



Automotive Grade EMI Components

Signal Current Ferrite Beads
High Current Ferrite Beads
Signal Current T-Filters
High Current T-Filters
CAN-Bus Common Mode Chokes

**MULTILAYER SMD POWER BEADS MPZ series****FEATURES**

- Prevention of radiation noise from DC POWER LINE
- LOW RDC characteristics because of Ag internal electrode Instead of Ag-Pd
- 2012, 3216(in mm) Chip selection

APPLICATION

- USB, IEEE1394 ,SCSI interface lines
- DVD, Video game, HDD
- Personal Computers and peripherals

PACKAGING

MPZ2012 : 4000 pcs /reel

MPZ3216 : 2000 pcs /reel

PRODUCT IDENTIFICATION

MPZ 2012 S 331 A
(1) (2) (3) (4) (5)

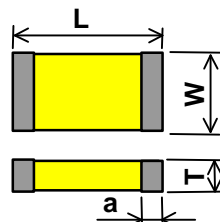
(1) Series Name

(2) Dimension

(3) Ferrite materials name

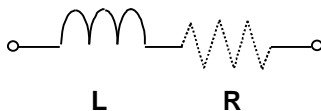
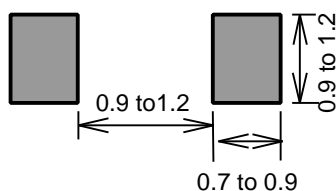
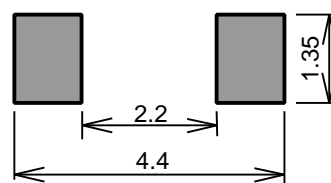
(4) Impedance (100MHz)

(5) Characteristics type

DIMENSIONS

(in mm)

TYPE	L	W	T
MPZ2012	2.0 ^{+0.3} _{-0.1}	1.25±0.2	0.85±0.2
MPZ3216	3.2±0.3	1.6±0.3	1.1±0.3

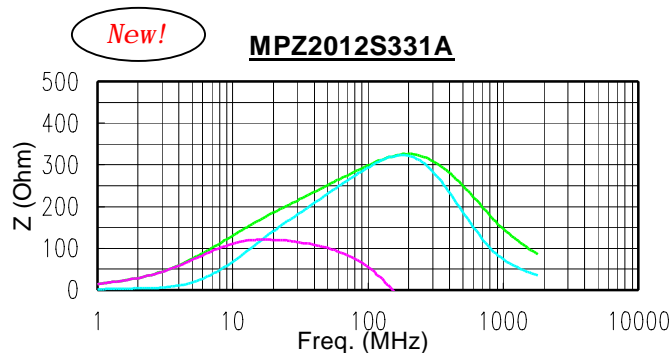
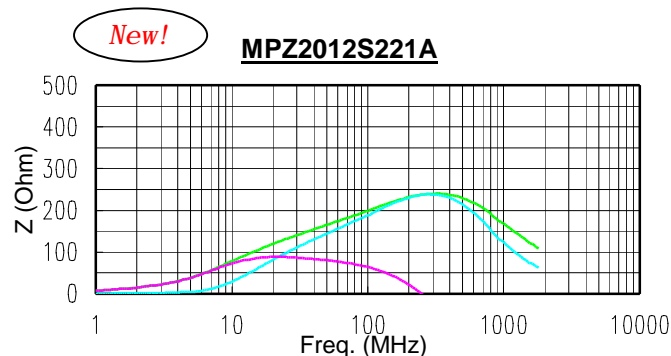
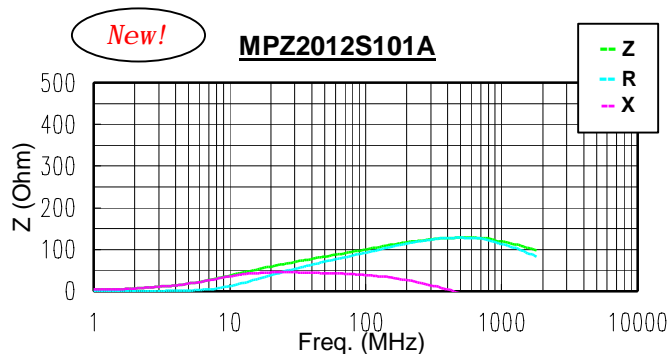
SCHEMATICS**RECOMMENDED PATTERN DIMENSION (in mm)****MPZ2012 Series****MPZ3216 Series**

**ELECTRICAL CHARACTERISTICS**

Operating temperature range : -25 ~ 85°C

Storage temperature : -40 ~ 85°C

Part number	Impedance at 100MHz Z (Ohm) (typ)	Resistance Rdc (Ohm) max. (typ.)	Current rating max. (A)
MPZ2012S300A	30	0.01 (0.006)	2.5
New! MPZ2012S101A	100	0.02(0.01)	4.0
New! MPZ2012S221A	220	0.04(0.02)	3.0
New! MPZ2012S331A	330	0.05(0.03)	2.5
MPZ3216S500A	50	0.01 (0.004)	3.0

IMPEDANCE CHARACTERISTICS**NOTES**● **Similar Products**SMD Beads for signal Line : **MMZ Series (1608,2012,3216 type)**Multi Line, Power Line : **ZBDS5101 Series**Common Mode Filter for DC Line(2A-5A): **ZJYS Series**

FERRITE CHIP EMI FILTERS ACF SERIES

FEATURES

The ACF series is a T-type EMI filter family with 2 beads and 1 capacitor packed into 1 single chip.
High attenuation in a small case size is possible due to a magnetic shield structure.
Even larger attenuation is possible by using a circuit with a stabilized ground.

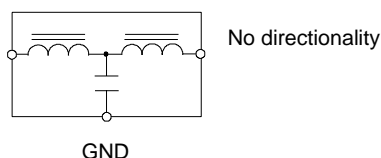
ACF3218 series

18 different suppressors are available, completely covers 11~700MHz. (25dB attenuation)

APPLICATION

EMC control for high speed digital circuit like a clock line and RGB lines.
EMC control for all digital circuit with a stabilized ground.

EQUIVALENT CIRCUIT

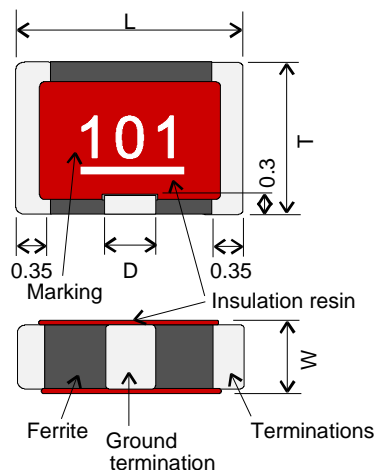


PRODUCT IDENTIFICATION

ACF321825 - 223 - T
(1) (2) (3)

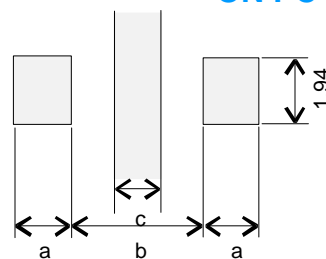
- (1) Series, Case size
- (2) Capacitance 223 : 22000pF
- (3) Packaging style T : Taping ø180mm reel
TL : Taping ø330mm reel
B : Bulk

SHAPES AND DIMENSIONS



unit : mm				
Type	L	W	T	D
ACF321825	3.2±0.3	1.8±0.2	2.5±0.25	0.6

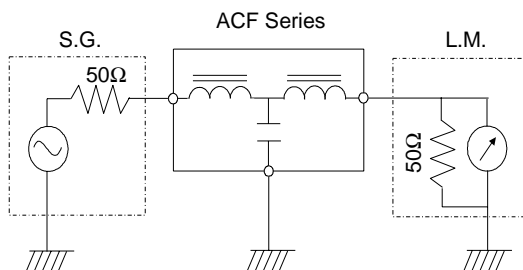
RECOMMENDED PATTERNS ON PC BOARD



unit : mm			
Type	a	b	c
ACF321825	1.4	2.2	0.6

These products are only for reflow soldering.

MEASURING CIRCUIT



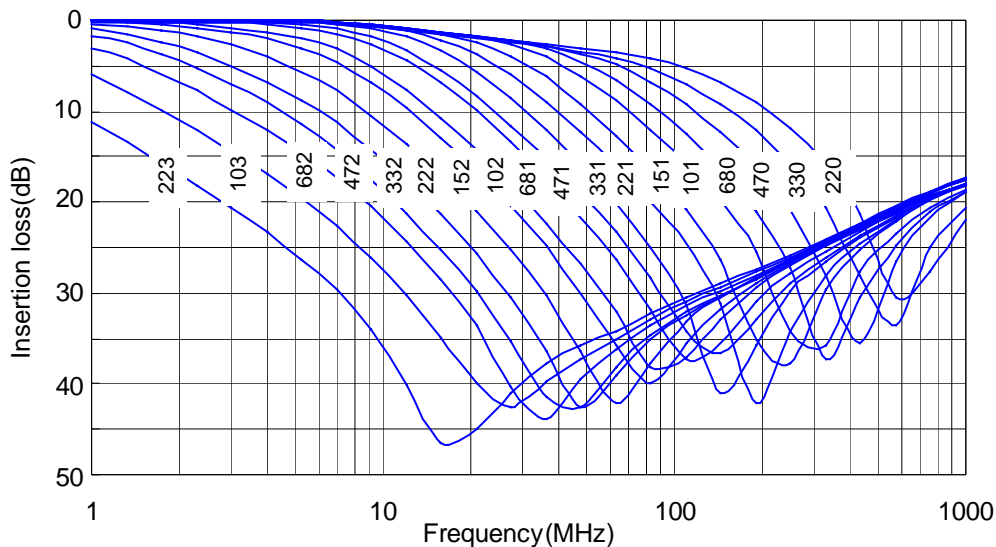
ELECTRICAL CHARACTERISTICS (ACF321825 SERIES)

Temp. -40C to +125C DC resistance : 0.15(Ω) max. , Rated voltage : DC 50(V) max. , Rated current : DC 300(mA) max.

Part No.	Marking	Capacitance (pF)	Max. attenuation frequency (MHz)	25dB attenuation frequency range (MHz)
ACF321825-223	223	22000	17	11 ~ 55
ACF321825-103	103	10000	27	17 ~ 60
ACF321825-682	682	6800	37	22 ~ 75
ACF321825-472	472	4700	45	30 ~ 85
ACF321825-332	332	3300	55	37 ~ 90
ACF321825-222	222	2200	65	45 ~ 105
ACF321825-152	152	1500	80	60 ~ 115
ACF321825-102	102	1000	100	80 ~ 140
ACF321825-681	681	680	120	95 ~ 150
ACF321825-471	471	470	145	120 ~ 180
ACF321825-331	331	330	165	130 ~ 210
ACF321825-221	221	220	200	170 ~ 250
ACF321825-151	151	150	240	205 ~ 280
ACF321825-101	101	100	300	265 ~ 340
ACF321825-680	680	68	370	340 ~ 420
ACF321825-470	470	47	450	420 ~ 500
ACF321825-330	330	33	530	500 ~ 600
ACF321825-220	220	22	650	600 ~ 700

Packaging styles are added at the end of a TDK item.
(T:Taping ø180mm Reel, TL:Taping ø330mm Reel, B:Bulk)
See product identification above, (3).

INSERTION LOSS vs. FREQUENCY CHARACTERISTICS(ACF321825 SERIES)



FERRITE CHIP EMI FILTERS **ACH** SERIES (High DC current type)

FEATURES

This ACH series is a high current version of the T-type EMI filter.

1.5A (ACH3218) and 2A (ACH4518C) current handling capability are available.

Due to the greatly lower DC resistance, the ACH series perfectly minimizes the power consumption of portable equipment.

ACH3218

20V 1.5A max. 18 different characteristics

ACH4518C

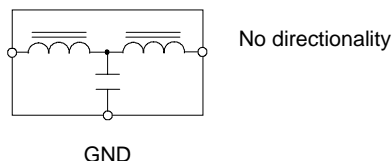
50V 2.0A max. 10 different characteristics

APPLICATION

EMC control for high current lines like battery lines and AC-adaptor lines.

Perfect for DC power circuits with stabilized ground.

EQUIVALENT CIRCUIT



PRODUCT IDENTIFICATION

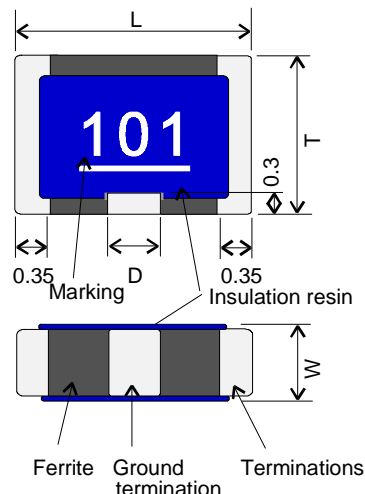
ACH3218 - 223 - T
(1) (2) (3)

(1) Series, Case size

(2) Capacitance 223 : 22000pF

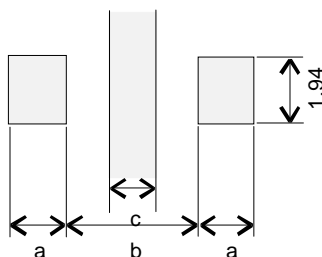
(3) Packaging style T : Taping ø180mm reel
TL : Taping ø330mm reel
B : Bulk

SHAPES AND DIMENSIONS



unit : mm				
Type	L	W	T	D
ACH3218	3.2±0.3	1.8±0.2	2.5±0.25	0.6
ACH4518C	4.5±0.4	1.8±0.2	3.2±0.3	1.0

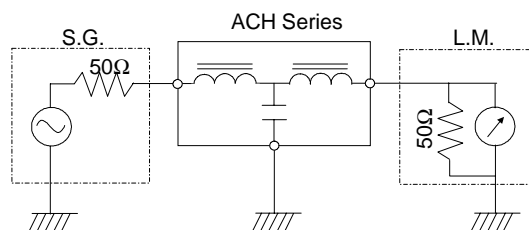
RECOMMENDED PATTERNS ON PC BOARD



unit : mm			
Type	a	b	c
ACH3218	1.4	2.2	0.6
ACH4518C	1.75	3.5	1.0

These products are only for reflow soldering.

MEASURING CIRCUIT



ELECTRICAL CHARACTERISTICS (ACH3218 SERIES)

DC resistance : 0.06(Ω) max. , Rated voltage : DC 20(V) max. , Rated current : DC 1.5(A) max.

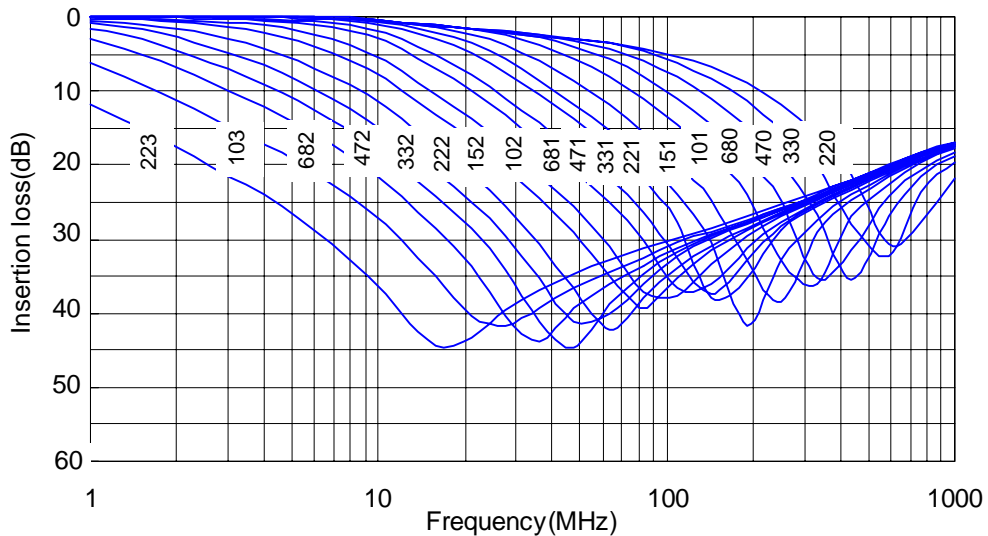
Part No.	Marking	Capacitance (pF)	Max. attenuation frequency (MHz)	25dB attenuation frequency range (MHz)
ACH3218-223	223	22000	17	11 ~ 55
ACH3218-103	103	10000	27	17 ~ 60
ACH3218-682	682	6800	37	22 ~ 75
ACH3218-472	472	4700	45	30 ~ 85
ACH3218-332	332	3300	55	37 ~ 90
ACH3218-222	222	2200	65	45 ~ 105
ACH3218-152	152	1500	80	60 ~ 115
ACH3218-102	102	1000	100	80 ~ 140
ACH3218-681	681	680	120	95 ~ 150
ACH3218-471	471	470	145	120 ~ 180
ACH3218-331	331	330	165	130 ~ 210
ACH3218-221	221	220	200	170 ~ 250
ACH3218-151	151	150	240	205 ~ 280
ACH3218-101	101	100	300	265 ~ 340
ACH3218-680	680	68	370	340 ~ 420
ACH3218-470	470	47	450	420 ~ 500
ACH3218-330	330	33	530	500 ~ 600
ACH3218-220	220	22	650	600 ~ 700

Packaging styles are added at the end of a TDK item.

(T:Taping ø180mm Reel, TL:Taping ø330mm Reel, B:Bulk)

capacitor values 682, 472, 332, 222, 152, 102, 681, 471 ACF rating 50Volts

INSERTION LOSS vs. FREQUENCY CHARACTERISTICS(ACH3218 SERIES)



ELECTRICAL CHARACTERISTICS (ACH4518C SERIES)

DC resistance : 0.04(Ω) max.

Rated voltage : DC 50(V) max. (333A : 16Vmax.) Rated current DC 2.0(A) max.

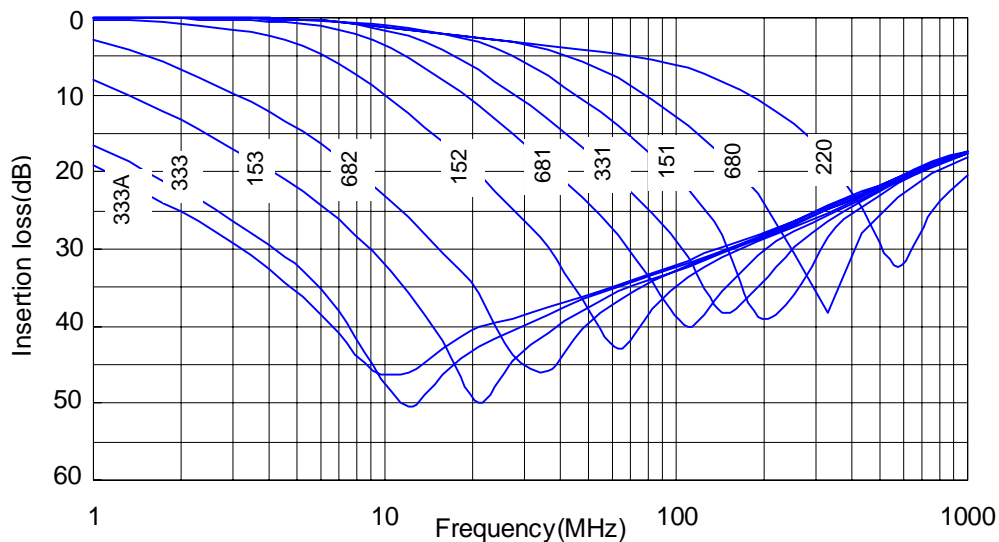
Part No.	Marking	Capacitance (pF)	Max. attenuation frequency (MHz)	25dB attenuation frequency range (MHz)
ACH4518C-333A	333	33000	10	6 ~ 50
ACH4518C-333	333	33000	10	6 ~ 50
ACH4518C-153	153	15000	20	12 ~ 70
ACH4518C-682	682	6800	30	20 ~ 80
ACH4518C-152	152	1500	70	50 ~ 115
ACH4518C-681	681	680	105	85 ~ 145
ACH4518C-331	331	330	150	130 ~ 190
ACH4518C-151	151	150	210	180 ~ 250
ACH4518C-680	680	68	330	290 ~ 360
ACH4518C-220	220	22	570	530 ~ 620

Packaging styles are added at the end of a TDK item.

(T:Taping ø180mm Reel, TL:Taping ø330mm Reel, B:Bulk)

See product identification above, (3).

INSERTION LOSS vs. FREQUENCY CHARACTERISTICS(ACH4518C SERIES)



EMC Components

Ferrite Beads

SMD

MMZ Series MMZ1005, 1608, 2012 Types

FEATURES

- Small bead inductor series offers 4 construction materials and 3 sizes (1×0.5, 1.6×0.8, and 2×1.3mm).
- Size standardized for use by automatic assembly equipment. No preferred orientation.
- Either flow or reflow soldering methods can be used due to electroplating of the terminal electrodes.
- High reliability due to an entirely monolithic structure.
- Closed magnetic circuit structure allows high-density installation while preventing crosstalk.
- Low DC resistance structure of electrode prevents wasteful electric power consumption.

MATERIAL CHARACTERISTICS

R material: For wide frequency applications calling for broad impedance characteristics.

For digital signal line applications calling requiring good waveform integrity. Impedance values selected for effectiveness at 10 to 200MHz.

S material: Standard type that features impedance characteristics similar to those of a typical ferrite core.

For signal line applications in which the blocking region is near 100MHz. Impedance values selected for effectiveness at 40 to 300MHz.

Y material: High frequency range type intended for the 100MHz region and above.

For signal line applications in which the signal frequency is far from the cutoff frequency. Impedance values selected for effectiveness at 80 to 400MHz.

D material: For applications calling for low insertion loss at low frequencies and sharply increasing impedance at high frequencies. Designed for high impedance at high frequencies (200 to 500MHz) for signal line applications.

APPLICATIONS

PCs, CRTs, liquid crystal display panels, printers, hard disks drive, game machines, cellular phones, etc.

PRODUCT IDENTIFICATION

MMZ	1608	R	121	A	T
(1)	(2)	(3)	(4)	(5)	(6)

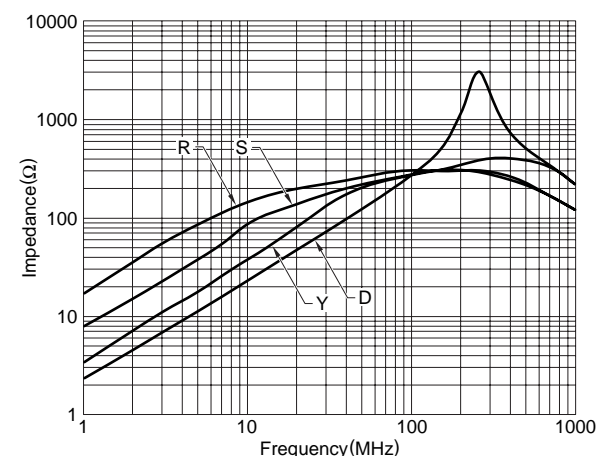
(1) Series name (4) Nominal impedance 121:120Ω at 100MHz

(2) Dimensions L×W (5) Characteristic type

(3) Material code (6) Packaging style T:Taping

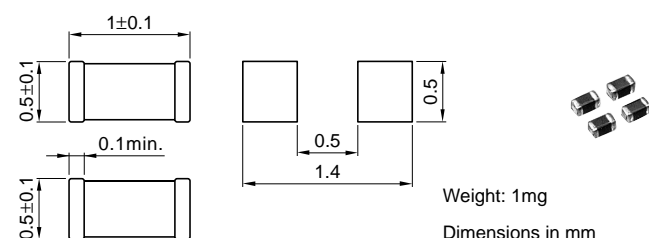
TYPICAL IMPEDANCE CHARACTERISTICS

MMZ1608(300Ω)



MMZ1005 TYPE

SHAPES AND DIMENSIONS/RECOMMENDED PC BOARD PATTERN



TEMPERATURE RANGE

Operating -55 to +125°C

PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	10000 pieces/reel

ELECTRICAL CHARACTERISTICS

Part No.	Impedance (Ω)±25% [100MHz]	DC resistance(Ω)		Rated current (mA)max.
		max.	typ.	
MMZ1005S241A	240	0.5	0.19	200
MMZ1005S601A	600	1	0.32	100
MMZ1005S800A	80	0.4	0.09	200
MMZ1005S121A	120	0.5	0.14	200

EMC Components

Ferrite Beads

SMD

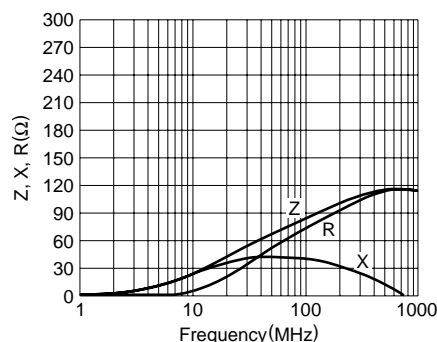
MMZ Series MMZ1005, 1608, 2012 Types

MMZ1005 TYPE

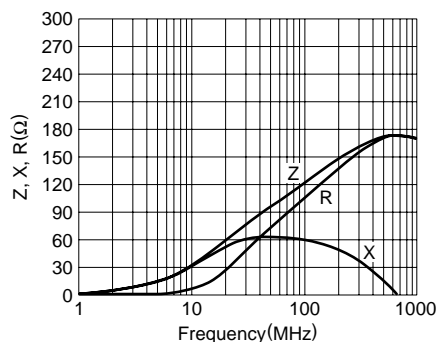
TYPICAL ELECTRICAL CHARACTERISTICS

Z, X, R vs. FREQUENCY CHARACTERISTICS

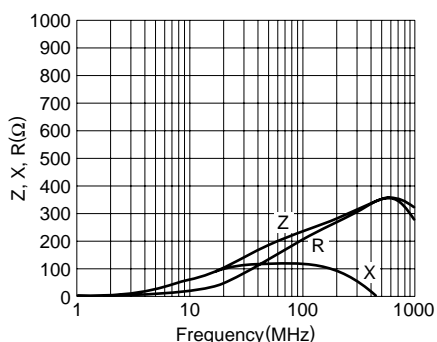
MMZ1005S800A



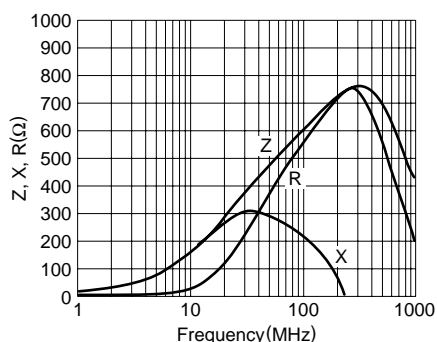
MMZ1005S121A



MMZ1005S241A

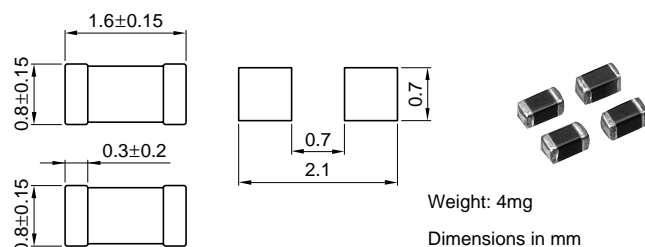


MMZ1005S601A



MMZ1608 TYPE

SHAPES AND DIMENSIONS/RECOMMENDED PC BOARD PATTERN



TEMPERATURE RANGE

Operating -55 to +125°C

PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	4000 pieces/reel

ELECTRICAL CHARACTERISTICS

Part No.	Impedance (Ω)±25% [100MHz]	DC resistance(Ω)		Rated current (mA)max.
		max.	typ.	
MMZ1608R121A	120	0.2	0.12	280
MMZ1608R301A	300	0.35	0.15	230
MMZ1608R601A	600	0.45	0.23	210
MMZ1608R102A	1000	0.6	0.34	190
MMZ1608S800A	80	0.2	0.1	280
MMZ1608S121A	120	0.2	0.12	280
MMZ1608S181A	180	0.3	0.13	230
MMZ1608S301A	300	0.35	0.17	230
MMZ1608S601A	600	0.45	0.25	210
MMZ1608S102A	1000	0.6	0.31	190
MMZ1608Y121B	120	0.2	0.11	280
MMZ1608Y301B	300	0.35	0.15	230
MMZ1608Y601B	600	0.45	0.28	210
MMZ1608Y102B	1000	0.6	0.37	190
MMZ1608Y152B	1500	0.7	0.48	150
MMZ1608D800B	80	0.5	0.25	190
MMZ1608D121B	120	0.6	0.3	180
MMZ1608D301B	300	1	0.5	150

EMC Components

Ferrite Beads

SMD

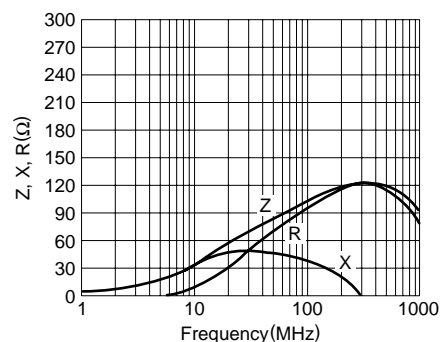
MMZ Series MMZ1005, 1608, 2012 Types

MMZ1608 TYPE

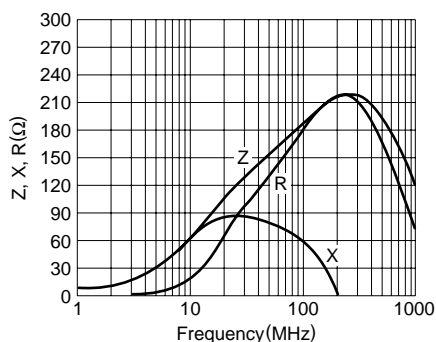
TYPICAL ELECTRICAL CHARACTERISTICS

Z, X, R vs. FREQUENCY CHARACTERISTICS

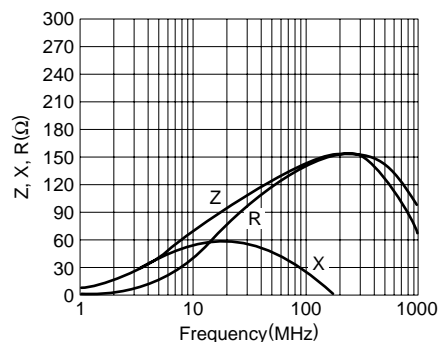
MMZ1608S800A



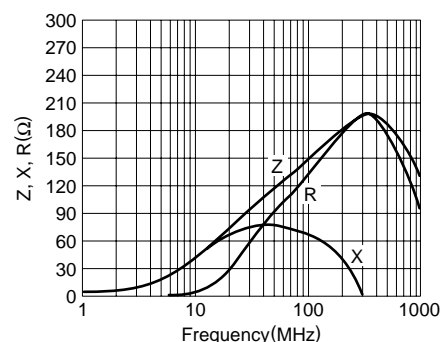
MMZ1608S181A



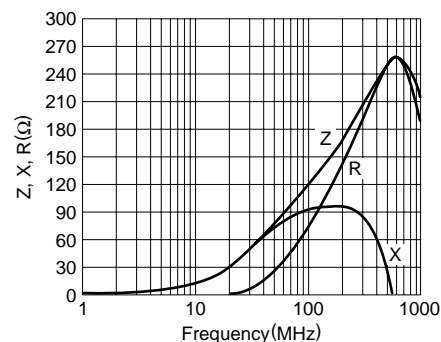
MMZ1608R121A



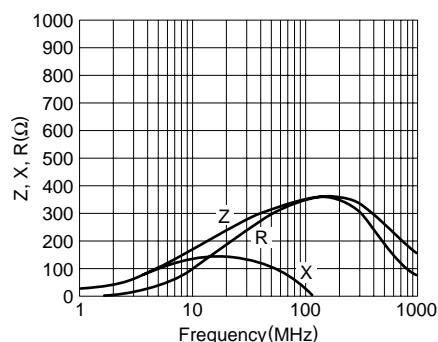
MMZ1608S121A



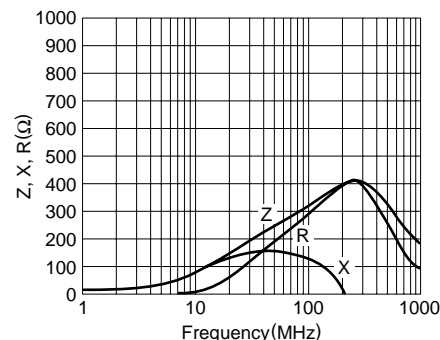
MMZ1608Y121B



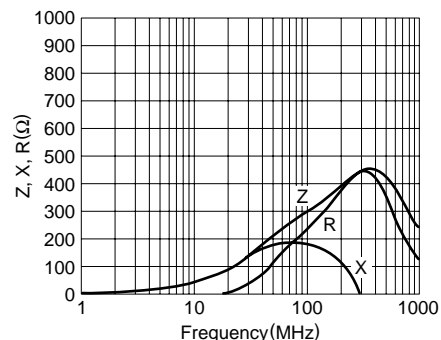
MMZ1608R301A



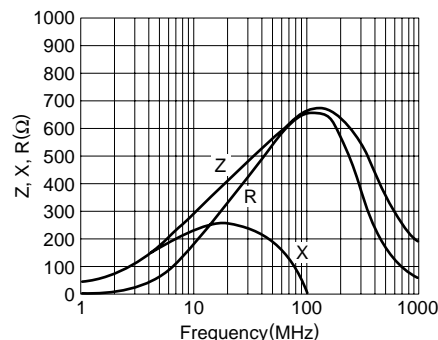
MMZ1608S301A



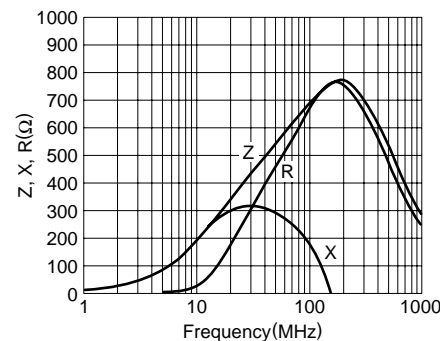
MMZ1608Y301B



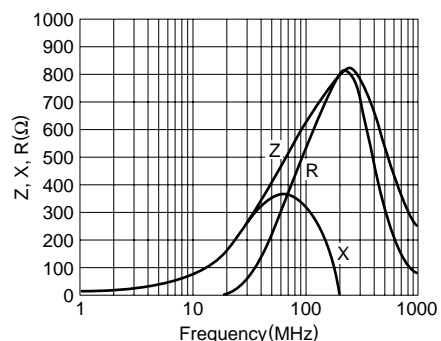
MMZ1608R601A



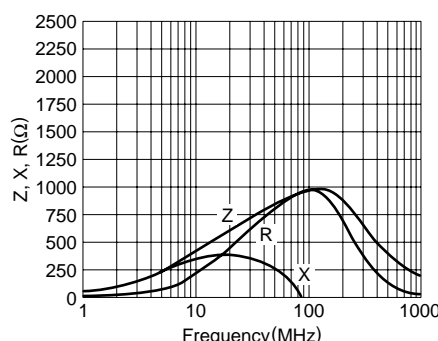
MMZ1608S601A



MMZ1608Y601B



MMZ1608R102A



EMC Components

Ferrite Beads

SMD

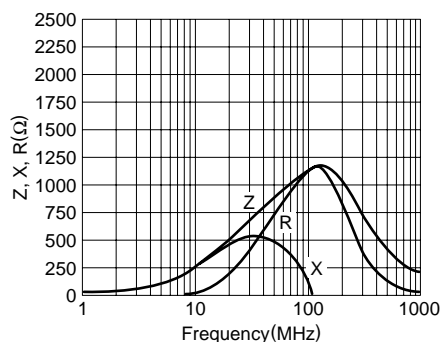
MMZ Series MMZ1005, 1608, 2012 Types

MMZ1608 TYPE

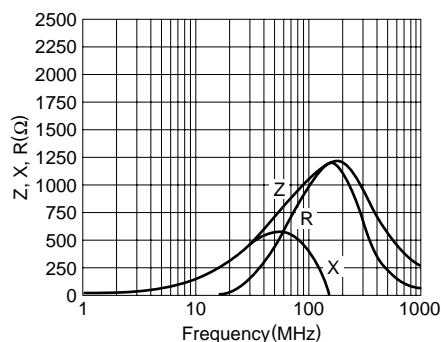
TYPICAL ELECTRICAL CHARACTERISTICS

Z, X, R vs. FREQUENCY CHARACTERISTICS

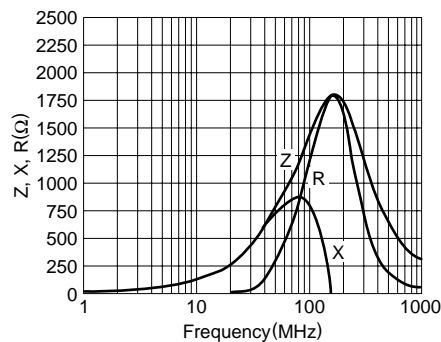
MMZ1608S102A



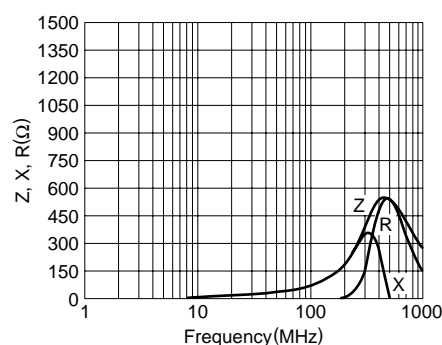
MMZ1608Y102B



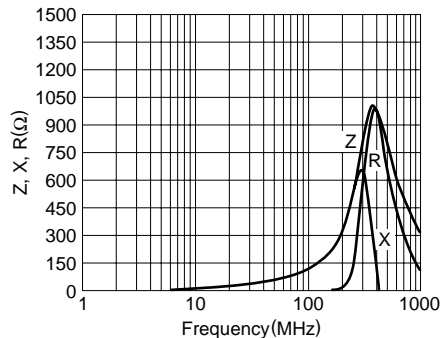
MMZ1608Y152B



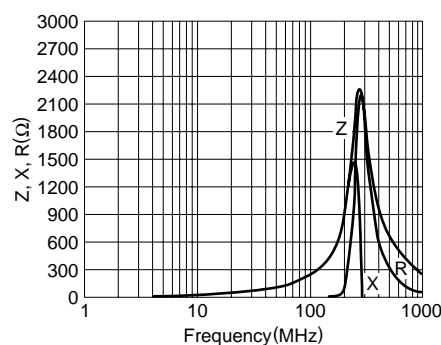
MMZ1608D800B



MMZ1608D121B

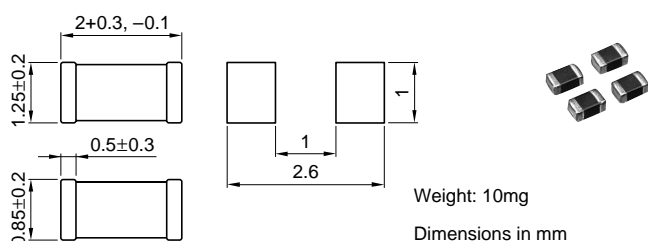


MMZ1608D301B



MMZ2012 TYPE

SHAPES AND DIMENSIONS/RECOMMENDED PC BOARD PATTERN



TEMPERATURE RANGE

Operating	-55 to +125°C
-----------	---------------

PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	4000 pieces/reel

ELECTRICAL CHARACTERISTICS

Part No.	Impedance (Ω)±25% [100MHz]	DC resistance(Ω)		Rated current (mA)max.
		max.	typ.	
MMZ2012R121A	120	0.15	0.07	310
MMZ2012R301A	300	0.2	0.08	270
MMZ2012R601A	600	0.3	0.14	240
MMZ2012R102A	1000	0.35	0.19	230
MMZ2012S800A	80	0.1	0.05	320
MMZ2012S121A	120	0.15	0.06	310
MMZ2012S181A	180	0.2	0.07	270
MMZ2012S301A	300	0.2	0.07	270
MMZ2012S601A	600	0.3	0.13	240
MMZ2012S102A	1000	0.35	0.17	230
MMZ2012Y121B	120	0.15	0.07	310
MMZ2012Y301B	300	0.2	0.1	270
MMZ2012Y601B	600	0.3	0.15	240
MMZ2012Y102B	1000	0.35	0.2	230
MMZ2012Y152B	1500	0.4	0.26	200
MMZ2012Y202B	2000	0.5	0.31	200
MMZ2012D800B	80	0.3	0.12	250
MMZ2012D121B	120	0.4	0.14	250
MMZ2012D301B	300	0.65	0.29	200

EMC Components

Ferrite Beads

SMD

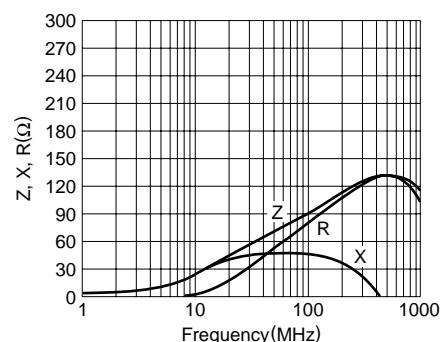
MMZ Series MMZ1005, 1608, 2012 Types

MMZ2012 TYPE

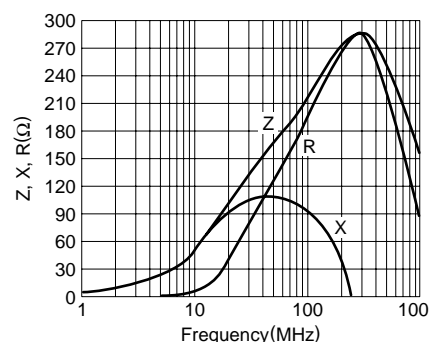
TYPICAL ELECTRICAL CHARACTERISTICS

Z, X, R vs. FREQUENCY CHARACTERISTICS

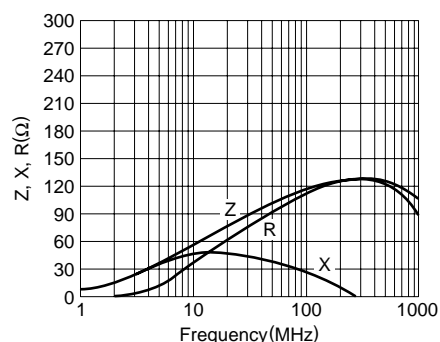
MMZ2012S800A



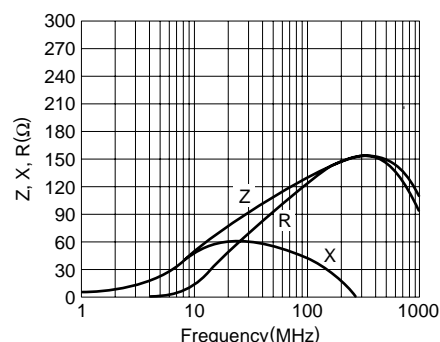
MMZ2012S181A



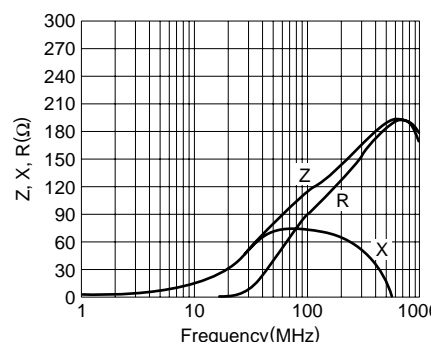
MMZ2012R121A



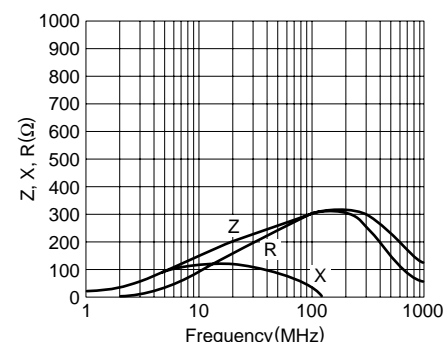
MMZ2012S121A



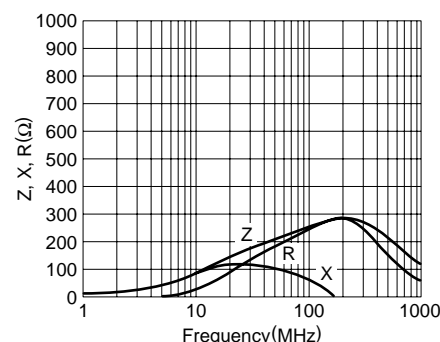
MMZ2012Y121B



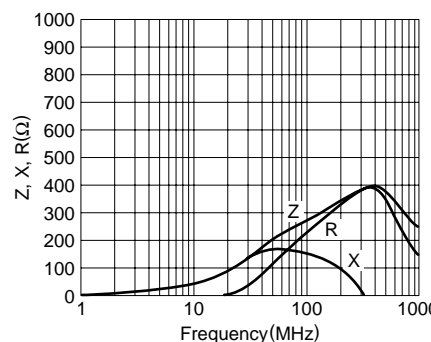
MMZ2012R301A



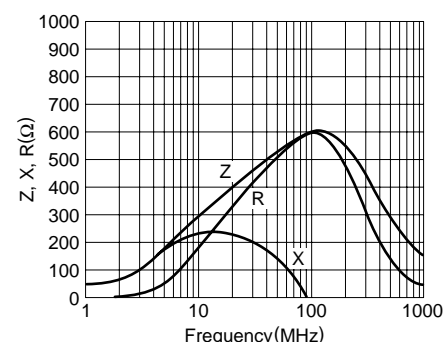
MMZ2012S301A



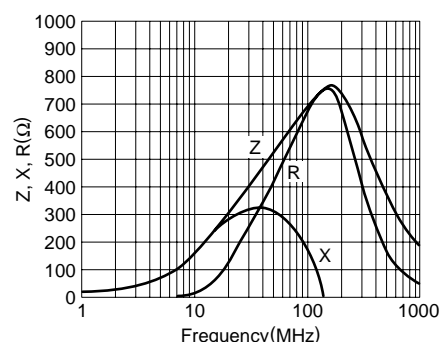
MMZ2012Y301B



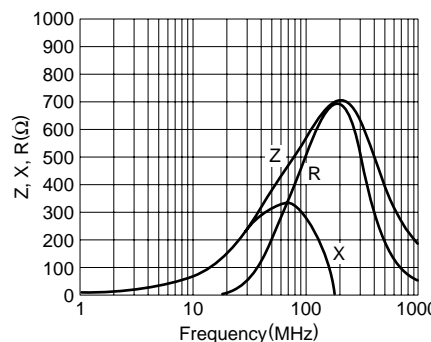
MMZ2012R601A



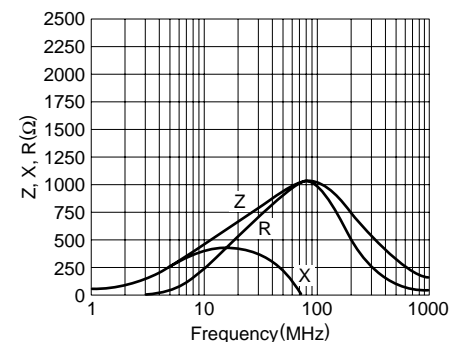
MMZ2012S601A



MMZ2012Y601B



MMZ2012R102A



EMC Components

Ferrite Beads

SMD

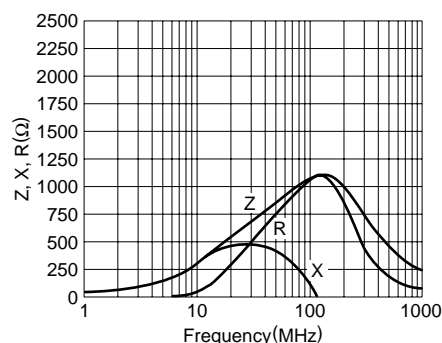
MMZ Series MMZ1005, 1608, 2012 Types

MMZ2012 TYPE

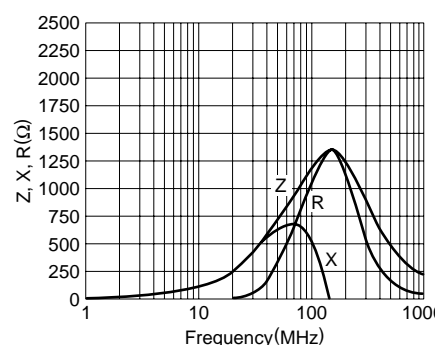
TYPICAL ELECTRICAL CHARACTERISTICS

Z, X, R vs. FREQUENCY CHARACTERISTICS

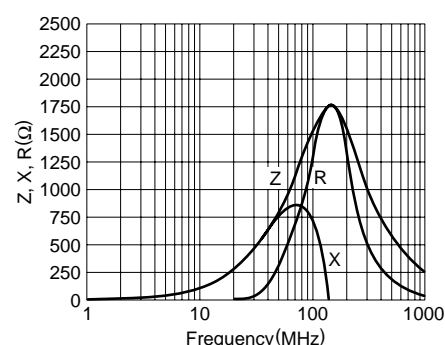
MMZ2012S102A



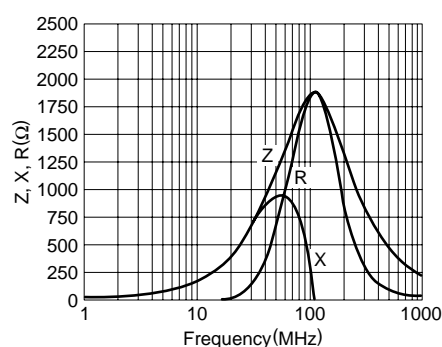
MMZ2012Y102B



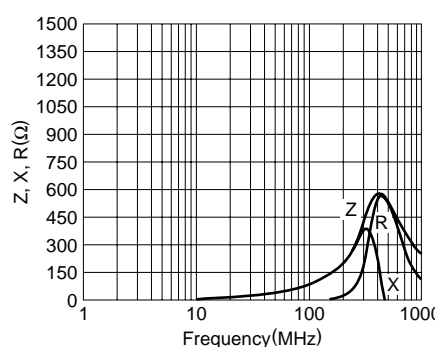
MMZ2012Y152B



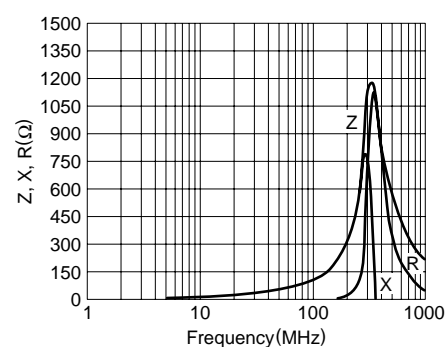
MMZ2012Y202B



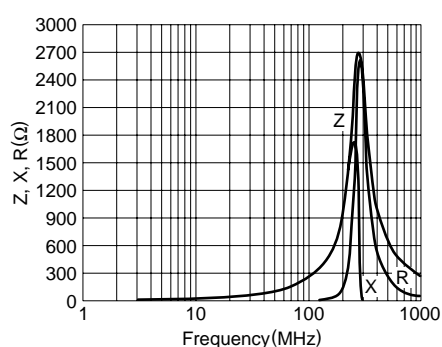
MMZ2012D800B



MMZ2012D121B



MMZ2012D301B



EMC Components

Common-Mode Choke Coils for Signal Line SMD

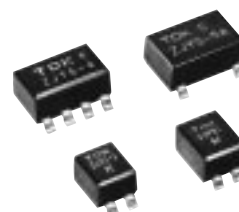
ZJYS, ZJYS-2PL Series

FEATURES

- A common-mode filter for distortion-free noise removal from transmitted signals. Optimized for transmission of high quality signals.
- Best filter for countering the common-mode noise resulting from data signal processing by PCs, phone equipment, etc.
- SMD-type designed for surface mounting.
- Due to a maximum current tolerance of 5A, can also be used to counter power line noise.
- The ZJYS81R5-2PL is a high inductance common-mode filter designed to use with a CAN bus.
- The "T" designation at the end of the product code indicates tape mounting.

APPLICATIONS

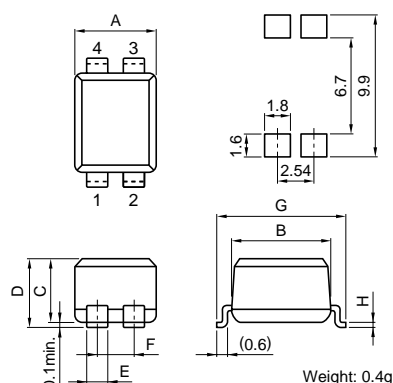
Personal computers, telephones, LANs, ISDNs, digital PBXs, electronic games, CTVs, CD-ROM drives, 8mm video equipment, and other electronic devices.



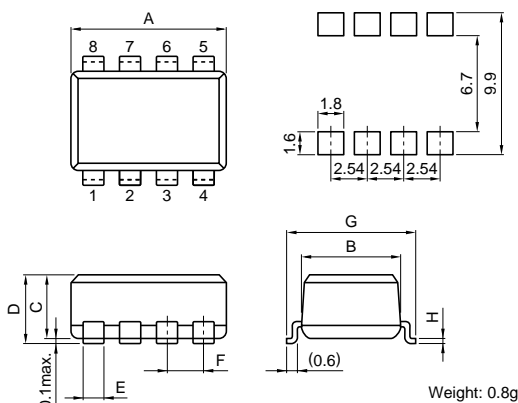
SHAPES AND DIMENSIONS/RECOMMENDED PC BOARD PATTERNS

TRANSFER MOLD

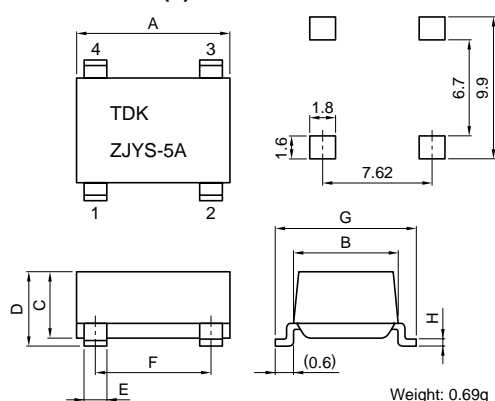
ZJYS51R5-2P(T), -2PB(T), -2PL(T), 5103-2PL(T)



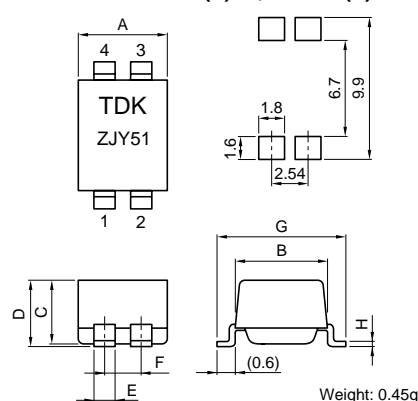
ZJYS51R5-4P(T), -M4PA(T)



ZJYS5105-2PL(T)



ZJYS81R5-2PL25(T)-G, -2PL51(T)-G



Dimensions in mm

Part No.	A max.	B max.	C max.	D max.	E	F	G max.	H
ZJYS51R5-2P(T), -2PB(T), -2PL(T), 5103-2PL(T)*	5.5	6.86	4.57	5.08	1.3	2.54±0.25	9±0.5	0.25
ZJYS51R5-4P(T), -M4PA(T)	10.5	6.86	4.57	5.08	1.3	2.54±0.25	9±0.5	0.25
ZJYS5105-2PL(T)	10.5	7.5	4.57	5.08	1.3	7.62±0.25	9±0.5	0.25
ZJYS81R5-2PL25(T)-G, -2PL51(T)-G	6	7.1	4.5	5	1.3	2.54±0.25	9±0.5	0.25

* T means the taping product.

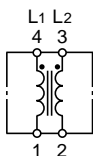
EMC Components

ZJYS, ZJYS-2PL Series

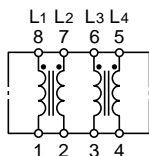
Common-Mode Choke Coils for Signal Line SMD

CIRCUIT DIAGRAMS

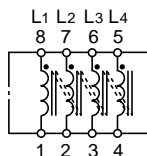
ZJYS51R5-2P(T),
-2PB(T), -2PL(T)
ZJYS5103-2PL(T)
ZJYS81R5-2PL25(T)-G
ZJYS81R5-2PL51(T)-G



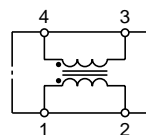
ZJYS51R5-4P(T)



ZJYS51R5-M4PA(T)



ZJYS5105-2PL(T)



ELECTRICAL CHARACTERISTICS

Part No.	ZJYS51R5-2P(T), -2PB(T)*1, -2PL(T)*2, -4P(T)	ZJYS5103-2PL(T)	ZJYS51R5-M4PA(T)
Rated voltage Edc(V)	50	50	50
Rated current (A)	2	3	0.5
Test voltage Edc(V) [Between terminals for 5s]	125	125	125
Insulation resistance (MΩ) [Between terminals at DC.50V for 1min]	100min.	100min.	100min.
DC resistance (Ω) [Each line]	0.06max.	0.03max.	0.2max.
Operating temperature range (°C)	-25 to +85	-25 to +85	-25 to +85
Impedance (Ω) [+5 to +35°C]	200min.[20 to 300MHz]	100min.[100 to 300MHz]	200min.[20 to 300MHz]

Part No.	ZJYS5105-2PL(T)	ZJYS81R5-2PL25(T)-G/-2PL51(T)-G
Rated voltage Edc(V)	50	80
Rated current (A)	5	0.5
Test voltage Edc(V) [Between terminals for 5s]	125	200
Insulation resistance (MΩ) [Between terminals at DC.50V for 1min]	100min.	100min.
DC resistance (Ω) [Each line]	0.01max.	0.25/0.3max.
Operating temperature range (°C)	-25 to +85	-40 to +125
Impedance (Ω) [+5 to +35°C]	100min.[100 to 300MHz]	600min./1000min.[10 to 100MHz]

*1 The characteristics of low area reform type.

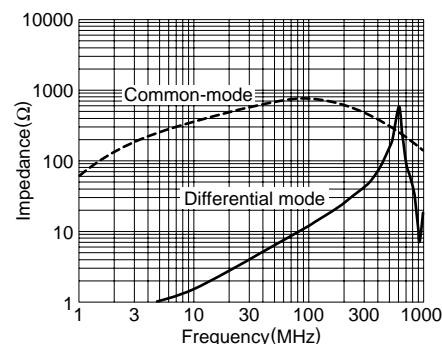
*2 Separate winding type (for communications).

• The "T" designation at the end of the product code indicates tape mounting.

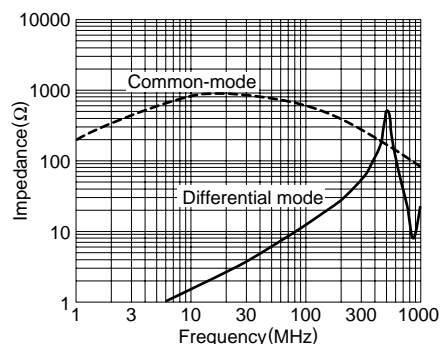
TYPICAL ELECTRICAL CHARACTERISTICS

IMPEDANCE CHARACTERISTICS (for 1 element)

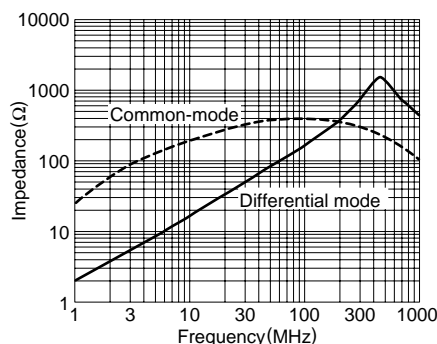
ZJYS51R5-2P, -4P



ZJYS51R5-2PB



ZJYS51R5-2PL



EMC Components

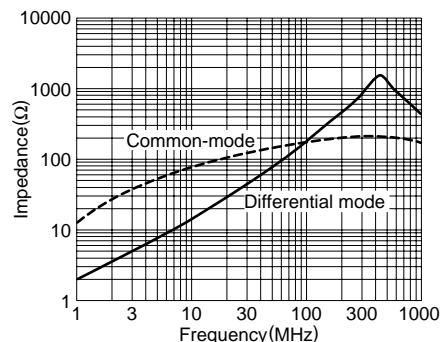
ZJYS, ZJYS-2PL Series

Common-Mode Choke Coils for Signal Line SMD

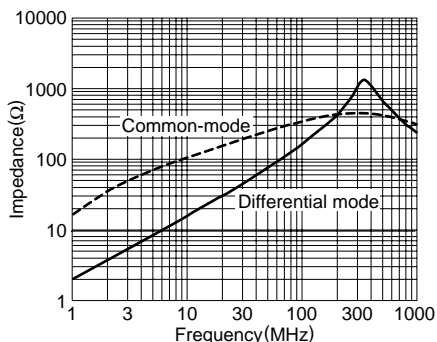
TYPICAL ELECTRICAL CHARACTERISTICS

IMPEDANCE CHARACTERISTICS (for 1 element)

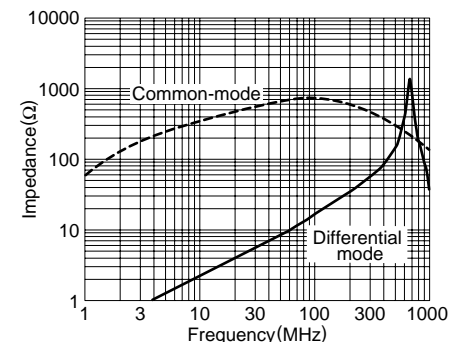
ZJYS5103-2PL



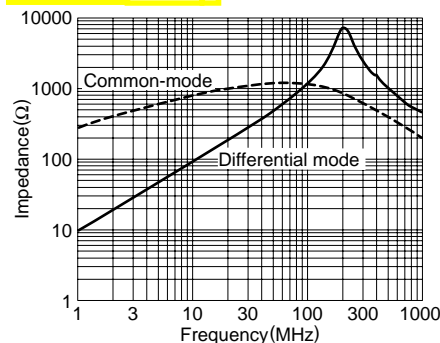
ZJYS5105-2PL



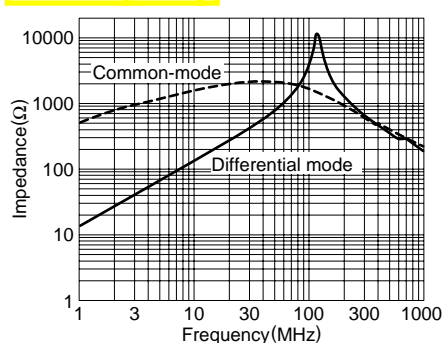
ZJYS51R5-M4PA



ZJYS81R5-2PL25-G



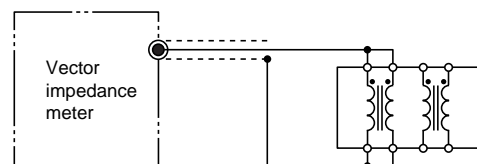
ZJYS81R5-2PL51-G



PACKAGING STYLE AND QUANTITIES

Part No.	Taping (/reel)	Bulk
ZJYS51R5-2P(T)	1500 pieces	200 pieces
ZJYS51R5-2PB(T)	1500 pieces	200 pieces
ZJYS51R5-2PL(T)	1500 pieces	200 pieces
ZJYS5103-2PL(T)	1500 pieces	200 pieces
ZJYS81R5-2PL25(T)-G	1500 pieces	200 pieces
ZJYS81R5-2PL51(T)-G	1500 pieces	200 pieces
ZJYS51R5-4P(T)	1000 pieces	100 pieces
ZJYS51R5-M4PA(T)	1000 pieces	100 pieces
ZJYS5105-2PL(T)	1000 pieces	100 pieces

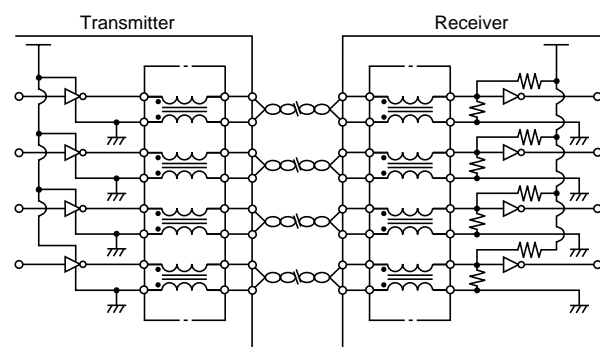
MEASURING CIRCUIT



Vector impedance meter (YHP 4191A equivalent)
Measuring at each common-mode choke coil

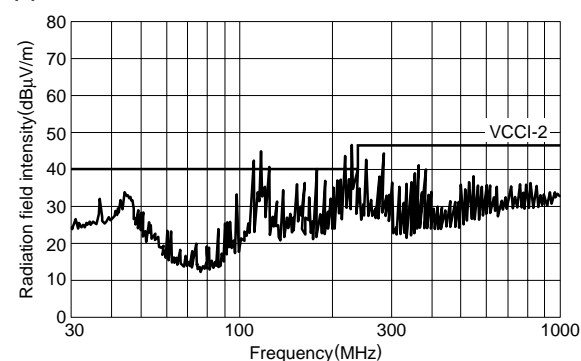
TYPICAL APPLICATION

An application example showing how radiation noise is prevented when transmitter and receiver are connected via twisted pair cabling.

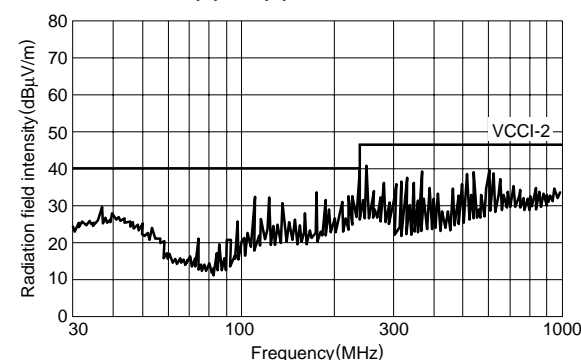


TYPICAL APPLICATION EFFECTS

(a) Without EMC filter



(b) With EMC filter ZJYS51R5-2P(T), 4P(T)



FERRITE CHIP COMMON-MODE FILTERS **ACM** SERIES (Signal lines)

FEATURES

These wound-type ACM common mode filter have been miniaturized to 1/2 ~ 1/5 the size of existing conventional filters.
Extremely high common mode impedance has been achieved in a compact case size.
There is almost no waveform distortion of the transmission signal due to obtaining the high coupling factor (more than 0.99) between inductors (low differential mode impedance).
Both 2 line and 3 line filters are available. Both types have a wide range of specifications and can be applied to many different circuits.

APPLICATION

Applications for this series are radiation noise suppression for all electronic equipment.
The series is especially suited for high speed digital equipment.

PRODUCT IDENTIFICATION

ACM3225 - 102 - 2P - T
(1) (2) (3) (4)

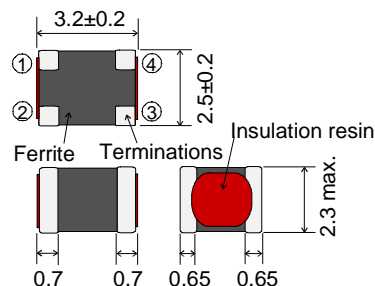
- (1) Series, Case size
- (2) Impedance [at 100MHz]
102 : 1000Ω
- (3) Number of lines
2P : 2 lines
3P : 3 lines
- (4) Packaging style
T : Taping ø180mm reel
TL : Taping ø330mm reel
B : Bulk

ELECTRICAL CHARACTERISTICS

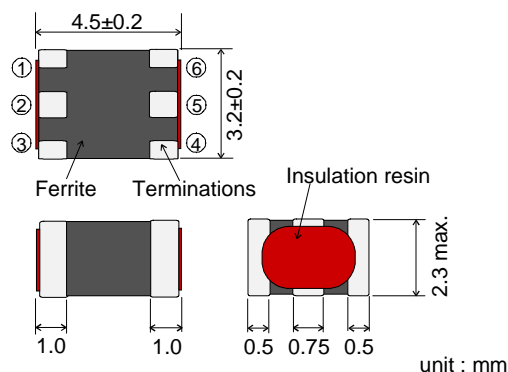
Type	Impedance (Ω) at 100MHz	DC resistance (Ω) max. (1 line)	Rated voltage (V) max.	Rated current (A) max.
ACM3225-102-2P	1000±25%	0.5	20	0.2
ACM4532-102-3P	1000±25%	0.6	20	0.2

SHAPES AND DIMENSIONS

ACM3225-102-2P (2 lines)

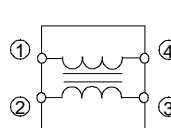


ACM4532-102-3P (3 lines)

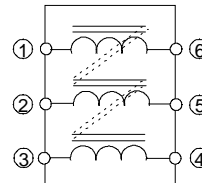


EQUIVALENT CIRCUIT

ACM3225-102-2P



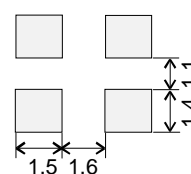
ACM4532-102-3P



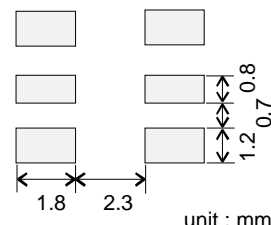
No directionality

RECOMMENDED PATTERNS ON PC BOARD

ACM3225-102-2P



ACM4532-102-3P

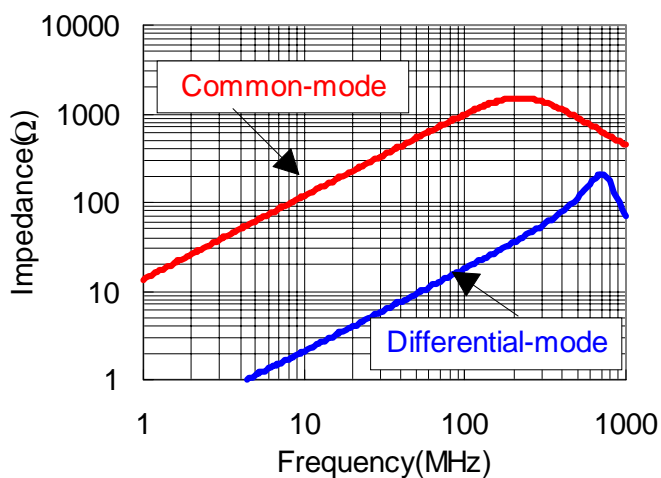


unit : mm

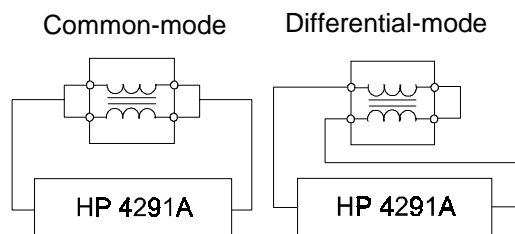
These products are only for reflow soldering.

IMPEDANCE vs. FREQUENCY CHARACTERISTICS

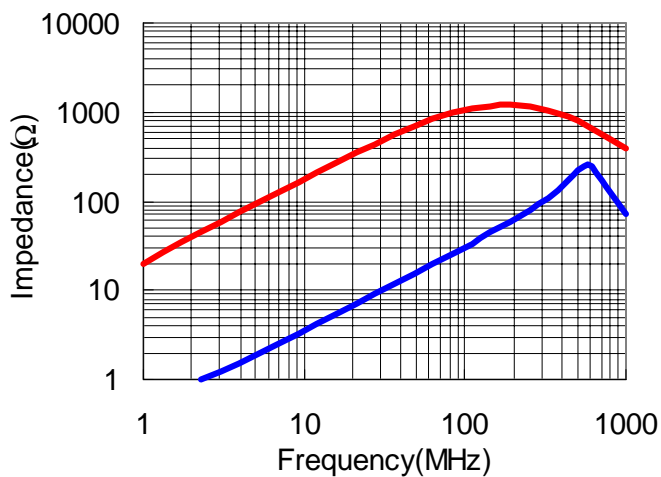
ACM3225-102-2P



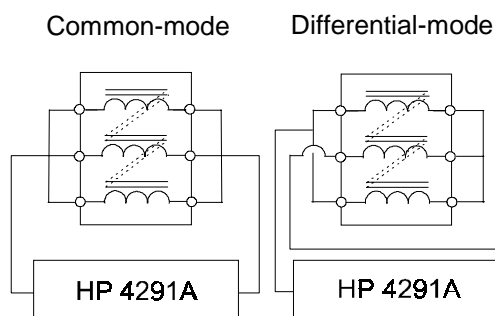
MEASURING CIRCUIT



ACM4532-102-3P



MEASURING CIRCUIT



Notice

To use the ACM4532-102-3P for audio and head-phone lines, please use the center line as a common ground line.

FERRITE CHIP TWO MODE FILTER ACT3225-102-2P

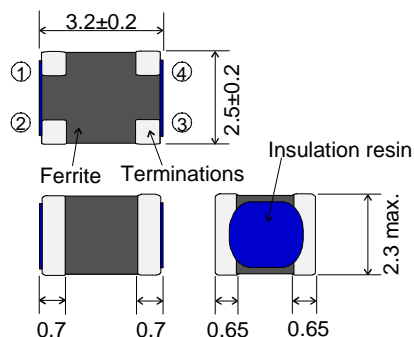
FEATURES

SMD common mode filter with high frequency differential mode impedance
One chip reduces both common mode noise and differential mode noise.
It works as a common mode filter up to 200MHz and as a chip beads above 200MHz

APPLICATION

General suppression(RADIATION)
For Portable PC, FAX, MD, CD-ROM, Modems, Game machines, etc.

SHAPES AND DIMENSIONS



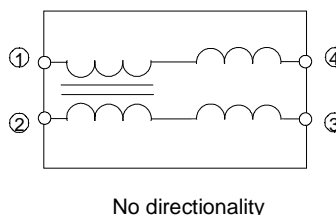
unit : mm

PRODUCT IDENTIFICATION

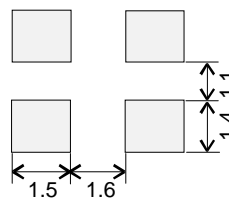
ACT3225 - 102 - 2P - T
(1) (2) (3) (4)

- (1) Series, Case size
- (2) Impedance [at 100MHz]
102 : 1000Ω
- (3) Number of lines
2P : 2 lines
- (4) Packaging style
T : Taping ø180mm reel
TL : Taping ø330mm reel
B : Bulk

EQUIVALENT CIRCUIT



RECOMMENDED PATTERNS ON PC BOARD



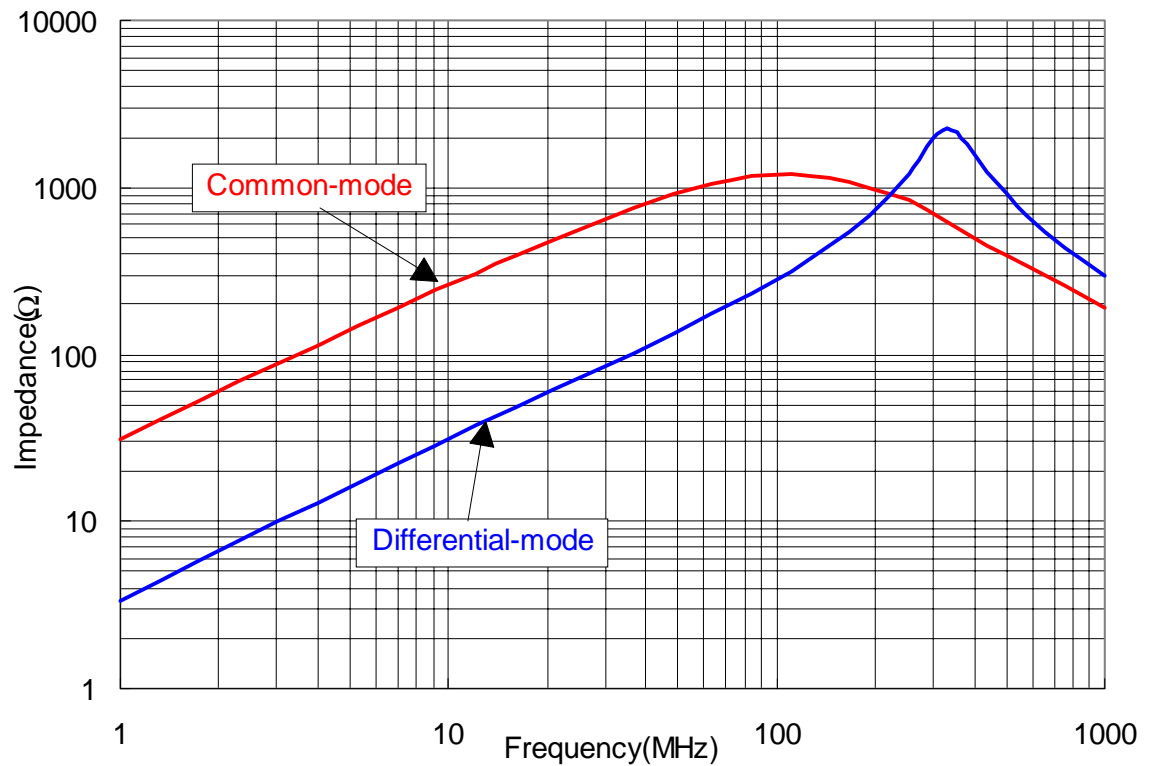
unit : mm

These products are only for reflow soldering.

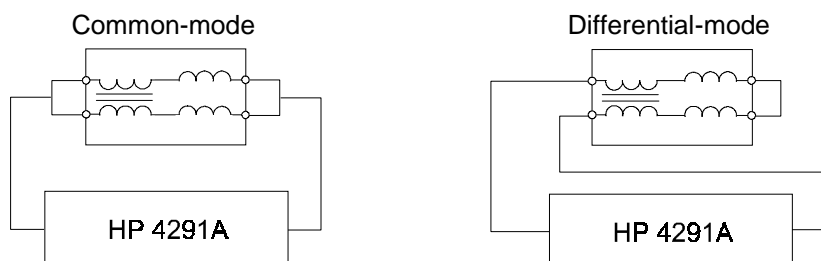
ELECTRICAL CHARACTERISTICS

Impedance [at 100MHz]	
Common mode	1000(Ω) min.
Differential mode	200(Ω) Typ.
DC resistance	0.5(Ω) max.
Rated current	200(mA) max.
Rated voltage	20(V) max.
Insulation resistance	10(MΩ) min.

IMPEDANCE vs. FREQUENCY CHARACTERISTICS



MEASURING CIRCUIT



Ferrite Cores

For Cable Cylindrical

RH Series

FEATURES

- For use with round cables. Both the clamp-on type and the regular type cores are available with diameters ranging from 7.3 to 13mm. Clamp-on cores can be attached to an existing cable while avoiding removal or cutting of the cable.
- Both regular and clamp-on types are available for use with flat cables. The clamp-on type core is highly effective for noise absorption (EMC) due to precision finish of the mating surfaces.

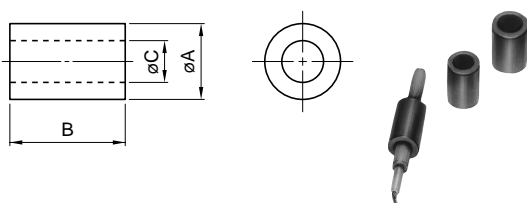
APPLICATIONS

Imaging devices, audio equipment, automotive electronics, telecommunication devices, office automation equipment, and digital interface various other cables.

MATERIAL CHARACTERISTICS

Material	Initial permeability μ_i	Temperature factor of initial permeability $\alpha_{\mu i} \times 10^{-6}/^{\circ}\text{C}$	Saturation magnetic flux density $B_s(\text{mT})$
HF70	1500	1 to 3	280[H=1600A/m]
HF60	900	8 to 14	300[H=1600A/m]
HF57	650	3 to 7	400[H=4000A/m]

SHAPES AND DIMENSIONS/CHARACTERISTICS



Part No.	Dimensions(mm)			Impedance Z (Ω)[at 23°C]		
	A	B	C	10MHz typ.	100MHz typ.	100MHz min.
HF70RH14.3X28.6X6.35	14.3	28.6	6.35	140	225	160
HF70RH12X15X7.3	12	15	7.3	44	83	58
HF70RH16X17X9	16	17	9	69	120	85
HF70RH16X28X9	16	28	9	100	165	115
HF70RH16X12X9.1	16	12	9.25	51	84	59
HF70RH17.4X28.57X9.5	17.44	28.57	9.52	125	210	145
HF70RH16X28X10	16	28	10	83	145	100
HF70RH19X29X13	19	29	13	80	145	100
HF70RH26X29X13	26	29	13	120	205	140
HF57RH12X15X7.3	12	15	7	35	100	70
HF57RH12X15X8.5	12	15	9	31	80	55
HF57RH12X20X5.6	12	20	6	65	199	140
HF57RH14.22X23.5X7	14	24	7	78	222	156
HF57RH14.3X28.6X6.35	14	29	6	120	285	200
HF57RH16X17X9	16	17	9	109	140	85
HF57RH16X28X6.7	16	28	7	111	315	200
HF57RH16X28X9	16	28	9	78	170	140
HF57RH17.5X28.5X9.5	18	29	10	87	243	180
HF57RH18.5X28.5X11	19	29	11	73	206	150
HF57RH19X29X13	19	29	13	55	168	100
HF57RH26X29X13	26	29	13	100	250	175

Ferrite Cores

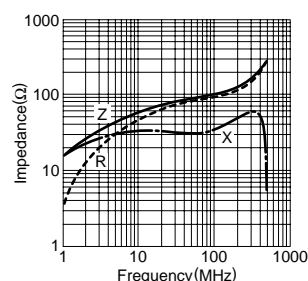
For Cable
Cylindrical

RH Series

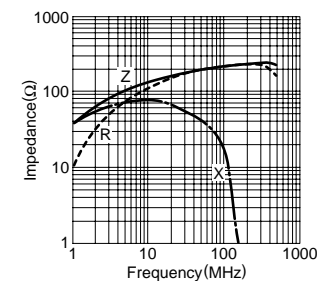
TYPICAL ELECTRICAL CHARACTERISTICS

Z, R, X vs. FREQUENCY CHARACTERISTICS

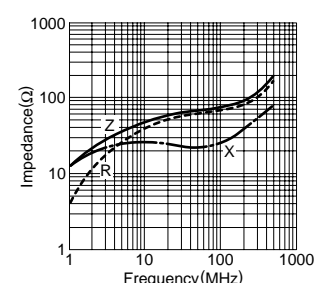
HF70RH16X17X9



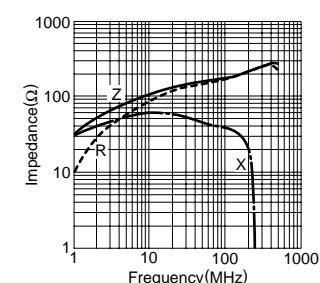
HF70RH14.3X28.6X6.35



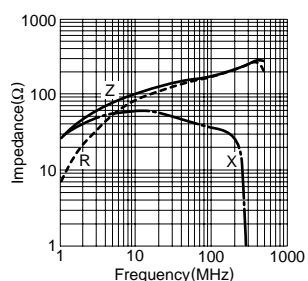
HF70RH12X15X7.3



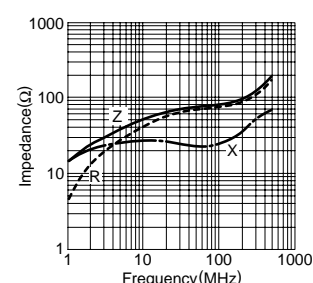
HF70RH17.4X28.57X9.5



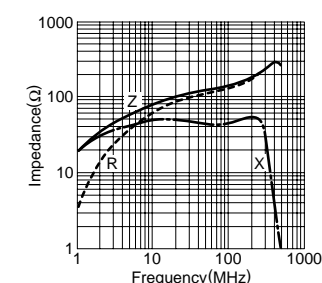
HF70RH16X28X9



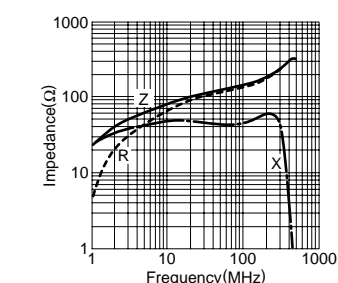
HF70RH16X12X9.1



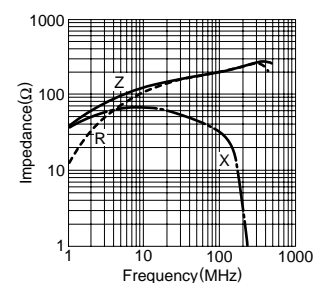
HF70RH16X28X10



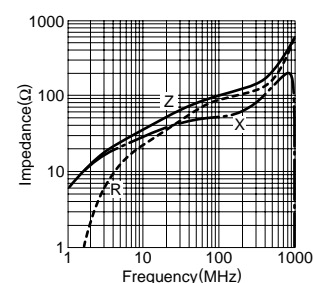
HF70RH19X29X13



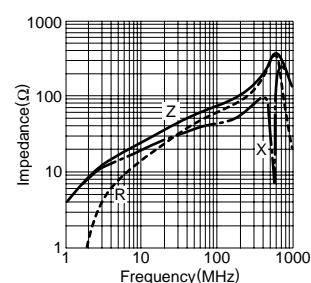
HF70RH26X29X13



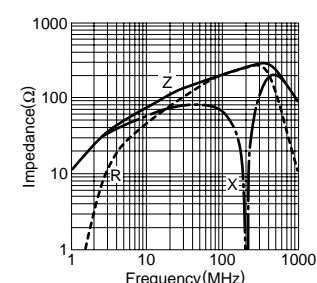
HF57RH12X15X7.3



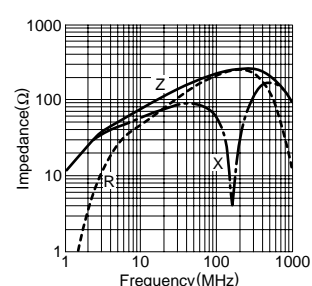
HF57RH12X15X8.5



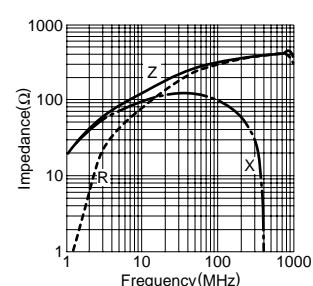
HF57RH12X20X5.6



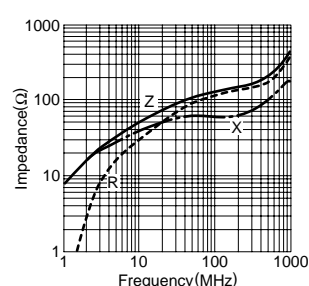
HF57RH14.22X23.5X7



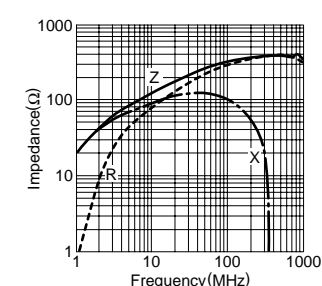
HF57RH14.3X28.6X6.35



HF57RH16X17X9



HF57RH16X28X6.7



Ferrite Cores

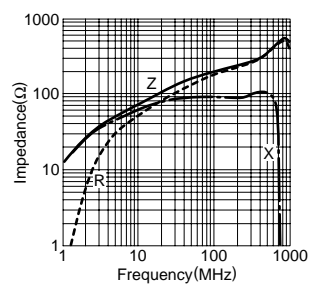
For Cable
Cylindrical

RH Series

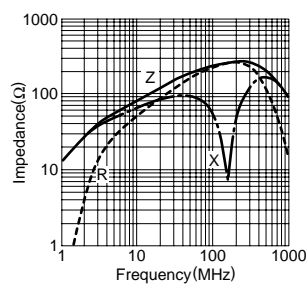
TYPICAL ELECTRICAL CHARACTERISTICS

Z, R, X vs. FREQUENCY CHARACTERISTICS

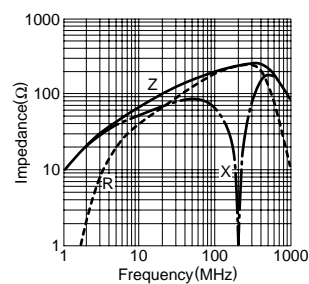
HF57RH16X28X9



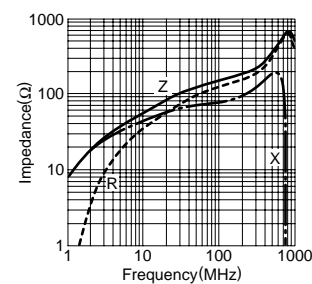
HF57RH17.5X28.5X9.5



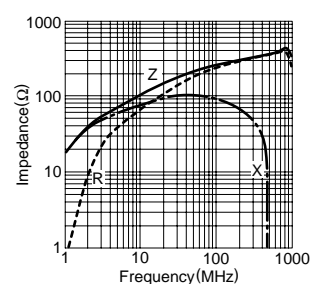
HF57RH18.5X28.5X11



HF57RH19X29X13



HF57RH26X29X13



EMC Components

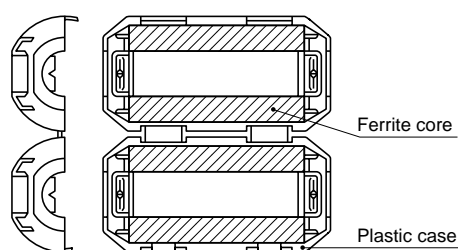
ZCAT Series

Clamp Filters For Cable

FEATURES

- Unique plastic case ensures simple, convenient installation and includes a self-holding mechanism to prevent slippage on cables.
- Ferrite core provides excellent absorption of high-frequency EMC.
- Highly effective as countermeasure against common mode EMC without adverse effect on signal quality.
- Large core size prevents saturation during large signal surges.

INTERNAL CONSTRUCTION



APPLICATIONS

Personal computers, word processors, monitors, hard disk drives, digital telephones, audio devices, electronic musical instruments, video games, copiers and facsimiles.

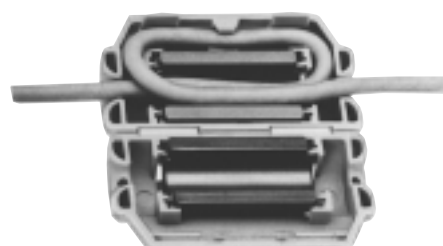
PRODUCT IDENTIFICATION

ZCAT	24	36	–	13	30	A	–	M	–	BK
(1)	(2)	(3)		(4)	(5)	(6)		(7)		(8)

- (1) Series name
- (2) Outer dimensions(mm)
- (3) Length(mm)
- (4) Inner dimensions(mm)
- (5) Material code
- (6) Fixed type code
 - A: Cable fixed
Hold the cable to secure it with the main body
 - AP: Cable fixed
(with lock mechanism)
 - B: Clamp fixed
 - C: Cable coil securing type
(Coil the cable one time within the case to fix it/with lock mechanism.)
 - Non code: Band fixed
(Secure the cable and main body with the nylon belt.)
- (7) TDK internal code
 - M: Standard type
 - Non code: High impedance type
- (8) Outer color code
 - BK: Black
 - Non code: Gray



ZCAT-C TYPE



PACKAGING STYLE AND QUANTITIES

Part No.	Quantity
ZCAT3035	140 pieces/box
ZCAT2017-B	350 pieces/box
ZCAT2235	350 pieces/box
ZCAT2436	350 pieces/box
ZCAT2032	400 pieces/box
ZCAT2035	400 pieces/box
ZCAT2132	400 pieces/box
ZCAT2749	400 pieces/box
ZCAT1730	500 pieces/box
ZCAT2017	800 pieces/box
ZCAT1325	900 pieces/box
ZCAT1518	900 pieces/box
ZCAT1525	900 pieces/box
ZCAT4625-D	240 pieces/box
ZCAT6819-D	160 pieces/box

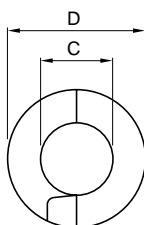
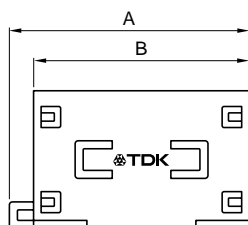
EMC Components

ZCAT Series

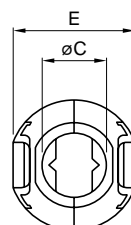
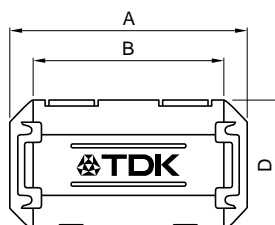
Clamp Filters For Cable

SHAPES AND DIMENSIONS

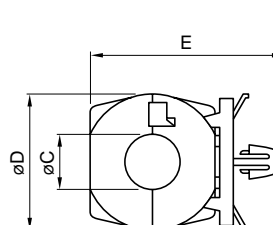
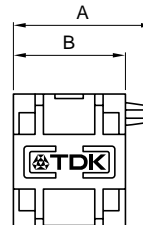
ZCAT TYPE



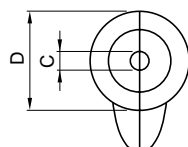
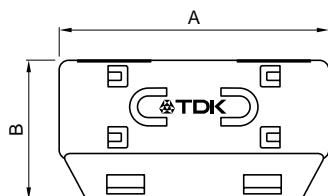
ZCAT-A, ZCAT-AP TYPE



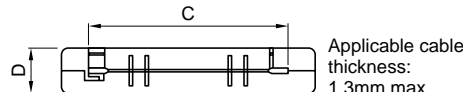
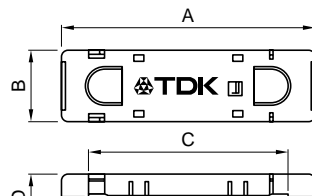
ZCAT-B TYPE



ZCAT-C TYPE



ZCAT-D TYPE



Dimensions in mm

Part No.	A	B	øC	øD	E	Applicable cable outer dia.	Weight(g)
ZCAT1518-0730-M(-BK)*1	22±1	18±1	7±1	15±1	—	7max.	6
ZCAT1518-0730(BK)*2	22±1	18±1	7±1	15±1	—	7max.	6
ZCAT2017-0930-M(-BK)	21±1	17±1	9±1	20±1	—	9max.	11
ZCAT2032-0930-M(-BK)*1	36±1	32±1	9±1	19.5±1	—	9max.	22
ZCAT2032-0930(-BK)*2	36±1	32±1	9±1	19.5±1	—	9max.	22
ZCAT2132-1130-M(-BK)*1	36±1	32±1	11±1	20.5±1	—	11max.	22
ZCAT2132-1130(-BK)*2	36±1	32±1	11±1	20.5±1	—	11max.	22
ZCAT3035-1330-M(-BK)*1	39±1	34±1	13±1	30±1	—	13max.	63
ZCAT3035-1330(-BK)*2	39±1	34±1	13±1	30±1	—	13max.	63
ZCAT1525-0430AP-M(-BK)	25±1	20±1	4±1	15±1	11.5±1	2.5 to 4(USB)	7
ZCAT1325-0530A-M(-BK)*1	25±1	20±1	5±1	12.8±1	11.2±1	3 to 5(USB)	7
ZCAT1325-0530A(-BK)	25±1	20±1	5±1	12.8±1	11.2±1	3 to 5(USB)	7
ZCAT1730-0730A-M(-BK)	30±1	23±1	7±1	16.5±1	15±1	4 to 7(USB/IEEE1394)	12
ZCAT2035-0930A-M(-BK)*1	35±1	28±1	9±1	19.5±1	17.4±1	6 to 9	22
ZCAT2035-0930A(-BK)	35±1	28±1	9±1	19.5±1	17.4±1	6 to 9	22
ZCAT2235-1030A-M(-BK)	35±1	28±1	10±1	21.5±1	20±1	8 to 10	27
ZCAT2436-1330A-M(-BK)	36±1	29±1	13±1	23.5±1	22±1	10 to 13	29
ZCAT2017-0930B-M(-BK)	21±1	17±1	9±1	20±1	28.5±1	9max.	12
ZCAT2749-0430C-M(-BK)	49±1	27±1	4.5±1	19.5±1	—	4.5max.	26
ZCAT4625-3430D(-BK)	45.5±1	24.5±1	34±1	12±1	—	For 26 wires flat cable	32
ZCAT4625-3430DT(-BK)*3	45.5±1	24.5±1	34±1	13±1	—	For 26 wires flat cable	32
ZCAT6819-5230D(-BK)	67.5±1	18.5±1	52±1	16±1	—	For 40 wires flat cable	58
ZCAT6819-5230DT(-BK)*3	67.5±1	18.5±1	52±1	17±1	—	For 40 wires flat cable	58

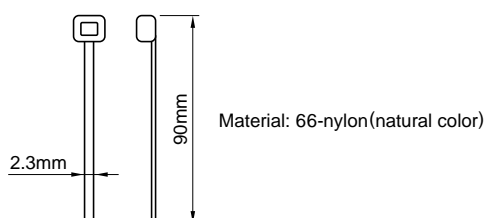
*1 Set M marking on product.

*2 These products are delivered with fixed band.

• ZCAT-B type: Clamp fixed type installation hole diameter ø4.8 to 4.9mm, thickness of board 0.5 to 2mm.

• ZCAT-AP, ZCAT-C type: Once closed, the case will not be easily opened manually.

STRUCTURE OF THE MOUNTING BAND



△ Specifications which provide more details for the proper and safe use of the described product are available upon request.

All specifications are subject to change without notice.

EMC Components

Clamp Filters For Cable

ZCAT Series

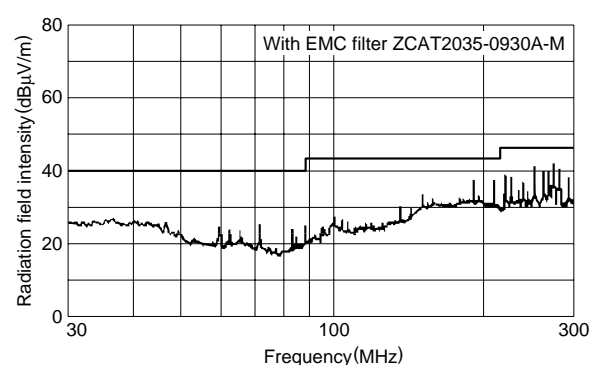
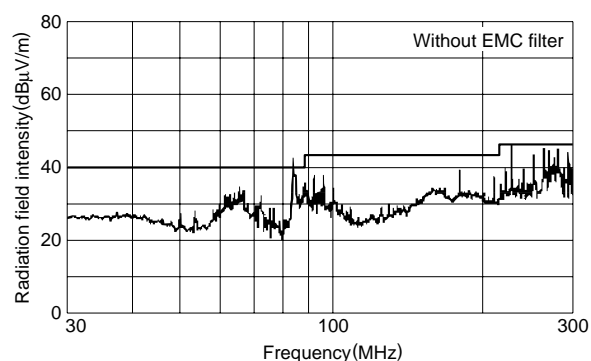
ELECTRICAL CHARACTERISTICS

Part No.	Impedance (Ω)min.[50 to 500MHz]
ZCAT1518-0730-M	35
ZCAT2017-0930-M	35
ZCAT2032-0930-M	80
ZCAT2132-1130-M	50
ZCAT3035-1330-M	100
ZCAT1525-0430AP-M	50
ZCAT1325-0530A-M	50
ZCAT1730-0730A-M	50
ZCAT2035-0930A-M	80
ZCAT2235-1030A-M	80
ZCAT2436-1330A-M	50
ZCAT2017-0930B-M	35
ZCAT2749-0430C-M	80
ZCAT4625-3430D(T)	35
ZCAT6819-5230D(T)	35

- Test conditions: R-X meter at unloaded condition, $\phi 1\text{mm}$ solder plated copper wire passes through.

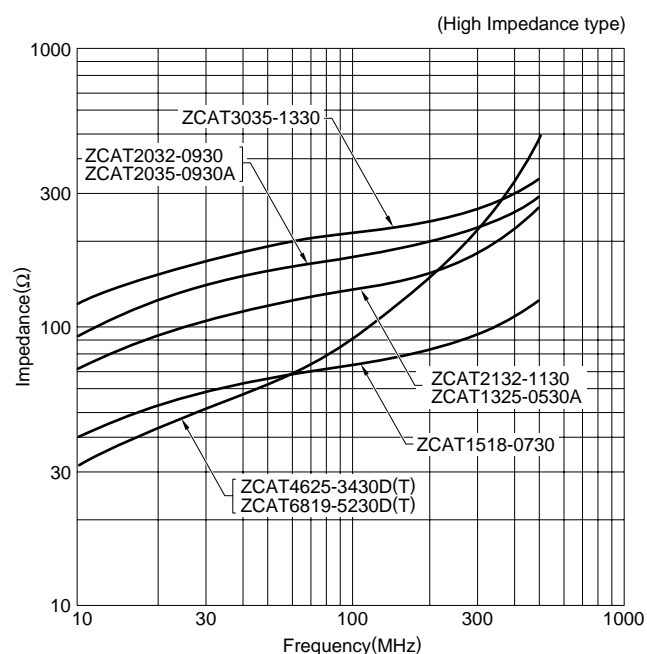
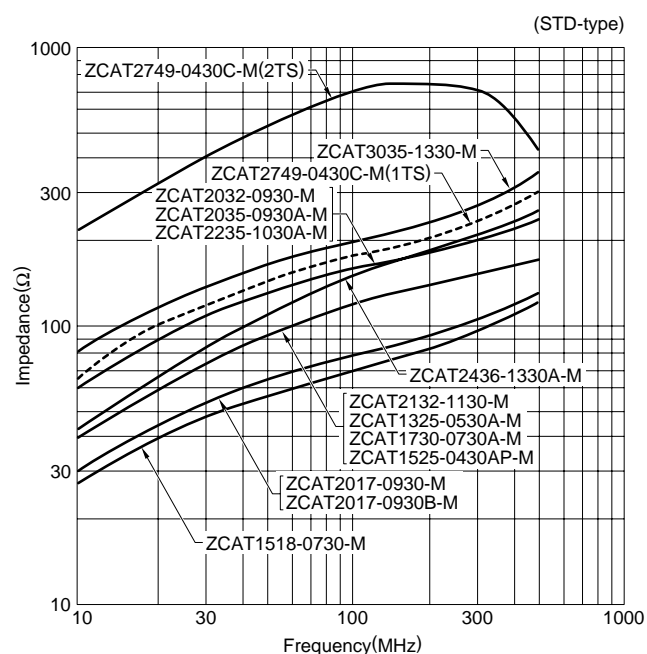
TYPICAL EMC SUPPRESSION EFFECTS

RADIATION LEVEL vs. FREQUENCY CHARACTERISTICS



TYPICAL ELECTRICAL CHARACTERISTICS

IMPEDANCE vs. FREQUENCY CHARACTERISTICS



EMC Components

Ferrite Beads Filter

Lead

BT, BH Series

Both Wire wound type B series and cylindrical type BB series are easy to handle and are supplied in various materials, shapes and packaging styles to meet for users' requests.

FEATURES

- Appropriate materials and shapes can be selected from various cores to suppress EMI effectively.
- The axial leaded type can be supplied both box and reel type packagings with 52mm[2.047 inches] and 26mm [1.024 inches] tape width (26mm for the box packaging). So can be selected depending on your automatic insertion machines.

PRODUCT IDENTIFICATION

HF55	B	TL	3.5	X	4.5	B
(1)	(2)	(3)	(4)		(5)	(6)

(1) Material code

(2) Series

(3) Type

TL: Taping type, 52mm[2.047 inches] tape width

TS: Taping type, 26mm[1.024 inches] tape width

HZ: Forming type, 15mm[.591 inches] lead pitch

HY: Forming type, 12.5mm[.492 inches] lead pitch

HW: Forming type, 10mm[.394 inches] lead pitch

WA: Straight wire type, 63mm[2.480 inches] overall length

WB: Straight wire type, 37mm[1.457 inches] overall length

(4) Outer diameter ϕA (mm)

(5) Length B(mm)

(6) Packaging style

B: Ammo-pack

R: Reel

APPLICATIONS

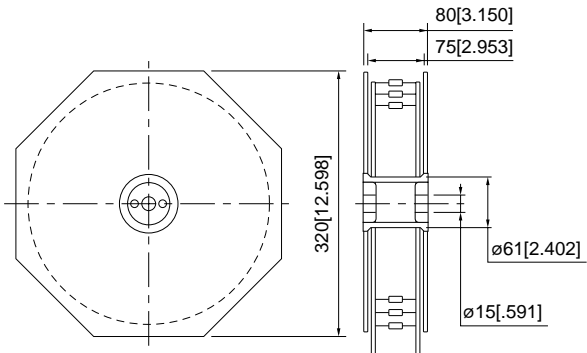
Video, acoustic, office automation equipment, communication equipment, automotive electronic equipment and others.

- Absorption EMI and penetrating noise
- Prevent parasitic oscillation

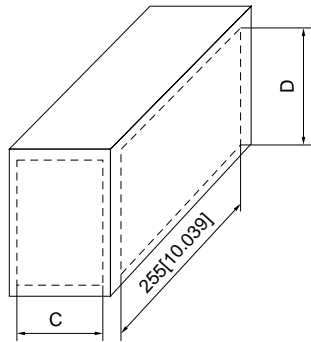


PACKAGING STYLES

Reel



Box



PACKAGING STYLE AND QUANTITIES

Packaging	Wrapping	ϕA (mm)	C(mm)	D(mm)	Quantity/box
	Reel	—	—	—	4000 pieces/reel
Taping	Box	2.6	41	81	3000 pieces/box
		3.5	75	76	1500 pieces/box

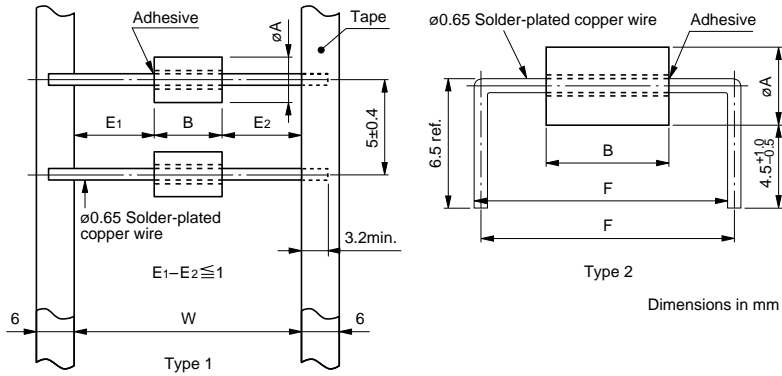
EMC Components

Ferrite Beads Filter

Lead

BT, BH Series

SHAPES AND DIMENSIONS/ELECTRICAL CHARACTERISTICS

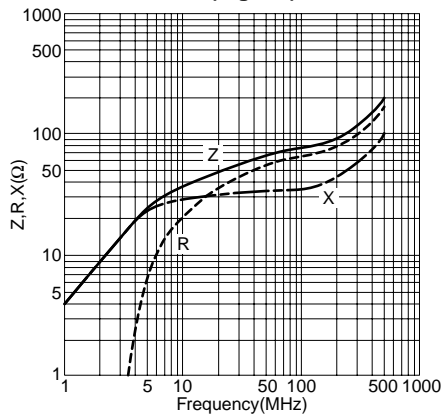


Part No.	Dimensions(mm)				Impedance(Ω)[at 23°C]			type	Fig.
	A	B	W	F	10MHz typ.	100MHz typ.	100MHz min.		
HF55BTL3.5X4.5B	3.5 \pm 0.2	4.5 \pm 0.3	52.5 \pm 1.5		34	74	52	1	a-1
HF55BTL3.5X4.5R	3.5 \pm 0.2	4.5 \pm 0.3	52.5 \pm 1.5		34	74	52	1	a-1
HF70BTL3.5X6R	3.5 \pm 0.2	6 \pm 0.3	52.5 \pm 1.5		50	83	58	1	a-2
HF55BTL3.5X8R	3.5 \pm 0.2	8 \pm 0.3			58	125	88	1	a-3
HF70BTL3.5X9R	3.5 \pm 0.2	9 \pm 0.4	52.5 \pm 1.5		76	120	83	1	a-4
HF55BTS3.5X4.5B	3.5 \pm 0.2	4.5 \pm 0.3	26.75 \pm 0.75		34	74	52	1	a-1
HF55BHW3.5X4.5	3.5 \pm 0.2	4.5 \pm 0.3		10 \pm 0.7	34	74	52	2	a-1
HF55BHW3.5X6	3.5 \pm 0.2	6 \pm 0.3		10 \pm 0.7	47	98	69	2	—
HF55BHY3.5X6	3.5 \pm 0.2	6 \pm 0.3		12.5 \pm 0.7	47	98	69	2	—
HF55BHY3.5X8	3.5 \pm 0.2	8 \pm 0.3		12.5 \pm 0.7	58	125	88	2	a-3
HF55BHZ3.5X8	3.5 \pm 0.2	8 \pm 0.3		15 \pm 1	58	125	88	2	a-3

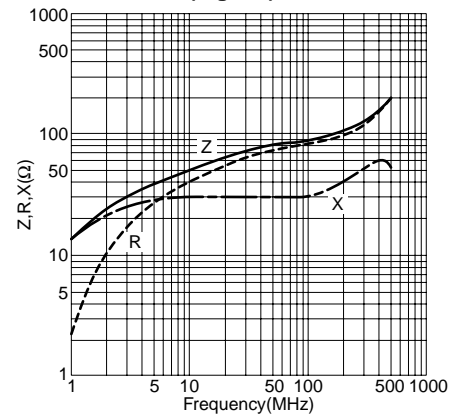
TYPICAL ELECTRICAL CHARACTERISTICS

Z, R, X vs. frequency characteristics

HF55B□□3.5X4.5□(Fig.a-1)



HF70B□□3.5X6□(Fig.a-2)



EMC Components

BT, BH Series

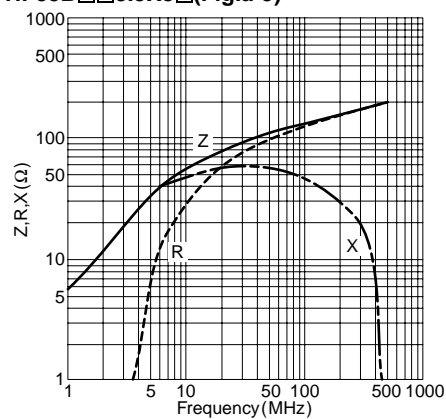
Ferrite Beads Filter

Lead

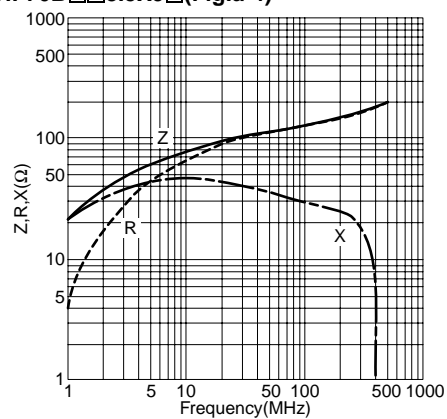
TYPICAL ELECTRICAL CHARACTERISTICS

Z, R, X vs. frequency characteristics

HF55B□□3.5X8□(Fig.a-3)



HF70B□□3.5X9□(Fig.a-4)



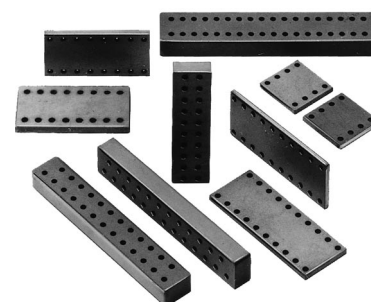
Ferrite Cores

For IC and Connector Multiple Holes

MH Series

FEATURES

- The MH Series provides simple, effective EMC suppression at terminal pins. Terminal pins that can be inserted include those of DIP type ICs, DIP IC sockets, and grid square type connector receptacles.
- The comprehensive product lineup offers numerous sizes, hole configurations, and ferrite materials. The variety of impedance vs. frequency characteristics enables optimization of EMC suppression performance for a wide range of possible applications.



APPLICATIONS

Suppression of digital signal ringing and prevention RFI from IC pins, suppression of interface cable EMC, preventing the entry of RFI into a device, and shaping the waveform of digital signals.

SHAPES AND DIMENSIONS/CHARACTERISTICS

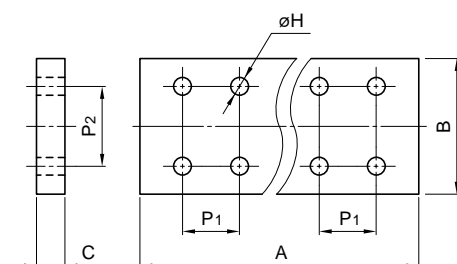


Fig.1

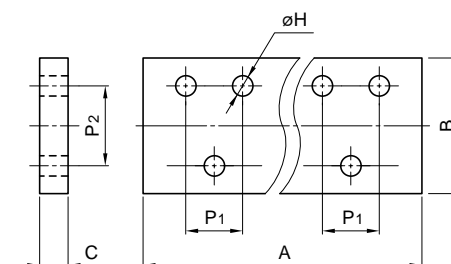


Fig.2

FOR IC

Part No.	Fig.	Dimensions(mm)						Number of holes	Impedance Z(Ω)at 23°C		
		A	B	C*	P1	P2	øH		10MHz typ.	100MHz typ.	100MHz min.
HF70MH2.5X7.6X8	1	10.16	10.16	1	2.54	7.62	1.08	8	9	25	17
HF70MH2.5X7.6X10	1	12.7	10.16	1	2.54	7.62	1.08	10	9	25	17
HF70MH2.5X7.6X14	1	17.78	10.16	1	2.54	7.62	1.08	14	9	25	17
HF70MH2.5X7.6X16	1	20.32	10.16	1	2.54	7.62	1.08	16	9	25	17
HF70MH2.5X7.6X16A	1	20.32	10.16	1.5	2.54	7.62	1.08	16	13	29	20
HF70MH2.5X7.6X20	1	25.4	10.16	1	2.54	7.62	1.08	20	9	25	17

*Dimension C is alterable on request.

FOR CONNECTOR

Part No.	Fig.	Dimensions(mm)						Number of holes	Impedance Z(Ω)at 23°C		
		A	B	C*	P1	P2	øH		10MHz typ.	100MHz typ.	100MHz min.
HF70MH2.5X2.5X8	1	10.16	7	3	2.54	2.54	1.08	8	27	50	35
HF70MH2.5X2.5X16	1	20.32	7	3	2.54	2.54	1.08	16	27	50	35
HF70MH2.5X2.5X20	1	25.4	7	3	2.54	2.54	1.08	20	27	50	35
HF40MH2.7X2.8X9-F	2	16.15	6.05	3.75	2.74	2.84	1.02	9	9	68	48
HF40MH2.7X2.8X15-F	2	24.1	6.05	3.75	2.74	2.84	1.02	15	9	68	48
HF40MH2.7X2.8X25-F	2	37.55	6.05	3.75	2.76	2.84	1.02	25	9	68	48
HF40MH2.2X4.3X36-F	1	41.52	8.6	3.75	2.16	4.29	1.08	36	10	74	52
HF40MH2.7X2.8X9-A	2	15	7	2.6	2.74	2.84	1.5	9	6	43	30
HF40MH2.8X2.8X15-A	2	23	7	2.6	2.77	2.84	1.5	15	6	43	30
HF40MH2.8X2.8X25-A	2	37	7	2.6	2.77	2.84	1.5	25	6	43	30

*Dimension C is alterable on request.

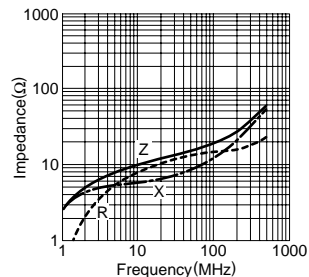
Ferrite Cores

For IC and Connector
Multiple Holes

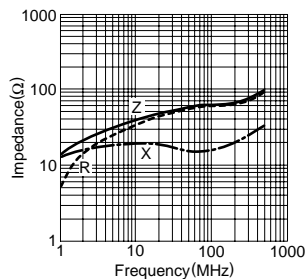
MH Series

TYPICAL ELECTRICAL CHARACTERISTICS Z, R, X vs. FREQUENCY CHARACTERISTICS

HF70MH2.5X7.6XXX*

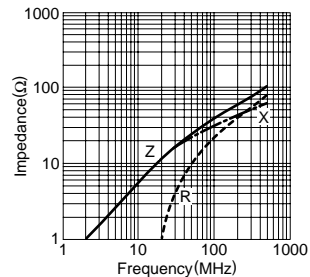


HF70MH2.5X2.5XXX



HF40MH2.7X2.8XXX-A

HF40MH2.8X2.8XXX-A



*Number of holes

