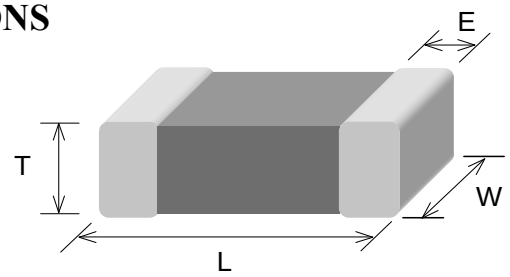
Chip Ferrite Bead (MCB-S Series) Engineering Spec.

■ PRODUCT DETAIL

Electrical Characteristics			Test Instruments
Z	Ω (Ref. Page 6~8)	TEST FREQ: (Ref. Page 6~8)MHz TEST LEVEL: 250 mV	•HP4291B RF IMPEDANCE / MATERIAL ANALYZER •HP4338A/B MILLIOHMMETER •Agilent 8720ES S-PARAMETER NETWORK ANALYZER •HP6632B SYSTEM DC POWER SUPPLY
DCR	Ω (Ref. Page 6~8)		
IDC	mA (Ref. Page 6~8)		

■ 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±030	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(Ω) ± 25%

5 Fixed Decimal Point

(ex：600=60Ω ；121=120Ω)

6 Rated Current Code

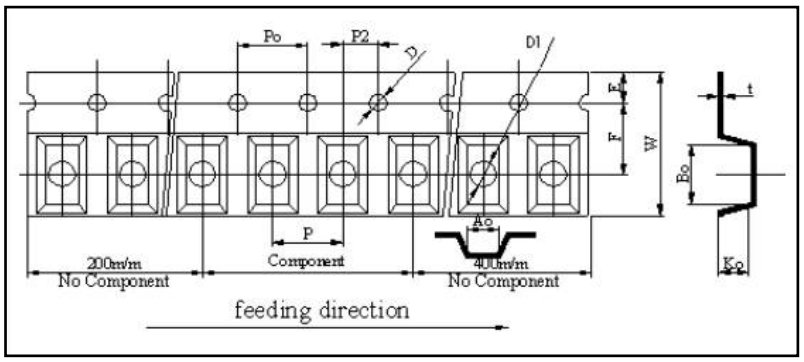
A=50mA	B=80mA	C=100mA	D=150mA	E=200mA	F=300mA
G=400mA	H=500mA	I =600mA	J =700mA	K=800mA	

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

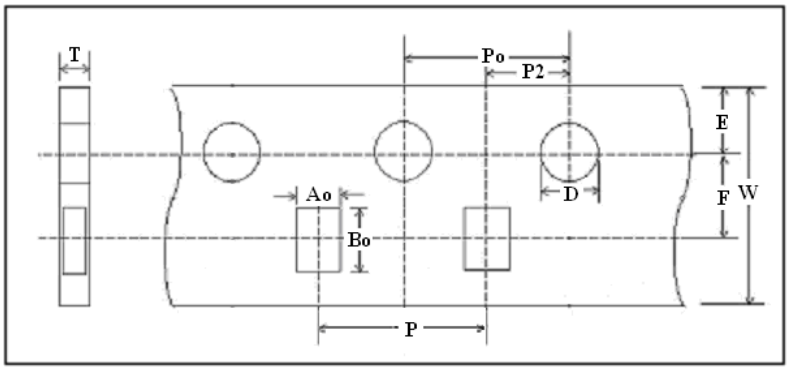
8 Packaging: P - Embossed paper tape, 7" reel.
E - Embossed plastic tape, 7" reel.

■ TAPE AND REEL SPECIFICATIONS

PLASTIC CARRIER



PAPER CARRIER



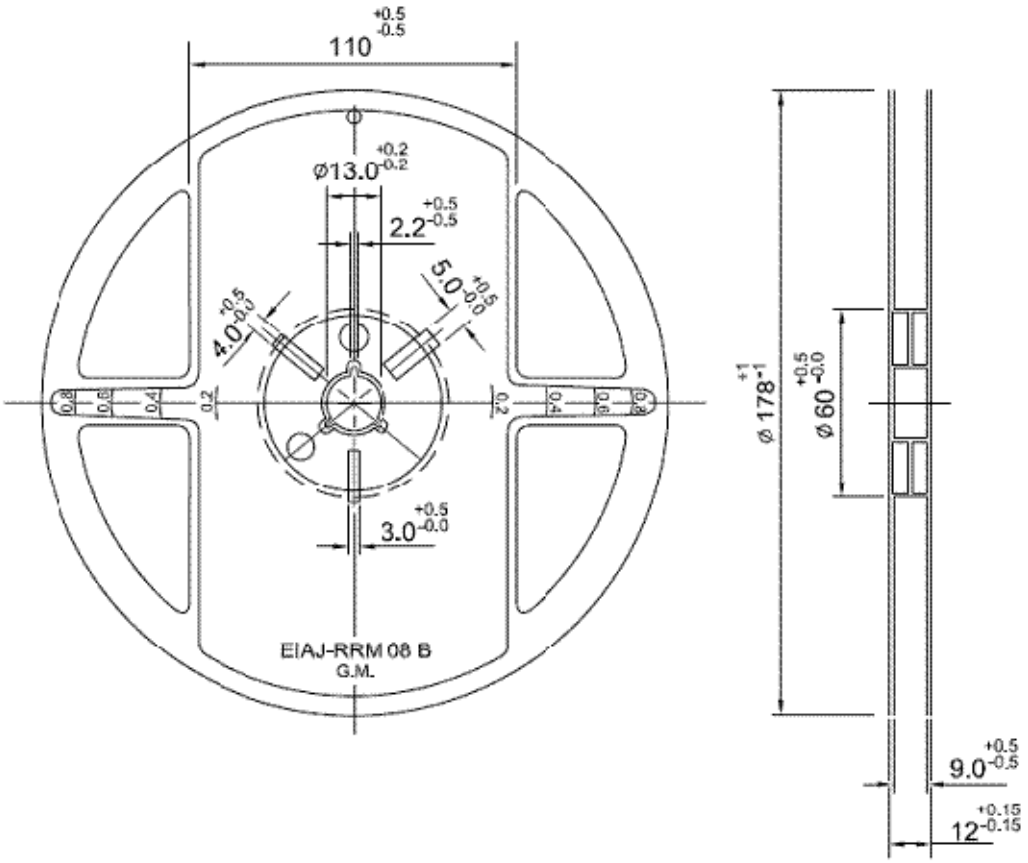
■ TAPING DIMENSIONS

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

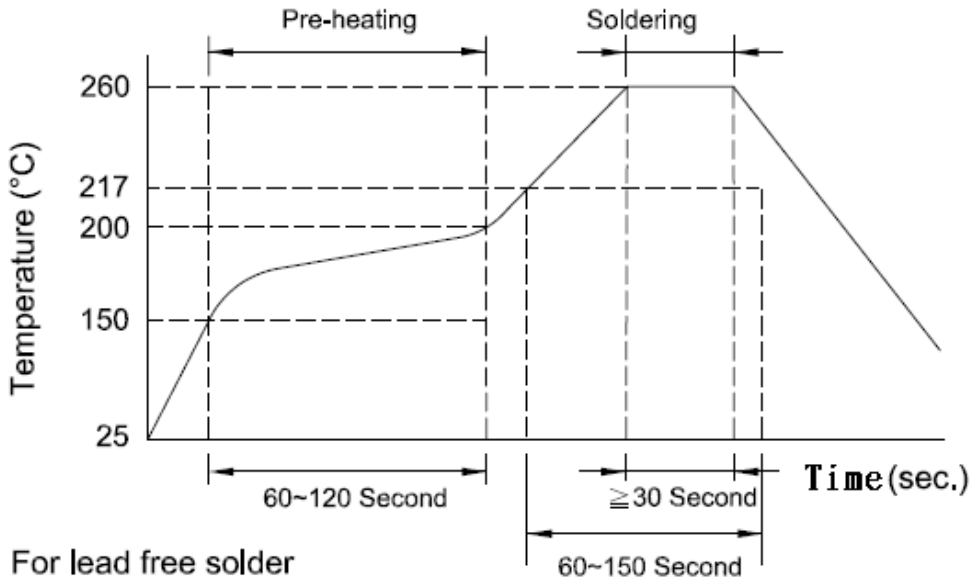


Reel Packaging Quantity								
PART SIZE (EIA SIZE)		**1005 (0402)**	**1608 (0603)**	**2012 (0805)**	**3216 (1206)**	**3225 (1210)**	**4516 (1806)**	**4532 (1812)**
7" REEL	Qty. (pcs)	10,000	4,000	4,000	3,000	2,000	2,000	1,000

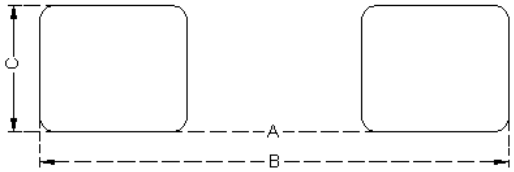
The Contents of a box：

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)

■ RELIABILITY AND TEST CONDITION

Test item	Test condition	Criteria
Temperature Cycle	a. Temperature : -40 ~ +85℃ 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 ± 20 % of the initial value
Operational Life	a. Temperature : 125℃ ± 5℃ 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 ± 20 % of the initial value
Biased Humidity	a. Temperature : 40℃ ± 2℃ 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 ± 20 % of the initial value
Resistance to Solder Heat	a. Solder temperature : 260 ± 5℃ 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 ± 20 % of the initial value
Adhesive Test	a. Reflow temperature : 245℃ 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℃ b. Test time : 4 hrs(MCB1005) Others : 8 hrs c. Solder temperature : 235 ± 5℃ 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℃

■ GENERAL TECHNICAL DATA

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

■ PART NUMBER AND CHARACTERISTICS TABLE

Part No.	Impedance(Ω) +/-25%	Test Freq.(MHz)	DCR(Ω) (Max.)	Rated Current (mA)
MCB1005-S Series				
MCB1005S100FB_	10	100	0.10	300
MCB1005S200FB_	20	100	0.20	300
MCB1005S300FB_	30	100	0.25	300
MCB1005S400FB_	40	100	0.30	300
MCB1005S600FB_	60	100	0.35	300
MCB1005S700FB_	70	100	0.35	300
MCB1005S121FB_	120	100	0.40	300
MCB1005S241EB_	240	100	0.70	200
MCB1005S301EB_	300	100	0.80	200
MCB1005S471EB_	470	100	1.00	200
MCB1005S601FB_	600	100	1.00	300
MCB1005S102EB_	1000	100	1.50	200

Part No.	Impedance(Ω) +/-25%	Test Freq.(MHz)	DCR(Ω) (Max.)	Rated Current (mA)
MCB1608-S Series				
MCB1608S100IB_	10	100	0.05	600
MCB1608S220IB_	22	100	0.05	600
MCB1608S300IB_	30	100	0.08	600
MCB1608S400IB_	40	100	0.10	600
MCB1608S600IB_	60	100	0.10	600
MCB1608S700IB_	70	100	0.10	600
MCB1608S800IB_	80	100	0.10	600
MCB1608S101IB_	100	100	0.15	600
MCB1608S121IB_	120	100	0.15	600
MCB1608S181FB_	180	100	0.30	300
MCB1608S221FB_	220	100	0.30	300
MCB1608S301FB_	300	100	0.35	300
MCB1608S471FB_	470	100	0.40	300
MCB1608S601EB_	600	100	0.45	200
MCB1608S751CB_	750	100	0.60	100
MCB1608S102CB_	1000	100	0.60	100
MCB2012-S Series				
MCB2012S070KB_	7	100	0.05	800
MCB2012S110KB_	11	100	0.05	800
MCB2012S170KB_	17	100	0.05	800
MCB2012S260KB_	26	100	0.05	800
MCB2012S300KB_	30	100	0.05	800
MCB2012S320KB_	32	100	0.05	800
MCB2012S400KB_	40	100	0.05	800
MCB2012S600KB_	60	100	0.15	800
MCB2012S800KB_	80	100	0.15	800
MCB2012S900KB_	90	100	0.15	800
MCB2012S121KB_	120	100	0.15	800
MCB2012S151KB_	150	100	0.15	800
MCB2012S181HB_	180	100	0.20	500
MCB2012S221HB_	220	100	0.20	500
MCB2012S301HB_	300	100	0.20	500
MCB2012S401HB_	400	100	0.30	500
MCB2012S601HB_	600	100	0.30	500
MCB2012S102FB_	1000	100	0.35	300
MCB2012S152FB_	1500	100	0.40	300
MCB2012S202EB_	2000	100	0.50	200

Part No.	Impedance(Ω) +/-25%	Test Freq.(MHz)	DCR(Ω) (Max.)	Rated Current (mA)
MCB3216-S Series				
MCB3216S190KB_	19	100	0.05	800
MCB3216S260KB_	26	100	0.05	800
MCB3216S310KB_	31	100	0.05	800
MCB3216S500KB_	50	100	0.08	800
MCB3216S700KB_	70	100	0.10	800
MCB3216S900KB_	90	100	0.15	800
MCB3216S121IB_	120	100	0.15	600
MCB3216S151IB_	150	100	0.15	600
MCB3216S201IB_	200	100	0.20	600
MCB3216S221IB_	220	100	0.20	600
MCB3216S301IB_	300	100	0.20	600
MCB3216S601HB_	600	100	0.30	500
MCB3216S102HB_	1000	100	0.40	500
MCB3216S122HB_	1200	100	0.40	500
MCB3216S152EB_	1500	50	0.50	200
MCB3216S202EB_	2000	30	0.50	200
MCB3225-S Series				
MCB3225S310KB_	31	100	0.30	800
MCB3225S600KB_	60	100	0.30	800
MCB3225S900KB_	90	100	0.30	800
MCB4516-S Series				
MCB4516S680KB_	68	100	0.10	800
MCB4516S800KB_	80	100	0.10	800
MCB4516S101KB_	100	100	0.20	800
MCB4516S151KB_	150	100	0.30	800
MCB4532-S Series				
MCB4532S700KB_	70	100	0.40	800
MCB4532S800KB_	80	100	0.40	800
MCB4532S121KB_	120	100	0.40	800

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