



INPAQ

PRODUCT SPECIFICATION

DOCUMENT NO.000300XXXXXX

DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
MCB-S Series	陳曉慧 Sharon Chen	賴柏志 Kidd Lai	賴柏志 Kidd Lai	吳維政 Albert Wu



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

This product belongs to the 3C and industrial grade standard, not for automotive application. If customer privately uses to automotive parts and results in any consequences, INPAQ is not responsible for after-sales service, thank you!

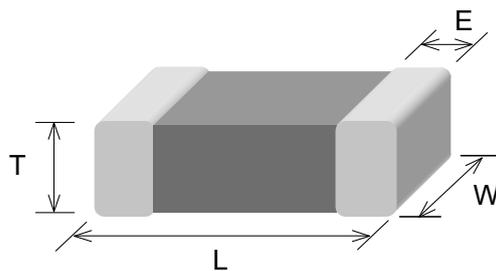
■ FEATURES

- **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



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
Unit	mm						

■ PART NUMBER CODE

<u>MCB</u>	<u>1005</u>	<u>S</u>	<u>60</u>	<u>1</u>	<u>E</u>	<u>B</u>	<u>P</u>
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 at 100MHz } (ex : 121 = 120Ω ; 600 = 60Ω)
- 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 – Paper tape, 7" reel.
E – Embossed plastic tape, 7" reel.

■ PART NUMBER AND CHARACTERISTICS TABLE

Part No.	Impedance(Ω) +/-25%	Test Freq. (MHz)	DCR(Ω) (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

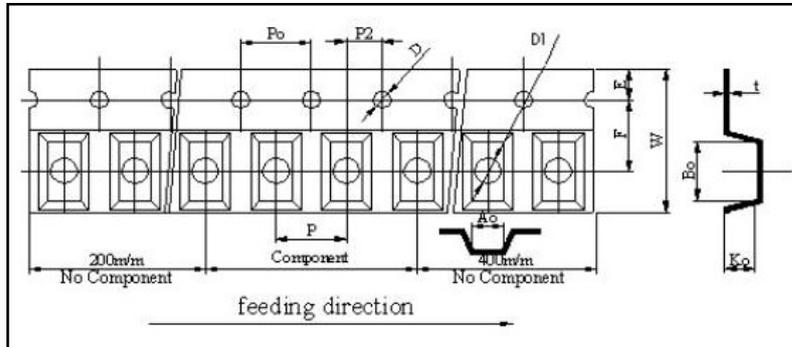
Part No.	Impedance(Ω) +/-25%	Test Freq. (MHz)	DCR(Ω) (Max.)	Rated Current (mA)
MCB1608-S Series				
MCB1608S600IBP	60	100	0.10	600
MCB1608S800IBP	80	100	0.10	600
MCB1608S121IBP	120	100	0.15	600
MCB1608S181FBP	180	100	0.30	300
MCB1608S221FBP	220	100	0.30	300
MCB1608S301FBP	300	100	0.35	300
MCB1608S471FBP	470	100	0.40	300
MCB1608S601EBP	600	100	0.45	200
MCB1608S102CBP	1000	100	0.60	100
MCB1608S182CBP	1800	100	0.70	100
MCB1608S252CBP	2500	100	0.70	100
MCB2012-S Series				
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
MCB3216-S Series				
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

Part No.	Impedance(Ω) +/-25%	Test Freq. (MHz)	DCR(Ω) (Max.)	Rated Current (mA)
MCB3225-S Series				
MCB3225S600KBE	60	100	0.30	800
MCB3225S900KBE	90	100	0.30	800
MCB4516-S Series				
MCB4516S800KBE	80	100	0.10	800
MCB4516S151KBE	150	100	0.30	800
MCB4532-S Series				
MCB4532S700KBE	70	100	0.40	800
MCB4532S800KBE	80	100	0.40	800
MCB4532S121KBE	120	100	0.40	800
	•Test Level : 250 mV			
Test Instruments :	<ul style="list-style-type: none"> •HP4291B RF IMPEDANCE / MATERIAL ANALYZER or EQUIVALENT •HP4338A/B MILLIOHMMETER •Agilent E5071C ENA SERIES NETWORK ANALYZER •HP6632B SYSTEM DC POWER SUPPLY 			

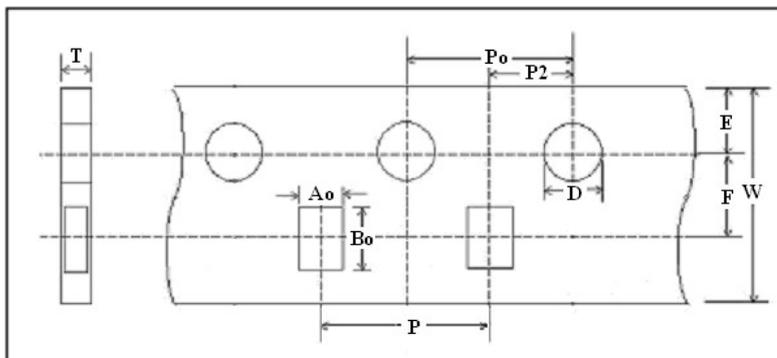
** For special part number which is not shown in the above table, please refer to appendix.

■ TAPE AND REEL SPECIFICATIONS

PLASTIC CARRIER



PAPER CARRIER

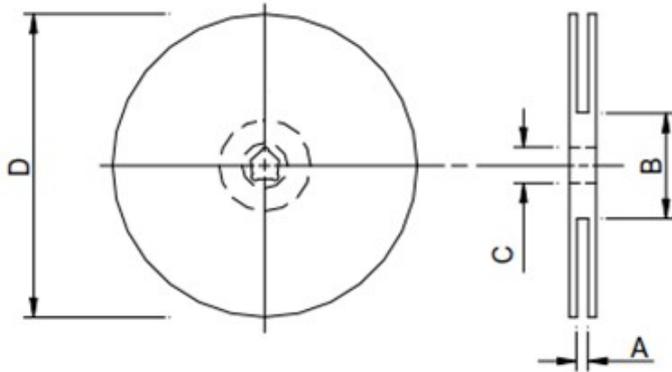


■ TAPING DIMENSIONS

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

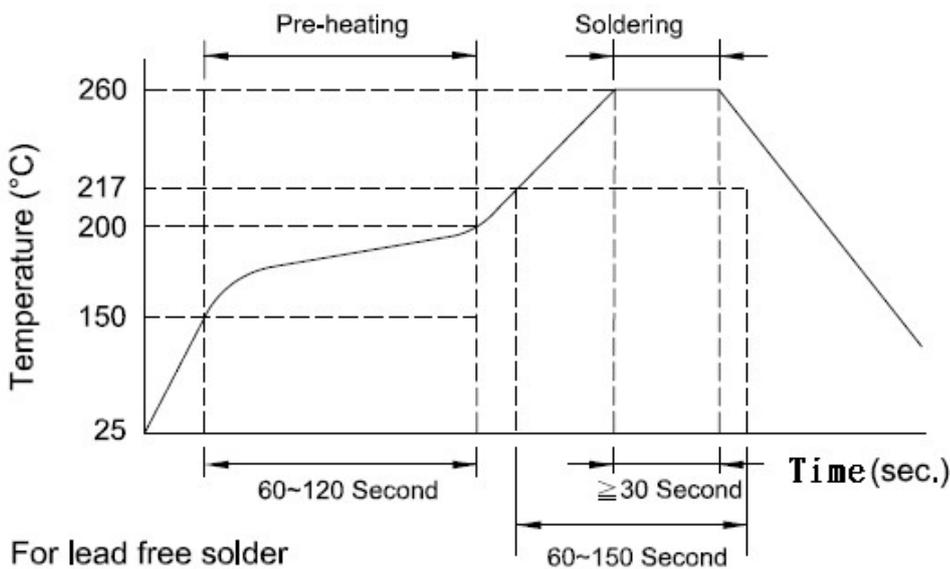
■ REEL DIMENSIONS



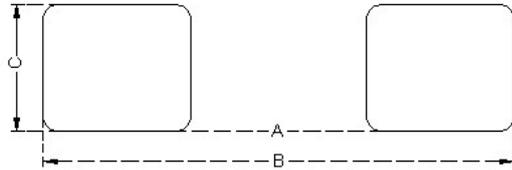
Type	7"
A(mm)	10±1.5
B(mm)	50 or more
C(mm)	13.2±1.0
D(mm)	178±2.0

7" Reel Packaging Quantity							
PART SIZE (EIA SIZE)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
Qty.(pcs)	10,000	4,000	4,000	3,000	2,000	2,000	1,000
BOX	5 reels / inner box					4 reels / inner box	

■ RECOMMENDED SOLDERING CONDITIONS



■ LAND PATTERNS FOR REFLOW SOLDERING



■ SOLDER LAND INFORMATION

Unit: mm (inches)

Size	A	B	C
1005	0.4 (0.016)	1.2 ~ 1.4 (0.047 ~ 0.055)	0.5 (0.020)
1608	0.7 (0.028)	1.8 ~ 2.0 (0.071 ~ 0.079)	0.7 (0.028)
2012	1.2 (0.047)	3.0 ~ 4.0 (0.118 ~ 0.157)	1.0 (0.039)
3216	2.0 (0.079)	4.2 ~ 5.2 (0.165 ~ 0.205)	1.2 (0.047)
3225	2.0 (0.079)	4.2 ~ 5.2 (0.165 ~ 0.205)	3.4 (0.134)
4516	3.0 (0.118)	5.5 ~ 6.5 (0.217 ~ 0.256)	1.2 (0.047)
4532	3.0 (0.118)	5.5 ~ 6.5 (0.217 ~ 0.256)	4.22 (0.166)

■ GENERAL TECHNICAL DATA

Operating temperature range : - 55°C ~ +125°C
 Storage Condition : Less than 40°C and 70% RH
 Storage Time: 6 months Max.(Size:1005)
 12 months Max.(Size:1608 above)
 Soldering method: Reflow

■ RELIABILITY AND TEST CONDITION

Test item	Test condition	Criteria
Thermal Shock	a. Temperature : -55°C ~ +125°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
Operational Life	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
Biased Humidity	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
Resistance to Solder Heat	a. Solder temperature : 260 $\pm 5^\circ\text{C}$ b. Flux : Rosin c. DIP time : 10 ± 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
Adhesive Test	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

Test item	Test condition	Criteria
Steam Aging Test	a. Temperature : 93°C b. Test time : 4 hrs(MCB1005) Others : 8 hrs c. Solder temperature : 235 ± 5°C d. Flux : Rosin e. DIP time : 5 ± 1 sec	More than 95 % of terminal electrode should be covered with new solder
Rated Current Test	a. Apply current : full rated current / 5min	Temperature rise should be less than 25°C