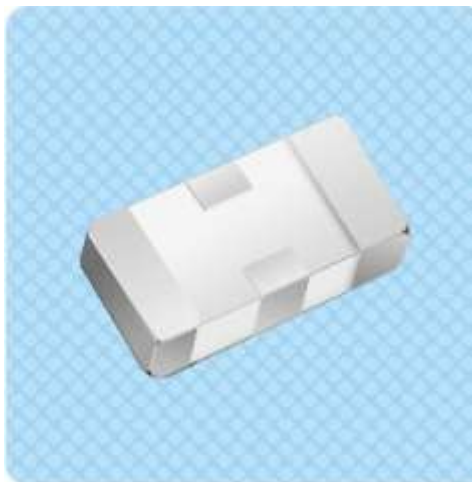


# TL Series Multilayer Chip EMI Filter



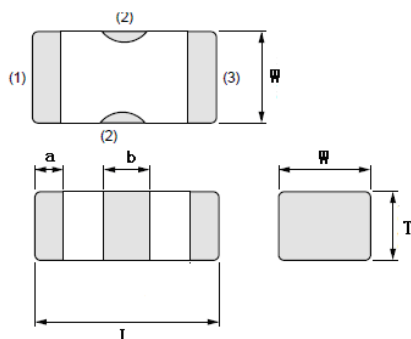
## FEATURES

- Multilayer structure and low profile enables high density mounting.
- Steep attenuation characteristics achieves effective noise suppression.
- Crosstalk is prevented due to closed magnetic circuit.

## APPLICATIONS

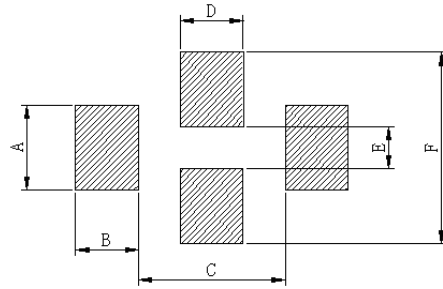
- Noise suppression in visual signal such as DVD, DSC, LCD, PDP, etc,
- Suppression of high magnitude radiated noise generated by high speed digital circuit such as clock line.
- USB and IE1394 VCC circuit.

## SHAPE AND DIMENSIONS



Part Number	Dimensions (mm)				
	L	W	T	a	b
TL1608	1.60±0.10	0.80±0.10	0.60±0.10	0.25±0.10	0.40±0.10
TL2012	2.00±0.20	1.25±0.20	0.80±0.20	0.30±0.20	0.40±0.30
TL3216	3.20±0.20	1.60±0.20	0.80±0.20	0.40±0.30	1.10±0.30
TL4516	4.50±0.30	1.60±0.30	1.00±0.20	0.40±0.30	1.50±0.30
TL4532	4.50±0.40	3.20±0.30	1.50±0.30	0.45±0.10	1.00±0.10

## RECOMMENDED PC BOARD PATTERN



Part Number	Dimensions (mm)					
	A	B	C	D	E	F
TL1608	0.60	0.50	1.10	0.40	0.40	1.60
TL2012	0.80	0.60	1.40	0.60	0.60	2.00
TL3216	1.20	0.80	2.40	1.30	1.00	2.20
TL4516	1.40	0.80	3.70	1.50	1.20	2.20
TL4532	2.80	1.00	3.50	1.00	2.00	3.00

## PRODUCT IDENTIFICATION

TL 2012 X-222 T 801  
 ① ② ③ ④ ⑤ ⑥

- ① Series name
- ② Dimensions Length (L) xWidth (W)
- ③ Feature type: N,X,Y
- ④ Capacitance: 222-2200pF
- ⑤ Packing style: B: Bulk; T: Tape and reel
- ⑥ Rated current: 801-800mA

## SPECIFICATIONS

### ● TL1608YPE

Part Number	Capacitance (pF)	Tolerance(%)	Rate Voltage(V)	Rated Current (mA)	Insulation Resistance(Ω)	DCR(Ω)
TL1608N-220T401	22	-20~+20	16	400	1000	0.30
TL1608N-470T401	47			400		
TL1608N-101T501	100			500		
TL1608N-221T501	220			500		
TL1608N-471T501	470			500		
TL1608X-102T601	1000			600		
TL1608X-222T501	2200			500		
TL1608X-222T701	2200			700		
TL1608X-222T102	2200			1000		
TL1608X-223T801	22000			800		
TL1608X-223T102	22000			1000		

### ● TL2012 TYPE

Part Number	Capacitance (pF)	Tolerance(%)	Rate Voltage(V)	Rated Current (mA)	Insulation Resistance(Ω)	DCR(Ω)
TL2012N-220T102	22	-20~+50	50	1000	1000	0.15
TL2012N-470T102	47			1000		0.15
TL2012N-101T102	100			1000		0.15
TL2012N-221T102	220			1000		0.20
TL2012N-471T801	470			800		0.20
TL2012N-471T102	470			1000		0.20
TL2012X-102T801	1000			800		0.20
TL2012X-102T102	1000			1000		0.20
TL2012X-222T801	2200			800		0.20
TL2012X-222T102	2200			1000		0.20
TL2012X-272T801	2700			800		0.20
TL2012X-332T801	3300			800		0.20
TL2012X-103T801	10000			800		0.20
TL2012X-103T102	10000			1000		0.20
TL2012X-153T801	15000			800		0.20
TL2012X-223T801	22000			800		0.20



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Part Number	Capacitance (pF)	Tolerance(%)	Rate Voltage(V)	Rated Current (mA)	Insulation Resistance( $\Omega$ )	DCR( $\Omega$ )
TL2012X-223T202	22000	-20~+50	50	2000	1000	0.20
TL2012Y-104T801	100000		25	800		0.20
TL2012Y-104T202	100000		25	2000		0.20

● TL3216 TYPE

Part Number	Capacitance (pF)	Tolerance(%)	Rate Voltage(V)	Rated Current (mA)	Insulation Resistance( $\Omega$ )	DCR( $\Omega$ )
TL3216N-221T102	220	-50~+50	50	1000	1000	0.30
TL3216X-102T202	1000	-50~+50	100	2000	1000	0.30
TL3216X-223T202	22000	-50~+50	50	2000	1000	0.30

● TL4516TYPE

Part Number	Capacitance (pF)	Tolerance(%)	Rate Voltage(V)	Rated Current (mA)	Insulation Resistance( $\Omega$ )	DCR( $\Omega$ )
TL4516N-220T301	22	-20~+50	100	300	10000	0.30
TL4516N-470T301	47					
TL4516N-101T301	100					
TL4516N-221T301	220					
TL4516N-471T301	470					
TL4516X-102T301	1000					
TL4516X-222T301	2200					
TL4516X-223T301	22000					

● TL4532 TYPE

Part Number	Capacitance (pF)	Tolerance(%)	Rate Voltage(V)	Rated Current (mA)	Insulation Resistance( $\Omega$ )	DCR( $\Omega$ )
TL4532X-153T301	15000	-20~+50	50	300	1000	0.15

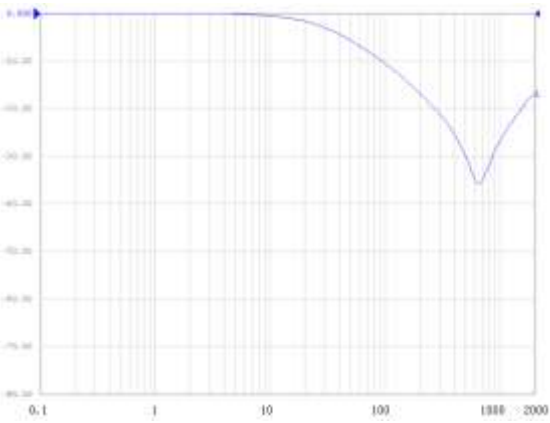


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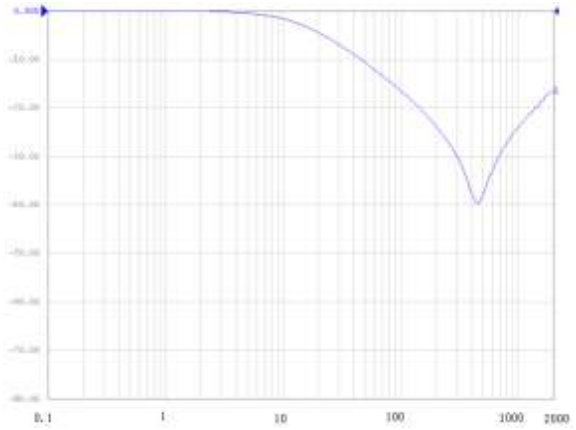
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## DETAIL ELECTRICAL CHARACTERISTICS

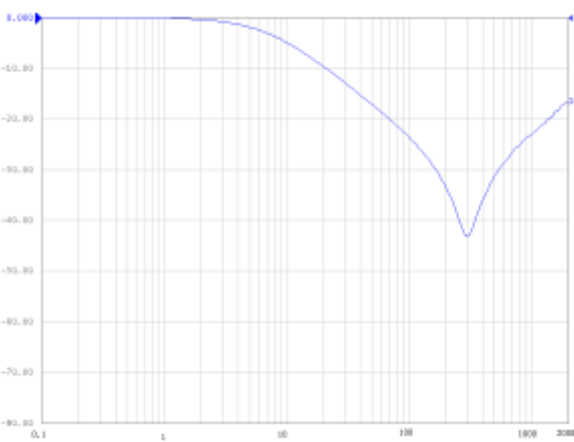
### ● TL1608



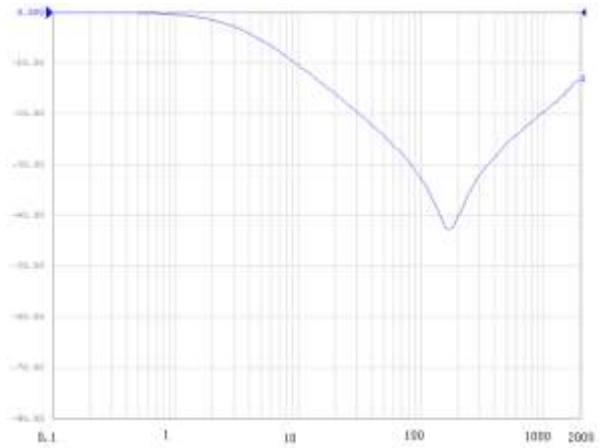
**TL1608N-221T501**



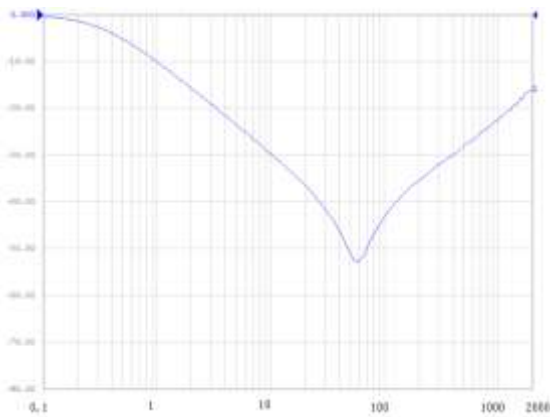
**TL1608N-471T501**



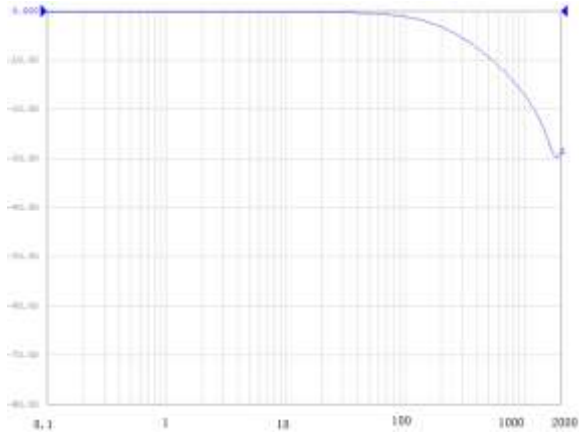
**TL1608X-102T601**



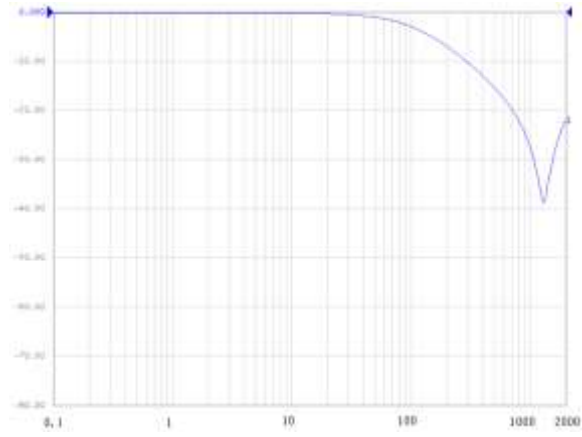
**TL1608X-222T701**



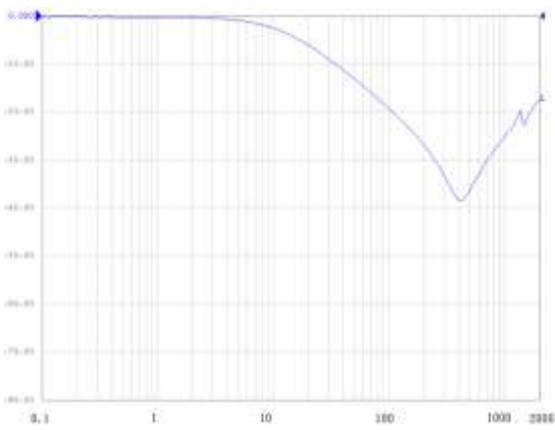
**TL1608X-223T102**



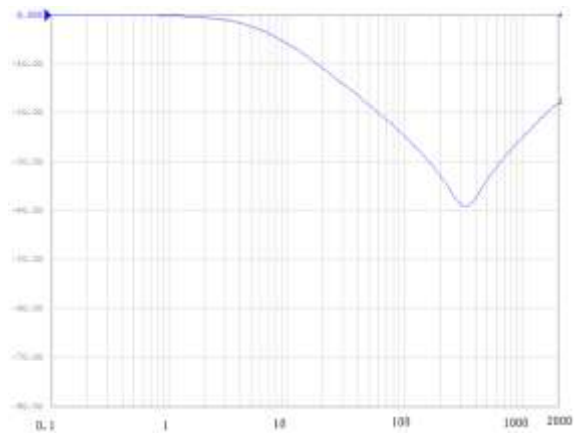
**TL2012N-220T102**



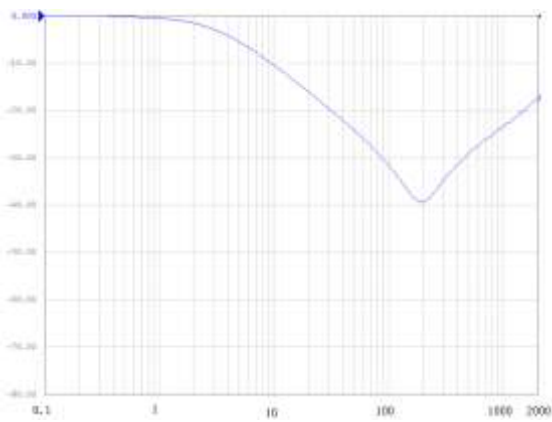
**TL2012N-470T102**



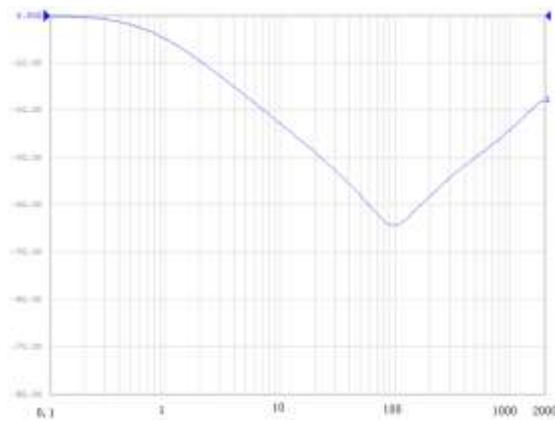
**TL2012N-471T102**



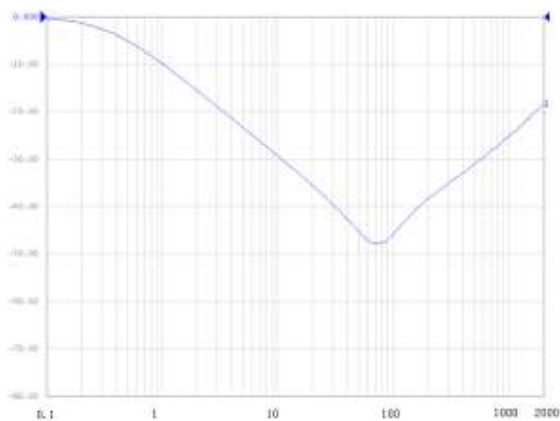
**TL2012X-102T801**



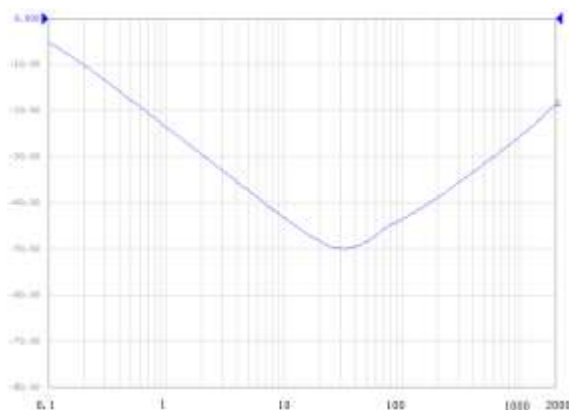
**TL2012X-222T801**



**TL2012X-103T801**



**TL2012X-223T801**



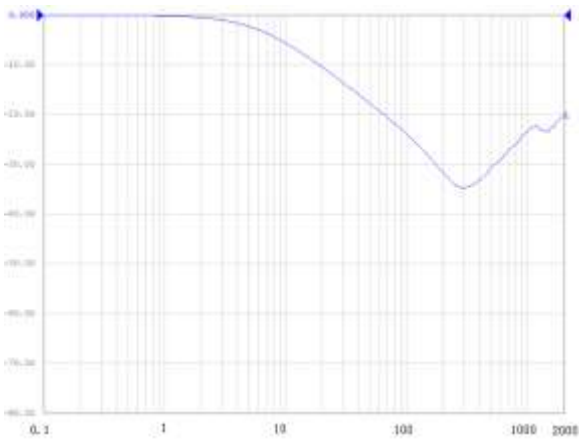
**TL2012X-104T202**



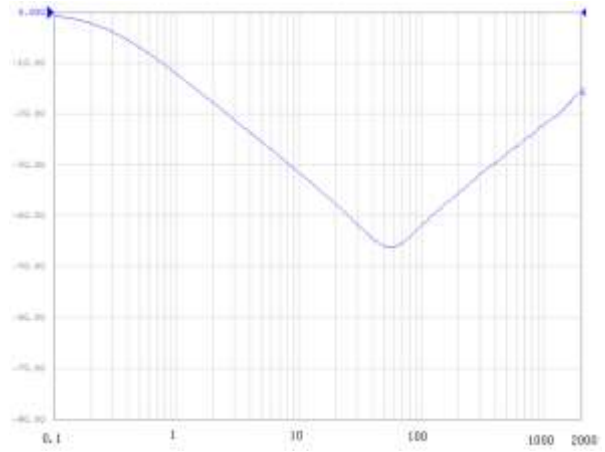
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● TL3216

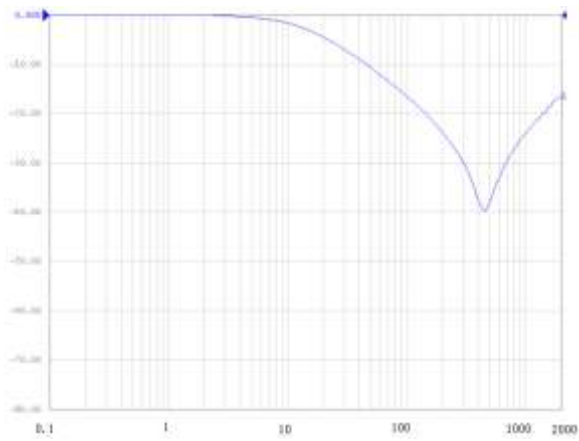


**TL3216X-102T202**

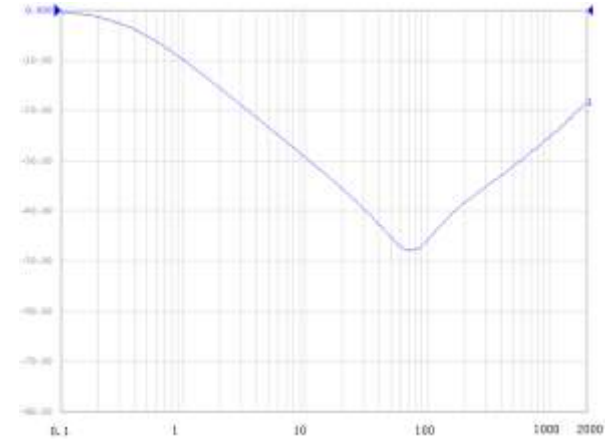


**TL3216X-223T202**

● TL4516

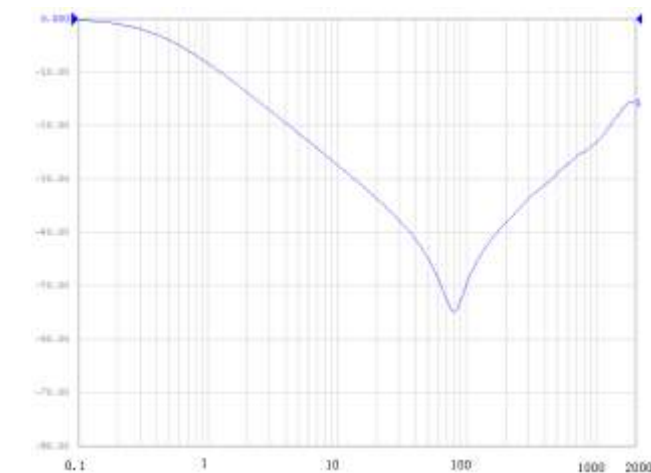


**TL4516N-471T301**



**TL4516X-223T301**

● TL4532



**TL4532X-153T301**



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