CHIP COMMON MODE FILTERS

Features

1. Effective for suppressing common mode noise at high frequency from several MHz to several hundreds MHz.
2. Compact design.
3. Excellent solderability characteristics.

Applications

1. Noise suppression in digital bus line equipment.
2. IEEE1394a HUB & IEEE1394a control lines.
3. USB host controllor & USB, HUB control lines.

Ordering Information

CM	-	2	S	3216	-	301	J	T
(1)		(2)	(3)	(4)		(5)	(6)	(7)

(1) Series
CM : For signal line

(2) Pole Type
2 : 2 pole
3 : 3 pole
4 : 4 pole

(3) Material & Design
L : For ultra high speed
S, B : For high speed
M : For high medium speed
T : For low speed

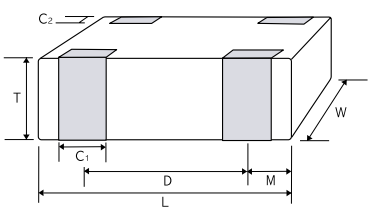
(4) Diminsions
The first two digits : length(mm)
The last two digits : width(mm

(5) Common mode impedance (at 100MHz)
The first two digit are significant.
The last digits is the number of zeros following

(6) Termination
J : Nickel barrier

(7) Packing
B : Bulk Pack
T : Tape & Reel ('"178mm)
L : Tape & Reel ('"254mm)

Shape and Dimensions



unit ; mm[inches]

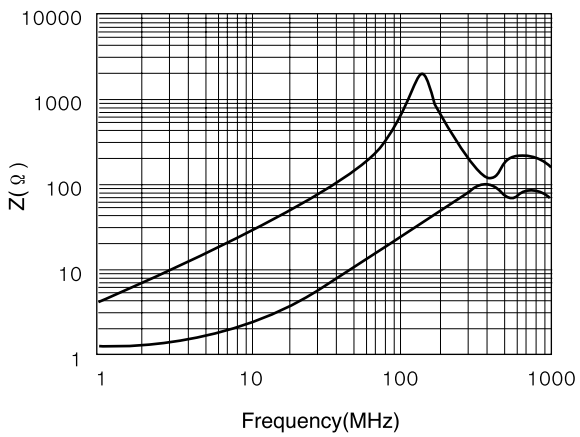
Type	L	W	T	C'ß	C'	D	M
CM-2□3216-	3.2±0.2 [.126±.008]	1.6±0.2 [.063±.008]	0.8±0.1 [.031±.004]	0.6±0.2 [.024±.008]	0.2~0.45 [.008~.018]	2.1±0.2 [.083±.008]	0.55±0.2 [.022±.008]
CM-2□2012-	2.0±0.2 [.079±.008]	1.2±0.2 [.047±.008]	0.6±0.1 [.024±.004]	0.4±0.2 [.016±.008]	0.2~0.45 [.008~.018]	1.2±0.1 [.047±.008]	0.40±0.1 [.008±.004]

Specifications

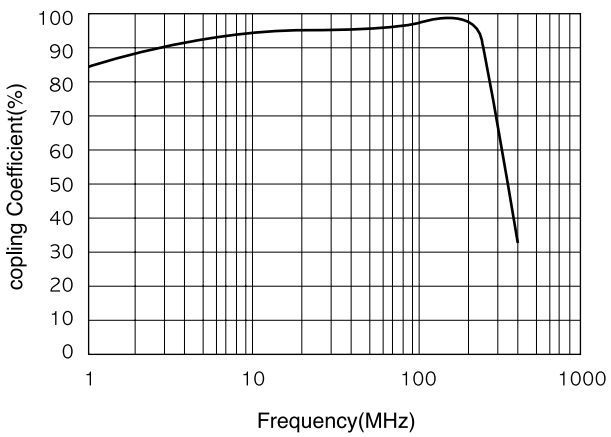
Part No.	Impedance at 100MHz(§)		DC Resistance max. (§)	Rated Current max. (mA)	Rated Voltage max. (V)	Insulation Resistance max. (M§)
	typ.	min.				
CM-2M3216-501JT	500	375	2.0	100	40	10
CM-2M3216-102JT	1000	750	2.5	100	40	10
CM-2S3216-301JT	300	225	2.0	100	40	10
CM-2S3216-501JT	500	375	2.0	100	40	10
CM-2T3216-601JT	600	450	2.5	100	40	10
CM-2T3216-102JT	1000	750	2.5	100	40	10
CM-2B3216-301JT	300	225	2.0	100	40	10
CM-2B3216-601JT	600	450	2.5	100	40	10

Electrical Characteristics

CM-2S3216-501

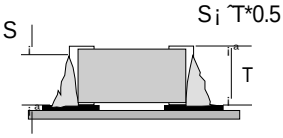
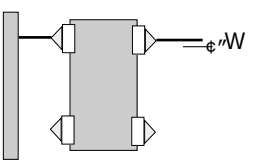
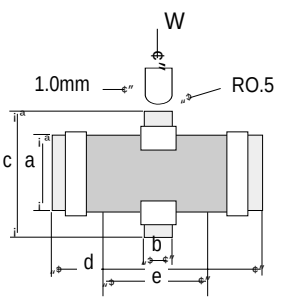
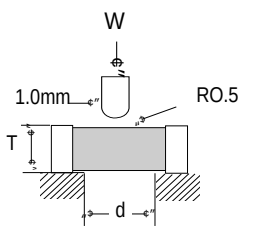


Coupling Coefficient



RELIABILITY AND TEST CONDITIONS

CHIP COMMON MODE FILTERS

ITEM		REQUIREMENTS		TEST CONDITION
		2012 2POLE	3216 2POLE	
Operating temp. range		-55¡ ~+125¡		—
Storage temp. & humidity range		40¡ max. , 70% RH max.		at packing condition
Resistance to solder heat		1. No damage such as cracks should be caused in chip element. 2. More than 75% of the terminal electrode shall be covered with new solder.		Preheat temperature : 100 to 150¡ Preheat time : 1min. Solder temperature : 260 ¡ 10¡ Dipping time : 10 ¡ 0.5sec.
Solderability		1. More than 90% of the terminal electrode shall be covered with new solder.		Preheat temperature : 100 to 150¡ Preheat time : 1min. Solder temperature : 230 ¡ 10¡ Dipping time : 3 ¡ 1sec.
Reflow soldering		1. More than 50% of the terminal electrode shall be covered with new solder. 2. Impedance change : ¡ within 30% 3. IR : min. 10§ S¡ ˜T*0.5 		Preheat temperature : 150¡ Preheat time : 1min. Solder temperature : 230¡ Soldering time: 10 sec. max. (Reflow soldering profile)
Tensile strength (Terminal strength)		1. No mechanical damage unit:Kgf (W)		
	W	0.5	0.6	
Adhension of terminal electrode (Flexure strength)		1. No mechanical damage unit: mm (a,b,c) , Kgf (W)		
	a	1.2	1.2	
	b	0.6	0.8	
	c	2.6	3.0	
	d	0.4	0.6	
	W	2.0	2.5	
Body strength (Bending strength)		1. The body shall not be damaged by forces applied on the right. unit: mm (d) , Kgf (W)		
	d	1.3	2.0	
	W	2.0	3.0	

CHIP COMMON MODE FILTERS

ITEM	REQUIREMENTS		TEST CONDITION
	2012 POLE	3216 POLE	
Drop	1. No mechanical damage		Drop 10 times on a concrete floor from a height of 91cm.
Vibration	1. No mechanical damage		Frequency : 10~55~10Hz Amplitude : 1.52 mm Direction and time : X,Y,Z directions for 2 hours
Thermal shock (Temperature cycle)	1. No mechanical damage 2. Impedance change : ¡ within 30% 3. IR : min. 10§		Step1. -40 ¡ 3¡ 30 ¡ 3min. Step2. 85 ¡ 3¡ 30 ¡ 3min. Number of cycle : 100 times
Heat load resistance	1. No mechanical damage 2. Impedance change : ¡ within 30% 3. IR : min. 10§		Temperature : 85 ¡ 2¡ Applied current : rated current Time : 1,000 hours Measured at room ambient temperature after placing for 24 hours
Low temp. resistance	1. No mechanical damage 2. Impedance change : ¡ within 30% 3. IR : min. 10§		Temperature : -40 ¡ 5¡ Time : 1,000 hours Measured at room ambient temperature after placing for 24 hours
Humidity resistance	1. No mechanical damage 2. Impedance change : ¡ within 30% 3. IR : min. 10§		Temperature : 40 ¡ 2¡ Humidity : 90~95% RH Time : 500 hours Measured at room ambient temperature after placing for 24 hours
Humidity load resistance	1. No mechanical damage 2. Impedance change : ¡ within 30% 3. IR : min. 10§		Temperature : 40 ¡ 2¡ Humidity : 90~95% RH Applied current : rated current Time : 500 hours Measured at room ambient temperature after placing for 24 hours

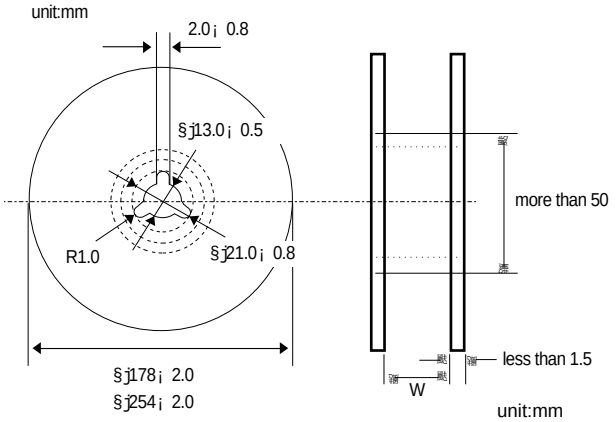
PACKING

■ STANDARD QUANTITY

Type	Q¡TY(PCS)	REMARKS
0603	15,000	
	10,000	
1005	50,000	BULK CASSETTE
	10,000	
1608	4,000	4mm pitch
	8,000	
2012	3,000	
	7,000	§254mm
3216	3,000	
	7,000	§254mm
4516	3,000	
4532	1,500	
5750	1,000	

■ REEL DIMENSION

unit:mm



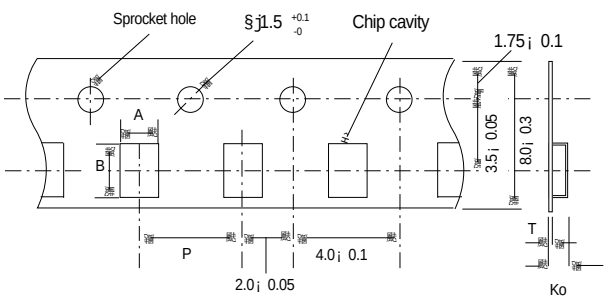
unit:mm

Type	W[mm]
0603, 1005, 1608, 2012, 3216 Array	9.0±0.3
4516, 4532, 5750	13.0±.0.3]

■ TAPING DIMENSION / 8mm wide

¡/Embossing Tape

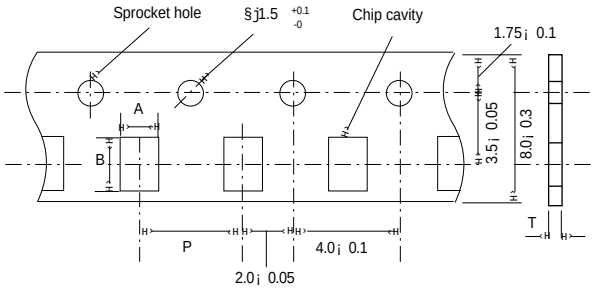
unit:mm



PRODUCT	Type	A¡ 0.1	B¡ 0.1	P¡ 0.1	Ko¡ 0.1	T(max.)
CHIP BEADS CHIP BEADS ARRAY CHIP FERRITE INDUCTOR CHIP EMI SUPPRESSION FILTER CHIP EMI FILTER ARRAY CHIP LC FILTER CHIP COMMON MODE FILTER CHIP FEEDTHRU CHIP VARISTOR CHIP VARISTOR ARRAY CHIP SURGE ABSORBER	1608	1.00	1.80	4.0	0.95	0.3
	2012	1.45	2.25	4.0	0.08 1.00	0.3
	2012	1.90	2.25	4.0	1.35	0.3
	3216	1.90	3.60	4.0	1.00	0.3
	3216	1.90	3.60	4.0	1.35	0.3

¡ /Paper Tape

unit:mm

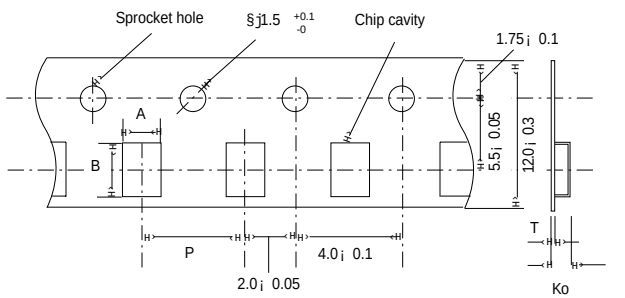


PRODUCT	Type	A¡ 0.1	B¡ 0.1	P¡ 0.1	T(max.)
MICRO INDUCTOR CHIP BEADS CHIP INDUCTOR CHIP VARISTOR CHIP SURGE ARRAY	0603	0.37±0.02	0.67±0.02	4.0±0.1	0.45
	1005	0.65±0.1	1.15±0.1	2.0±0.1	0.8
	1608	1.00±0.1	1.8±0.1	2.0±0.1	1.1

■ TAPING DIMENSION / 12mm wide

¡ /Embossing Tape

unit:mm

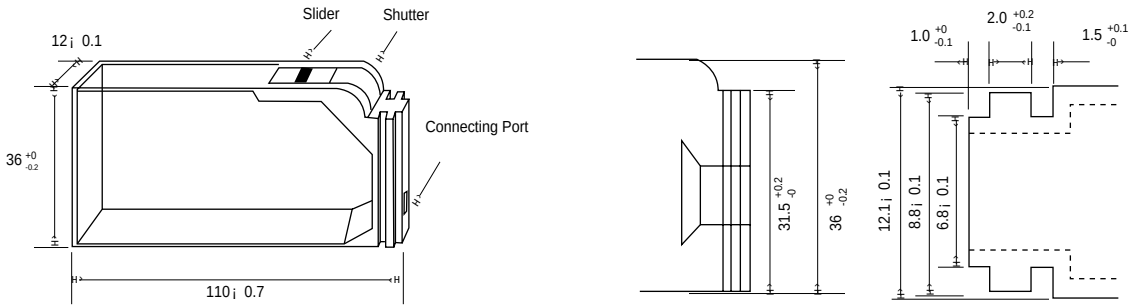


unit ; mm

PRODUCT	Type	A¡ 0.1	B¡ 0.1	P¡ 0.1	Ko¡ 0.1	T(max.)
CHIP BEADS CHIP FEEDTHRU	4516	1.90	4.90	4.0	1.00	0.3
	4516	1.90	4.90	4.0	1.35	0.3
	4532	3.60	4.90	8.0	1.40	0.3
	5750	5.20	6.10	8.0	2.05	0.3

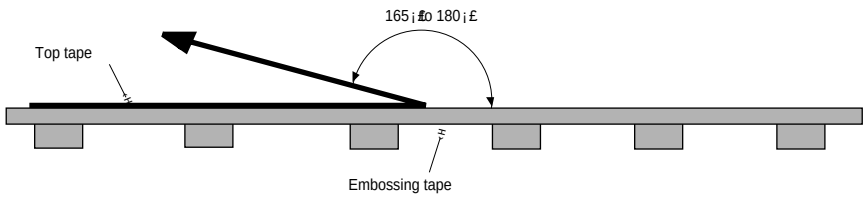
§ 1005 BULK CASSETTE DIMENSION

Unit:mm



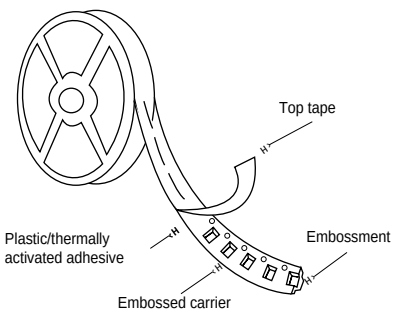
§ TOP TAPE STRENGTH

¡ /The force for tearing off top tape is 20 to 70 grams in the arrow direction.

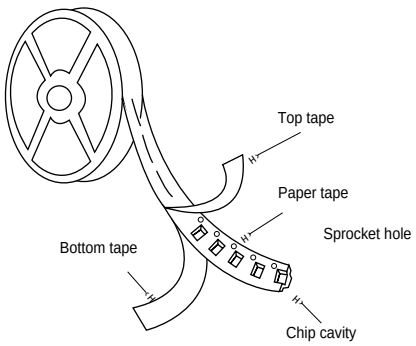


§ TAPING MATERIAL

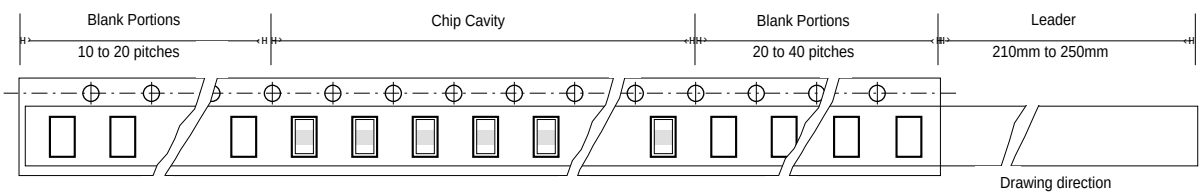
¡ /Embossed Tape



¡ /Paper Tape



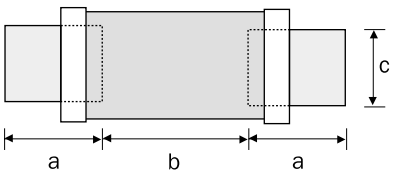
§ LEADER AND BLANK PORTION



¡ /The pitch holes shift within ¡ 0.3mm for cumulative 10 pitches.

LAND PATTERN DESIGN

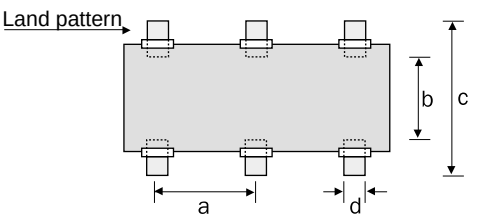
■ BEAD, INDUCTOR, VARISTOR, SURGE ABSORBER



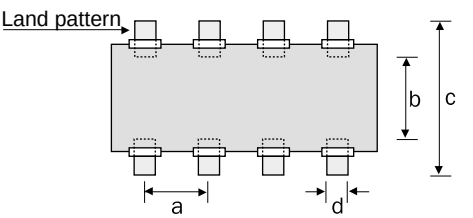
unit ; mm

SIZE	a	b	c
0603	0.22	0.25	0.32
1005	0.7	0.4	0.5
1608	1.0	0.6	0.8
2012	1.0	1.0	1.0
3216	1.1	2.2	1.4
4516	1.5	3.0	1.4
4532	1.8	3.0	3.0
5750	2.0	4.0	5.8

■ ARRAY



<3 array>

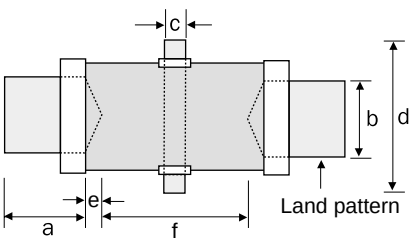


<4 array>

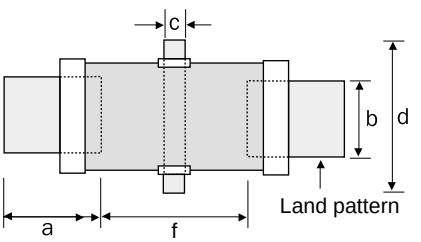
unit ; mm

SIZE	array	a	b	c	d
3216	3 array	1.0	0.8	3.0	0.5
3216	4 array	0.8	0.8	3.0	0.4

■ EMI SUPPRESSION FILTER, LC FILTER, FEEDTHRU CAPACITOR



<2012 size>



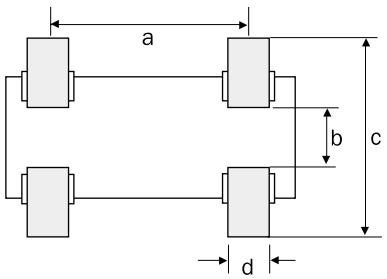
<3216, 4516 size>

unit ; mm

SIZE	a	b	c	d	e	f
2012	1.0	1.0	0.4	2.0	0.1	1.4
3216	1.1	1.4	0.6	2.4	-	2.4
4516	1.5	1.4	0.8	2.4	-	3.4

LAND PATTERN DESIGN

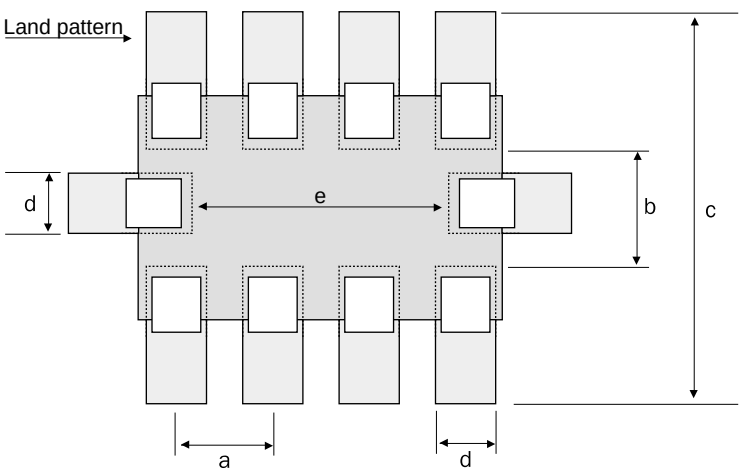
■ COMMON MODE FILTER, VARISTOR ARRAY



unit ; mm

SIZE	POLE(Array)	a	b	c	d
2012	2 POLE	1.20	0.60	2.60	0.40
2012	2 Array	0.76	0.38	2.16	0.46
3216	2 POLE	2.10	0.80	3.00	0.60
3216	2 Array	1.96	0.76	2.54	0.90

¡ÆEMI FILTER ARRAY

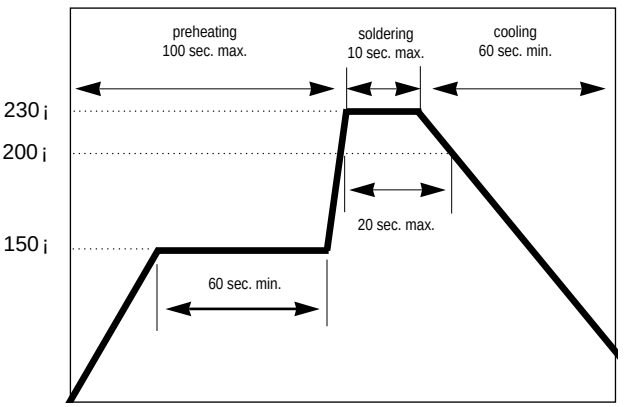


unit ; mm

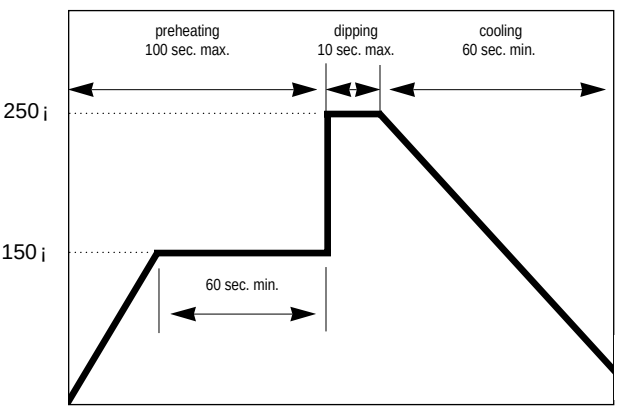
SIZE	POLE(Array)	a	b	c	d	e
3216	4 Array	0.8	0.8	3.0	0.4	2.4

SOLDERING PROFILE

■ REFLOW SOLERING PROFILE



■ FLOW SOLDERING PROFILE



■ MANUAL SOLDERING