

## Data Sheet

**Customer:**

**Product:** Automotive Grade Multilayer Chip Beads – CBM..A Series

**Sizes.:** 0402/0603/0805/1204/1210/1808

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## Automotive Grade Multilayer Chip Beads



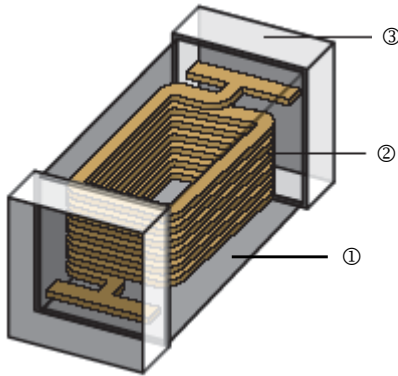
### ■ Features

- Effective EMI protection
- Low DC resistance
- High soldering heat resistance
- Multiple size availability
- AEC-Q200 Compliance

### ■ Applications

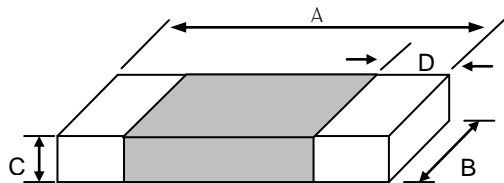
- Computers and Peripheral Equipment
- VCRS, Television, Pagers
- Cellular Phones
- Digital Communication Equipment
- Various Electronics Equipments
- Circuit Where a Stable Ground is Unavailable

### ■ Construction



① Ferrite	② Internal Electrode	③ Electrode Plating
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### ■ Dimensions



Type	Size (Inch)	A (mm)	B (mm)	C (mm)	D (mm)	Weight (g) (1000pcs)
CBM02	0402	1.0±0.10	0.50±0.10	0.5±0.10	0.25±0.10	2.6
CBM03	0603	1.6±0.15	0.80±0.15	0.8±0.15	0.30±0.20	6.2
CBM05	0805	2.0±0.20	1.25±0.20	0.9±0.20	0.50±0.30	10
CBM04	1204	3.2±0.20	1.60±0.20	1.1±0.20	0.50±0.30	30
CBM10	1210	3.2±0.20	2.50±0.20	1.3±0.20	0.50±0.30	54
CBM08	1808	4.5±0.25	1.60±0.20	1.6±0.20	0.60±0.40	60

**Automotive Grade Multilayer Chip Beads**

**Part Numbering**

CBM	03	Y	T	-	N	601	A
Product Type	Dimensions	Impedance Tolerance	Packaging Code	Material Code	Current	Impedance	Function Code
	02: 0402 03: 0603 05: 0805 04: 1204 10: 1210 08: 1808	Y: ±25%	T: Taping Reel	-: No material B: B material H: H material	H: High current N: General current	700: 70Ω 121: 120Ω 102: 1000Ω	A: Automotive Grade

**Standard Electrical Specifications(for General Signal Line Use)**

CBM02(100505)

Part No.	Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM02YT-N700A	70	±25%	100	0.15	600
CBM02YT-N121A	120	±25%	100	0.25	500
CBM02YT-N241A	240	±25%	100	0.35	300
CBM02YTBN601A	600	±25%	100	0.65	200
CBM02YT-N102A	1000	±25%	100	1.00	200
CBM02YTBN102A	1000	±25%	100	0.90	200
CBM02YTBN182A	600	±25%	100	1.40	200

CBM03(160808)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM03YT-N800A	80	±25%	100	0.10	600
CBM03YT-N121A	120	±25%	100	0.18	500
CBM03YT-N221A	220	±25%	100	0.25	500
CBM03YT-N471A	470	±25%	100	0.35	500
CBM03YT-N601A	600	±25%	100	0.38	500
CBM03YT-N102A	1000	±25%	100	0.50	400
CBM03YT-N182A	1800	±25%	100	1.50	50
CBM03YT-N222A	2200	±25%	100	1.50	50
CBM03YT-N252A	2500	±25%	100	1.50	50

CBM05(201209)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM05YT-N121A	120	±25%	100	0.15	200
CBM05YT-N151A	150	±25%	100	0.15	200
CBM05YT-N221A	220	±25%	100	0.20	200
CBM05YT-N601A	600	±25%	100	0.30	200
CBM05YT-N102A	1000	±25%	100	0.45	200

CBM04(321611)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
CBM04YT-N601A	600	±25%	100	0.90	200

**We are capable to design according to customer special requirement**

**Automotive Grade Multilayer Chip Beads**

**■ Standard Electrical Specifications(for High Speed Signal Line Use)**

CBM02(100505)

Part No.	Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM02YTHN750A	75	±25%	100	0.40	300
CBM02YTHN121A	120	±25%	100	0.55	300
CBM02YTHN221A	220	±25%	100	0.60	200

CBM03(160808)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM03YTHN200A	20	±25%	100	0.20	700
CBM03YTHN750A	75	±25%	100	0.30	500
CBM03YTHN120A	120	±25%	100	0.40	200
CBM03YTHN240A	240	±25%	100	0.45	200
CBM03YTHN601A	600	±25%	100	0.65	200
CBM03YTHN102A	1000	±25%	100	0.85	100

CBM05(201209)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM05YTHN121A	120	±25%	100	0.25	200
CBM05YTHN151A	150	±25%	100	0.25	200
CBM05YTHN221A	220	±25%	100	0.25	200
CBM05YTHN601A	600	±25%	100	0.35	200
CBM05YTHN222A	2200	±25%	100	0.60	200

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**Automotive Grade Multilayer Chip Beads**

**■ Standard Electrical Specifications(For High Current Line Use)**

CBM02(100505)

Part No.	Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM02YT-H100A	10	±25%	100	0.050	1000
CBM02YT-H121A	120	±25%	100	0.090	1500

CBM03(160808)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
CBM03YT-H300A	30	±25%	100	0.050	1000
CBM03YT-H600A	60	±25%	100	0.100	1000
CBM03YT-H121A	120	±25%	100	0.050	2000
CBM03YT-H181A	180	±25%	100	0.090	2000
CBM03YT-H221A	220	±25%	100	0.100	1500
CBM03YT-H301A	300	±25%	100	0.150	1500
CBM03YT-H471A	470	±25%	100	0.200	1000
CBM03YT-H601A	600	±25%	100	0.200	1000

CBM05(201209)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
CBM05YT-H310A	31	±25%	100	0.015	3000
CBM05YT-H600A	60	±25%	100	0.026	3000
CBM05YT-H121A	120	±25%	100	0.040	3000
CBM05YT-H221A	220	±25%	100	0.050	2000
CBM05YT-H331A	330	±25%	100	0.090	1500
CBM05YT-H601A	600	±25%	100	0.090	2000
CBM05YT-H152A	1500	±25%	100	0.300	1000

CBM04(321611)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
CBM04YT-H500A	50	±25%	100	0.025	3000
CBM04YT-H121A	120	±25%	100	0.025	3000
CBM04YT-H601A	600	±25%	100	0.090	1500

CBM10(322513)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
CBM10YT-H102A	1000	±25%	100	0.090	2000

CBM08(451616)

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
CBM08YT-H600A	60	±25%	100	0.010	6000
CBM08YT-H181A	180	±25%	100	0.020	3500
CBM08YT-H102A	1000	±25%	100	0.090	1500

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**Automotive Grade Multilayer Chip Beads**

**Environmental Characteristics**

Electrical Performance Test

Item	Specification	Test Methods
Impedance	Refer to standard electrical spec.	HP4291B
DCR		HP 4338 digital mili-ohm meter

Mechanical Performance Test

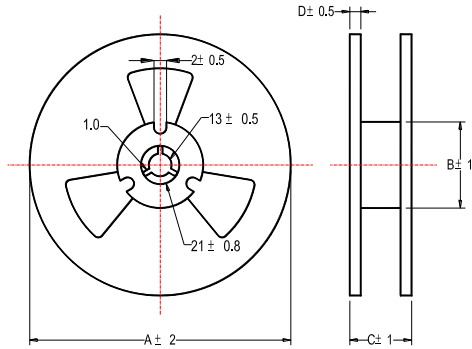
Item	Specification	Test Methods												
High Temperature Exposure	No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	Temperature : $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Test time : 1000 hrs Measurement: at ambient temperature 24 hrs after test completion												
Temperature Cycle	No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	Temperature : $-55 \sim +125^{\circ}\text{C}$ Cycle : 1000 cycles Dwell time : 30minutes Measurement: at ambient temperature 24 hrs after test completion												
Biased Humidity	No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	Temperature : $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Humidity : 85 % RH Test time : 1000 hrs Apply current : full rated current Measurement: at ambient temperature 24 hrs after test completion												
Operational Life	No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	Temperature : $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Test time : 1000 hrs Apply current : full rated current Measurement: at ambient temperature 24 hrs after test completion												
Mechanical Shock	No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	Condition F:1500g's/0.5ms/Half sine												
Vibration Test	No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	5g's for 20 minutes,12cycles each of 3 orientations Test from 10-2000Hz.,12cycles each of 3 orientations												
Resistance to Solder Heat	More than 95 % of terminal electrode should be covered with new solder No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	Solder temperature : $260 \pm 5^{\circ}\text{C}$ Flux : Rosin DIP time : $10 \pm 1$ sec												
ESD	No mechanical damage Impedance value should be within $\pm 30\%$ of the initial value	Classification Levels 1C 1000 V (DC) to < 2000 V (DC)												
Solderability Test	More than 95 % of terminal electrode should be covered with new solder No mechanical damage	Solder temperature : $235 \pm 5^{\circ}\text{C}$ Flux : Rosin DIP time : $5 \pm 1$ sec												
Board Flex	No mechanical damage.	Epoxy-PCB(1.6mm) Deflection 2mm(min) 60s minimum holding time												
Terminal Strength	No mechanical damage	<table border="1"> <thead> <tr> <th>Size</th> <th>Apply Force(F)</th> <th>Test Time</th> </tr> </thead> <tbody> <tr> <td>0402</td> <td>5N</td> <td>10<math>\pm</math>1 sec</td> </tr> <tr> <td>0603</td> <td>10N</td> <td>10<math>\pm</math>1 sec</td> </tr> <tr> <td><math>\geq</math>0805</td> <td>17.7N</td> <td>60<math>\pm</math>1 sec</td> </tr> </tbody> </table>	Size	Apply Force(F)	Test Time	0402	5N	10 $\pm$ 1 sec	0603	10N	10 $\pm$ 1 sec	$\geq$ 0805	17.7N	60 $\pm$ 1 sec
Size	Apply Force(F)	Test Time												
0402	5N	10 $\pm$ 1 sec												
0603	10N	10 $\pm$ 1 sec												
$\geq$ 0805	17.7N	60 $\pm$ 1 sec												

■ **Operating Temperature:  $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$**

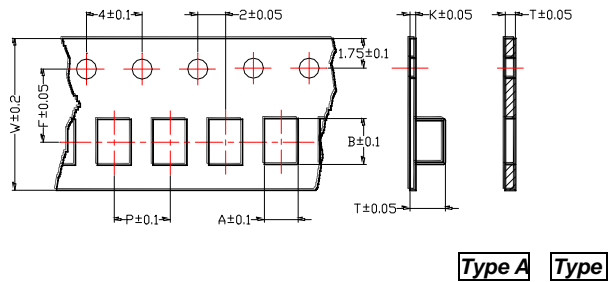
■ **Storage Temperature:  $15\sim 28^{\circ}\text{C}$  ; Humidity < 80%RH**

**■Packaging**

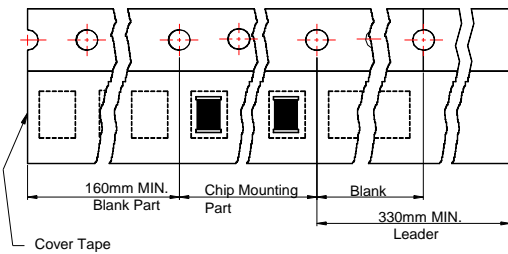
Reel Specifications



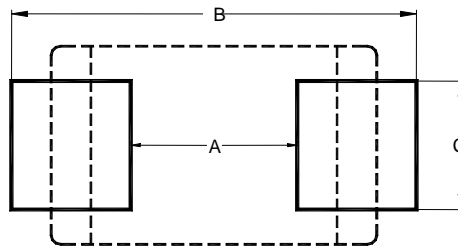
Tape Specifications



Tape Material



Recommended Pattern



Unit : mm

Type	Tape Dimensions								Reel Dimensions				Recommended Pattern			Quantity (EA)
	A	B	T	W	P	F	K	Tape Type	A	B	C	D	A	B	C	
CBM02	0.62	1.12	0.60	8.0	2.0	3.5	-	B	178	60	10	2	0.4	1.2-1.4	0.5	10000
CBM03	1.05	1.85	0.95	8.0	4.0	3.5	-	B	178	60	10	2	0.7	1.8-2.0	0.7	4000
CBM05	1.50	2.30	0.95	8.0	4.0	3.5	-	B	178	60	10	2	1.2	3.0-4.0	1.0	4000
CBM04	1.85	3.43	1.22	8.0	4.0	3.5	0.25	A	178	60	10	2	2.0	4.2-5.2	1.2	3000
CBM10	2.57	3.40	1.32	8.0	4.0	3.5	0.25	A	178	60	10	2	2.0	4.2-5.2	3.4	2000
CBM08	1.83	4.85	1.73	12	4.0	5.5	0.29	A	178	60	14	2	3.0	5.5-6.5	1.2	2000

**■Soldering Condition**

