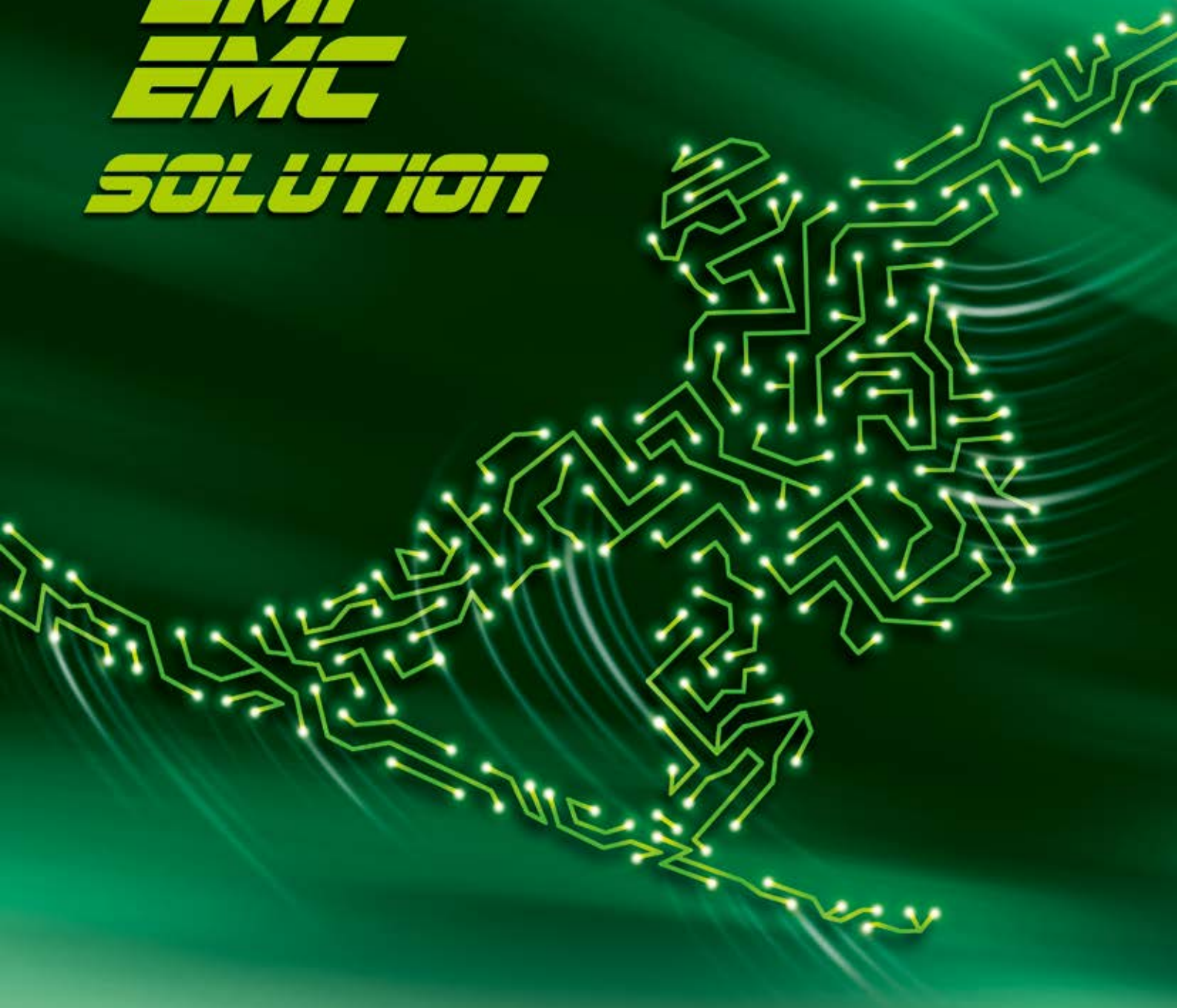
PSA 佳邦科技股份有限公司
INPAQ TECHNOLOGY CO., LTD.

EMI EMC SOLUTION



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Product ID	Line up	Series	Size (EIAJ)	Size (EIA)	Page
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Common mode filter

HF Halogen Free Pb lead-free RoHS

Circuit Type

High Speed Differential Signal Line

HIGH SPEED SIGNAL LINE
USB2.0/LVDS/IEEE1394/mipi...etc.

Multilayer Type

 MCM1012B

 MCM2012B

 MCM3216B

Wire wound Type

 WCM2012BT

ULTRA HIGH SPEED SIGNAL LINE

USB3.0/HDMI/DVI/DP...etc.

Multilayer Type

 HCM1012GD

 HCM2012GD

LTCC Type For RFI

 HCR1012UR

Wire wound Type

 WCM2012HT/ST

USB3.1 Gen1/Gen2...etc.

Multilayer Type

 HCM1012GD/GS

LTCC Type For RFI

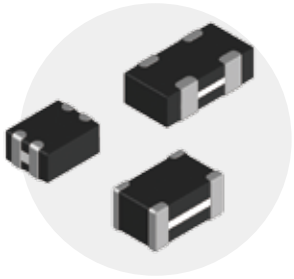
 HCR1012UR

Array Type

 MCA2012B

 MCA3216B

MCM Series



FEATURES

- Powerful components with composite co-fired materials to solve EMI problem for high speed differential signal transmission line as USB, LVDS, HDMI, MIPI, MHL, and Ethernet without distortion to high speed signal transmission.

APPLICATIONS

- USB, HDMI,MIPI, MHL serial interface in mobile device.; Ethernet interface in 3C device.

PART NUMBER

MCM	1012	B	900	F	06	B	P
1	2	3	4	5	6	7	8

(1) Product Type
MCM= Multilayer Common mode filter

(2) Dimension Code

(3) Speed Identification Code:
B= Basic type

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 90Ω → 900; 120Ω → 121

(5) Internal code
A=50mA, D=100mA, E=200mA, Y=250mA, F=300mA, G=400mA, H=500mA, I=600mA, J=700mA, K=800mA

(6) Thickness Dimension
ex.: 0.5mm → 05; 0.6mm → 06

(7) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

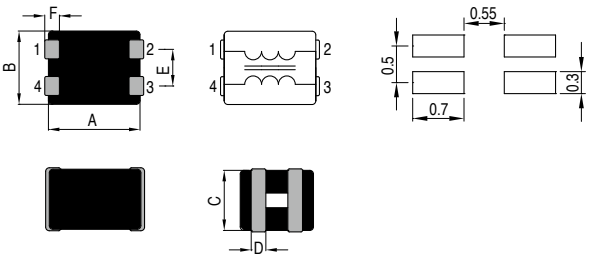
(8) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

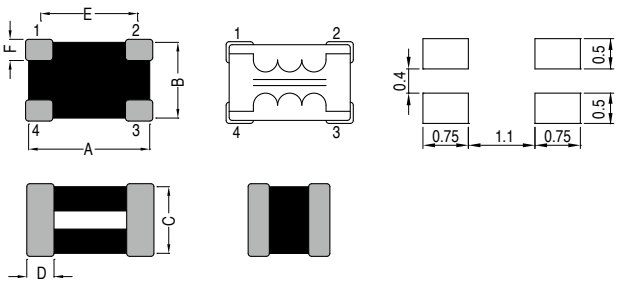
MCM 1012 series

(Top / Bottom)



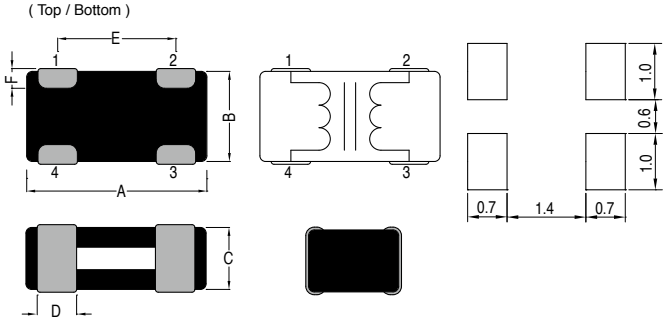
MCM 2012 series

(Top / Bottom)



MCM 3216 series

(Top / Bottom)



Size (EIA)	1012 (0405)	2012 (0805)	3216 (1206)
A	1.25±0.10	2.00±0.20	3.20±0.20
B	1.00±0.10	1.25±0.20	1.60±0.20
C	0.60±0.10	1.00±0.10	1.00±0.10
D	0.30±0.10	0.40±0.20	0.70±0.20
E	0.50±0.10	1.60±0.20	2.10±0.20
F	0.20±0.15	0.30±0.20	0.30±0.20

MCM Series

HF Halogen Free Pb lead-free RoHS

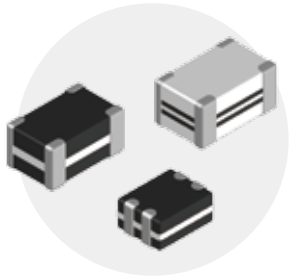
STANDARD PACKING

Size (EIA)	1012 (0405)	2012 (0805)	3216 (1206)
Quantity (pcs/reel)	4,000	3,000	3,000

SPECIFICATIONS

Part Number	Impedance (Ω) @100MHz	Impedance Tolerance	DCR Max. (Ω)	Rated Current Max (mA)	Rated Voltage (V)	Insulation Resistance Min. (MΩ)
1012 (EIA 0405) Low profile						
MCM1012B670F06BP	67	±25%	0.50	300	10	200
MCM1012B900F06BP	90	±25%	0.60	300	10	200
MCM1012B121F06BP	120	±25%	0.60	300	10	200
2012 (EIA 0805)						
MCM2012B670GBE	67	±25%	0.40	400	10	200
MCM2012B900GBE	90	±25%	0.40	400	10	200
MCM2012B121GBE	120	±25%	0.40	400	10	200
MCM2012B161GBE	160	±25%	0.50	400	10	200
MCM2012B181GBE	180	±25%	0.50	400	10	200
MCM2012B221FBE	220	±25%	0.50	300	10	200
3216 (EIA 1206)						
MCM3216B900HBE	90	±25%	0.50	500	10	200
MCM3216B121HBE	120	±25%	0.50	500	10	200

HCM Series



FEATURES

- Ultra High Speed Chip Common Mode Filter, HCM series adopts internally unique multilayer ceramic/ferrite co-firing technologies and higher cut-off frequency design for miniaturized size of EMI filter product development. for higher speed I/O of tablet PC/NB & MB.

APPLICATIONS

- USB, HDMI,MIPI, MHL serial interface in mobile device.; Ethernet interface in 3C device.

PART NUMBER

HCM	1012	GD	900	B	05	P
1	2	3	4	5	6	7

(1) Product Type
HCM= Multilayer High speed Common mode filter

(2) Dimension Code

(3) Speed Identification Code:
GD= For High cut-off frequency
GS= For Ultra High cut-off frequency

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 90Ω → 900; 120Ω → 121

(5) Internal code

(6) Thickness Dimension
ex.: 0.5mm → 05; 0.6mm → 06

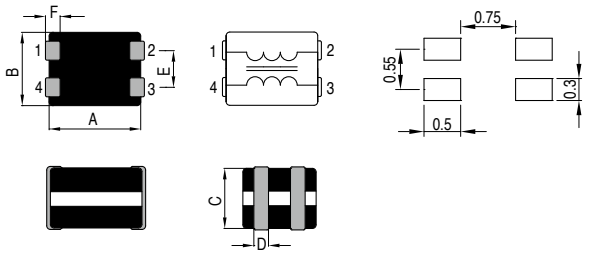
(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

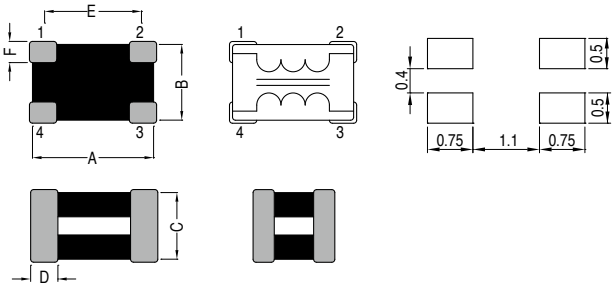
HCM 1012 series

(Top / Bottom)



HCM 2012 series

(Top / Bottom)



Size (EIA)	1012 (0405)	2012 (0805)
A	1.25±0.10	2.00±0.20
B	1.00±0.10	1.20±0.20
C	0.50±0.10	1.00±0.10
D	0.30±0.10	0.40±0.20
E	0.50±0.10	1.60±0.20
F	0.20±0.15	0.30±0.20

HCM Series

HF Halogen Free Pb lead-free RoHS

STANDARD PACKING

Size (EIA)	1012 (0405)	2012 (0805)
Quantity (pcs/reel)	4,000	3,000

SPECIFICATIONS

Part Number	Impedance (Ω) @100MHz	Impedance Tolerance	DCR Max. (Ω)	Rated Current Max (mA)	Rated Voltage (V)	Insulation Resistance Min. (MΩ)
1012 (EIA 0405)						
HCM1012GD500A05P	50	±25%	1.50	100	10	100
HCM1012GD670A05P	67	±25%	1.50	100	10	100
HCM1012GD900B05P	90	±25%	3.00	100	10	100
HCM1012GS150A05P	15	±25%	0.80	100	10	100
2012 (EIA 0805)						
HCM2012GD500AE	50	±25%	1.00	100	10	100
HCM2012GD900AE	90	±25%	1.00	200	10	100
HCM2012GD121AE	120	±25%	1.20	100	10	100

HCR Series

FEATURES

- Miniature footprint: 1.25 X 1.00 X 0.83 mm³
- LTCC Process
- High attenuation for common mode noise over wide frequency range
- Low insertion loss and strong balance capability for high-speed differential signal.

APPLICATIONS

- HUSB, HDMI, Display port, PCI Express, SATA, LVDS, DVI
- PC related, Mobile phones and other portable devices.

PART NUMBER

HCR	1012	UR	13	B	E
1	2	3	4	5	6

(1) Product Type
HCR=High speed Common mode filter For RFI

(2) Dimension Code

(3) Material Code
GH=For High speed

(4) Internal code

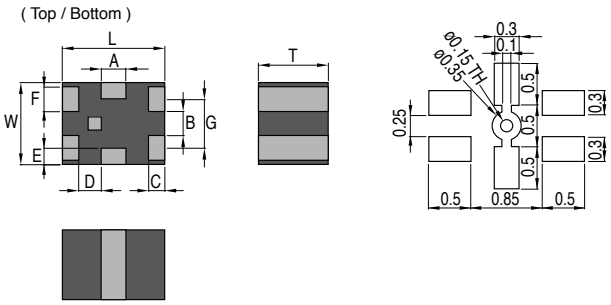
(5) Soldering
B=Lead-Free for whole chip

(6) Packaging
E=7" Reel Embossed taping

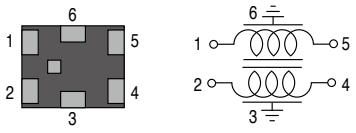
EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

Size (EIA)	1012 (0405)
L	1.25 ± 0.10
W	1.00 ± 0.10
T	0.83 ± 0.10
A	0.30 ± 0.10
B	0.25 ± 0.10
C	0.20 ± 0.10
D	0.275 ± 0.10
E	0.20 ± 0.10
F	0.30 ± 0.10
G	0.55 ± 0.10



Pin	Name	Pin	Name
1	IN/OUT	4	IN/OUT
2	IN/OUT	5	IN/OUT
3	GND	6	GND
F	0.20±0.15	0.20±0.15	0.30±0.20



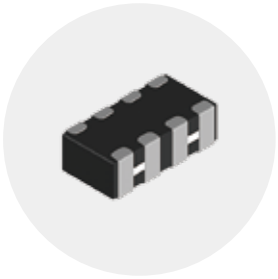
STANDARD PACKING

Size (EIA)	1012 (0405)
Quantity (pcs/reel)	2,000

SPECIFICATIONS

Part Number	Cutoff Frequency Min.(GHz)	Common Mode insertion loss Typical(dB)	Rated Current Max.(mA)	DC Resistance Max.(Ω)	Insulation Resistance Min.(MΩ)
HCE Series					
1012 (EIA 0405)					
HCR1012UR14BE	10	30 dB Typ.(2.4GHz), 20 dB Typ.(5.4GHz)	100	2.0	100

MCA Series



FEATURES

- Powerful components with composite co-fired materials to solve EMI problem for high speed differential signal transmission line as USB and Ethernet without distortion to high speed signal transmission.

APPLICATIONS

- USB, LVDS serial interface in mobile device.; Ethernet interface in 3C device.

PART NUMBER

MCA	2012	B	900	G	B	E
1	2	3	4	5	6	7

(1) Product Type
MCA= Multilayer Array type Common mode filter

(2) Dimension Code

(3) Speed Identification Code:
B= For General use

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 90Ω → 900; 120Ω → 121

(5) Rated Current Code
E=200mA, F=300mA, G=400mA, H=500mA, I=600mA, J=700mA, K=800mA

(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

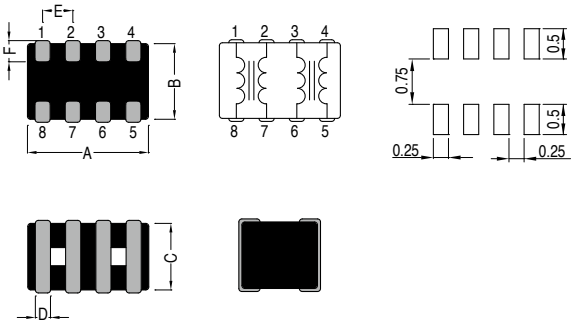
(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

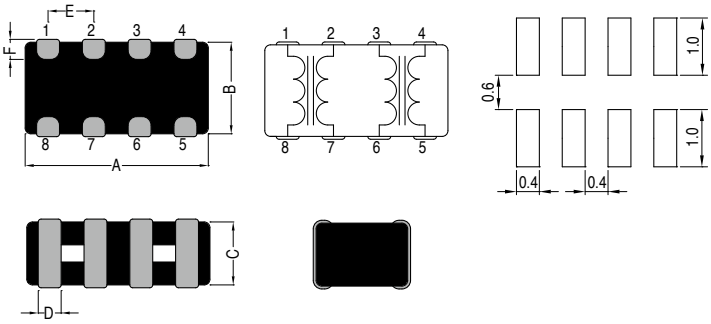
MCA 2012 series

(Top / Bottom)



MCA 3216 series

(Top / Bottom)



Size (EIA)	2012 (0805) Array	3216 (1206) Array
A	2.00±0.20	3.20±0.20
B	1.25±0.20	1.60±0.20
C	1.00±0.10	1.00±0.10
D	0.25±0.20	0.45±0.15
E	0.50±0.20	0.80±0.10
F	0.25±0.20	0.30±0.20

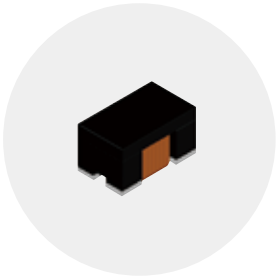
STANDARD PACKING

Size (EIA)	2012 (0805)	3216 (1206)
Quantity (pcs/reel)	3,000	3,000

SPECIFICATIONS

Part Number	Impedance (Ω) ±25% @100MHz	DCR Max. (Ω)	Rated Current Max (mA)	Rated Voltage (V)	Insulation Resistance Min. (MΩ)
MCA Series					
2012 (EIA 0805)					
MCA2012B900GBE	90	0.60	400	10	200
MCA2012B121FBE	120	0.60	300	10	200
3216 (EIA 1206)					
MCA3216B900GBE	90	0.40	400	10	200
MCA3216B121FBE	120	0.40	300	10	200
MCA3216B181FBE	180	0.50	300	10	200

WCM Series



FEATURES

- Powerful components with high common mode impedance at high frequency perform outstanding noise suppression, also realize miniature size and low profile.
- 100% Lead(Pb) & Halogen-Free and RoHS compliant.

APPLICATIONS

- Apply for USB2.0,USB3.0,HDMI,Display Port,SATA interface in laptop,and LVDS, without distortion to high speed signal transmission. MIPI, MHL serial interface in mobile device.

PART NUMBER

WCM	2012	BT	900	C	E
1	2	3	4	5	6

(1) Product Type
WCM= Wire wound Common mode filter

(2) Dimension Code

(3) Speed Identification Code:
BT= For High speed
HT= For High cut-off frequency
ST= For Ultra High cut-off frequency

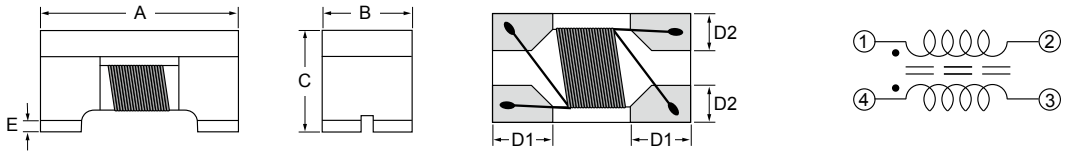
(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 90Ω → 900; 120Ω → 121

(5) linternal code

(6) Packaging
E=7" Reel Embossed taping

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

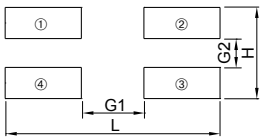


Size (EIA)	A	B	C	D1	D2	E
2012	2.00±0.20	1.20±0.20	1.20±0.20	0.55±0.10	0.46±0.10	0.15±0.10

SOLDER LAND INFORMATION

Unit: mm

TYPE	HT/ST	BT
L	2.6	2.6
H	1.2	1.25
G1	1.2	1.1
G2	0.5	0.5



STANDARD PACKING

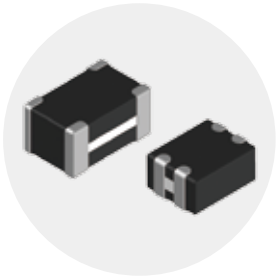
Size (EIA)	2012 (0805)
Quantity (pcs/reel)	3,000

SPECIFICATIONS

Part Number	Impedance (Ω) ±25% @100MHz	DCR Max. (Ω)	Rated Current Max (mA)	Rated Voltage (V)	Withstand Volt. (Vdc)	Insulation Resistance Min. (Ω)
2012 (EIA 0805)						
WCM2012BT670CE	67	0.25	400	50	125	10M
WCM2012BT900CE	90	0.30	400	50	125	10M
WCM2012BT121CE	120	0.30	400	50	125	10M
WCM2012BT181CE	180	0.35	350	50	125	10M
WCM2012BT261CE	260	0.40	300	50	125	10M
WCM2012BT361CE	360	0.50	300	50	125	10M
WCM2012HT670CE	67	0.30	400	50	125	10M
WCM2012HT900CE	90	0.30	400	50	125	10M
WCM2012ST500CE	50	0.25	400	50	125	10M
WCM2012ST670CE	67	0.30	400	50	125	10M
WCM2012ST900CE	90	0.30	400	50	125	10M

COMMON MODE FILTER (AEC-Q200)

MCM-W Series



FEATURES

- Powerful components with composite co-fired materials to solve EMI problem for high speed differential signal transmission line as USB, LVDS, HDMI, MIPI, MHL, and Ethernet without distortion to high speed signal transmission.
- Compliant with AEC Q200.

APPLICATIONS

- USB, HDMI,MIPI, MHL, Ethernet serial interface in automotive device.

PART NUMBER

MCM	1012	W	900	F	06	B	P
1	2	3	4	5	6	7	8

(1) Product Type
MCM= Multilayer Common mode filter

(2) Dimension Code

(3) Speed Identification Code:
W= For Automotive standard type

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 90Ω → 900; 120Ω → 121

(5) Rated Current Code
E=200mA, F=300mA, G=400mA,
H=500mA, I=600mA, J=700mA, K=800mA

(6) Thickness Dimension
ex.: 0.6mm → 06

(7) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

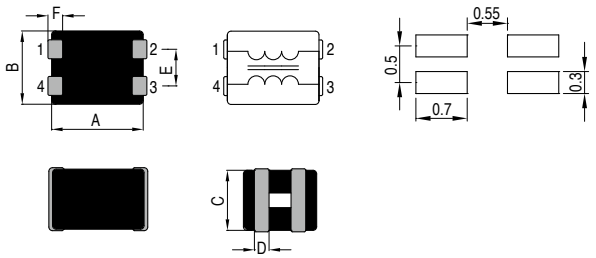
(8) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

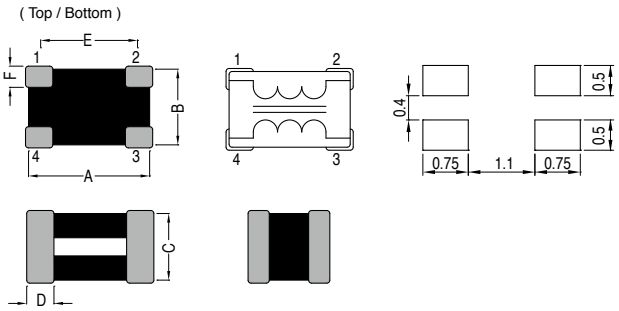
MCM 1012 W series

(Top / Bottom)



MCM 2012 W series

(Top / Bottom)



Size (EIA)	1012 (0405)	2012 (0805)
A	1.25±0.10	2.00±0.20
B	1.00±0.10	1.25±0.20
C	0.60±0.10	1.00±0.10
D	0.30±0.10	0.40±0.20
E	0.50±0.10	2.10±0.20
F	0.20±0.15	0.30±0.20

STANDARD PACKING

Size (EIA)	1012 (0405)	2012 (0805)
Quantity (pcs/reel)	4,000	3,000

SPECIFICATIONS

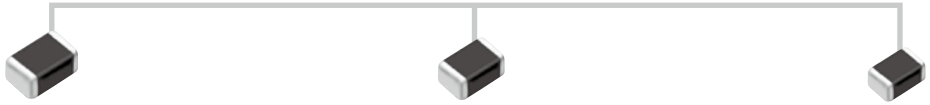
Part Number	Impedance (Ω) ±25% @100MHz	DCR Max. (Ω)	Rated Current Max (mA)	Rated Voltage (V)	Withstand Voltage (V)	Insulation Resistance Min.(MΩ)
1012 (EIA 0405)						
MCM1012W670F06BP	67	0.50	300	10	25	200
MCM1012W900F06BP	90	0.60	300	10	25	200
2012 (EIA 0805)						
MCM2012W670GBE	67	0.40	400	10	25	200
MCM2012W900GBE	90	0.40	400	10	25	200
MCM2012W121GBE	120	0.40	400	10	25	200
MCM2012W161GBE	160	0.50	400	10	25	200
MCM2012W181GBE	180	0.50	400	10	25	200
MCM2012W221FBE	220	0.50	300	10	25	200

HF Halogen Free Pb lead-free RoHS

Multilayer Chip Bead

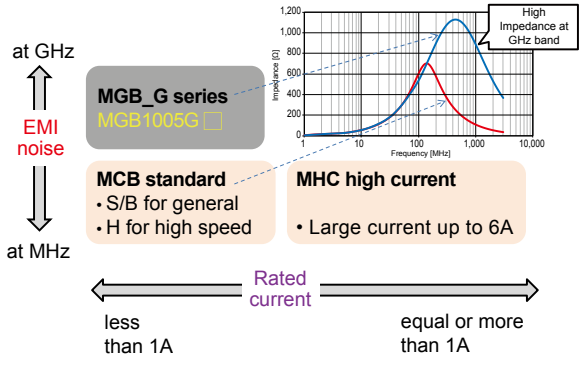
Multilayer Chip Bead Series use multilayer ferrite design/process for EMI and noise filtering for general use, high-speed signal lines, power supplies, power supplies with low DC resistance type.

Circuit Type



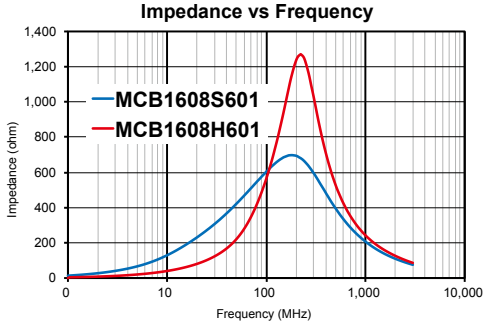
DC POWER LINE MHC Series	GENERAL SIGNAL LINE Under 10MHz MCB S/B-Series	HIGH SPEED SIGNAL LINE Over 10MHz MCB H-Seies	
MHC0603S	MCB0603S/B	Noise frequency: under 1GHz	MCB0603H
MHC1005S	MCB1005S/B		MCB1005H
MHC1608S	MCB1608S		MCB1608H
MHC2012S	MCB2012S		MCB2012H
MHC3216S	MCB3216S		
MHC3225S	MCB3225S	Noise frequency: Giga Band	MGB0603G
MHC4516S	MCB4516S		MGB1005G
MHC4532S	MCB4532S		*Ultra Low DCR Type*
Ultra Low DCR Type	*Ultra Low DCR Type*		MHG1005G
MHC0603P	MCB0603P		MHG1608G
MHC1005P	MCB1005P		
MHC1608P		Noise frequency: High Giga Band	MGB0603H

Using the impedance(Z) of bead to suppress the EMI noise
Select a suitable circuits (signal-line or power-line)



■ Difference between MCB S type and H type

S type: For general application, suppresses noise in a wide frequency range.
H type: For high speed circuit, with less damage to signal waveforms.



MCB-S/B/P Series

HF Halogen Free Pb lead-free RoHS

FEATURES

- Monolithic ferrite material construction
- Closed magnetic circuit avoids crosstalk
- SMD Type & suitable for reflow and wave soldering
- Available in various sizes
- Excellent solderability and heat resistance
- High reliability
- Effectively filtering capability over a wide range of frequency

APPLICATIONS

- Filtering between analog and digital circuitry, clock generation circuitry, I/O interconnects, isolation between RF noisy circuits and logic devices susceptible to functional degradation, power supply filtering to prevent conducted RF energy from corrupting the power generation circuitry, high frequency EMI prevention of computer, printers, VCRs, TVs and portable telephones.

PART NUMBER

MCB	0603	P	102	Z	B	P	A22
1	2	3	4	5	6	7	8

(1) Product Type
MCB= For General chip bead

(2) Dimension Code

(3) Material Code
S= Standard Type
B= For General Use
P=Ultra Low DCR

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
D=150mA, E=200mA, F=300mA, G=400mA, H=500mA, I=600mA, J=700mA, K=800mA, Z=other (refer to code 8)

(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

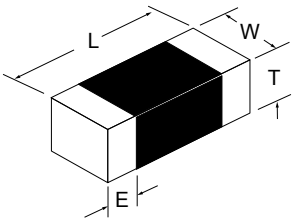
(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

(8) Specialized Specification Code
ex.: 1A2=1.2A; A80=0.8A

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

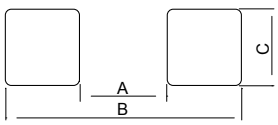
Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
L	0.60±0.03	1.00±0.10	1.60±0.15	2.00±0.20	3.20±0.20	3.20±0.20	4.50±0.25	4.50±0.25
W	0.30±0.03	0.50±0.10	0.80±0.15	1.25±0.20	1.60±0.20	2.50±0.20	1.60±0.20	3.20±0.25
T	0.30±0.03	0.50±0.10	0.80±0.15	0.90±0.20	1.10±0.20	1.30±0.20	1.60±0.20	1.50±0.25
E	0.15±0.03	0.25±0.10	0.30±0.20	0.50±0.30	0.50.±0.30	0.50.±0.30	0.60±0.40	0.60±0.40



SOLDER LAND INFORMATION

Unit: mm

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
A	0.2~0.3	0.4	0.7	1.2	2.0	2.0	3.0	3.0
B	0.75~1.05	1.2~1.4	1.8~2.0	3.0~4.0	4.2~5.2	4.2~5.2	5.5~6.5	5.5~6.5
C	0.3	0.5	0.7	1.0	1.2	3.4	1.2	4.22



STANDARD PACKING

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
Quantity (pcs/reel)	15,000	10,000	4,000	4,000	3,000	2,000	2,000	1,000

MCB-S/B/P Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance ±25% (Ω)	Test Freq (MHz)	DCR Max. (Ω)	Rated Current (mA)
0603 S (EIA 0201)				
MCB0603S220HBP	22	100	0.065	500
MCB0603S330HBP	33	100	0.07	500
MCB0603S800EBP	80	100	0.40	200
MCB0603S121EBP	120	100	0.50	200
MCB0603S241EBP	240	100	0.80	200
MCB0603S601DBP	600	100	1.20	150
MCB0603S102EBP	1000	100	1.15	200
0603 B (EIA 0201)				
MCB0603B600EBP	60	100	0.25	200
MCB0603B121ZBPA25	120	100	0.40	250
MCB0603B241EBP	240	100	0.80	200
MCB0603B471ZBPA22	470	100	1.05	220
MCB0603B601EBP	600	100	1.20	200
0603 P (EIA 0201)				
MCB0603P100ZBP1A0	10	100	0.05	1000
MCB0603P800ZBPA50	80	100	0.18	500
MCB0603P121ZBPA45	120	100	0.23	450
MCB0603P241ZBPA35	240	100	0.38	350
MCB0603P601ZBPA25	600	100	0.80	250
MCB0603P102ZBPA22	1000	100	1.15	220
1005 S (EIA 0402)				
MCB1005S100FBP	10	100	0.10	300
MCB1005S200FBP	20	100	0.20	300
MCB1005S300FBP	30	100	0.25	300
MCB1005S400FBP	40	100	0.30	300
MCB1005S600FBP	60	100	0.35	300
MCB1005S700FBP	70	100	0.35	300
MCB1005S121FBP	120	100	0.40	300
MCB1005S241EBP	240	100	0.70	200
MCB1005S301EBP	300	100	0.80	200
MCB1005S471EBP	470	100	1.00	200
MCB1005S601FBP	600	100	1.00	300
MCB1005S102EBP	1000	100	1.50	200
1005 B (EIA 0402)				
MCB1005B601FBP	600	100	0.60	300
MCB1005B102EBP	1000	100	1.00	200
MCB1005B152DBP	1500	100	1.50	150
MCB1005B182DBP	1800	100	1.50	150
1005 P (EIA 0402)				
MCB1005P100ZBP1A8	10	100	0.015	1800
MCB1005P300ZBP1A1	30	100	0.060	1100
MCB1005P700ZBPA78	70	100	0.100	780

Part Number	Impedance ±25% (Ω)	Test Freq (MHz)	DCR Max. (Ω)	Rated Current (mA)
1608 S (EIA 0603)				
MCB1608S100IBP	10	100	0.05	600
MCB1608S300IBP	30	100	0.08	600
MCB1608S600IBP	60	100	0.10	600
MCB1608S800IBP	80	100	0.10	600
MCB1608S121IBP	120	100	0.15	600
MCB1608S181FBP	180	100	0.30	300
MCB1608S221FBP	220	100	0.30	300
MCB1608S301FBP	300	100	0.35	300
MCB1608S471FBP	470	100	0.40	300
MCB1608S601EBP	600	100	0.45	200
MCB1608S102CBP	1000	100	0.60	100
MCB1608S182CBP	1800	100	0.70	100
MCB1608S252CBP	2500	100	0.70	100
2012 S (EIA 0805)				
MCB2012S300KBP	30	100	0.05	800
MCB2012S400KBP	40	100	0.05	800
MCB2012S600KBP	60	100	0.15	800
MCB2012S800KBP	80	100	0.15	800
MCB2012S121KBP	120	100	0.15	800
MCB2012S221HBP	220	100	0.20	500
MCB2012S301HBP	300	100	0.20	500
MCB2012S601HBP	600	100	0.30	500
MCB2012S102FBP	1000	100	0.35	300
MCB2012S202EBP	2000	100	0.50	200
3216 S (EIA 1206)				
MCB3216S310KBE	31	100	0.05	800
MCB3216S500KBE	50	100	0.08	800
MCB3216S700KBE	70	100	0.10	800
MCB3216S121IBE	120	100	0.15	600
MCB3216S601HBE	600	100	0.30	500
MCB3216S102HBE	1000	100	0.40	500
MCB3216S122HBE	1200	100	0.40	500
MCB3216S152EBE	1500	50	0.50	200
MCB3216S202EBE	2000	30	0.50	200
3225 S (EIA 1210)				
MCB3225S600KBE	60	100	0.30	800
MCB3225S900KBE	90	100	0.30	800
4516 S (EIA 1806)				
MCB4516S800KBE	80	100	0.10	800
MCB4516S151KBE	150	100	0.30	800
4532 S (EIA 1812)				
MCB4532S700KBE	70	100	0.40	800
MCB4532S800KBE	80	100	0.40	800
MCB4532S121KBE	120	100	0.40	800

MCB-H Series

HF Halogen Free Pb lead-free RoHS

FEATURES

- Monolithic ferrite material construction.
- Closed magnetic circuit avoids crosstalk.
- SMD Type & suitable for reflow and wave soldering.
- Available in various sizes.
- Excellent solderability and heat resistance.
- With a sharp and high frequency impedance characteristics which can effectively filter high frequency noise without attenuating high frequency signal.

APPLICATIONS

- Filtering between analog and digital circuitry, clock generation circuitry, I/O interconnects, isolation between RF noisy circuits and logic devices susceptible to functional degradation, power supply filtering to prevent conducted RF energy from corrupting the power generation circuitry.
- Sharp impedance characteristics can effectively minimize attenuation, high frequency EMI prevention of LCD monitor, PDA, Computers, Computer Peripherals, Cellular Equipment, Digital TV, Digital Cameras, Audio/Visual Equipment, DVD, Wireless Communication Devices, MP3/MP4/MP5.

PART NUMBER

MCB	1005	H	601	F	B	P
1	2	3	4	5	6	7

(1) Product Type
MCB= For General chip bead

(2) Dimension Code

(3) Material Code
H= For high speed

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
D=150mA, E=200mA, F=300mA, G=400mA, H=500mA, I=600mA, J=700mA, K=800mA

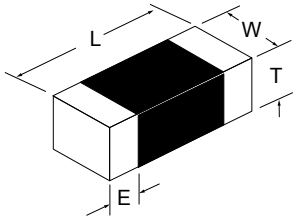
(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

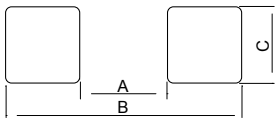
Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)
L	0.60±0.03	1.00±0.10	1.60±0.15	2.00±0.20
W	0.30±0.03	0.50±0.10	0.80±0.15	1.25±0.20
T	0.30±0.03	0.50±0.10	0.80±0.15	0.90±0.20
E	0.15±0.03	0.25±0.10	0.30±0.20	0.50±0.30



SOLDER LAND INFORMATION

Unit: mm

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)
A	0.2~0.3	0.4	0.7	1.2
B	0.75~1.05	1.2~1.4	1.8~2.0	3.0~4.0
C	0.3	0.5	0.7	1.0



STANDARD PACKING

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)
Quantity (pcs/reel)	15,000	10,000	4,000	4,000

MCB-H Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance (Ω) +/-25%	Test Freq. (MHz)	DCR Max. (Ω)	Rated Current (mA)
0603 H (EIA 0201)				
MCB0603H100FBP	10	100	0.25	300
MCB0603H220EBP	22	100	0.45	200
MCB0603H330DBP	33	100	0.55	150
MCB0603H470EBP	47	100	0.70	200
MCB0603H560CBP	56	100	1.00	100
MCB0603H800EBP	80	100	1.30	200
MCB0603H121CBP	120	100	1.50	100
1005 H (EIA 0402)				
MCB1005H220FBP	22	100	0.35	300
MCB1005H750FBP	75	100	0.40	300
MCB1005H121FBP	120	100	0.55	300
1608 H (EIA 0603)				
MCB1608H200HBP	20	100	0.25	500
MCB1608H750EBP	75	100	0.35	200
MCB1608H800HBP	80	100	0.35	500
MCB1608H121EBP	120	100	0.45	200
MCB1608H301EBP	300	100	0.45	200
MCB1608H601EBP	600	100	0.50	200
MCB1608H102EBP	1000	100	0.60	200
2012 H (EIA 0805)				
MCB2012H121EBP	120	100	0.25	200
MCB2012H221EBP	220	100	0.25	200
MCB2012H301EBP	300	100	0.25	200
MCB2012H601EBP	600	100	0.35	200

MHC-S Series

FEATURES

- Combination of high frequency noise suppression with capability of handing high current The current rating up to 6 Amps with low DCR

APPLICATIONS

- High current DC power lines
- Circuits where a stable ground in unavailable

PART NUMBER

MHC	1608	S	102	Z	B	P	A80
1	2	3	4	5	6	7	8

(1) Product Type
MHC= High currtnt chip bead

(2) Dimension Code

(3) Material Code
S= Standard Type

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
L=1000mA, M=1500mA, N=2000mA, P=2500mA, Q=3000mA, R=4000mA, U=5000mA, W=6000mA, Z=other (refer to code 8)

(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

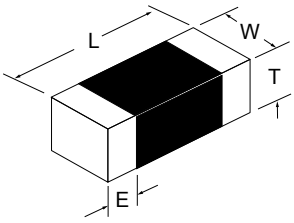
(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

(8) Specialized Specification Code
ex.: 1A2=1.2A; A80=0.8A

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

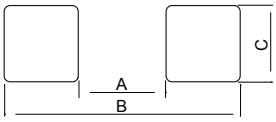
Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
L	0.60±0.03	1.00±0.10	1.60±0.15	2.00±0.20	3.20±0.20	3.20±0.20	4.50±0.25	4.50±0.25
W	0.30±0.03	0.50±0.10	0.80±0.15	1.25±0.20	1.60±0.20	2.50±0.20	1.60±0.20	3.20±0.25
T	0.30±0.03	0.50±0.10	0.80±0.15	0.90±0.20	1.10±0.20	1.30±0.20	1.60±0.20	1.50±0.25
E	0.15±0.03	0.25±0.10	0.30±0.20	0.50±0.30	0.50.±0.30	0.50.±0.30	0.60±0.40	0.60±0.40



SOLDER LAND INFORMATION

Unit: mm

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
A	0.2~0.3	0.4	0.7	1.2	2.0	2.0	3.0	3.0
B	0.75~1.05	1.2~1.4	1.8~2.0	3.0~4.0	4.2~5.2	4.2~5.2	5.5~6.5	5.5~6.5
C	0.3	0.5	0.7	1.0	1.2	3.4	1.2	4.22



STANDARD PACKING

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4516 (1806)	4532 (1812)
Quantity (pcs/reel)	15,000	10,000	4,000	4,000	3,000	2,000	2,000	1,000

MHC-S Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance ±25% (Ω)	Test Freq (MHz)	DCR Max. (Ω)	Rated Current (mA)
0603 S (EIA 0201)				
MHC0603S220LBP	22	100	0.065	1000
MHC0603S330ZBPA75	33	100	0.090	750
1005 S (EIA 0402)				
MHC1005S100NBP	10	100	0.090	2000
MHC1005S300NBP	30	100	0.090	2000
MHC1005S600PBP	60	100	0.070	2500
MHC1005S121MBP	120	100	0.150	1500
1608 S (EIA 0603)				
MHC1608S190QBP	19	100	0.040	3000
MHC1608S300QBP	30	100	0.040	3000
MHC1608S600QBP	60	100	0.040	3000
MHC1608S800QBP	80	100	0.040	3000
MHC1608S121QBP	120	100	0.040	3000
MHC1608S121PBP	120	100	0.070	2500
MHC1608S121NBP	120	100	0.090	2000
MHC1608S151NBP	150	100	0.090	2000
MHC1608S221NBP	220	100	0.090	2000
MHC1608S301NBP	300	100	0.090	2000
MHC1608S301MBP	300	100	0.150	1500
MHC1608S391MBP	390	100	0.150	1500
MHC1608S471MBP	470	100	0.150	1500
MHC1608S471LBP	470	100	0.200	1000
MHC1608S601LBP	600	100	0.200	1000
MHC1608S102ZBPA80	1000	100	0.250	800
2012 S (EIA 0805)				
MHC2012S300QBP	30	100	0.040	3000
MHC2012S390RBP	39	100	0.030	4000
MHC2012S310WBP	31	100	0.015	6000
MHC2012S400RBP	40	100	0.030	4000
MHC2012S600QBP	60	100	0.040	3000
MHC2012S800UBP	80	100	0.020	5000
MHC2012S800QBP	80	100	0.040	3000
MHC2012S121UBP	120	100	0.020	5000
MHC2012S121QBP	120	100	0.040	3000
MHC2012S151QBP	150	100	0.040	3000
MHC2012S221NBP	220	100	0.090	2000
MHC2012S221QBP	220	100	0.040	3000
MHC2012S301PBP	300	100	0.070	2500
MHC2012S301NBP	300	100	0.090	2000
MHC2012S301LBP	300	100	0.200	1000
MHC2012S331PBP	330	100	0.070	2500
MHC2012S331NBP	330	100	0.090	2000
MHC2012S421LBP	420	100	0.200	1000
MHC2012S471LBP	470	100	0.200	1000
MHC2012S601NBP	600	100	0.090	2000
MHC2012S601LBP	600	100	0.200	1000
MHC2012S102LBP	1000	100	0.200	1000
MHC2012S152LBP	1500	100	0.300	1000

Part Number	Impedance ±25% (Ω)	Test Freq (MHz)	DCR Max. (Ω)	Rated Current (mA)
3216 S (EIA 1206)				
MHC3216S190WBP	19	100	0.015	6000
MHC3216S300WBE	30	100	0.015	6000
MHC3216S380UBP	38	100	0.020	5000
MHC3216S500WBE	50	100	0.015	6000
MHC3216S500QBE	50	100	0.040	3000
MHC3216S800RBE	80	100	0.030	4000
MHC3216S121WBE	120	100	0.015	6000
MHC3216S121NBE	120	100	0.090	2000
MHC3216S151NBE	150	100	0.090	2000
MHC3216S221NBE	220	100	0.090	2000
MHC3216S301NBE	300	100	0.090	2000
MHC3216S301LBE	300	100	0.200	1000
MHC3216S391NBE	390	100	0.090	2000
MHC3216S471NBE	470	100	0.090	2000
MHC3216S471LBE	470	100	0.200	1000
MHC3216S501QBE	500	100	0.040	3000
MHC3216S601PBE	600	100	0.070	2500
MHC3216S601NBE	601	100	0.090	2000
MHC3216S122LBE	1200	100	0.200	1000
3225 S (EIA 1210)				
MHC3225S600MBE	60	100	0.150	1500
MHC3225S102NBE	1000	50	0.090	2000
4516 S (EIA 1806)				
MHC4516S600WBE	60	100	0.015	6000
MHC4516S851MBE	850	100	0.150	1500
4532 S (EIA 1812)				
MHC4532S121WBE	120	100	0.015	6000
MHC4532S601QBE	600	50	0.040	3000
MHC4532S681RBE	680	100	0.030	4000
MHC4532S132QBE	1300	60	0.040	3000

MHC-P Series

FEATURES

- Combination of high frequency noise suppression with capability of handing high current The current rating up to 6 Amps with ultra low DCR.

APPLICATIONS

- High current DC power lines.
- Circuits where a stable ground in unavailable.

PART NUMBER

MHC	1608	P	260	Z	06	B	P	6A0
1	2	3	4	5	6	7	8	9

(1) Product Type
MHC= High currtnt chip bead

(2) Dimension Code

(3) Material Code
P= Low DCR

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 26Ω → 260; 600Ω → 601

(5) Rated Current Code
L=1000mA, M=1500mA, N=2000mA, P=2500mA, Q=3000mA, R=4000mA, U=5000mA, W=6000mA, Z=other (refer to code 9)

(6) Thickness Dimension
ex.: 0.6mm → 06

(7) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

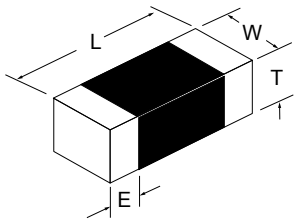
(8) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

(9) Specialized Specification Code
ex.: 1A2=1.2A; A80=0.8A

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

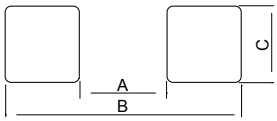
Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)
L	0.60±0.03	1.00±0.10	1.60±0.15
W	0.30±0.03	0.50±0.10	0.80±0.15
T	0.30±0.03	0.50±0.10	0.80±0.15
E	0.15±0.03	0.25±0.10	0.30±0.20



SOLDER LAND INFORMATION

Unit: mm

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)
A	0.2~0.3	0.4	0.7
B	0.75~1.05	1.2~1.4	1.8~2.0
C	0.3	0.5	0.7



STANDARD PACKING

Size (EIA)	0603 (0201)	1005 (0402)	1608 (0603)
Quantity (pcs/reel)	15,000	10,000	4,000

MHC-P Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance (Ω) +/-25%	Test Freq. (MHz)	DCR Max. (Ω)	Rated Current (mA)
0603 P (EIA 0201)				
MHC0603P220ZBP1A8	22	100	0.040	1800
MHC0603P330ZBP1A5	33	100	0.055	1500
MHC0603P800ZBP1A0	80	100	0.130	1000
MHC0603P121ZBPA90	120	100	0.160	900
1005 P (EIA 0402)				
MHC1005P330ZBP3A0	33	100	0.022	3000
MHC1005P600ZBP2A5	60	100	0.032	2500
MHC1005P800ZBP2A3	80	100	0.038	2300
MHC1005P121ZBP2A0	120	100	0.055	2000
MHC1005P181ZBP1A5	180	100	0.090	1500
MHC1005P221ZBP1A4	220	100	0.100	1400
MHC1005P331ZBP1A2	330	100	0.150	1200
MHC1005P471ZBP1A0	470	100	0.200	1000
MHC1005P601ZBPA90	600	100	0.230	900
1608 P (EIA 0603)				
MHC1608P220Z06BP8A0	22	100	0.004	8000
MHC1608P260Z06BP6A0	26	100	0.007	6000
MHC1608P300Z06BP6A0	30	100	0.007	6000
MHC1608P300Z06BP5A0	30	100	0.010	5000
MHC1608P700Z06BP3A5	70	100	0.022	3500
MHC1608P101Z06BP3A0	100	100	0.030	3000
MHC1608P121Z06BP3A0	120	100	0.030	3000
MHC1608P221ZBP2A2	220	100	0.050	2200
MHC1608P331ZBP1A7	330	100	0.080	1700
MHC1608P471ZBP1A5	470	100	0.130	1500
MHC1608P601ZBP1A3	600	100	0.150	1300

MGB-G/H Series

FEATURES

- Effectively filtering capability over a wide range of frequency (Several MHz to GHz).
- Monolithic inorganic material construction.
- Closed magnetic circuit avoids crosstalk.
- Excellent solderability and heat resistance.
- High reliability.

APPLICATIONS

- RF and wireless communication, information technology equipment which includes computer, laptop, telecommunications, radar detectors, automotive electronics, cellular phones, pagers, audio equipment, PDAs, keyless remote system and Navigator systems.

PART NUMBER

MGB	0603	G	102	Z	B	P	A13
1	2	3	4	5	6	7	8

(1) Product Type
MGB= GHz band chip bead

(2) Dimension Code

(3) Material Code
G= For GHz band
H= For High GHz band

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
E=200mA, Y=250mA, F=300mA, G=400mA, H=500mA, I=600mA, J=700mA, K=800mA, Z=other (refer to code 8)

(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

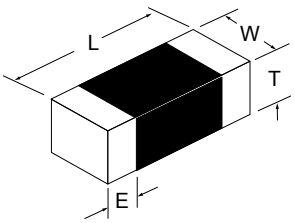
(7) Packaging
P=7" Reel Paper taping

(8) Specialized Specification Code
ex.: 1A2=1.2A; A80=0.8A

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

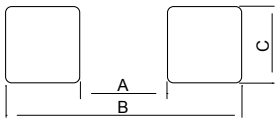
Size (EIA)	L	W	T	E
0603 (0201)	0.60±0.03	0.30±0.03	0.30±0.03	0.15±0.03
1005 (0402)	1.00±0.10	0.50±0.10	0.50±0.10	0.25±0.10



SOLDER LAND INFORMATION

Unit: mm

TYPE	A	B	C
0603 (0201)	0.2 ~ 0.3	0.75 ~ 1.05	0.3
1005 (0402)	0.4	1.2~1.4	0.5



STANDARD PACKING

Size (EIA)	0603 (0201)	1005 (0402)
Quantity (pcs/reel)	15,000	10,000

SPECIFICATIONS

Part Number	Impedance (Ω) ±25% @100MHz	Impedance (Ω) ±40% @1GHz	DCR Max. (Ω)	Rated Current Max (mA)
0603 (EIA 02012)				
MGB0603G601ZBPA16	600	1500	1.60	160
MGB0603G102ZBPA13	1000	2300	2.50	130
MGB0603G152ZBPA12	1500	2700	3.10	120
MGB0603H250ZBPA60	25	135	0.26	600
MGB0603H500ZBPA40	50	255	0.58	400
1005 (EIA 0402)				
MGB1005G601FBP	600	1400	0.85	300
MGB1005G102YBP	1000	2000	1.25	250
MGB1005G182EBP	1800	2700	2.20	200

MHG-G Series

FEATURES

- Effectively filtering capability over a wide "Low DCR and large rated current "range of frequency (Several MHz to GHz)
- Monolithic inorganic material construction.
- Closed magnetic circuit avoids crosstalk.
- Excellent solderability and heat resistance.
- High reliability.

APPLICATIONS

- RF and wireless communication, information technology equipment which includes computer, laptop, telecommunications, radar detectors, automotive electronics, cellular phones, pagers, audio equipment, PDAs, keyless remote system and Navigator systems.

PART NUMBER

MHG	1608	G	101	Z	05	B	P	2A0
1	2	3	4	5	6	7	8	9

(1) Product Type
MHG= For High current GHz band chip bead

(2) Dimension Code

(3) Material Code
G= For GHz band

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
L=1000mA, M=1500mA, N=2000mA, P=2500mA, Q=3000mA, R=4000mA, U=5000mA, W=6000mA, Z=other (refer to code 9)

(6) Thickness Dimension
ex.: 0.5mm → 05

(7) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

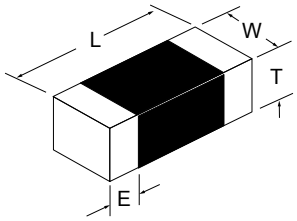
(8) Packaging
P=7" Reel Paper taping

(9) Specialized Specification Code
ex.: 2A0=2.0A; A80=0.8A

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

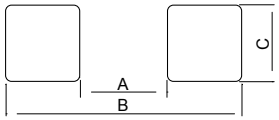
Size (EIA)	L	W	T	E
1005 (0402)	1.00±0.10	0.50±0.10	0.50±0.10	0.25±0.10
1608 (0603)	1.60±0.15	0.80±0.15	0.80±0.15	0.30±0.20



SOLDER LAND INFORMATION

Unit: mm

TYPE	A	B	C
1005 (0402)	0.4	1.2~1.4	0.5
1608 (0603)	0.7	1.8~2.0	0.7



STANDARD PACKING

Size (EIA)	1005 (0402)	1608 (0603)
Quantity (pcs/reel)	10,000	4,000

MHG-G Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance (W) ±25%@100MHz	Impedance (W) ±40%@1GHz	DCR (W) Max.	Rated Current (mA)	
				85°C	125°C
MHG1005 Series					
MHG1005G121Z05BP1A6	120	200	0.085	1600	900
MHG1005G221Z05BP1A0	220	240	0.150	1000	600
MHG1005G331Z05BPA80	330	210	0.220	800	500
MHG1608 Series					
MHG1608G470Z08BP3A5	47	75	0.020	3500	1700
MHG1608G600Z08BP3A0	60	100	0.025	3000	1500
MHG1608G101Z08BP2A5	100	170	0.035	2500	1200
MHG1608G151Z08BP2A1	150	270	0.050	2100	1100
MHG1608G221Z08BP1A8	220	370	0.070	1800	900
MHG1608G331Z08BP1A2	330	520	0.130	1200	600
MHG1608G471Z08BP1A0	470	750	0.150	1000	500
MHG1608G601Z08BPA90	600	900	0.170	900	500
MHG1608G102Z08BPA60	1000	1200	0.350	600	300
MHG1608G102Z08BPA60	1000	600	1200	0.350	600

MCB-W Series

FEATURES

- Monolithic inorganic material construction.
- Closed magnetic circuit avoids crosstalk.
- SMD Type & suitable for reflow and wave soldering.
- Available in various sizes.
- Excellent solderability and heat resistance.
- High reliability.
- Effectively filtering capability over a wide range of frequency.
- Compliant with AEC Q200.

APPLICATIONS

- Filtering between analog and digital circuitry, clock generation circuitry, I/O interconnects, isolation between RF noisy circuits and logic devices susceptible to functional degradation, power supply filtering to prevent conducted RF energy from corrupting the power generation circuitry, high frequency EMI prevention of automotive device.

PART NUMBER

MCB	1005	W	601	F	B	P	B
1	2	3	4	5	6	7	8

(1) Product Type
MCB= For General chip bead

(2) Dimension Code

(3) Material Code
W=For Automotive Standard Type

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
A=50mA, E=200mA, F=300mA, G=400mA, H=500mA, I=600mA, J=700mA, K=800mA

(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

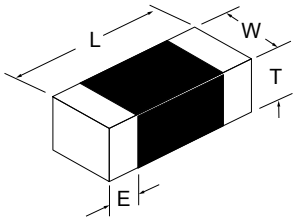
(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

(8) Material Code

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

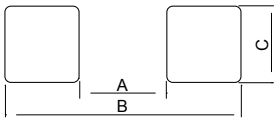
Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)
L	1.00±0.10	1.60±0.15	2.00±0.20	3.20±0.20
W	0.50±0.10	0.80±0.15	1.25±0.20	1.60±0.20
T	0.50±0.10	0.80±0.15	0.90±0.20	1.10±0.20
E	0.25±0.10	0.30±0.20	0.50±0.30	0.50±0.30



SOLDER LAND INFORMATION

Unit: mm

Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)
A	0.4	0.7	1.2	2.0
B	1.2~1.4	1.8~2.0	3.0~4.0	4.2~5.2
C	0.5	0.7	1.0	1.2



STANDARD PACKING

Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)
Quantity (pcs/reel)	10,000	4,000	4,000	3,000

MCB-W Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance (Ω) +/-25%	Test Freq. (MHz)	DCR Max. (Ω)	Rated Current (mA)
1005 (EIA 0402)				
MCB1005W700IBP	70	100	0.15	600
MCB1005W121HBP	120	100	0.25	500
MCB1005W241FBP	240	100	0.35	300
MCB1005W601EBPB	600	100	0.65	200
MCB1005W102EBP	1000	100	1.00	200
MCB1005W102EBPB	1000	100	0.90	200
MCB1005W182EBPB	1800	100	1.40	200
1608 (EIA 0603)				
MCB1608W121HBP	120	100	0.18	500
MCB1608W221HBP	220	100	0.25	500
MCB1608W471HBP	470	100	0.35	500
MCB1608W601HBP	600	100	0.38	500
MCB1608W102GBP	1000	100	0.50	400
MCB1608W152GBP	1500	100	0.60	400
MCB1608W182ABP	1800	100	1.50	50
MCB1608W222ABP	2200	100	1.50	50
MCB1608W252ABP	2500	100	1.50	50
2012 (EIA 0805)				
MCB2012W121EBP	120	100	0.15	200
MCB2012W151EBP	150	100	0.15	200
MCB2012W221EBP	220	100	0.20	200
MCB2012W601EBP	600	100	0.30	200
MCB2012W102EBP	1000	100	0.45	200
3216 (EIA 1206)				
MCB3216W601EBE	600	100	0.90	200

MCB-W H Series

FEATURES

- Monolithic inorganic material construction.
- Closed magnetic circuit avoids crosstalk.
- SMD Type & suitable for reflow and wave soldering.
- Available in various sizes.
- Excellent solderability and heat resistance.
- High reliability.
- Effectively filtering capability over a wide range of frequency.
- With a sharp and high frequency impedance characteristics which can effectively filter high frequency noise without attenuating high frequency signal.
- Compliant with AEC Q200.

APPLICATIONS

- Filtering between analog and digital circuitry, clock generation circuitry, I/O interconnects, isolation between RF noisy circuits and logic devices susceptible to functional degradation, power supply filtering to prevent conducted RF energy from corrupting the power generation circuitry Sharp impedance characteristics can effectively minimize attenuation, high frequency EMI prevention of in automotive device.

PART NUMBER

MCB	1005	W	121	E	B	P	H
1	2	3	4	5	6	7	8

(1) Product Type
MCB= For General chip bead

(2) Dimension Code

(3) Material Code
W= For Automotive Standard Type

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
E=200mA, Y=250mA, F=300mA, G=400mA, H=500mA, I=600mA, J=700mA, K=800mA

(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

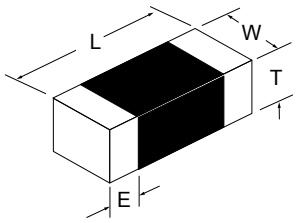
(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

(8) Material Code
H: For High speed

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

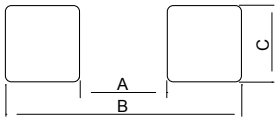
Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)
L	1.00±0.10	1.60±0.15	2.00±0.20
W	0.50±0.10	0.80±0.15	1.25±0.20
T	0.50±0.10	0.80±0.15	0.90±0.20
E	0.25±0.10	0.30±0.20	0.50±0.30



SOLDER LAND INFORMATION

Unit: mm

Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)
A	0.4	0.7	1.2
B	1.2~1.4	1.8~2.0	3.0~4.0
C	0.5	0.7	1.0



STANDARD PACKING

Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)
Quantity (pcs/reel)	10,000	4,000	4,000

MCB-W H Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance (Ω) +/-25%	Test Freq. (MHz)	DCR Max. (Ω)	Rated Current (mA)
1005 (EIA 0402)				
MCB1005W750FBPH	75	100	0.40	300
1608 (EIA 0603)				
MCB1608W750HBPH	75	100	0.30	500
MCB1608W121EBPH	120	100	0.40	200
MCB1608W241EBPH	240	100	0.45	200
MCB1608W601EBPH	600	100	0.65	200
MCB1608W102CBPH	1000	100	0.85	100
2012 (EIA 0805)				
MCB2012W121EBPH	120	100	0.25	200
MCB2012W151EBPH	150	100	0.25	200
MCB2012W221EBPH	220	100	0.25	200
MCB2012W601EBPH	600	100	0.35	200
MCB2012W222EBPH	2200	100	0.60	200

MHC-W Series

FEATURES

- Combination of high frequency noise suppression with capability of handing high current The current rating up to 6 Amps with ultra low DCR.
- Compliant with AEC Q200.

APPLICATIONS

- High current DC power lines in automotive device.
- Circuits where a stable ground in unavailable.

PART NUMBER

MHC	1608	W	601	L	B	P	_
1	2	3	4	5	6	7	8

(1) Product Type
MHC= High currtnt chip bead

(2) Dimension Code

(3) Material Code
W= For Automotive Standard Type

(4) Impedance (The unit is in ohm(Ω) at 100MHz)
ex.: 600Ω → 601; 1000Ω → 102

(5) Rated Current Code
L=1000mA, M=1500mA, N=2000mA, P=2500mA, Q=3000mA, R=4000mA, U=5000mA, W=6000mA, Z=other (refer to code 8)

(6) Soldering
A— Soldering Lead-Free
B— Lead-Free for whole chip

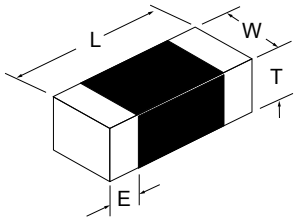
(7) Packaging
P=7" Reel Paper taping
E=7" Reel Embossed taping

(8) Specialized Specification Code
ex.: 1A2=1.2A; A80=0.8A

EQUIVALENT CIRRUIT & DIMENSIONS

Unit: mm

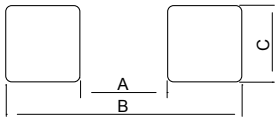
Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	4516 (1806)
L	1.00±0.10	1.60±0.15	2.00±0.20	3.20±0.20	4.50±0.25
W	0.50±0.10	0.80±0.15	1.25±0.20	1.60±0.20	1.60±0.20
T	0.50±0.10	0.80±0.15	0.90±0.20	1.10±0.20	1.60±0.20
E	0.25±0.10	0.30±0.20	0.50±0.30	0.50±0.30	0.60±0.40



SOLDER LAND INFORMATION

Unit: mm

Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	4516 (1806)
A	0.4	0.7	1.2	2.0	3.0
B	1.2~1.4	1.8~2.0	3.0~4.0	4.2~5.2	5.5~6.5
C	0.5	0.7	1.0	1.2	1.2



STANDARD PACKING

Size (EIA)	1005 (0402)	1608 (0603)	2012 (0805)	3216 (1206)	4516 (1806)
Quantity (pcs/reel)	10,000	4,000	4,000	3,000	2,000

MHC-W Series

HF Halogen Free Pb lead-free RoHS

SPECIFICATIONS

Part Number	Impedance (Ω) +/-25%	Test Freq. (MHz)	DCR Max. (Ω)	Rated Current (mA)
1005 (EIA 0402)				
MHC1005W100LBP	10	100	0.050	1000
MHC1005W121MBP	120	100	0.090	1500
1608 (EIA 0603)				
MHC1608W300LBP	30	100	0.050	1000
MHC1608W600LBP	60	100	0.100	1000
MHC1608W121NBP	120	100	0.050	2000
MHC1608W181MBP	180	100	0.090	1500
MHC1608W221MBP	220	100	0.100	1500
MHC1608W301MBP	300	100	0.150	1500
MHC1608W471LBP	470	100	0.200	1000
MHC1608W601LBP	600	100	0.200	1000
2012 (EIA 0805)				
MHC2012W310QBP	31	100	0.015	3000
MHC2012W600QBP	60	100	0.026	3000
MHC2012W101RBP	100	100	0.020	4000
MHC2012W121RBP	120	100	0.020	4000
MHC2012W221NBP	220	100	0.050	2000
MHC2012W331MBP	330	100	0.090	1500
MHC2012W152LBP	1500	100	0.300	1000
3216 (EIA 1206)				
MHC3216W500QBE	50	100	0.025	3000
MHC3216W121QBE	120	100	0.025	3000
MHC3216W601MBE	600	100	0.090	1500
4516 (EIA 1806)				
MHC4516W600WBE	60	100	0.010	6000
MHC4516W181ZBE3A5	180	100	0.020	3500
MHC4516W102MBE	1000	100	0.150	1500

Reliability and Test Condition

HF Halogen Free Pb lead-free RoHS

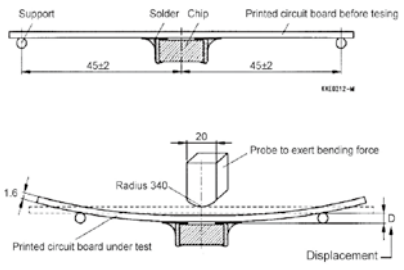
For General Products

Test item	Test condition	Criteria	Reference
Temperature Cycle	1. Temperature : -40 ~ +85°C (For MGB Series : -55 ~ +125°C) 2. Cycle : 100 cycles 3. Dwell time : 30minutes Measurement : at ambient temperature 24 hrs after test completion	1. No mechanical damage 2. Impedance value should be within ± 20% (MGB & MHG&MHC P Series +/-30%) of the initial value	JESD22 A-106B
Operational Life	1. Temperature : 85°C ± 5°C (For MCB/MGB/MHC S Series 125°C ± 5°C) 2. Test time : 1000 hrs 3. Apply current : full rated current Measurement : at ambient temperature 24 hrs after test completion	1. No mechanical damage 2. Impedance value should be within ± 20% (MGB & MHG&MHC P Series +/-30%) of the initial value	MIL-STD-202G Method 108
Biased Humidity	1. Temperature : 40 ± 2°C 2. Humidity : 90 ~ 95% RH 3. Test time : 1000 hrs 4. Apply current : full rated current Measurement : at ambient temperature 24 hrs after test completion	1. No mechanical damage 2. Impedance value should be within ± 20% (MGB & MHG&MHC P Series +/-30%) of the initial value	MIL-STD-202G Method 103
Resistance to Solder Heat	1. Solder temperature : 260 ± 5°C 2. Flux : Rosin 3. DIP time : 10 ± 1 sec	1. More than 95 % of terminal electrode should be covered with new solder 2. No mechanical damage 3. Impedance value should be within ± 20% (MGB & MHG&MHC P Series +/-30%) of the initial value	MIL-STD-202G Method 210
Solderability Test	1. Solder temperature : 235 ± 5°C 2. Flux : Rosin 3. DIP time : 5 ± 1 sec	More than 95% of terminal electrode should be covered with new solder	J-STD-002C

Reliability and Test Condition (AEC-Q200)

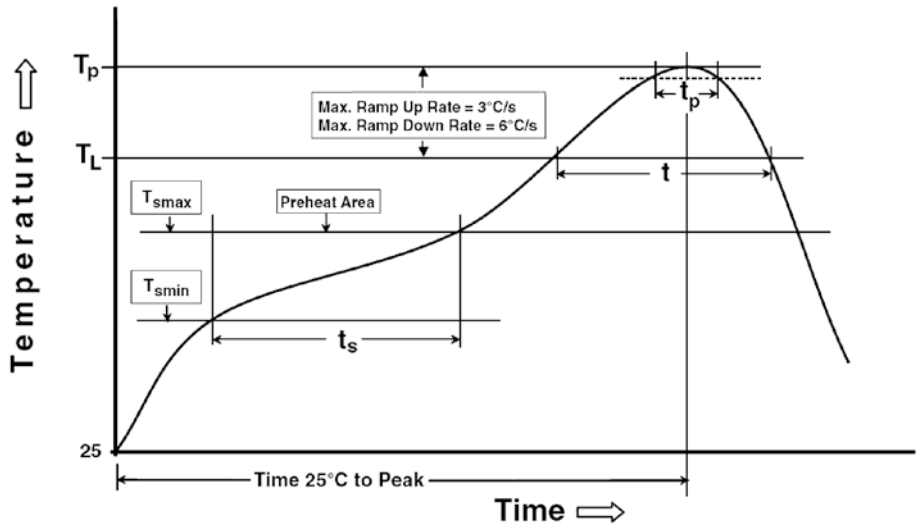
HF Halogen Free Pb lead-free RoHS

For Automotive Product (Passive Component)

Test item	Test condition	Criteria	Reference
High Temperature Exposure	1. Temperature : 125°C ± 5°C 2. Test time : 1000 hrs Measurement: at ambient temperature 24 hrs after test completion	1. No mechanical damage 2. Impedance value should be within ± 30% of the initial value (For MCM Serie within ± 20% of the initial value)	MIL-STD-202 Method 108
Temperature Cycling	1. Temperature : -55 ~ +125°C 2. Cycle : 1000 cycles 3. Dwell time : 30minutes Measurement : at ambient temperature 24 hrs after test completion	1. No mechanical damage 2. Impedance value should be within ± 30% of the initial value (For MCM Serie within ± 20% of the initial value)	JESD22 Method JA-104
Biased Humidity	1. Temperature : 85°C ± 2°C 2. Humidity : 85 % RH 3. Test time : 1000 hrs 4. Apply current : full rated current Measurement: At ambient temperature 24 hrs after test completion	1. No mechanical damage 2. Impedance value should be within ± 30% of the initial value (For MCM Serie within ± 20% of the initial value)	MIL-STD-202 method 103
Operational Life	1. Temperature : 125°C ± 5°C 2. Test time : 1000 hrs 3. Apply current : full rated current Measurement: At ambient temperature 24 hrs after test completion	1. No mechanical damage 2. Impedance value should be within ± 30% of the initial value (For MCM Serie within ± 20% of the initial value)	MIL-STD-202 Method 108
Mechanical Shock	Condition F:1500g's/0.5ms/Half sine	No mechanical damage	MIL-STD-202 Method 213
Vibration Test	1. 5g's for 20 minutes,12cycles each of 3 orientations 2. Test from 10-2000Hz.,12cycles each of 3 orientations	No mechanical damage	MIL-STD-202 Method 204
Resistance to Solder Heat	1. Solder temperature : 260 ± 5°C 2. Flux : Rosin 3. DIP time : 10 ± 1 sec	1. More than 95 % of terminal electrode should be covered with new solder 2. No mechanical damage 3. Impedance value should be within ± 30% of the initial value (For MCM Serie within ± 20% of the initial value)	MIL-STD-202 Method 210
ESD	Classification Levels 1C 1000 V (DC) to < 2000 V (DC)	1. No mechanical damage 2. Impedance value should be within ± 30% of the initial value (For MCM Serie within ± 20% of the initial value)	AEC-Q200-002
Solderability Test	1. Solder temperature : 235 ± 5°C 2. Flux : Rosin 3. DIP time : 5 ± 1 sec	More than 95% of terminal electrode should be covered with new solder	J-STD-002
Board Flex	60 sec minimum holding time 	No mechanical damage	AEC-Q200-005
Terminal Strength	DIMENSIONS / Apply Force (F) / Test Time 0603 / 2N / 5 sec. 1005/1012 / 5N / 10 sec. 1608 / 10N / 10 sec. ≥ 2012 / 17.7N / 60 sec.	No mechanical damage	INPAQ Specification

Recommended Soldering Conditions

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Tsmax to Tp)	3°C /second max.
Preheat	
– Temperature Min (Tsmin)	150°C
– Temperature Max (Tsmax)	200°C
– Time (tsmin to tsmax)	60-180 seconds
Time maintained above:	
– Temperature (TL)	217°C
– Time (tL)	60-150 seconds
Peak/Classification Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

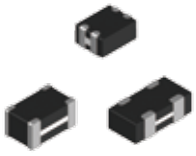
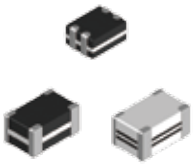


Recommended soldering profile for lead-free soldering based on JEDEC J-STD-020

Cross Reference

HF Halogen Free Pb lead-free RoHS

Common Mode Filter

Product ID	Product Name	INPAQ	MuRata	TDK	Taiyo Yuden	Panasonic
	Common Mode Filter Multilayer Type (For High Speed)	MCM 1012B MCM 2012B MCM 3216B	DLM 11SN	MCZ 1210AH	MCF 12102G MCF 20122G	EXC 24CE EXC 34CE
	Common Mode Filter Multilayer Type (For Ultra High Speed)	HCM 1012GD HCM 2012GD	DLP 11SA	MCZ 1210DH	MCF 12102H	EXC 24CH EXC 34CG
	Common Mode Filter Multilayer Array Type	MCA 2012 MCA 3216	DLP 2AD DLP 31D	MCZ 2010		
	Common Mode Filter Wire wound Type	WCM 2012BT WCM 2012HT	DLW 21SN_SQ DLW 21SN_HQ	ACM 2012T ACM 2012T		

Cross Reference

HF Halogen Free Pb lead-free RoHS

Chip Ferrite Bead

Product ID	Product Name	INPAQ	MuRata	TDK	Taiyo Yuden
	Chip Ferrite Bead Signal Lines Type (For Standard)	MCB 0603S MCB 0603B MCB 1005S MCB 1005B MCB 1608S MCB 2012S MCB 3216S MCB 3225S MCB 4516S MCB 4532S	BLM 03AG BLM 03BD BLM 15AG BLM 15BD BLM 18AG BLM 21AG	MMZ 0603S MMZ 0603Y MMZ 1005S MMZ 1005Y MMZ 1608S MMZ 2012S	BK 0603HS BK 0603HM BK 1005HS BK 1005HM BK 1608HS BK 2125HS
	Chip Ferrite Bead Signal Lines Type (Ultra Low DCR)	MCB 0603P MCB 1005P	BLM 03AX BLM 15AX	MMZ 0603S MMZ 1005S	BK 0603HR/TS BKP 1005HS
	Chip Ferrite Bead Signal Lines Type (For High Speed)	MCB 0603H MCB 1005H MCB 1608H MCB 2012H	BLM 03BB BLM 15BB/BC BLM 18BB BLM 21BB	MMZ 0603D MMZ 1005D MMZ 1608D MMZ 2012D	BK 0603LL BK 1005LL
	Chip Ferrite Bead Power Lines Type	MHC 0603S MHC 1005S MHC 1608S MHC 2012S MHC 3216S MHC 3225S MHC 4516S MHC 4532S	BLM 03PG BLM 15PD BLM 18PG BLM 21PG BLM 31PG BLM 41PG	MMZ 0603S MPZ 1005S MPZ 1608S MPZ 2012S	BKP 0603HS BKP 1005EM FBMJ 1608HS FBMJ 2125HS FBMJ 3216HS FBMJ 4516HS
	Chip Ferrite Bead Power Lines Type (Ultra low DCR)	MHC 0603P MHC 1005P MHC 1608P	BLM 03PX BLM 15PX BLM 18KG	MPZ 0603S MPZ 1005S MPZ 1608S	BKP 0603HS/TS BKP1005EM FB MH1608HM
	Chip Ferrite Bead Signal Lines Type (For GHz Band)	MGB 0603G MGB 1005G	BLM 03HD BLM 15HD	MMZ 0603D MMZ 1005D	BKH 0603LM BKH 1005LM
	Universal Type (For High GHz Band)	MGB 0603H	BLM 03EB	MMZ 0603F	BKH 0603HL
	Chip Ferrite Bead Power Lines Type (For GHz Band)	MHG 1005G MHG 1608G	BLM 15EG BLM 18EG	MPZ 1005S	BKP 1005EM FB MH1608HM

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