ 5.2 (0.165 ~ 0.204)	1.0 ~ 1.4 (0.039 ~ 0.055)
3225	2.1 ~ 2.3 (0.082 ~ 0.090)	4.2 ~ 5.2 (0.165 ~ 0.204)	2.2 ~ 2.5 (0.086 ~ 0.098)
4516	3.4 ~ 3.7 (0.133 ~ 0.145)	6.3 ~ 7.3 (0.248 ~ 0.287)	1.3 ~ 1.7 (0.051 ~ 0.067)
4532	3.4 ~ 3.7 (0.133 ~ 0.145)	6.3 ~ 7.3 (0.248 ~ 0.287)	2.9 ~ 3.2 (0.144 ~ 0.126)

■ **GENERAL TECHNICAL DATA**

Operating temperature range : - 55°C ~ +125°C

Storage Condition : Less than 40°C and 70% RH

Storage Time: 6 months(Size:1005)

12 months(Size:1608 above)

Soldering method: Reflow or Wave Soldering



**■ RELIABILITY AND TEST CONDITION**

Test item	Test condition	Criteria
<b>Temperature Cycle</b>	a. Temperature : -40 ~ +85°C b. Cycle : 100 cycles c. Dwell time : 30minutes d. Measurement : at ambient temperature 24 hrs after test completion	a. No mechanical damage b. Impedance value should be within $\pm 20\%$ of the initial value
<b>Operational Life</b>	a. Temperature : 125°C $\pm 5^\circ\text{C}$ b. Test time : 1000 hrs c. Apply current : full rated current d. Measurement : at ambient temperature 24 hrs after test completion	a. No mechanical damage b. Impedance value should be within $\pm 20\%$ of the initial value
<b>Biased Humidity</b>	a. Temperature : 40°C $\pm 2^\circ\text{C}$ b. Humidity : 90 ~ 95 % RH c. Test time : 1000 hrs d. Apply current : full rated current e. Measurement : at ambient temperature 24 hrs after test completion	a. No mechanical damage b. Impedance value should be within $\pm 20\%$ of the initial value
<b>Resistance to Solder Heat</b>	a. Solder temperature : 260 $\pm 5^\circ\text{C}$ b. Flux : Rosin c. DIP time : 10 $\pm 1$ sec	a. More than 95 % of terminal electrode should be covered with new solder b. No mechanical damage c. Impedance value should be within $\pm 20\%$ of the initial value
<b>Adhesive Test</b>	a. Reflow temperature : 245°C It shall be Soldered on the substrate applying direction parallel to the substrate b. Apply force(F) : 5 N c. Test time : 10 sec	a. No mechanical damage b. Soldering the products on PCB after the pulling test force > 5 N
<b>Steam Aging Test</b>	a. Temperature : 93°C b. Test time : 4 hrs(MCB1005) Others : 8 hrs c. Solder temperature : 235 $\pm 5^\circ\text{C}$ d. Flux : Rosin e. DIP time : 5 $\pm 1$ sec	More than 95 % of terminal electrode should be covered with new solder
<b>Rated Current Test</b>	a. Apply current : full rated current / 5min	Temperature rise should be less than 25°C