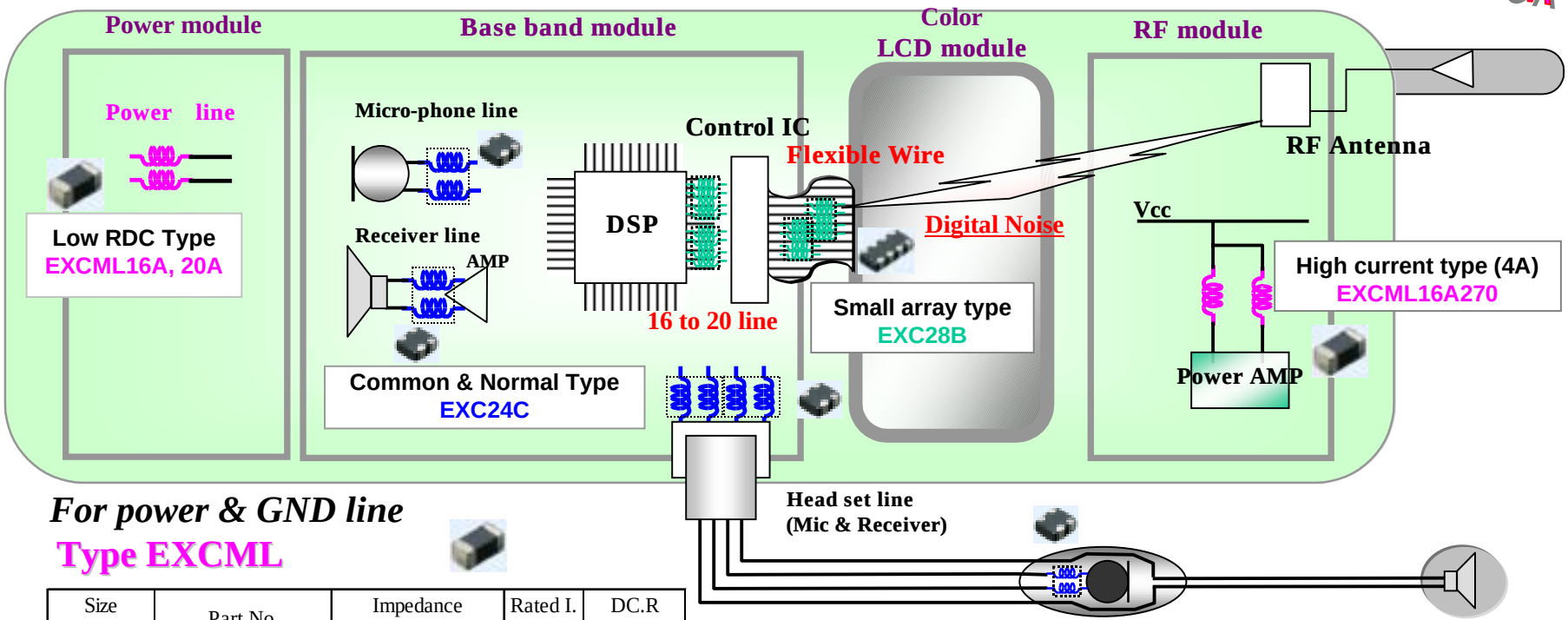
Matsushita

EMI suppression for Mobile phone

Sample Book



For power & GND line

Type EXCML

Size (mm/inch)	Part No.	Impedance 100MHz	Rated I. (A)	DC.R (ohm)
1608/0603	EXCML16A270U	27 ohm +/-25%	4	0.003 typ.
2012/0805	EXCML20A390U	39 ohm +/-25%	4	0.004 typ.

For Receiver & Microphone line

Type EXC24C

Size (mm/inch)	Part No.	Impedance 100MHz	Rated I. (mA)	DC.R (ohm)
1012/0405	EXC24CP121U	120 ohm +/-25%	500	0.3
1012/0405	EXC24CP221U	220 ohm +/-25%	350	0.4
1012/0405	EXC24CB221U	220 ohm +/-25%	100	0.7
1012/0405	EXC24CB102U	1000 ohm +/-25%	50	1.5

For LCD data line

Type EXC28B

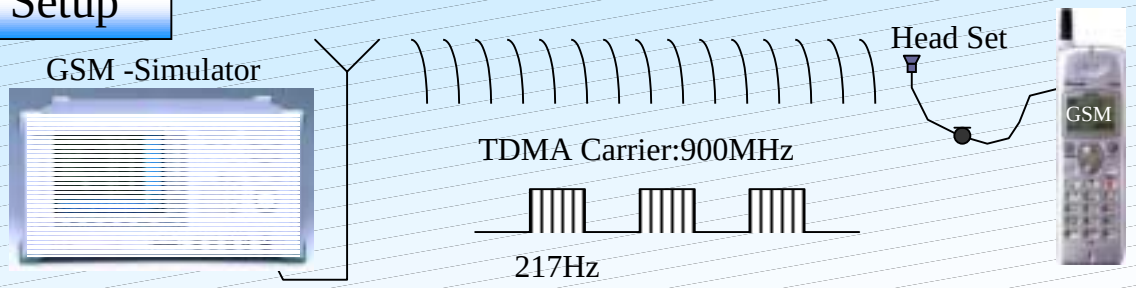
Size (mm/inch)	Part No.	Impedance 100MHz	Rated I. (mA)	DC.R (ohm)
2010/0804	EXC28BA121U	120 ohm +/-25%	100	0.5
2010/0804	EXC28BA221U	220 ohm +/-25%	100	0.7
2010/0804	EXC28BB121U	120 ohm +/-25%	100	0.5
2010/0804	EXC28BB221U	220 ohm +/-25%	100	0.7

Matsushita

2 mode Noise Filter

0405 size, Normal mode & Common mode type

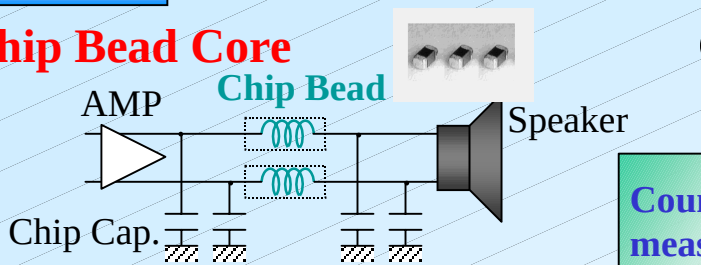
Test Setup

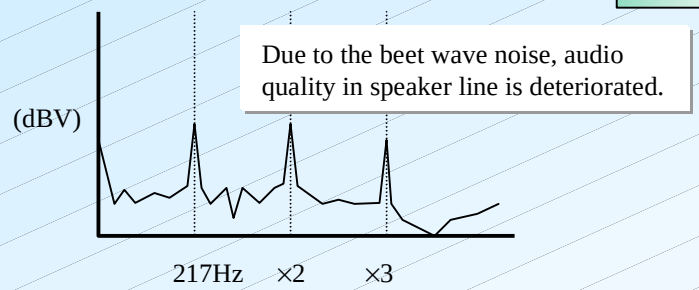


When radiation noise is attached to head set and the mobile phone, the majority of these conduction noise consist of common mode noise.

Applications

Chip Bead Core

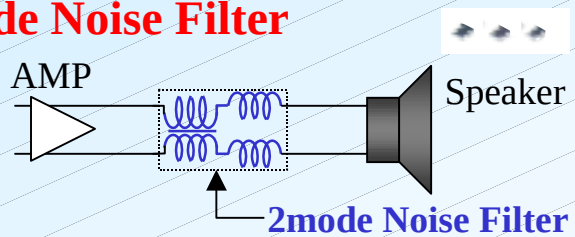


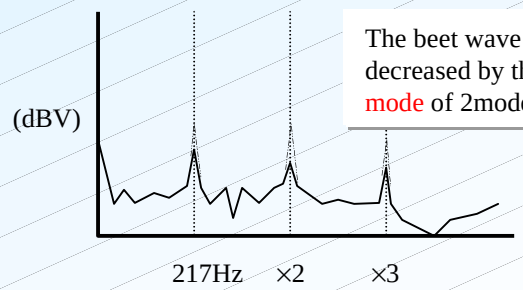


Due to the beet wave noise, audio quality in speaker line is deteriorated.

Counter measure

2 mode Noise Filter





The beet wave noise can be greatly decreased by the effect of common mode of 2mode Noise Filter.

<Advantage>

1:Minimized number of components 6pcs. ⇒ 1pcs.

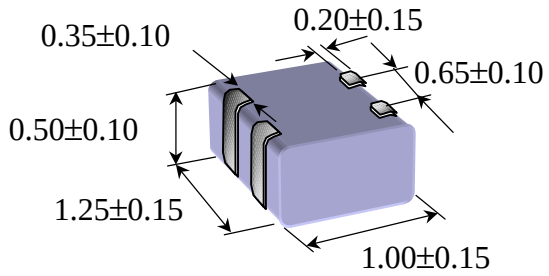
2:Space saving 50%

Matsushita Electronic Components

2 mode Noise Filter: EXC24CB

Dimensions

unit:mm

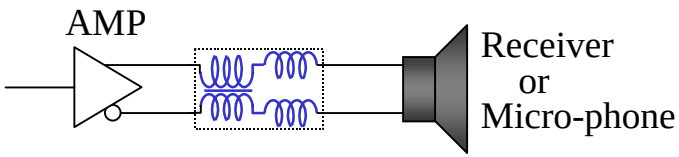


Specifications

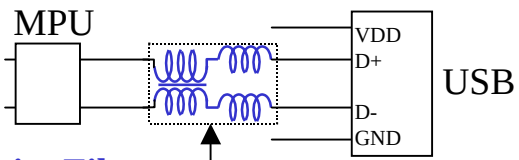
Part Number	Impedance in 100MHz (Ω)		Rated Voltage (V DC)	Rated Current (mA)	DCR (Ω)
	Open mode	Common mode			
EXC24CB221U	220 ±25%	100 min.	5	100	0.7
EXC24CB102U	1000 ±25%	450 min.	5	50	1.5

Applications

- **For Audio Line of Mobile-Phone**

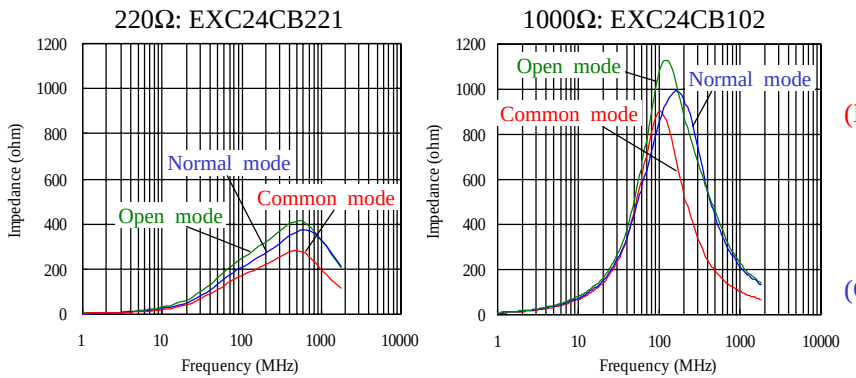


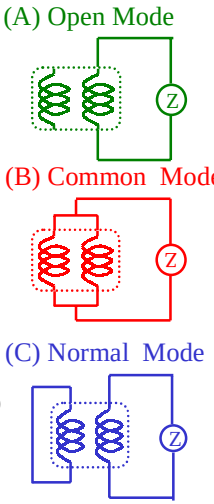
- **For USB data line**



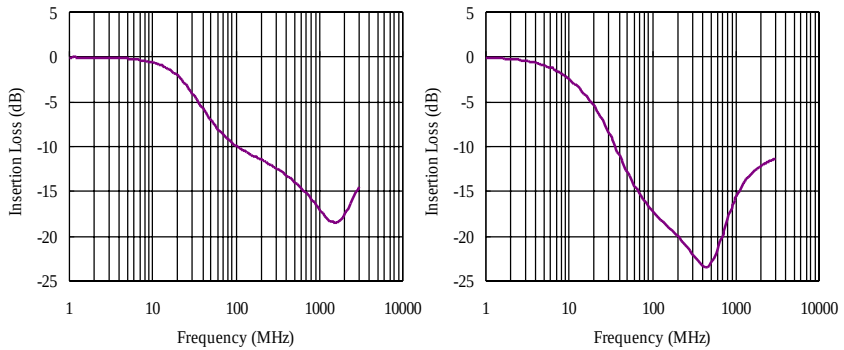
2mode Noise Filter

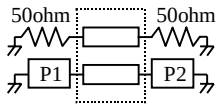
Impedance Characteristics (Typical)



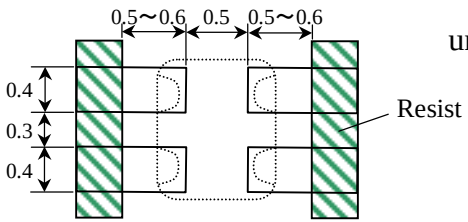


Insertion Loss (Typical)





Recommended Land Pattern Design



unit : mm

Land Compatible for 0402×2 chip jumper (EXB24VR000)

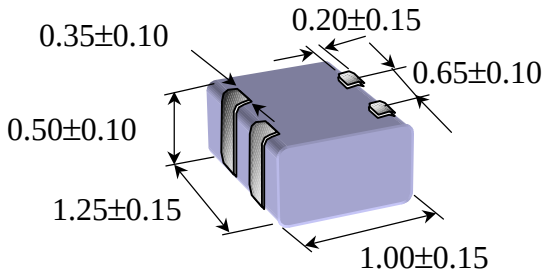
No. K0616BKE121

Matsushita Electronic Components

2 mode Noise Filter: EXC24CP (High Current type)

Dimensions

unit:mm

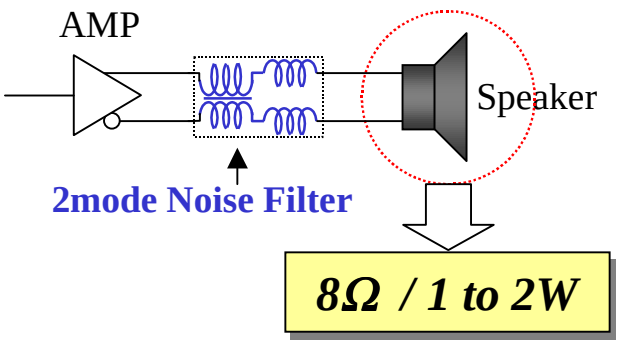


Specifications

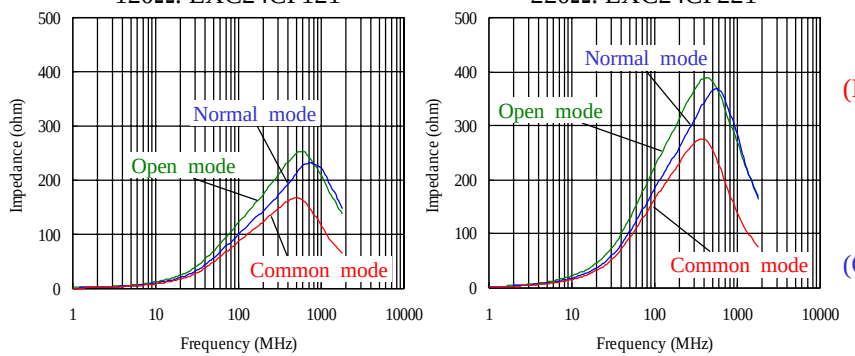
Part Number	Impedance in 100MHz (Ω)		Rated Voltage (V DC)	Rated Current (mA)	DCR (Ω)
	Open mode	Common mode			
EXC24CP121U	120 ±25%	60 min.	5	500	0.3
EXC24CP221U	220 ±25%	120 min.	5	350	0.4

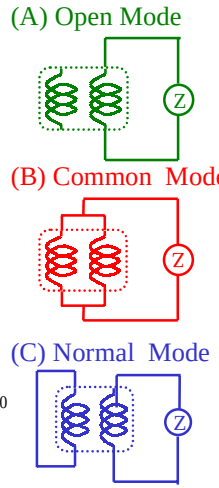
Applications

- **For Audio Line of Mobile-Phone**

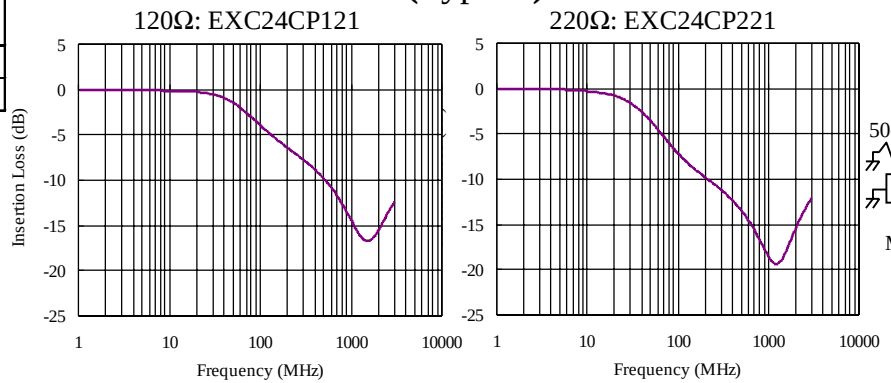


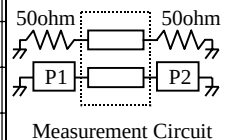
Impedance Characteristics (Typical)



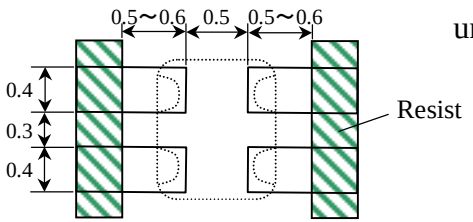


Insertion Loss (Typical)





Recommended Land Pattern Design



unit : mm

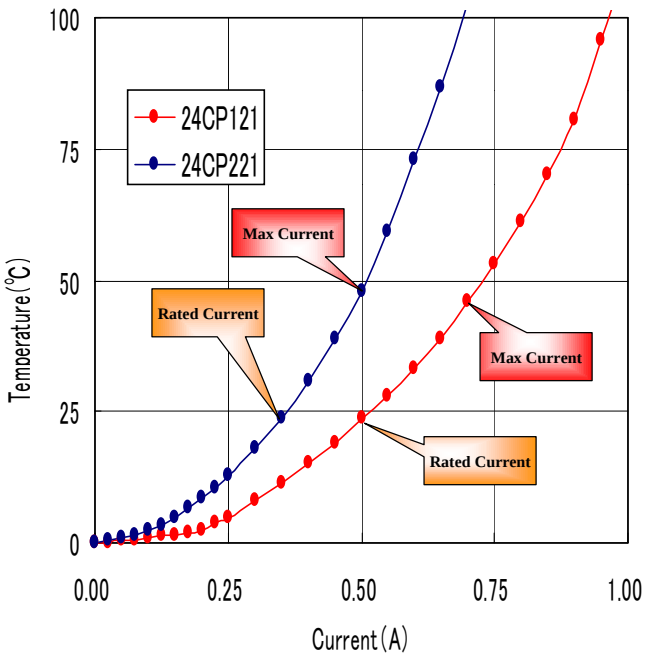
Land Compatible for 0402×2 chip jumper (EXB24VR000)

No. K0616BKE221

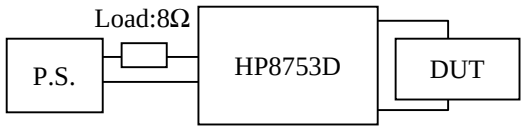
2 mode Noise Filter (High Current type)

Technical Data

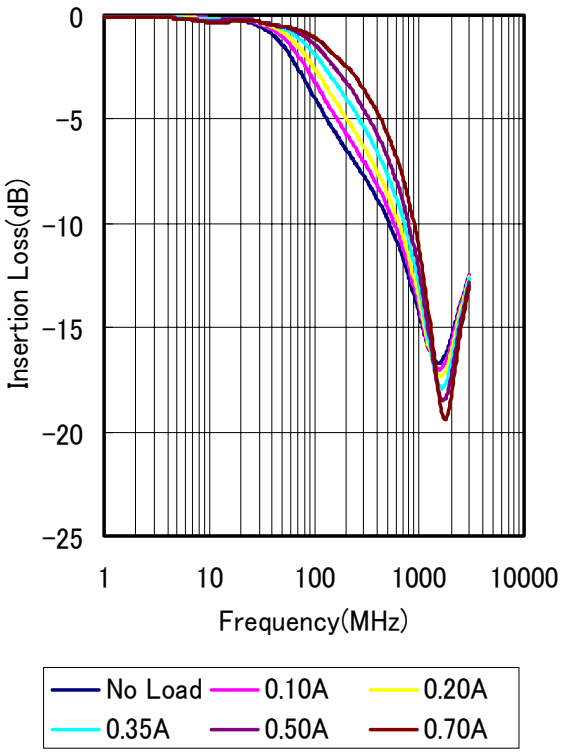
Over Current Characteristic vs. Surface Temperature



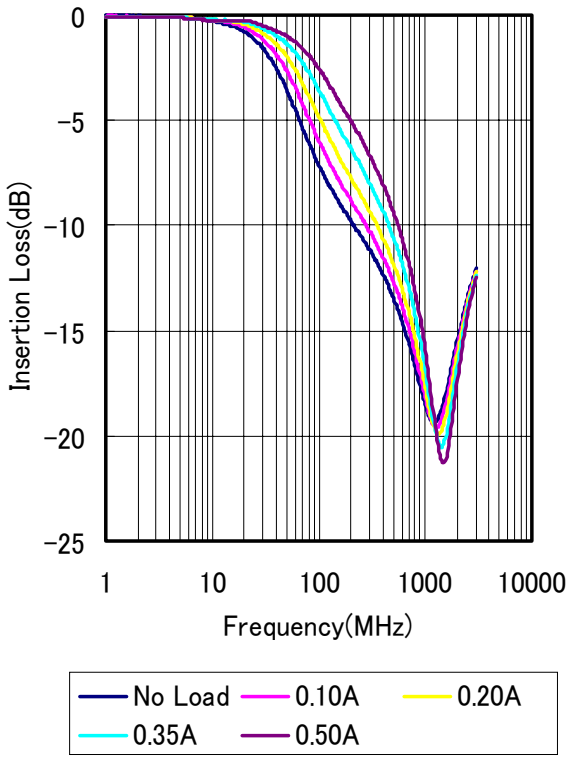
DC Superposed Insertion Loss



EXC24CP121



EXC24CP221



Chip Bead Array 2010 Type New Product Introduction

Matsushita

Matsushita 2010 (1005×4) Size

- Product thickness : 0.5mm
- Narrow Pitch : 0.5mm
  (Compatible with SSOP pitch)
  *Simple pattern layout
  Shortest the wiring length of PCB Board
  → low noise design
- Compatible with the dimension of resister array
  (our company product :EXB28V)

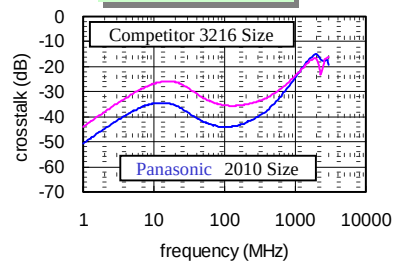
- Light weight 5mg(typical)

Smallest and lightest package

Space ratio
60% reduction

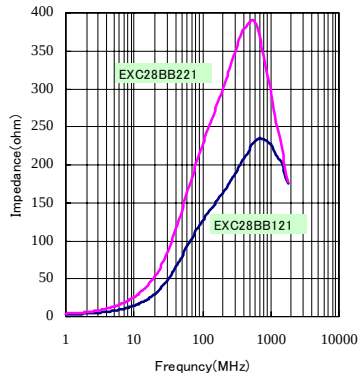
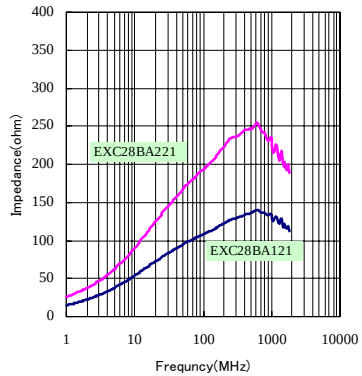
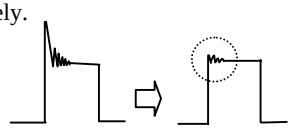
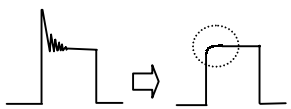
Weight ratio
75% reduction

low cross-talk



Other Suppliers3216(1608×4)Size

- thickness 0.7 to 0.9mm
- pitch 0.8mm
- weight 20mg(typical)

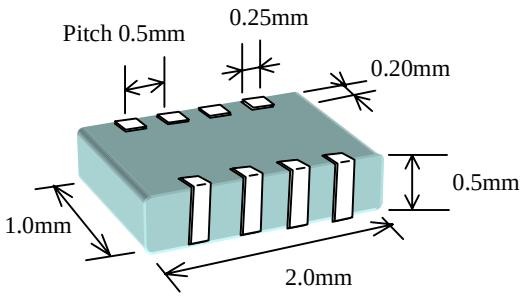
	High speed signal type EXC28BB	Ringing suppression type EXC28BA
Impedance Characteristics		
Features	•High attenuation in high frequency (f=50MHz~) •In the frequency range between 80 MHz to 500MHz , impedance curve rises sharply to suppress the noise effectively. 	•Suppress the ringing without dulling the wave form. 
Applications	•PC VGA chip data line •LCD module data line •DSC, PDA •NAVI •MD, CD Portable	•HDD E-IDE (Ultra-DMA33) •CD-ROM, CD-R, CD-RW •DVD-ROM

Matsushita Electronic Components

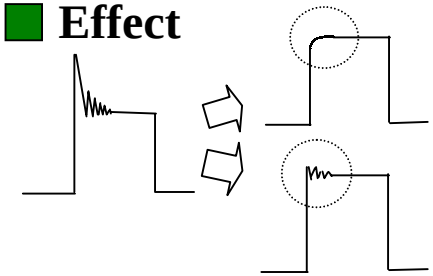
Chip Bead Array (4 line): EXC28B

Appearance

Dimensions



Effect



EXC28BA

For high speed data line

Suppress the ringing

EXC28BB

High attenuation in high frequency (80MHz~)

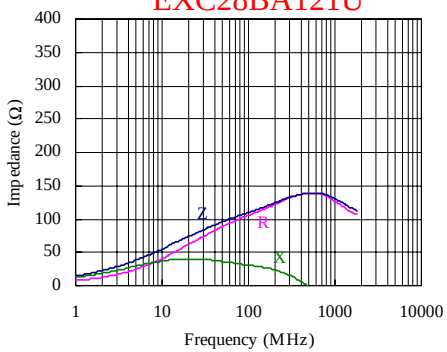
Reduce the noise without dulling the wave form

Specifications

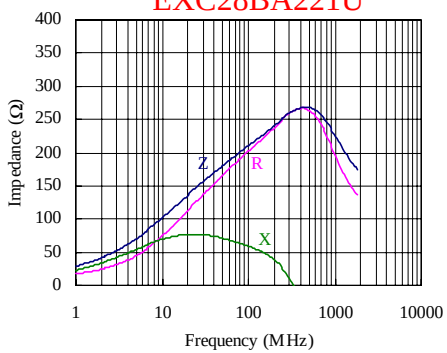
Part Number	Impedance in 100MHz (Ω)	Rated I (mA)	DCR (Ω)
EXC28BA121	120 ±25%	100	0.5
EXC28BA221	220 ±25%	100	0.7
EXC28BB121	120 ±25%	100	0.5
EXC28BB221	220 ±25%	100	0.7

Impedance Characteristics (Typical)

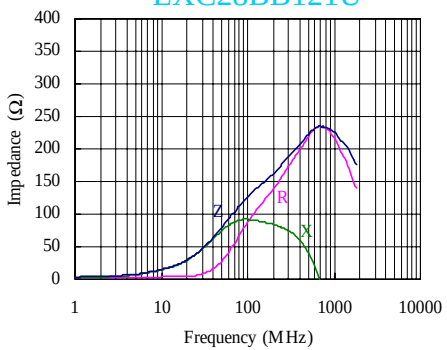
EXC28BA121U



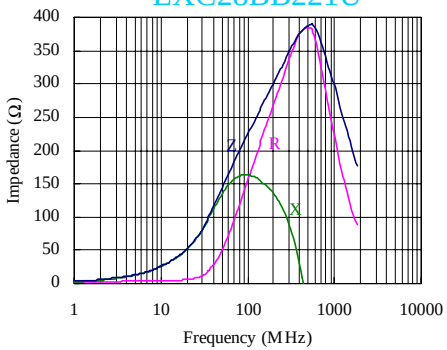
EXC28BA221U



EXC28BB121U



EXC28BB221U



Features

- Compatible with SSOP package (0.5mm pitch)
- Space saving 60% area compared with 1005 (inch) array
- Light weight (1/4 weight compared with 1005 (inch) array)
- EXC28BA: Suppress the ringing (High loss from lower frequency)
- EXC28BB: Reduce the noise without dulling the wave form
  (High loss in high frequency (over 80MHz))
- Excellent Cross Talk Characteristics (100MHz: <-30dB)

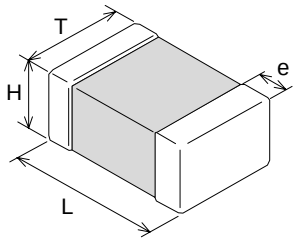
Applications

Mobile-phone, PC, DSC, PDA, Navigation System, Game etc.

Matsushita Electronic Components

Chip Bead Core for high power line : EXCML

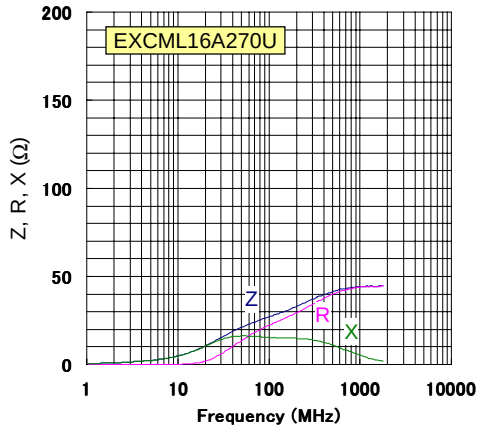
Dimensions

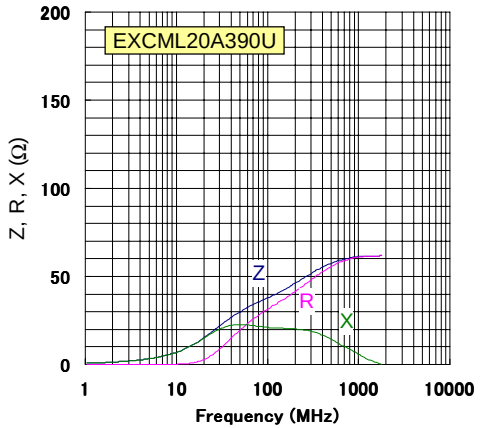


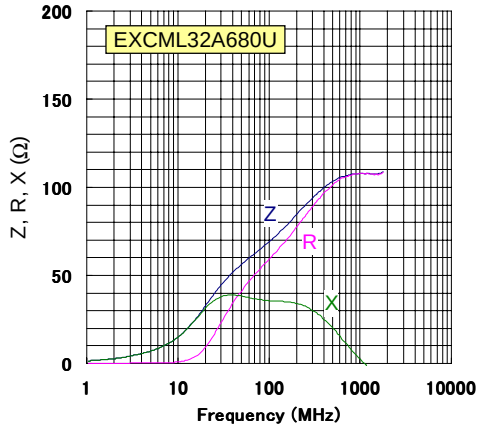
Type	L	H	T	e
EXCML16	1.6±0.2	0.8 ±0.2	0.8±0.2	(0.4)
	.063±.008	.031±.008	.031±.008	(.02)
EXCML20	2.0±0.2	1.25±0.2	0.9±0.2	(0.5)
	.079±.008	.049±.008	.035±.008	(.02)
EXCML32	3.2±0.3	1.6 ±0.3	0.9±0.2	(0.6)
	.126±.012	.063±.012	.035±.008	(.02)
EXCML45	4.5±0.3	1.6 ±0.3	1.1±0.2	(0.6)
	.177±.012	.063±.012	.043±.008	(.02)

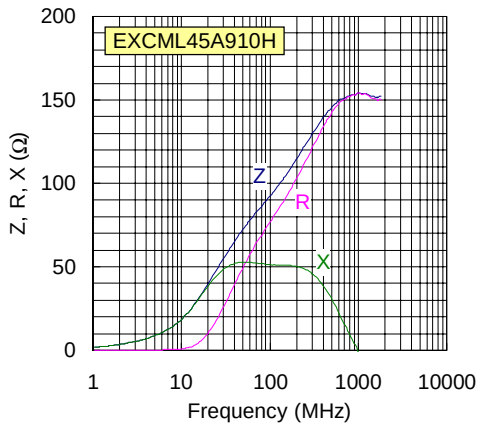
Appearance

Impedance Characteristics (Typical)









Specifications

Size (mm/inch)	Part No.	Impedance at 100MHz (Ω)	Rated I. (A)	DCR (mΩ)
1608/0603	EXCML16A270	27 ±25%	4	6
2012/0805	EXCML20A390	39 ±25%	4	8
3216/1206	EXCML32A680	68 ±25%	3	12
4516/1806	EXCML45A910	91 ±25%	3	16

Features

Low DCR ⇨ Application: **High Current Power Line**

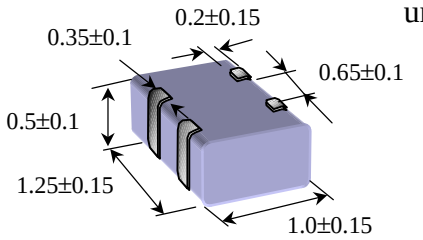
New smaller size

Common Mode Noise Filter

Common Mode Noise Filter for USB 1.1

Dimensions

unit:mm



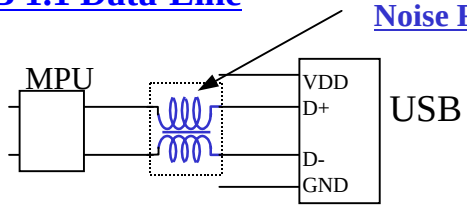
Specifications

Part Number	Impedance(Ω) at 100MHz		Rated Voltage	Rated Current	DCR
	Common mode	Differential mode	(V DC)	(mA)	(Ω)
EXC24CC271U	270ohm (Typ.)	160 ohm Max.	5	100	1.5

Applications

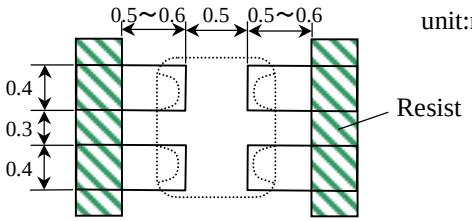
USB 1.1 Data-Line

Common Mode Noise Filter



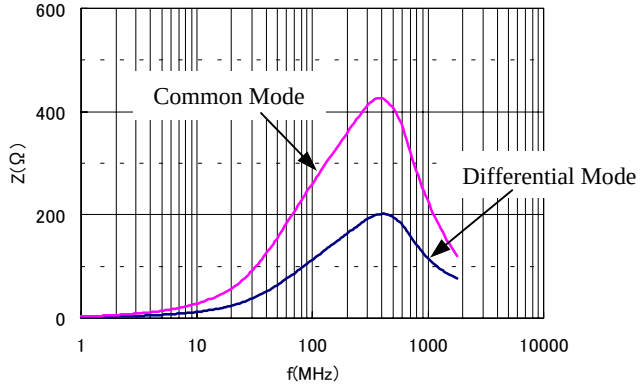
Recommended Land Pattern Design

unit:mm

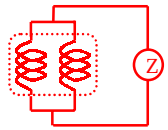


Land Compatible for 0402×2 chip jumper (EXB24VR000)

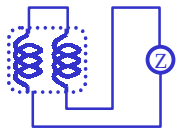
Impedance Characteristics(Typical)



・Common Mode

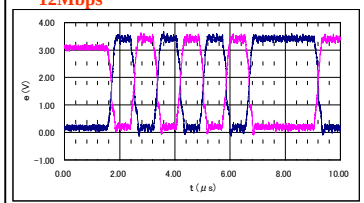
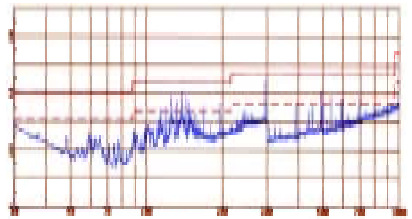


・Differential Mode



Effects of USB conditions

- **Bit Error countermeasure**
- **Radiation noise suppression**

Noise Filter	Transmission Wave Form	Radiation Noise Level
No Filter	12Mbps 	
Common Mode Noise Filter	12Mbps