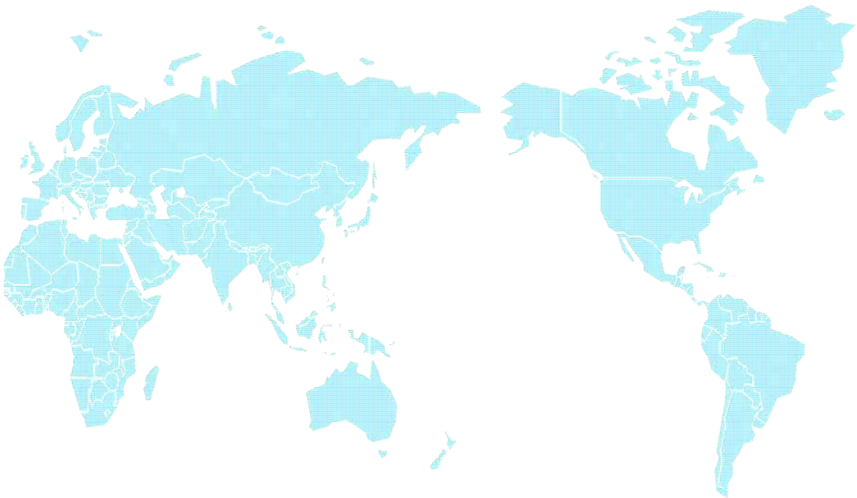
MODA INNOCHIPS

2022 PRODUCT CATALOG

A Global Leading Company for EMC Total Solution & Modularity



www.innochips.co.kr

About Moda-innochips

Founded in 2000, Moda_Innochips continues to research, develop and manufacture core electronic components that meet customers' needs and value with ceramic based materials. Through continuous technology development, self-innovation, and bold investment, we manufacture ceramic based hand-operated components, sensors, modules and electronic components such as chip component that eliminate noise in internal circuits that prevents static electricity and electromagnetic waves, to help high-tech devices operate smoothly. Our main products are Power Inductor, CMF/CMEF, ESD/EMI Filter and Chip Varistor.

Moda_Innochips has world-class ceramic chip R&D expertise with 403 patents and invests 7% of annual sales in R&D every year. Built Vietnam factory in 2019, we have high production capacity more than 700 million units per month and production expertise.

Our Goal is to become a trusting, respected company by being strict and thorough with basic principles. Due to our efforts for the best quality management, we were able to get certified such as ISO 9001:2005, ISO 14001:2015, and ISO/TS 16949:2016 from International Organization for Standardization. With one of our principles, which is putting our customers value first, we are doing business with more than 130 domestic and 100 overseas companies.

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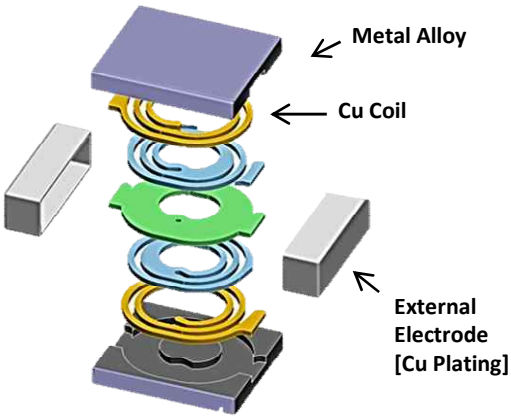
- *VARISTOR [Normal, Low Cap]*
- *SMD Type NTC Thermistor*
- *RF Inductor*

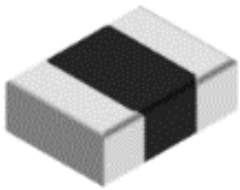
Metal Composite Power Inductor

Features

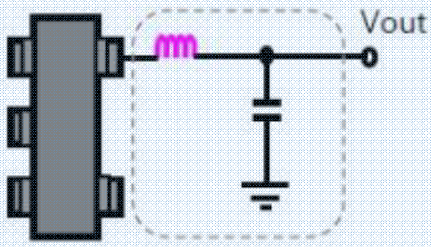


- Thin Film Type
- High Current Type
- High Efficiency
- Low DC resistance
- Magnetically shielded
- Monolithic structure for high reliability
- AEC-Q200 Standard(MPA for Automotive)

Application



DC-DC Converters and Power modules
in general use Electronic equipment(Mobile phone , Tablet , PC)



-> Stabilize rapidly changing current changes

Power Inductor is often used in power circuits and is designed to withstand high voltage and high current.

Occurs during DC-DC Convert Switching in the process of PMIC -> DC-DC Convert -> App

Used to remove ripple voltage. In other words, Used to obtain a stabilized power.

Metal Composite Power Inductor

Part Numbering

①	②	③	④	⑤	⑥	⑦	⑧	⑨
MP	1608	08	E	R47	B	M	F	R

① Product

Code	Product
MP	**M**etal Composite **P**ower Inductor
MPA	**M**etal Composite **P**ower Inductor for **A**utomotive

② Dimensions (L X W)

Code		1412	1608	2012	2016	2520
Dimension	mm	1.4 x 1.2	1.6 x 0.8	2.0 x 1.2	2.0 x 1.6	2.5 x 2.0
	inch	0605	0603	0805	0806	1008

③ Thickness (Max)

Code	R6	08	10
Thickness (mm)	0.65	0.80	1.00

④ Characteristic

Code	S	H	E	U
Characteristic	Standard	High Current	Excellent Current	Ultra Current

⑤ Inductance

Code	R24	R33	R47	R56	1R0	1R5	2R2	4R7
Inductance (uH)	0.24	0.33	0.47	0.56	1.0	1.5	2.2	4.7

⑥ External Electrode

Code	N/A	B	L
Type	Ag Epoxy	Cu Plating	L type Cu Plating

⑦ Inductance Tolerance : M = ± 20%, L = -10% ~ +30%

⑧ Electrode Type : F = Lead Free

⑨ Packing Type : R = Real Taping, B = Bulk

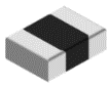
Metal Composite Power Inductor

Product Specification

1412 Series 

0.65T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP1412R6UR24LMFR	0.24±20%	17	21	5.5	5.0	5.0	4.5
MP1412R6UR33LMFR	0.33±20%	21	25	5.1	4.6	4.9	4.5

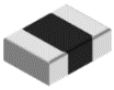
1608 Series 

0.80T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP160808SR24BMFR	0.24±20%	25	30	3.5	3.0	3.5	3.2
MP160808ER47BMFR	0.47±20%	37	45	3.4	3.1	3.2	2.9
MP160808E1R0BMFR	1.00±20%	115	135	2.2	2.0	2.0	1.7

Metal Composite Power Inductor

Product Specification

2012 Series 

0.65T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP2012R6UR33LMFR	0.33±20%	22	26	5.5	5.0	5.1	4.6

0.80T

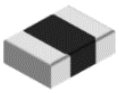
Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP201208SR47BLFR	0.47 -10%, +30%	35	43	4.2	4.0	3.2	3.0
MP201208SR47BMFR	0.47±20%	31	35	4.3	4.1	3.9	3.7
MP201208SR56BMFR	0.56±20%	40	48	3.5	3.2	3.5	3.2
MP201208ER47LMFR	0.47±20%	25	27	5.0	4.8	4.2	4.0
MP201208ER47BMFR	0.47±20%	30	35	5.0	4.7	4.0	3.8
MP201208S1R0BMFR	1.00±20%	48	55	3.5	3.2	3.3	3.1
MP201208E1R0BMFR	1.00±20%	60	65	3.4	3.1	3.0	2.7

1.00T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP201210ER47BMFR	0.47±20%	25	33	5.4	4.9	4.5	4.3
MP201210E1R0BMFR	1.00±20%	58	63	3.4	3.1	3.0	2.7

Metal Composite Power Inductor

Product Specification

2016 Series 

0.65T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP2016R6UR47LMFR	0.47±20%	27	31	5.5	5.0	5.1	4.5

0.80T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP201608SR24MFR	0.24±20%	20	25	5.0	4.6	4.2	3.8
MP201608SR47MFR	0.47±20%	32	40	3.7	3.3	3.4	3.0
MP201608SR68MFR	0.68±20%	40	55	3.6	3.2	3.1	2.7
MP201608S1R0MFR	1.00±20%	50	65	3.3	9	3.0	2.6
MP201608S1R5MFR	1.50±20%	90	120	2.9	2.3	2.1	1.9
MP201608S2R2MFR	2.20±20%	130	150	2.0	1.6	1.9	1.5
MP201608ER47MFR	0.47±20%	21	27	5.0	4.7	4.1	4.0
MP201608H2R2MFR	1.00±20%	45	50	3.9	3.6	3.5	3.2

Metal Composite Power Inductor

Product Specification

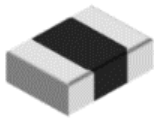
1.00T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP201610SR24MFR	0.24±20%	18	23	5.8	5.3	4.4	4.0
MP201610SR47MFR	0.47±20%	35	40	4.2	3.5	3.7	3.2
MP201610SR68MFR	0.68±20%	48	556	3.8	3.3	3.4	3.0
MP201610S1R0MFR	1.00±20%	58	65	3.2	2.8	3.0	2.6
MP201610S2R2MFR	2.20±20%	135	150	2.2	1.8	2.3	1.9
MP201610ER47MFR	0.47±20%	21	27	6.0	5.7	5.2	4.8
MP201610E1R0MFR	1.00±20%	43	46	4.2	4.0	3.5	3.2
MP201610E2R2MFR	2.20±20%	117	140	2.6	2.4	2.1	1.9
MP201610HR47MFR	0.47±20%	26	30	4.8	4.5	4.2	3.6
MP201610H1R0MFR	1.00±20%	45	50	3.5	3.3	3.1	2.7
MP201610H1R5MFR	1.50±20%	85	100	2.7	2.5	2.5	2.3
MP201610H2R2MFR	2.20±20%	115	135	2.7	2.5	2.4	2.2

Metal Composite Power Inductor

Product Specification

2520 Series



0.80T

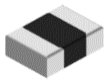
Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP252008SR47BMFR	0.47±20%	24	29	5.5	5.0	4.5	4.2
MP252008S1R0BMFR	1.00±20%	36	43	4.3	4.1	4.2	4.0

1.00T

Part Number	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
		Typical	Max	Isat		Irms	
				Typical	Max	Typical	Max
MP252010SR33MFR	0.33±20%	20	25	6.2	5.8	5.6	5.2
MP252010SR47MFR	0.47±20%	25	30	6.0	5.5	4.1	3.7
MP252010S1R0MFR	1.00±20%	40	50	4.2	3.8	3.5	3.1
MP252010S1R5MFR	1.50±20%	65	80	3.5	3.1	2.8	2.5
MP252010S2R2MFR	2.20±20%	100	110	3.0	2.5	2.5	2.3
MP252010S4R7MFR	4.70±20%	250	255	1.9	1.6	1.8	1.5
MP252010ER47MFR	0.47±20%	21	27	6.4	6.0	5.2	4.6
MP252010E1R0MFR	1.00±20%	33	36	5.0	4.7	4.3	4.0
MP252010E2R2MFR	2.20±20%	85	89	3.5	3.1	2.5	2.3
MP252010H1R0MFR	1.00±20%	35	45	4.6	4.1	3.8	3.5
MP252010H2R2MFR	2.20±20%	90	97	3.5	3.1	2.5	2.3

Metal Composite Power Inductor

Product Specification

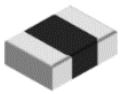
1608 Series AEC-Q200 

S Series

Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA160808S1R0MFR	0.8	1.00 ±20%	130	150	2.0	1.7	2.0	1.7

E Series

Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA160808ER47MFR	0.8	0.47 ±20%	37	45	3.4	3.1	3.2	2.9
MPA160808ER56BMFR	0.8	0.56 ±20%	55	60	2.9	2.6	2.5	2.2
MPA160808E1R0MFR	0.8	1.00 ±20%	115	135	2.2	2.0	2.0	1.7

2012 Series AEC-Q200 

S Series

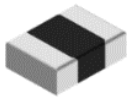
Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA201208SR47MFR	0.8	0.47 ±20%	30	35	4.2	4.0	4.0	3.8
MPA201210S1R0MFR	1.0	1.00 ±20%	50	60	3.5	3.2	3.0	2.7

E Series

Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA201210ER47BMFR	1.0	0.47 ±20%	25	33	5.4	4.9	4.5	4.3
MPA201210E1R0BMFR	1.0	1.00 ±20%	58	6.3	3.4	3.1	3.0	2.7

Metal Composite Power Inductor

Product Specification

2016 Series AEC-Q200 

S Series

Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA201608S2R2MFR	0.8	2.20 ±20%	130	150	2.0	1.6	1.9	1.5
MPA201610SR68MFR	1.0	0.68 ±20%	48	55	3.8	3.3	3.4	3.0
MPA201610S1R0MFR	1.0	1.00 ±20%	58	65	3.2	2.8	3.0	2.6
MPA201610S2R2MFR	1.0	2.20 ±20%	135	150	2.2	1.8	2.3	1.9

E Series

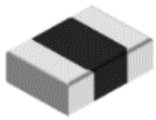
Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA201610ER47MFR	1.0	0.47 ±20%	21	24	6.0	5.7	5.2	4.8
MPA201610E1R0MFR	1.0	1.00 ±20%	43	46	4.2	4.0	3.5	3.2
MPA201610E2R2MFR	1.0	2.20 ±20%	117	140	2.6	2.4	2.1	1.9

H Series

Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA201610HR47MFR	1.0	0.47 ±20%	20	25	5.3	4.8	4.2	3.6
MPA201610H1R0MFR	1.0	1.00 ±20%	40	45	3.9	3.6	3.1	2.7
MPA201610H1R5MFR	1.0	1.50 ±20%	85	100	3.2	2.8	2.5	2.3

Metal Composite Power Inductor

Product Specification

2520 Series AEC-Q200 

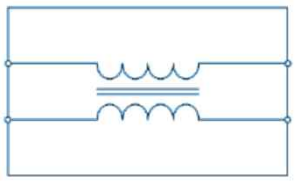
S Series

Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA252010SR33MFR	1.0	0.33 ±20%	20	25	6.2	5.8	5.6	5.2
MPA252010SR47MFR	1.0	0.47 ±20%	25	30	6.0	5.5	4.1	3.7
MPA252010S1R0MFR	1.0	1.00 ±20%	40	50	4.2	3.8	3.5	3.1
MPA252010S1R5MFR	1.0	1.50 ±20%	65	80	3.5	3.1	2.8	2.5
MPA252010S2R2MFR	1.0	2.20 ±20%	100	110	3.0	2.5	2.5	2.3
MPA252010S3R3MFR	1.0	3.30 ±20%	55	170	2.2	2.0	1.9	1.6
MPA252010S4R7MFR	1.0	4.70 ±20%	230	245	1.9	1.6	1.8	1.5

E Series

Part Number	T [mm]	Inductance [uH]	DCR [mΩ]		Rated DC Current [A]			
			Typical	Max	Isat		Irms	
					Typical	Max	Typical	Max
MPA252010E1R0MFR	1.0	1.00 ±20%	27	32	5.0	4.7	4.3	4.0
MPA252010E2R2MFR	1.0	2.20 ±20%	85	95	3.5	3.1	2.5	2.3

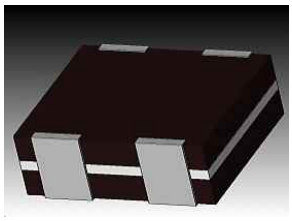
Common Mode Filter



Features

- Effective for suppressing Common Mode Noise
- Almost no effect for high speed Differential Data Line
- Ultra Low Profile [0.05mm]
- For MIPI D-PHY Data Line
- Ceramic Multilayer type SMD component

Application

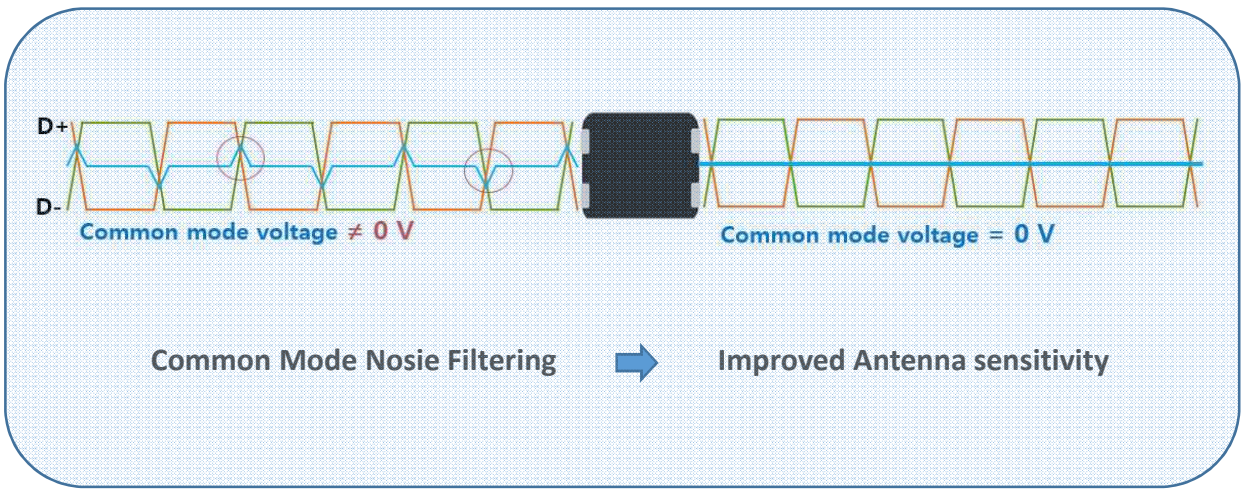


USB 3.1 Gen1, USB 3.1 Gen2, USB 2.0

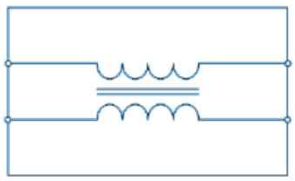
MIPI Lines in mobile phones and other devices

LVDS, DP Lines in Notebook computers

Serial Data Line



Common Mode Filter



Part Numbering

①	②	③	④	⑤	⑥	⑦
ICMF	05	2P	120	M	F	R

① Product

Code	Product
ICMF	ICT's Common Mode Filter
ICMAF	ICT's Common Mode AEC-Q200 Filter

② Dimensions (L X W)

Code		05	06	11	21	10
Dimension	mm	0.64 x 0.57	0.87 x 0.67	1.27 x 1.00	2.00 x 1.20	1.60 x 0.80
	inch	0302	0403	0504	0805	0603

③ Number Of Lines (CH)

Code	2P	4P
CH	2CH	4CH

④ Common Mode Impedance (At 100Mhz)

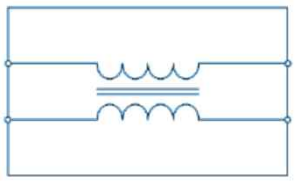
Code	120	350	500	650	900	101
Impedance (Ω)	12	35	50	65	90	100

⑤ Inductance Tolerance : N = ± 30%, M = ± 25%

⑥ Electrode Type : F = Lead Free

⑦ Packing Type : R = Real Taping, B = Bulk

Common Mode Filter



Product Specification

0605 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMF052P120NFR	12Ω(±30%)	1.5Ω(±40%)	Min. 10MΩ	5V	50mA	11.95GHz
ICMF052P350MFR	35Ω(±25%)	Max 5.0Ω	Min. 10MΩ	5V	50mA	7.08GHz
ICMF052P650MFR	65Ω(±25%)	Max 10Ω	Min. 10MΩ	5V	50mA	4.71GHz
ICMF052P900MFR	90Ω(±25%)	Max 10Ω	Min. 10MΩ	5V	50mA	4.50GHz

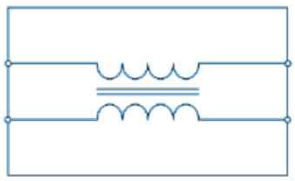
0806 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMF062P120NFR	12Ω(±30%)	1.3Ω(±30%)	Min. 10MΩ	5V	100mA	9.20GHz
ICMF062P250MFR	25Ω(±25%)	Max 5.0Ω	Min. 10MΩ	5V	100mA	8.28GHz
ICMF062P650MFR	65Ω(±25%)	Max 5.0Ω	Min. 10MΩ	5V	100mA	3.20GHz
ICMF062P900MFR	90Ω(±25%)	Max 6.0Ω	Min. 10MΩ	5V	100mA	3.10GHz

1210 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMF112P120NFR	12Ω(±30%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	10.50GHz
ICMF112P350MFR	35Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	8.72GHz
ICMF112P500MFR	50Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	6.45GHz
ICMF112P650MFR	65Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	5.35GHz
ICMF112P900MFR	90Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	4.50GHz
ICMFS112P750MFR	75Ω(±25%)	Max 2.0Ω	Min. 10MΩ	5V	100mA	3.00GHz

Common Mode Filter



Product Specification

2012 Series

2P

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMF212P121MFR	120Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	3.95GHz
ICMF212P181MFR	180Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	3.46GHz
ICMF212P900MFR	90Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	4.10GHz

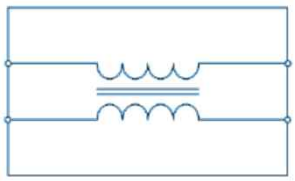
4P

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMF214P101MFR	100Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	3.7GHz
ICMF214P181MFR	180Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	4.23GHz

1608 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMF104P750MFR	75(±25%)	Max 6.0	Min. 10MΩ	5V	100mA	4.1GHz

Common Mode Filter



Product Specification

1210 Series AEC-Q200

2P

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMAF112P120MFR	12Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	18.46GHz
ICMAF112P900MFR	90Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	4.65GHz

2012 Series

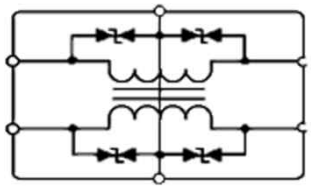
2P

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMAF212P900MFR	90Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	3.89GHz

4P

Part Number	Common Mode Impedance	Resistance	Insulation Resistance	Rated Voltage	Rated Current	Cut-off Frequency
ICMAF214P101MFR	100Ω(±25%)	Max 4.0Ω	Min. 10MΩ	5V	100mA	2.92GHz

Common Mode ESD Filter

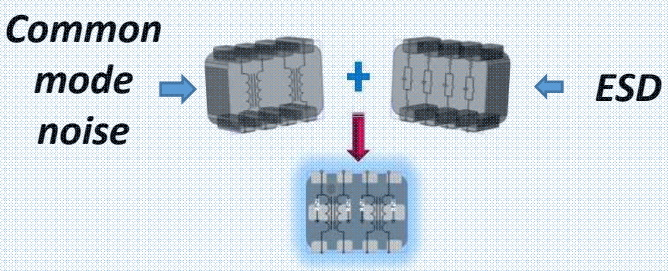


Features

- Effective for suppressing Common Mode Noise and **ESD**
- Almost no effect for high speed Differential Data Line
- IEC61000-4-2 Level4
- For MIPI D-PHY Data Line

Application

Suitable for high-speed serial interfaces such as LVDS, MDDI, MIPI, HDMI, USB

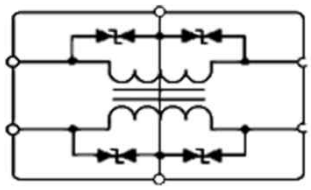


Common Mode Filter with ESD protection.

-> Cost & space-saving solution

Best solution for EMI and ESD simultaneously.

Common Mode ESD Filter



Part Numbering

①	②	③	④	⑤	⑥	⑦
ICMEF	06	2P	120	N	F	R

① Product

Code	Product
ICMEF	ICT's Common Mode ESD Filter
ICMEAF	ICT's Common Mode ESD AEC-Q200 Filter

② Dimensions (L X W)

Code		05	06	11	21	10
Dimension	mm	0.68 x 0.55	0.87 x 0.67	1.27 x 1.00	2.00 x 1.20	1.60 x 0.80
	inch	0302	0403	0504	0805	0603

③ Number Of Lines (CH)

Code	2P	4P
CH	2CH	4CH

④ Common Mode Impedance (At 100Mhz)

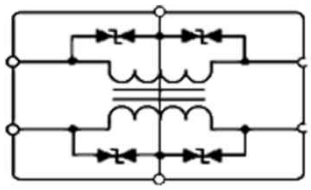
Code	120	350	500	900	101
Impedance (Ω)	12	35	50	90	100

⑤ Inductance Tolerance : N = ± 30%, M = ± 25%

⑥ Electrode Type : F = Lead Free

⑦ Packing Type : R = Real Taping, B = Bulk

Common Mode ESD Filter



Product Specification

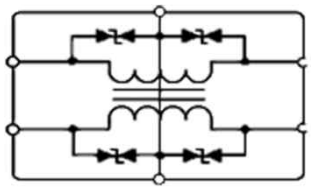
0605 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF052P120NFR	12Ω(±30%)	Max 2.0Ω	Min. 10MΩ	Max 1.2pF	100mA	14.13GHz
ICMEF052P350MFR	35Ω(±25%)	Max 5.0Ω	Min. 10MΩ	Max 1.7pF	50mA	7.09GHz
ICMEF052P650MFR	60Ω(±25%)	Max 8.0Ω	Min. 10MΩ	Max 1.7pF	50mA	4.76GHz

0806 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF062P120NFR	12Ω(±30%)	Max 5.0Ω	Min. 10MΩ	Max 1.7pF	100mA	10.35GHz
ICMEF062P250MFR	25Ω(±25%)	Max 5.0Ω	Min. 10MΩ	Max 1.7pF	100mA	8.07GHz
ICMEF062P750MFR	75Ω(±25%)	Max 6.0Ω	Min. 10MΩ	Max 1.7pF	100mA	3.60GHz
ICMEF062P900MFR	90Ω(±25%)	Max 6.0Ω	Min. 10MΩ	Max 1.7pF	100mA	4.03GHz
ICMEW062P500MFR	50Ω(±25%)	Max 7.0Ω	Min. 10MΩ	Max 1.7pF	100mA	3.60GHz
ICMES062P750MFR	75Ω(±25%)	Max 6.0Ω	Min. 10MΩ	Max 1.7pF	100mA	4.00GHz
ICMEG062P900MFR	90Ω(±25%)	Max 8.0Ω	Min. 10MΩ	Max 2.0pF	100mA	3.50GHz

Common Mode ESD Filter



Product Specification

1210 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF112P120NFR	12Ω(±30%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	10.50GHz
ICMEF112P350MFR	35Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	7.10GHz
ICMEF112P500MFR	50Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	6.00GHz
ICMEF112P650MFR	65Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	4.00GHz
ICMEF112P900MFR	90Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	4.00GHz

1207 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF124P850MFR	85Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	50mA	4.00GHz

2012 Series

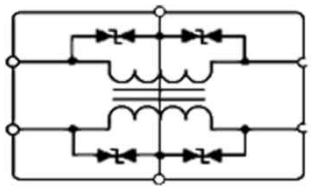
2P

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF212P900MFR	90Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	3.38GHz
ICMEF212P121MFR	120Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	3.62GHz

4P

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF214P101MFR	100Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	4.22GHz

Common Mode ESD Filter



Product Specification

3008 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF306P750MFR	75Ω(±25%)	Max 6.0Ω	Min. 10MΩ	Max 2.0pF	100mA	4.51GHz

1608 Series

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEF104P180MFR	18Ω(±25%)	Max 6.0Ω	Min. 10MΩ	Max 1.7pF	100mA	10.35GHz
ICMEF104P350MFR	35Ω(±25%)	Max 6.0Ω	Min. 10MΩ	Max 1.7pF	100mA	7.20GHz
ICMEF104P750MFR	75Ω(±25%)	Max 6.0Ω	Min. 10MΩ	Max 1.7pF	100mA	4.91GHz

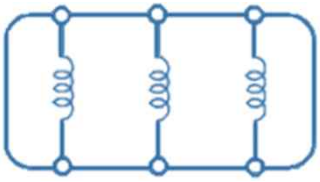
1210 Series AEC-Q200

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEAF112P350MFR	35Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	6.38GHz
ICMEAF112P900MFR	90Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	4.57GHz

1608 Series AEC-Q200

Part Number	Common Mode Impedance	Resistance	Insulation Resistance [5V]	Capacitance	Rated Current	Cut-off Frequency
ICMEAF104P101MFR	100Ω(±25%)	Max 4.0Ω	Min. 10MΩ	Max 1.7pF	100mA	5.50GHz

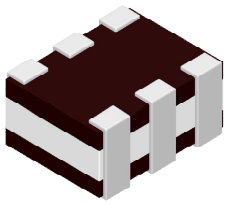
C-PHY Filter



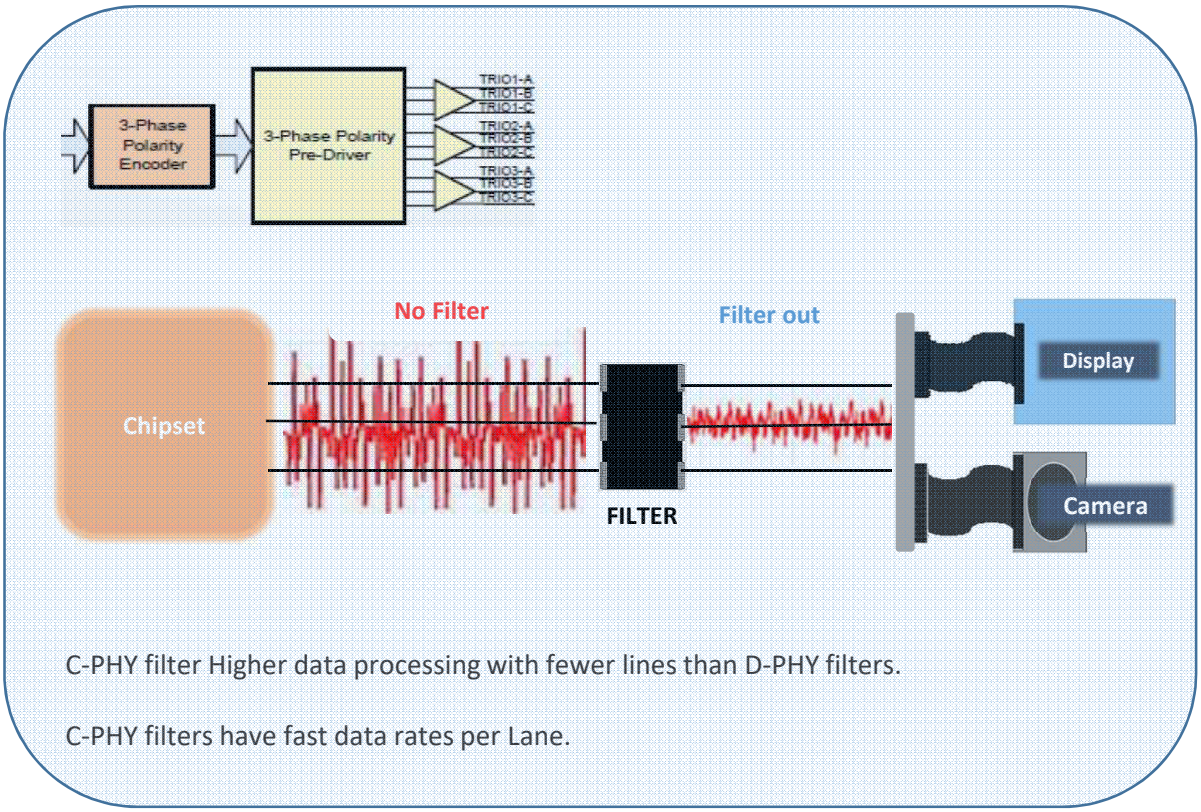
Features

- Effective for suppressing Common Mode Noise
- Almost no effect for high speed Differential Data Line
- Non-polarized product
- It is a product conforming to RoHS directive

Application



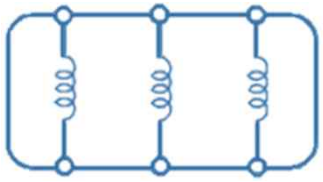
Camera, LCD MIPI C-PHY data Lines
(Mobile phone, Automotive)



C-PHY filter Higher data processing with fewer lines than D-PHY filters.

C-PHY filters have fast data rates per Lane.

C-PHY Filter



Part Numbering

①	②	③	④	⑤	⑥	⑦
ICPF	07	3P	250	M	F	R

① Product

Code	Product
ICPF	ICT's C-PHY Filter

② Dimensions (L X W)

Code		07
Dimension	mm	0.90 x 0.68
	inch	0403

③ Number Of Lines (CH)

Code	3P
CH	3CH

④ Common Mode Impedance (At 100Mhz)

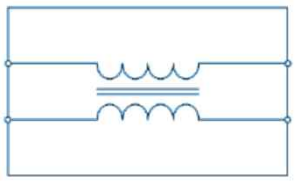
Code	250	350
Impedance (Ω)	25	35

⑤ Inductance Tolerance : N = ± 30%, M = ± 20%

⑥ Electrode Type : F = Lead Free

⑦ Packing Type : R = Real Taping, B = Bulk

C-PHY Filter

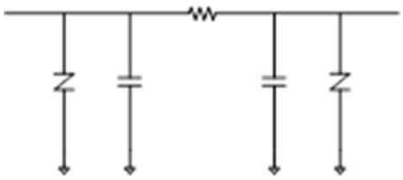


Product Specification

0907 Series 

Part Number	Common Mode Impedance	Resistance	Rated Voltage	Rated Current	Cut-off Frequency	Design Guide
ICPF073P4R5QFR	4.5Ω(±1.5Ω)	Max 4.0	5V	80mA	-	-
ICPF073P180NFR	18Ω(±35%)	Max 5.0	5V	80mA	-	-
ICPF073P250MFR	25Ω(±25%)	Max 5.0	5V	80mA	6.7GHz	Max. 3.5GS/s(V1.2)
ICPF073P350MFR	35Ω(±25%)	Max 8.0	5V	70mA	4.54GHz	Max. 2.5GS/s(V1.0)
ICPWF073P130NFR	13Ω(±30%)	Max 5.0	5V	70mA	5.5GHz	-

EMI / ESD Filter



Features

- RC EMI Filter and ESD Protection Lines per device
- ESD IEC61000-4-2 Level4
- High attenuation characteristic plot
- Highly effective noise Filtering
- Very thin and low space consuming size

Application

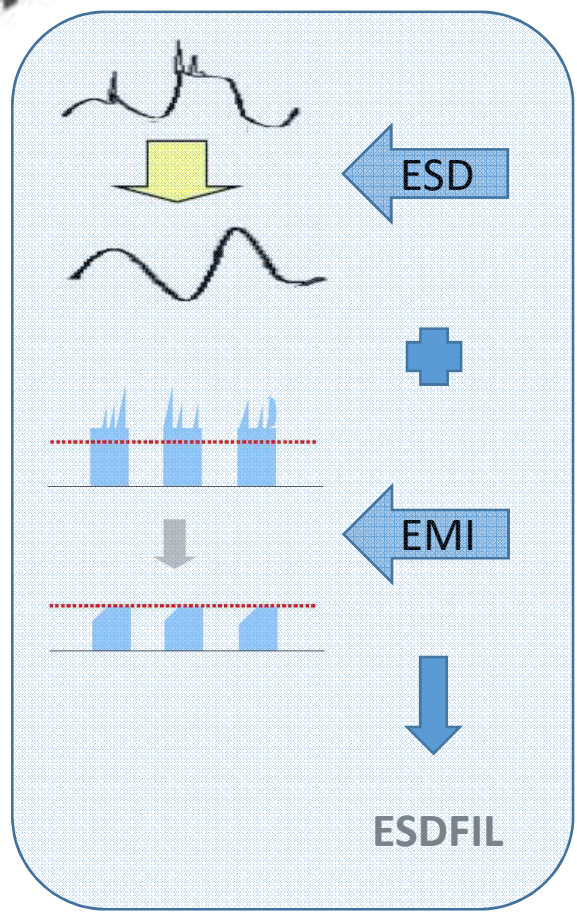
Mobile Phones, Automotive

Computers and Systems

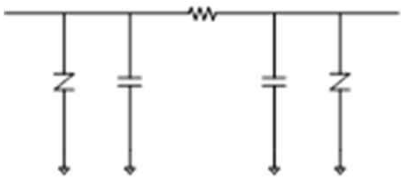
Internet Appliances

PDAs

Laptop Computer



EMI / ESD Filter



Part Numbering

①	②	③	④	⑤	⑥	⑦	⑧
ICVH	10	18	4E	050	R100	F	R

① Product

Code	Product
ICVH	EMI/ESD FILTER For AUTOMOTIVE
ICVE	EMI FILTER Array Chip Varistor

② Dimensions (L X W)

Code		10	21	31	32
Dimension	mm	1.6 x 0.8	2.0 x 1.2	3.0 x 1.2	3.2 x 1.2
	inch	0603	0805	1205	1305

③ Working Voltage

Code	05	09	14	18
Voltage (Vdc)	5.6	9	14	18

④ Number Of Lines (CH)

Code	1E	4E	6E	8E
CH	1CH	4CH	6CH	8CH

⑤ C Line Capacitance

Code	050	070	150	250	300	301	401
Capacitance @1MHZ (pF)	7	7.5	15	25	30	300	400

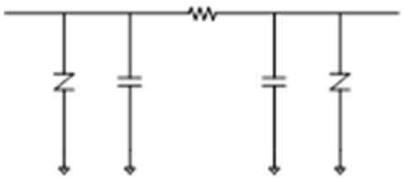
⑥ Resistance

Code	R100	R500	R101	R201
Resistance (Ω)	10	50	100	200

⑦ Electrode Type : F = Lead Free

⑧ Packing Type : R = Real Taping, B = Bulk

EMI / ESD Filter

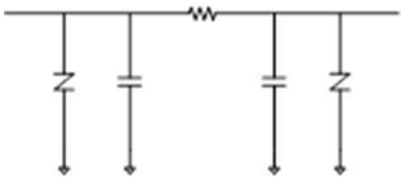


Product Specification

1608 4E Series

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVE10054E250R500FR	110MHz	800-2000MHz	50Ω	25pF	15-25V	65V	5A
ICVE10054E250R101FR	110MHz	800-2000MHz	100Ω	25pF	15-25V	45V	5A
ICVE10054E250R201FR	110MHz	800-2000MHz	200Ω	25pF	15-25V	45V	5A
ICVE10054E250R401FR	110MHz	800-2000MHz	400Ω	25pF	15-25V	65V	5A
ICVE10184E050R100FR	700MHz	3500-4300MHz	10Ω	5pF	60-100V	130V	6A
ICVE10184E050R101FR	550MHz	2200-3400MHz	100Ω	5pF	60-100V	130V	6A
ICVE10184E070R100FR	430MHz	2800-3500MHz	10Ω	7.5pF	55-85V	130V	6A
ICVE10184E070R500FR	280MHz	1800-2500MHz	50Ω	7.5pF	55-85V	130V	5A
ICVE10184E070R101FR	330MHz	1800-2500MHz	100Ω	7.5pF	55-85V	130V	6A
ICVE10184E150R500FR	200MHz	900-2000MHz	50Ω	15pF	24-36V	65V	5A
ICVE10184E150R101FR	200MHz	900-2000MHz	100Ω	15pF	24-36V	50V	10A
ICVE10184E150R201FR	200MHz	900-2000MHz	200Ω	15pF	24-36V	65V	5A
ICVE10184E150R401FR	250MHz	900-2000MHz	400Ω	15pF	24-36V	65V	5A

EMI / ESD Filter

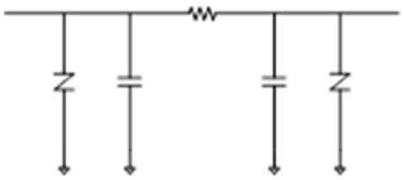


Product Specification

2012 4E Series

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVE21054E250R500FR	110MHz	800-2000MHz	50Ω	25pF	15-25V	35V	15A
ICVE21054E250R101FR	110MHz	800-2000MHz	100Ω	25pF	15-25V	35V	15A
ICVE21054E250R201FR	120MHz	800-2000MHz	200Ω	25pF	15-25V	35V	15A
ICVE21054E300R101FR	95MHz	700-1900MHz	100Ω	30pF	15-25V	35V	15A
ICVE21144E500R101FR	55MHz	500-1900MHz	100Ω	50pF	16-26V	35V	10A
ICVE21184E050R101FR	550MHz	2500-3500MHz	100Ω	5pF	60-100V	130V	3A
ICVE21184E070R100FR	370MHz	2500-4000MHz	10Ω	7.5pF	55-85V	130V	5A
ICVE21184E070R101FR	330MHz	1800-2500MHz	100Ω	7.5pF	55-85V	130V	5A
ICVE21184E150R500FR	180MHz	900-2000MHz	100Ω	15pF	24-36V	50V	10A
ICVE21184E150R101FR	190MHz	00-2000MHz	50Ω	15pF	24-36V	50V	5A

EMI / ESD Filter



Product Specification

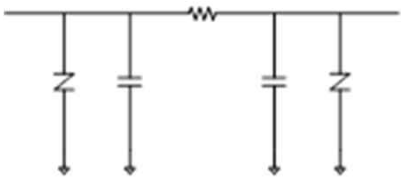
3012 6E Series

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVE31186E070R100FR	440MHz	2500-3000MHz	10Ω	7.5pF	55-85V	130V	3A
ICVE31186E150R101FR	180MHz	900-2000MHz	100Ω	15pF	24-36V	50V	15A

3212 8E Series

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVE32058E250R101FR	100MHz	800-2000MHz	100Ω	25pF	15-25V	45V	5A
ICVE32188E070R100FR	370MHz	2500-3000MHz	10Ω	7.5pF	55-85V	130V	3A
ICVE32188E070R101FR	330MHz	1800-2500MHz	100Ω	7.5pF	55-85V	130V	3A
ICVE32188E150R100FR	180MHz	900-2000MHz	100Ω	15pF	24-36V	50V	10A

EMI / ESD Filter

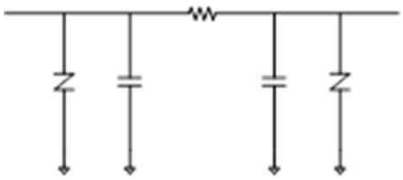


Product Specification

1608 4E Series AEC-Q200

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVH10184E050R100FR	700MHz	3500-4300MHz	10Ω	5pF	60-100V	130V	6A
ICVH10184E050R101FR	550MHz	2200-3400MHz	100Ω	5pF	60-100V	130V	6A
ICVH10184E070R100FR	430MHz	2800-3500MHz	10Ω	7.5pF	55-85V	130V	6A
ICVH10184E070R500FR	280MHz	1800-2500MHz	50Ω	7.5pF	55-85V	130V	6A
ICVH10184E070R101FR	330MHz	1800-2500MHz	100Ω	7.5pF	55-85V	130V	6A
ICVH10184E150R500FR	200MHz	900-2000MHz	50Ω	15pF	24-36V	65V	5A
ICVH10184E150R101FR	200MHz	900-2000MHz	100Ω	15pF	24-36V	65V	5A
ICVH10184E150R201FR	200MHz	900-2000MHz	200Ω	15pF	24-36V	65V	5A
ICVH10054E250R500FR	100MHz	800-2000MHz	50Ω	25pF	15-25V	45V	5A
ICVH10054E250R101FR	100MHz	800-2000MHz	100Ω	25pF	15-25V	45V	5A
ICVH10054E250R201FR	100MHz	800-2000MHz	200Ω	25pF	15-25V	45V	5A

EMI / ESD Filter



Product Specification

2012 4E Series AEC-Q200

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVD21184E070R100FR (ES)	340MHz	1900-3450MHz	10Ω	7.5pF	24-36V	50V	5A
ICVH21184E070R100FR	370MHz	2500-4000MHz	10Ω	7.5pF	55-85V	130V	5A
ICVH21184E070R101FR	330MHz	1800-2500MHz	100Ω	7.5pF	55-85V	130V	5A
ICVH21184E150R101FR	180MHz	900-2000MHz	100Ω	15pF	24-36V	50V	10A

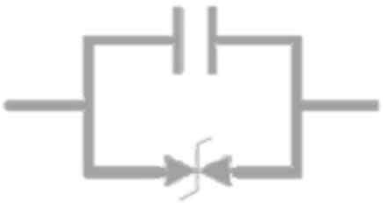
3012 6E Series AEC-Q200

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVH31186E070R100FR	440MHz	2500-3000MHz	10Ω	7.5pF	55-85V	130V	3A
ICVH31056E250R101FR	100MHz	700-2000MHz	100Ω	25pF	15-25V	35V	15A

3212 8E Series AEC-Q200

Part Number	Cut-off Frequency	ATT Characteristic (Min-20dB)	Resistance	Capacitance	Varistor Voltage	Clamping Voltage	Peak Current
ICVH32188E070R101FR	330MHz	1800-2500MHz	100Ω	7.5pF	55-85V	130V	3A
ICVH32058E250R101FR	100MHz	800-2000MHz	100Ω	25pF	15-25V	45V	5A

MLCC + ESD Protection



Features

- Electronic Shock Current & ESD Protection
- IEC 61000-4-2 Level4
- Shock Current [IEC 60990 Standard]
- Mobile RF antenna line, High Pass Filtering
- Capacitance 1.5 ~ 100pF, 0603 ~ 1005mm

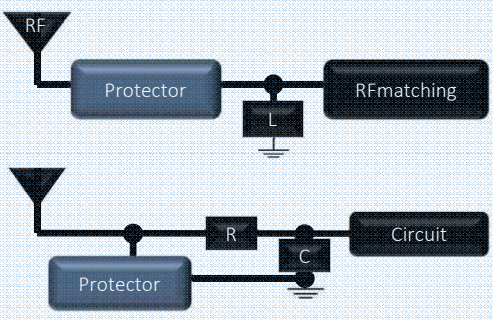
Application

Electrostatic (ESD) absorption

Replace the TVS Diode & Capacitor & Varistor combination

Pulse noise removal

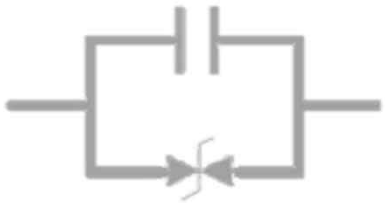
Electric shock protection devices for metal case



Function : ESD Protection + Leakage Current Blocking

Application : Apply all Metal connections

MLCC + ESD Protection



Part Numbering

①	②	③	④	⑤	*	⑥	⑦
ISG	03	30	V341	CR75	M	F	R

① Product

Code	Product
IMG	INNO **M** GUARD
ISG	INNO **S** GUARD
IVG	INNO **V** GUARD

② Dimensions (L X W)

Code		03	05
Dimension	mm	0.6 x 0.3	1.0 x 0.5
	inch	0201	0402

③ Working Voltage

Code	30
Voltage (Vdc)	30

④ Breakdown Voltage

Code	V181	V321	V341
Voltage (Vdc)	180	320	340

⑤ Capacitance

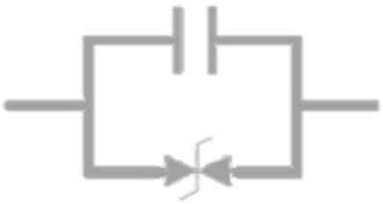
Code	CR75	101	390(39 x 10 ˚)
Capacitance @1MHz (pF)	0.75	100	39

*** Inductance Tolerance : J = ± 5%, M = ± 15%, N = ±30%**

⑥ Electrode Type : F = Lead Free

⑦ Packing Type : R = Real Taping, B = Bulk

MLCC + ESD Protection



Product Specification

ISG Series

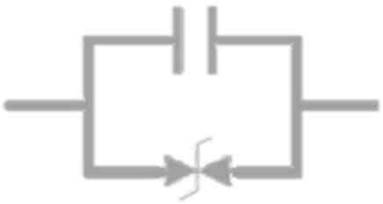
0603

Part Number	Capacitance	Capacitance Tolerance	Breakdown Voltage	Leakage Current	Shock Current [TA Abnormal Mode]
ISG0330C1R0M	1.0pF	15%	340V	<5uA	Max 50uA
ISG0330C2R7J	2.7pF	5%	340V		
ISG0330C2R7J	2.7pF	5%	340V		
ISG0330C8R2J	8.2pF	5%	340V		
ISG0330C4R7J	4.7pF	5%	340V		

1005

Part Number	Capacitance	Capacitance Tolerance	Breakdown Voltage	Leakage Current	Shock Current [TA Abnormal Mode]
ISG0530V321C2R0	2.0pF	15%	320V	<5uA	Max 50uA
ISG0530C1R5M	1.5pF	15%	340V		
ISG0530C4R7M	4.7pF	15%	340V		
ISG0530C6R8J	6.8pF	5%	340V		
ISG0530C8R2J	8.2pF	5%	340V		
ISG0530C150J	15pF	5%	340V		
ISG0530C330J	33pF	5%	340V		
ISG0530C390J	39pF	5%	340V		
ISG0530C600J	60pF	5%	340V		
ISG0530C331J	330pF	5%	340V		
ISG5V321C390J	39pF	5%	Min. 340V Typ. 360V		
ISG5V321C101J	100pF	5%			

MLCC + ESD Protection



Product Specification

IMG Series

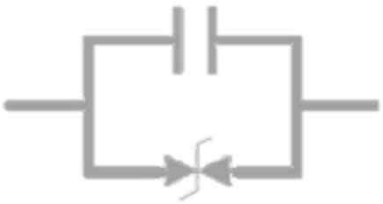
0603

Part Number	Capacitance	Capacitance Tolerance	Breakdown Voltage	Leakage Current	Shock Current [TA Abnormal Mode]
IMG0330C390J	39pF	5%	340V	<5uA	Max 50uA
IMG0330C101J	100pF	5%	340V		

1005

Part Number	Capacitance	Capacitance Tolerance	Breakdown Voltage	Leakage Current	Shock Current [TA Abnormal Mode]
IMG0530V181C040	4.0pF	15%	180V	<5uA	Max 50uA
IMG0530C400	39pF	15%	340V		
IMG0530C101J	100pF	5%	340V		

MLCC + ESD Protection



Product Specification

IVG Series AEC-Q200

1005

Part Number	Capacitance	Clamping Voltage	Breakdown Voltage	Leakage Current	Peak Current
IVG0505X150FR	360pF	15.5	7.2~10.8	<20uA	20
IVG0505500FR	50pF	27.2	9.0~16.0	<20uA	5
IVG0505101FR	100pF	15.5	7.2~10.8	<20uA	15
IVG0505201FR	200pF	20.0	9.0~16.0	<20uA	20
IVG0518100FR	10pF	51.2	24.0~36.0	<20uA	3
IVG0518150FR	15pF	50	24.0~36.0	<20uA	3
IVGS0505A015FR	0.15pF	50.0	-	<1uA	-

1608

Part Number	Capacitance	Clamping Voltage	Breakdown Voltage	Leakage Current	Peak Current
IVG1018100FR	10pF	50.0	24.0~36.0	<20uA	3
IVG1018101FR	100pF	48.0	24.0~36.0	<20uA	19
IVGS1024B015FR	0.15pF	80.0	-	<1uA	-

Multilayer Chip Varistor

Features

- ESD Protection
- IEC 61000-4-2 Level4
- Protection against ESD threat for Input/output port with ICT's MLVs

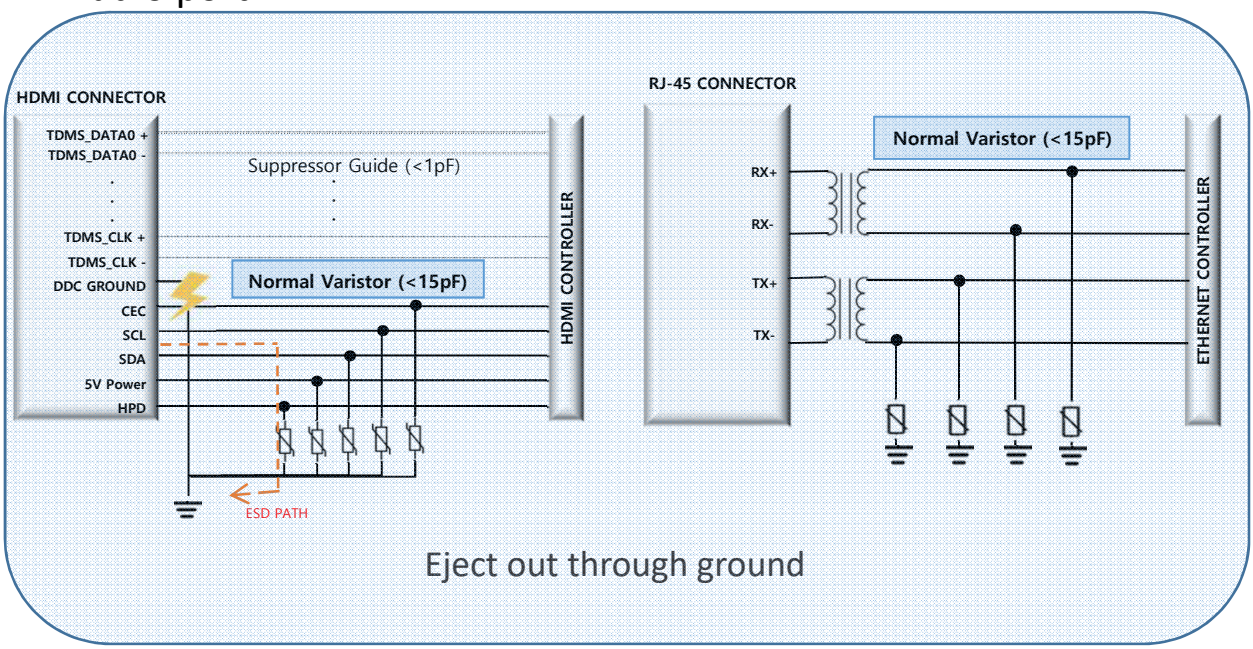
Application

HDMI

USB 2.0 / 3.0

Ethernet

Audio port



Multilayer Chip Varistor

Part Numbering

①	②	③	*	④	⑤	⑥	⑦
ICVL	05	05	101	V	150	F	R

① Product

Code	Product
ICVN	Normal type
ICVS	Special type
ICVL	High speed type

② Dimensions (L X W)

Code		03	05	10	21
Dimension	mm	0.6 x 0.3	1.0 x 0.5	1.6 x 0.8	2.0 x 1.2
	inch	0201	0402	0603	0805

③ Working Voltage

Code	03	05	09	12	14	18	26	30	48	60
Voltage (Vdc)	3.3	5.6	9.0	12	14	18	26	30	48	60

④ Energy

Code	A	C	D	F	G	H	J	V	X	Y
Voltage (Vdc)	0.1	0.3	0.4	0.7	0.9	1.2	1.5	0.02	0.05	0.005

⑤ Clamping Voltage

Code	100	150	200	250	300	350	400	500	560	580	620	650	101	121
Voltage (Vdc)	10.0	15.5	20.0	25.0	30.0	35.0	40.0	50.0	56.0	58.0	62.0	65.0	100.0	120.0

⑥ Electrode Type : F = Lead Free

⑦ Packing Type : R = Real Taping, B = Bulk

Multilayer Chip Varistor

Product Specification

0603 Series

Part Number	Working Voltage[V]	Varistor Voltage[V]	Clamping Voltage[V, 8/20us]	Peak Current [A, 8/20us]	Capacitance
ICVS0305330	5.6	9~16	15	10	33 @1kHz
ICVS0305500	5.6	9~16	50	10	50 @1kHz
ICVS0305150	5.6	9~16	40	10	15 @1kHz
ICVS0318100	18	24~36	45	10	10 @1kHz
ICVS0318150	18	24~36	45	10	15 @1kHz

Multilayer Chip Varistor

Product Specification

1005 Series

Part Number	Working Voltage[V]	Varistor Voltage[V]	Clamping Voltage[V, 8/20us]	Peak Current [A, 8/20us]	Capacitance
ICVS0505481	5.6	6.8~10.2	15.5	20	480@1kHz
ICVL0505101V150	5.6	7.2~10.8	15.5	15	100@1MHz
ICVN0505X150	5.6	7.2~10.8	15.5	20	360@1MHz
ICVS0505531	5.6	7.2~10.8	30	20	530@1kHz
ICVS0505500	5.6	9~16	20	10	50@1kHz
ICVL0505600V150	5.6	9~16	20	15	60@1MHz
ICVS0505201	5.6	9~16	20	20	200@1kHz
ICVL0509101V200	9	10.4~15.6	20	15	100@1MHz
ICVN0514X300	14	16.8~25.2	30	20	120@1MHz
ICVS0514X350	14	18~24	35	20	120@1MHz
ICVL0518100Y500	18	24~36	50	3	10@1MHz
ICVS0518150	18	24~36	50	3	15@1kHz
ICVS0518270	18	24~36	50	15	27@1MHz
ICVL0518400V500	18	24~36	50	15	40@1MHz
ICVN0518X400	18	24~36	40	20	90@1MHz
ICVS0518011	18	46~65	50	3	1.1@1MHz
ICVL0518030	18	100~160	50	3	3@1MHz
ICVL0518050	18	100~160	50	3	5@1MHz
ICVS0530450	30	36~48	50	30	45@1kHz

Multilayer Chip Varistor

Product Specification

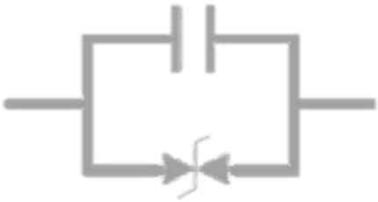
1608 Series

Part Number	Working Voltage[V]	Varistor Voltage[V]	Clamping Voltage[V, 8/20us]	Peak Current [A, 8/20us]	Capacitance
ICVN1005A150	5.6	7.2~10.8	15.5	30	825@1MHz
ICVS1005201	5.6	9~16	64	25	200@1MHz
ICVS1005330	5.6	9~16	20	10	33@1MHz
ICVN1009A200	9	9~16	20	30	550@1MHz
ICVN1014A300	14	16.8~25.2	30	30	424@1MHz
ICVL1018100Y500	18	24~36	50	3	10@1MHz
ICVL1018101A400	18	24~36	45	30	100@1MHz
ICVL1018011	18	46~65	50	3	1.1@1MHz
ICVN1026A580	26	31~41	45	30	160@1MHz
ICVL1026900A580	26	33~41	47	30	90@1MHz
ICVS1030100	30	40~60	65	3	10@1MHz

2012 Series

Part Number	Working Voltage[V]	Varistor Voltage[V]	Clamping Voltage[V, 8/20us]	Peak Current [A, 8/20us]	Capacitance
ICVS0305330	5.6	9~16	15	10	33 @1kHz
ICVS0305500	5.6	9~16	50	10	50 @1kHz
ICVS0305150	5.6	9~16	40	10	15 @1kHz
ICVS0318100	18	24~36	45	10	10 @1kHz
ICVS0318150	18	24~36	45	10	15 @1kHz

ESD Suppressor



Features

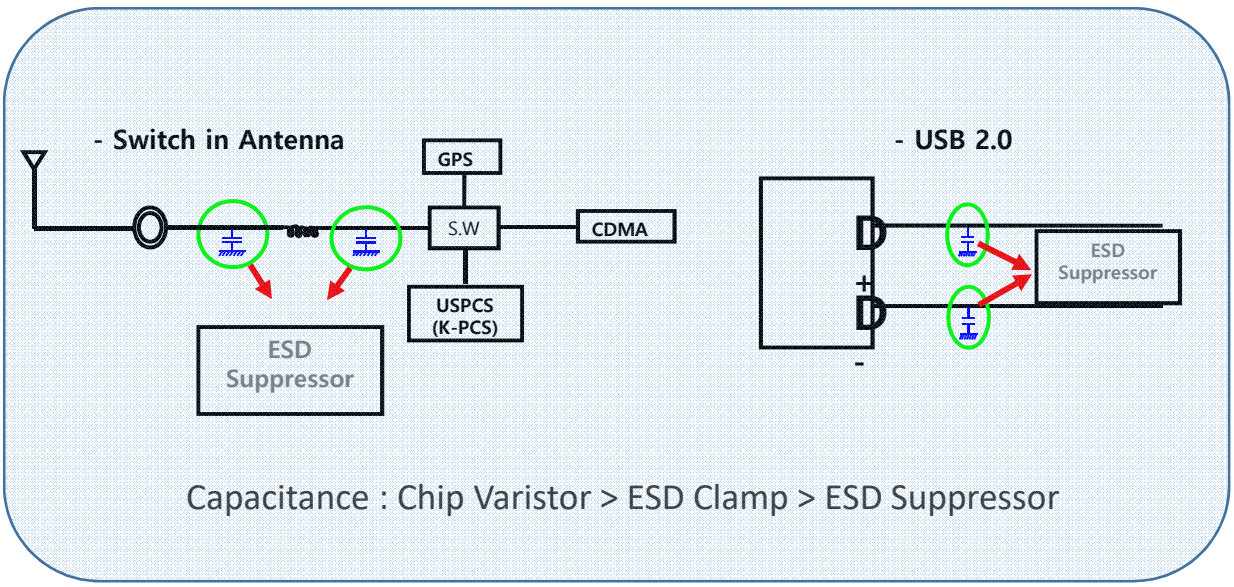
- Ultra Low Capacitance < 0.15pF
- Low ESL (Equivalent Series Inductance)
- Use ANT port, High Speed Data Line
- IEC 61000-4-2 Level4

Application

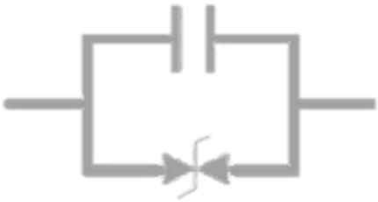
Switch in Antenna

USB port

High Speed Data transmission line



ESD Suppressor



Part Numbering

①	②	③	④	⑤	⑥	⑦
ULCE	05	05	C	015	F	R

① Product

Code	Product
ULCE	Ultra Low Capacitance ESD Suppressor

② Dimensions (L X W)

Code		03	05	10
Dimension	mm	0.6 x 0.3	1.0 x 0.5	1.6 x 0.8
	inch	0201	0402	0603

③ Working Voltage

Code	05	18
Voltage (Vdc)	5	18

④ Trigger Voltage

Code	A	B	C
Voltage (Vdc)	300	500	1000

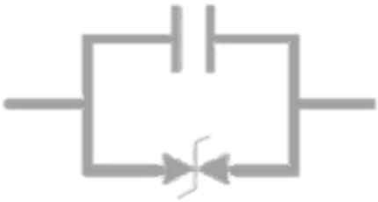
⑤ Capacitance

Code	005	015
Capacitance (pF)	0.05	0.15

⑥ Electrode Type : F = Lead Free

⑦ Packing Type : R = Real Taping, B = Bulk

ESD Suppressor



Product Specification

0603 Series

Part Number	Working Voltage[V]	Trigger Voltage[V]	Clamping Voltage [V, 8/20us]	Response time [ns]	Insertion Loss [0-2GHz]	Capacitance [Typ]
ULCE305C005FR	5	1000	30	0.6	0.05dB	0.05pF

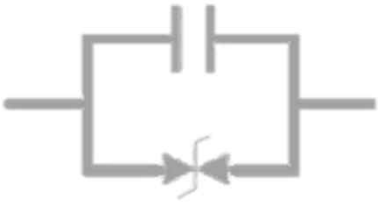
1005 Series

Part Number	Working Voltage[V]	Trigger Voltage[V]	Clamping Voltage [V, 8/20us]	Response time [ns]	Insertion Loss [0-2GHz]	Capacitance [Typ]
ULCE0505A015FR	5	300	30	0.6	0.05dB	0.15pF
ULCE0505B015FR	5	500	30	0.6	0.05dB	0.15pF
ULCE0505C015FR	5	1000	30	0.6	0.05dB	0.15pF
ULCE0518A015FR	18	300	30	0.6	0.05dB	0.15pF
ULCE0518C015FR	18	1000	30	0.6	0.05dB	0.15pF

1608 Series

Part Number	Working Voltage[V]	Trigger Voltage[V]	Clamping Voltage [V, 8/20us]	Response time [ns]	Insertion Loss [0-2GHz]	Capacitance [Typ]
ULCE1005A015FR	5	300	30	0.6	0.05dB	0.15pF
ULCE1005C015FR	5	1000	30	0.6	0.05dB	0.15pF

ESD Clamp



Features

- Ultra Low Capacitance < 0.4pF
- Low ESL (Equivalent Series Inductance)
- IEC 61000-4-2 Level4
- Fast Response time

Application

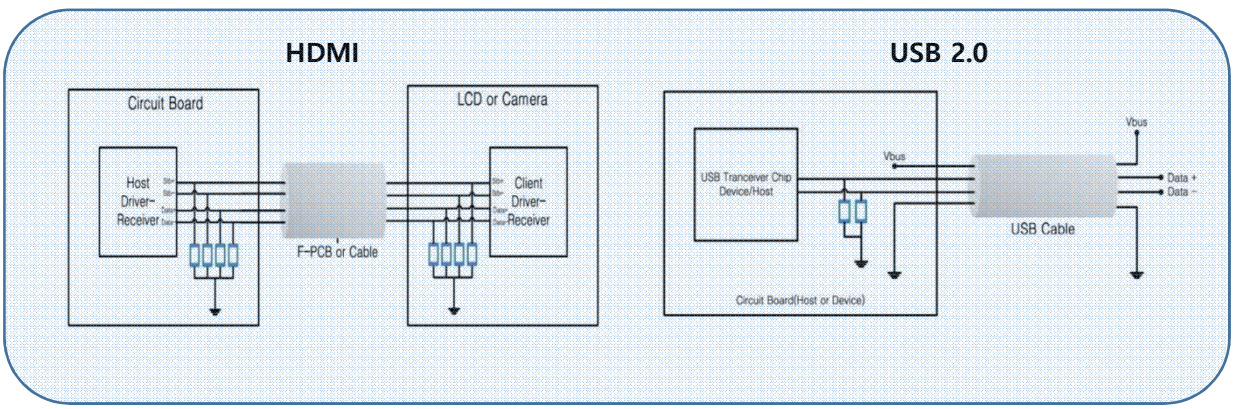
LVDS Lines in Notebook PC (USB2.0, IEEE1394)

HDMI (HDTV, STB)

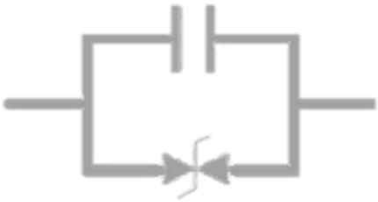
Computer peripherals
(Keyboard, Mouse, Printer, Scanner Data line etc.)

Portable Device using High Speed Data Lines (PDA, PMP, Navigation)

MDDI & MIPI Application in Mobile Phone



ESD Clamp



Part Numbering

①	②	③	④	⑤	⑥
IECS	**03**	**05**	**C040**	**F**	**R**

① Product

Code	Product
IECS	ESD Clamp Single type

② Dimensions (L X W)

Code		03	05
Dimension	mm	0.6 x 0.3	1.0 x 0.5
	inch	0201	0402

③ Working Voltage

Code	05
Voltage (Vdc)	5

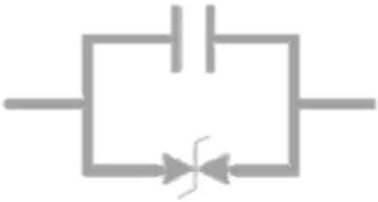
④ Trigger Capacitance

Code	C040
Capacitance (pF)	0.4

⑤ Electrode Type : F = Lead Free

⑥ Packing Type : R = Real Taping, B = Bulk

ESD Clamp



Product Specification

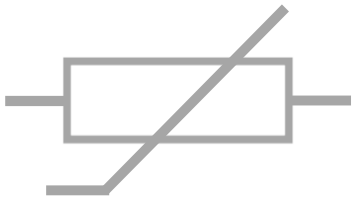
0603 Series

Part Number	Working Voltage[V]	Trigger Voltage[V]	Clamping Voltage [V, 8/20us]	Response time [ns]	Insertion Loss [0-2GHz]	Capacitance [Typ]
IECS0305C040FR	5	500	30	0.6	0.05dB	0.4pF

1005 Series

Part Number	Working Voltage[V]	Trigger Voltage[V]	Clamping Voltage [V, 8/20us]	Response time [ns]	Insertion Loss [0-2GHz]	Capacitance [Typ]
IECS0505C040FR	5	50	30	0.6	0.05dB	0.4pF

SMD Type NTC Thermistor



Features

- It can be used simply in the form of SMD
- Easy to use on a small-space PCB
- High accuracy temperature sensing and thermal compensation
- High Reliability

Application

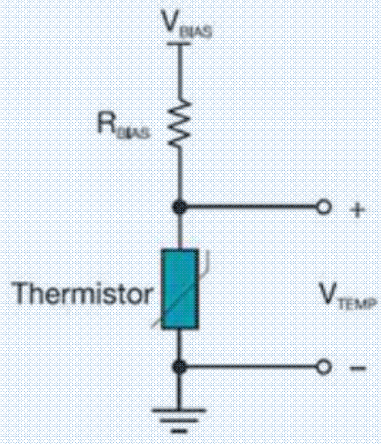
Mobile communication(TCXO, RF circuit, LCD panel, Battery pack)

Personal computer and peripheral device

Video camcorder and car audio

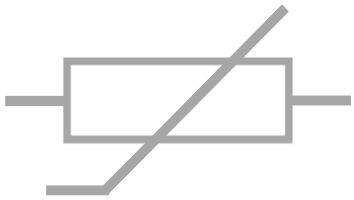
Optical communication

Smart Phone



NTC Thermistor : Decrease in electrical resistance due to an increase in temperature

SMD Type NTC Thermistor



Part Numbering

①	②	③	④	⑤	⑥	⑦	⑧
ICNT	05S	4250	F	104	F	F	R

① Product

Code	Product
ICNT	NTC Thermistor

② Dimensions (L X W)

Code		3
Dimension	mm	0.6 x 0.3
	inch	0201

③ B Constant

Code	4250
B Constant (K)	4250

④ B Constant Tolerance

Code	F	H	J
Tolerance (%)	±1	±3	±5

⑤ Resistance (at 25℃)

Code	104
Resistance (Ω)	100,000

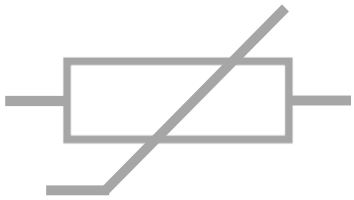
⑥ Resistance Tolerance

Code	F	H	J
Tolerance (%)	±1	±3	±5

⑦ Electrode Type : F = Lead Free

⑧ Packing Type : R = Real Taping , B = Bulk

SMD Type NTC Thermistor



Product Specification

0603 Series

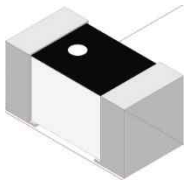
Part Number	Resistance @25℃ [kΩ]	Resistance Tolerance @25℃	B – Constant [K]		B – Constant Tolerance	Thermal Dissipation Constant @25℃
			25℃/50℃	25℃/85℃		
ICNT03S4250F104FFR	100	±1%	4,250	4,307	±1%	1mV/℃

RF Inductor

Features

- High Resonance Frequency and Excellent Q Characteristics
- Minimize reflection and loss
- Low DC resistance
- High current type

Application

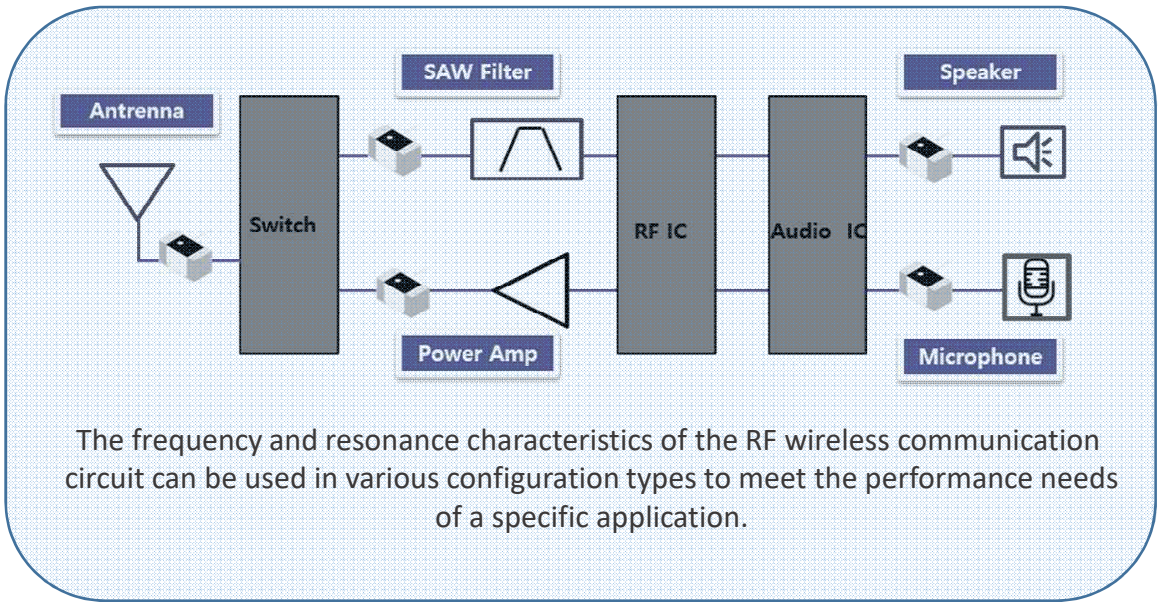


RF module, RF circuits for smart phones, smart wearable devise.

Various wireless communication modules such as Wi-Fi / Bluetooth

Car navigations, car audios

Body control equipment like wipers, power windows



The frequency and resonance characteristics of the RF wireless communication circuit can be used in various configuration types to meet the performance needs of a specific application.

RF Inductor

Part Numbering

①	②	③	④	⑤	⑥	⑦	⑧	⑨
RI	H	3	TQ	0N6	B	T	F	R

① Product

Code	Product
RI	RF Inductor

② Stucture

Code	H
Struture	Horizontal

③ Dimensions (L X W)

Code		3
Dimension	mm	0.6 x 0.3
	inch	0201

④ Characteristic

Code	TQ
Characteristic	Standard Q

⑤ Inductance (at 500MHz)

Code	0N6	1N8	3N3	3N9
Inductance (nH)	0.6	1.8	3.3	3.9

⑥ Inductance Tolerance : B = ± 0.1nH

⑦ Features : T = Standard Type

⑧ Electrode Type : F = Lead Free

⑨ Packing Type : R = Real Taping

Product Specification

0603 Series

Part Number	Inductance @500MHz [nH]	Q @500MHz	DCR [Ω]	Self Resonant Frequency [MHz]		Rated Current [mA]
		Min	Max	Min	Typ.	
RIH3TQ0N6BTFR	0.6±0.1	14	0.07	20000	20000	850
RIH3TQ1N8BTFR	1.8±0.1	14	0.15	15000	17700	600
RIH3TQ3N3BTFR	3.3±0.1	14	0.25	8000	10900	450
RIH3TQ3N9BTFR	3.9±0.1	14	0.30	5700	7900	400