

Multilayer Ferrite Power Beads



Features

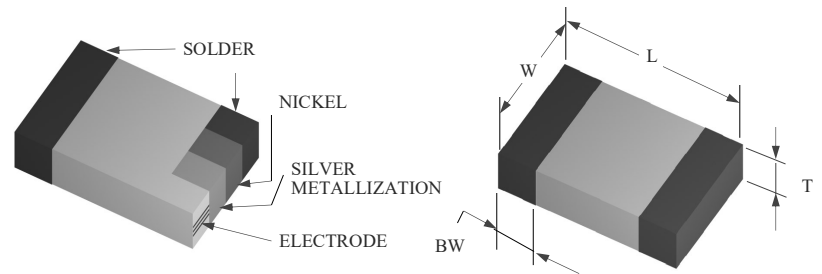
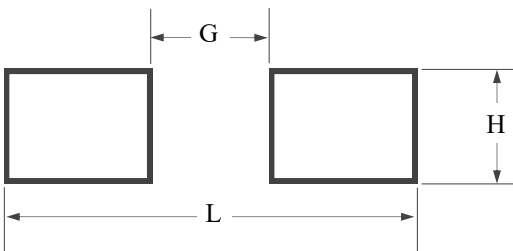
- Monolithic structure for closed magnetic path and high reliability
- Maximum permissible currents up to 4A
- Standard EIA/EIAJ chip sizes such as 0603/1608, 0805/2012, and 1206/3216
- Superior termination bonding strength
- Nickel barrier with solder overplated termination offering excellent solderability and solder leach resistance, suitable for both wave and reflow soldering processes
- RoHS compliant when -T option is specified

Applications

- Noise suppression in computers and peripherals
- Noise suppression in telecommunications
- Noise suppression in data communications
- Noise suppression in consumer electronics

Recommended PC Board Land Patterns

CHIP SIZE EIA/EIAJ	L INCH (mm)	G INCH (mm)	H INCH (mm)
0603(1608)	0.102 (2.60)	0.022 (0.55)	0.037 (0.94)
0805(2012)	0.118 (3.00)	0.026 (0.66)	0.057 (1.45)
1206(3216)	0.173 (4.40)	0.059 (1.50)	0.071 (1.80)
1210(3225)	0.173 (4.40)	0.059 (1.50)	0.106 (2.70)



CHIP SIZE EIA/EIAJ	LENGTH (L) INCH (mm)	WIDTH (W) INCH (mm)	THICKNESS (T) INCH (mm)	TERMINATION (BW) INCH (mm)
0603/1608	0.063 ± 0.006 (1.60 ± 0.15)	0.031 ± 0.006 (0.80 ± 0.15)	0.031 ± 0.006 (0.80 ± 0.15)	0.014 ± 0.006 (0.36 ± 0.15)
0805/2012	0.079 ± 0.008 (2.00 ± 0.20)	0.049 ± 0.008 (1.25 ± 0.20)	0.035 ± 0.008 (0.90 ± 0.20)	0.020 ± 0.012 (0.51 ± 0.30)
1206/3216	0.126 ± 0.008 (3.20 ± 0.20)	0.063 ± 0.008 (1.60 ± 0.20)	0.043 ± 0.008 (1.10 ± 0.20)	0.020 ± 0.012 (0.51 ± 0.30)
1210/3225	0.126 ± 0.008 (3.20 ± 0.20)	0.098 ± 0.008 (2.50 ± 0.20)	0.051 ± 0.008 (1.30 ± 0.20)	0.020 ± 0.012 (0.51 ± 0.30)

Other sizes and values may be available upon customer's request.

Operating Temperature

-55°C — +125°C

Product Identification

MCP 0805 F 600 P T - T
(1) (2) (3) (4) (5) (6) (7)

- (1) Series code:
MCP: Multilayer Ferrite Power Bead
- (2) Dimensions: L x W inches
The first two digits: L (length)
The last two digits: W (width)
- (3) Characteristic code: F
- (4) Value code: Impedance (ohms at 100 MHz)
The first two digits are significant. The last digit specifies the number of zeros to follow.
- (5) Tolerance code:
P = ±25%
Other tolerances may be available upon request.
- (6) Package code:
T = Tape & Reel
B = Bulk
- (7) Termination type code:
T = 100% Sn plating

Shape and Dimensions

MCP Series (High Current)

<i>AEM Part Number</i>	<i>Z@100MHz Ω</i>	<i>Tolerance</i>	<i>Max. R_{DC} Ω</i>	<i>Max. I A</i>
MCP0603F300PT-T	30	P	0.040	3.0
MCP0603F600PT-T	60	P	0.200	1.0
MCP0603F800PT-T	80	P	0.040	3.0
MCP0603F121PT-T	120	P	0.100	2.0
MCP0603F181PT-T	100	P	0.200	1.0
MCP0603F221PT-T	220	P	0.100	2.0
MCP0603F301PT-T	300	P	0.200	1.0
MCP0603F601PT-T	600	P	0.200	1.0
MCP0603F751PT-T	750	P	0.200	1.0
MCP0805F300PT-T	30	P	0.040	3.0
MCP0805F500PT-T	50	P	0.040	3.0
MCP0805F600PT-T	60	P	0.030	4.0
MCP0805F800PT-T	80	P	0.040	3.0
MCP0805F121PT-T	120	P	0.100	2.0
MCP0805F151PT-T	150	P	0.100	2.0
MCP0805F221PT-T	220	P	0.100	2.0
MCP0805F301PT-T	300	P	0.200	1.0
MCP0805F601PT-T	600	P	0.200	1.0
MCP0805F102PT-T	1000	P	0.200	1.0
MCP1206F190PT-T	19	P	0.030	4.0
MCP1206F300PT-T	30	P	0.040	3.0
MCP1206F500PT-T	50	P	0.040	3.0
MCP1206F800PT-T	80	P	0.040	3.0
MCP1206F101PT-T	100	P	0.050	2.5
MCP1206F121PT-T	120	P	0.100	2.0

MCP Series (High Current)

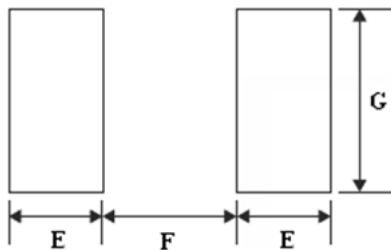
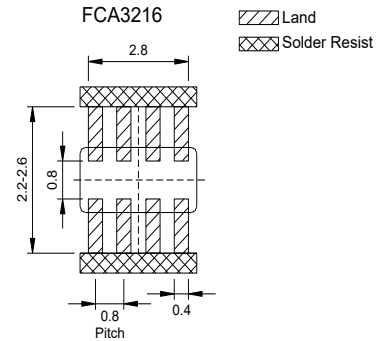
<i>AEM Part Number</i>	<i>Z@100MHz Ω</i>	<i>Tolerance</i>	<i>Max. R_{DC} Ω</i>	<i>Max. I A</i>
MCP1206F301PT-T	300	P	0.200	1.0
MCP1206F601PT-T	600	P	0.100	2.0

Definition of rated current: When the rated current is applied to a power bead, its temperature rise shall not exceed 20°C.

Soldering and Mounting

Recommended PC Board Pattern

Chip Size						Land Patterns For Reflow Soldering		
Series	Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
MCP	0603	1.6±0.15	0.80±0.15	0.80±0.15	0.30±0.20	0.80	0.85	0.95
	0805	2.0±0.20	1.25±0.20	0.85±0.20	0.50±0.30	1.05	1.00	1.45
		2.0±0.20	1.25±0.20	1.25±0.20	0.50±0.30			
	1206	3.2±0.20	1.60±0.20	1.10±0.20	0.50±0.30	1.05	2.20	1.80



PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

Soldering

Mildly activated rosin fluxes are preferred. AEM terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

IR Soldering Reflow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E)

Soldering Iron:

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended. (Figure 2.)

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip • Use a 20 watt soldering iron with tip diameter of 1.0mm
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.

Fig.1 IR Soldering Reflow

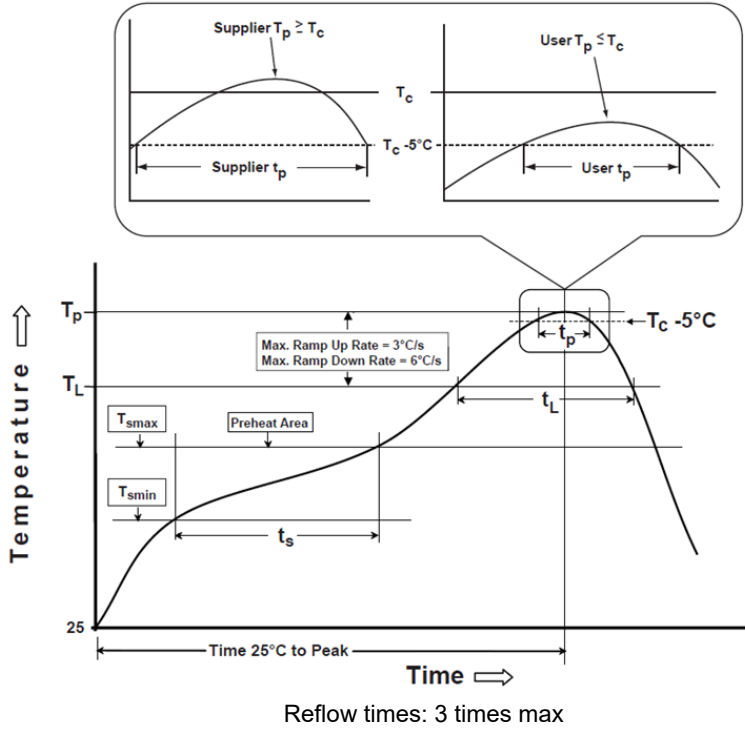


Fig.2 Iron soldering temperature profiles

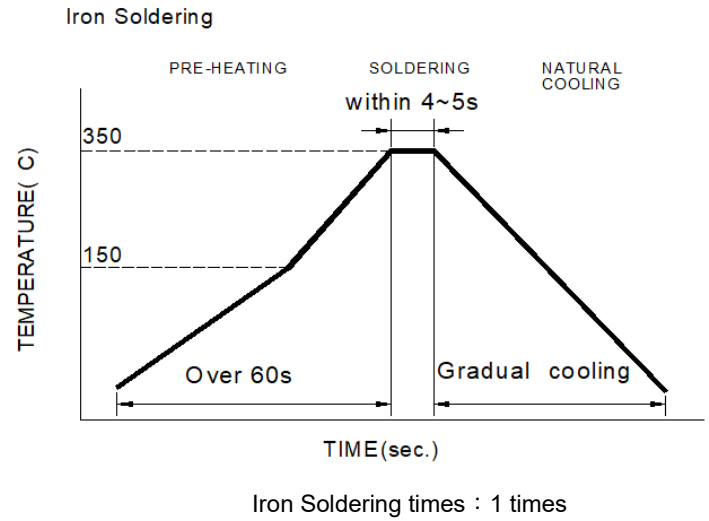


Table (1.1): Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat	
-Temperature Min(T_{smin})	150°C
-Temperature Max(T_{smax})	200°C
-Time(t_s)from(T_{smin} to T_{smax})	60-120seconds
Ramp-up rate(T_L to T_p)	3°C/second max.
Liquidus temperature(T_L)	217°C
Time(t_L)maintained above T_L	60-150 seconds
Classification temperature(T_c)	See Table (1.2)
Time(t_p) at $T_c - 5^\circ\text{C}$ (T_p should be equal to or less than T_c .)	< 30 seconds
Ramp-down rate(T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

T_p: maximum peak package body temperature, **T_c**: the classification temperature.
 For user (customer) **T_p** should be equal to or less than **T_c**.

Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

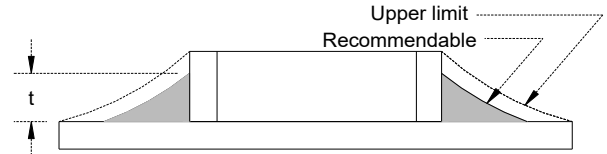
	Package Thick-ness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020E

Solder Volume:

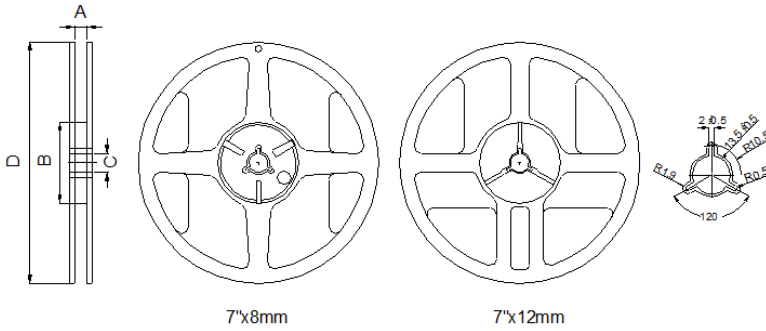
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:

Minimum fillet height = soldering thickness + 25% product height



Packaging Information

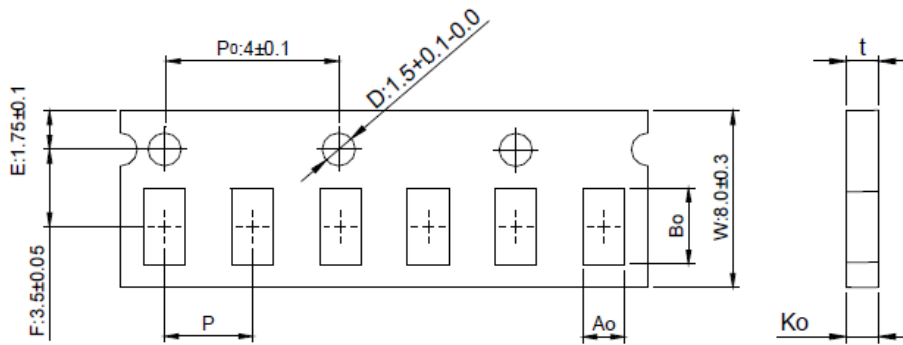
Reel Dimension



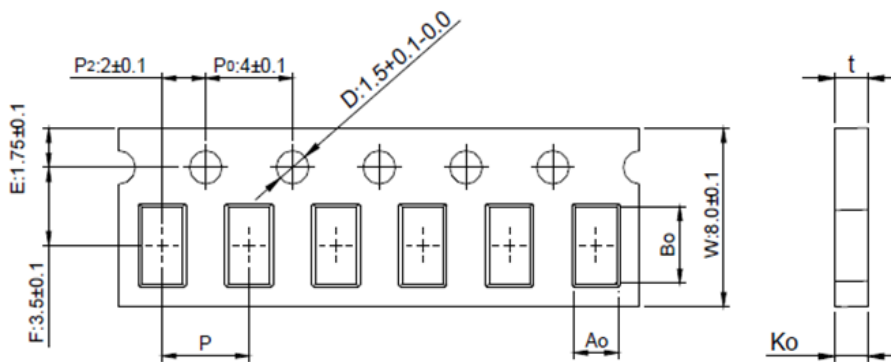
Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60±2	13.5±0.5	178±2
7"x12mm	13.5±0.5	60±2	13.5±0.5	178±2

Tape Dimension / 8mm

- ◆ Material of taping is paper

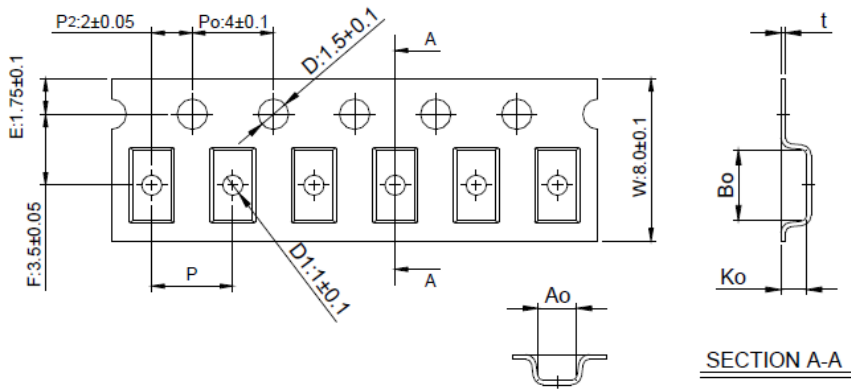


Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
100505	1.12±0.03	0.62±0.03	0.60±0.03	2.0±0.05	0.60±0.03



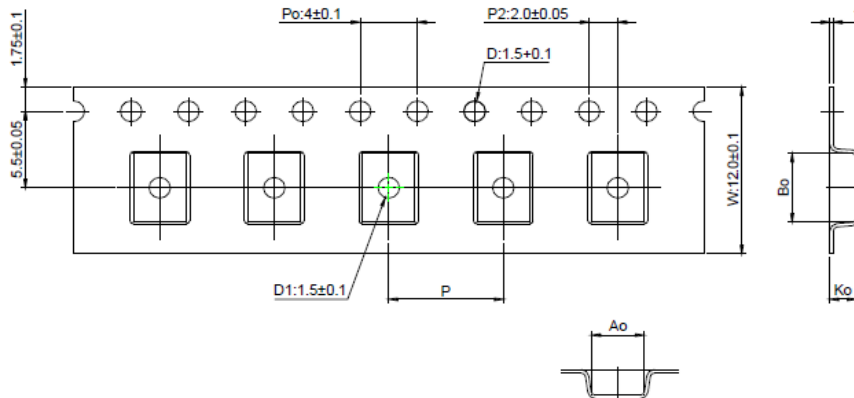
Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
160808	1.80±0.05	0.96+0.05/-0.03	0.95±0.05	4.0±0.10	0.95±0.05
201209	2.10±0.05	1.30±0.05	0.95±0.05	4.0±0.10	0.95±0.05

◆ Material of taping is plastic



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
321611	3.35±0.10	1.75±0.10	1.25±0.10	4.0±0.10	0.23±0.05	1.0±0.10

Tape Dimension / 12mm

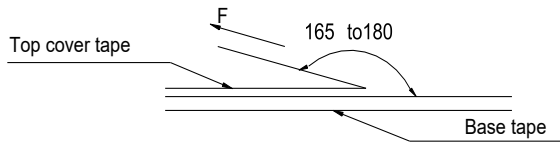


Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
451616	4.70±0.10	1.75±0.10	1.75±0.10	4.0±0.10	0.24±0.05	1.5±0.10
453215	4.70±0.10	3.45±0.10	1.60±0.10	8.0±0.10	0.24±0.05	1.5±0.10

Packaging Quantity

Chip Size	453215	451616	321611	201209	160808	100505
Chip / Reel	1000	2000	3000	4000	4000	10000
Inner box	4000	8000	15000	20000	20000	50000
Middle box	20000	40000	75000	100000	100000	250000
Carton	40000	80000	150000	200000	200000	500000

Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

·Storage Conditions(component level)

To maintain the solder ability of terminal electrodes:

1. AEM products meet IPC/JEDEC J-STD-020E standard-MSL, level 1.
2. Temperature and humidity conditions: Less than 40°C and 60% RH.
3. Recommended products should be used within 12 months from the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

·Transportation

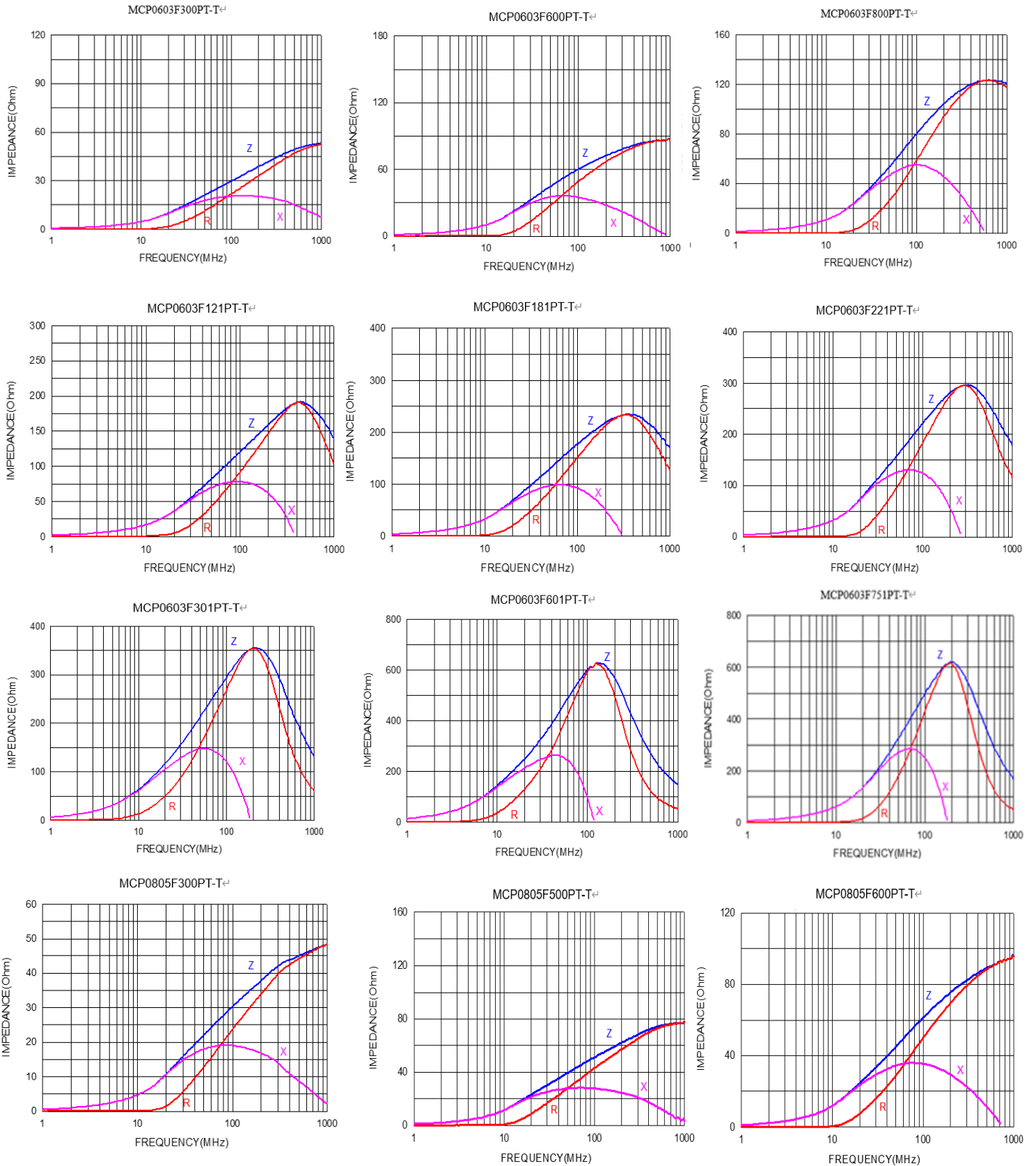
1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.

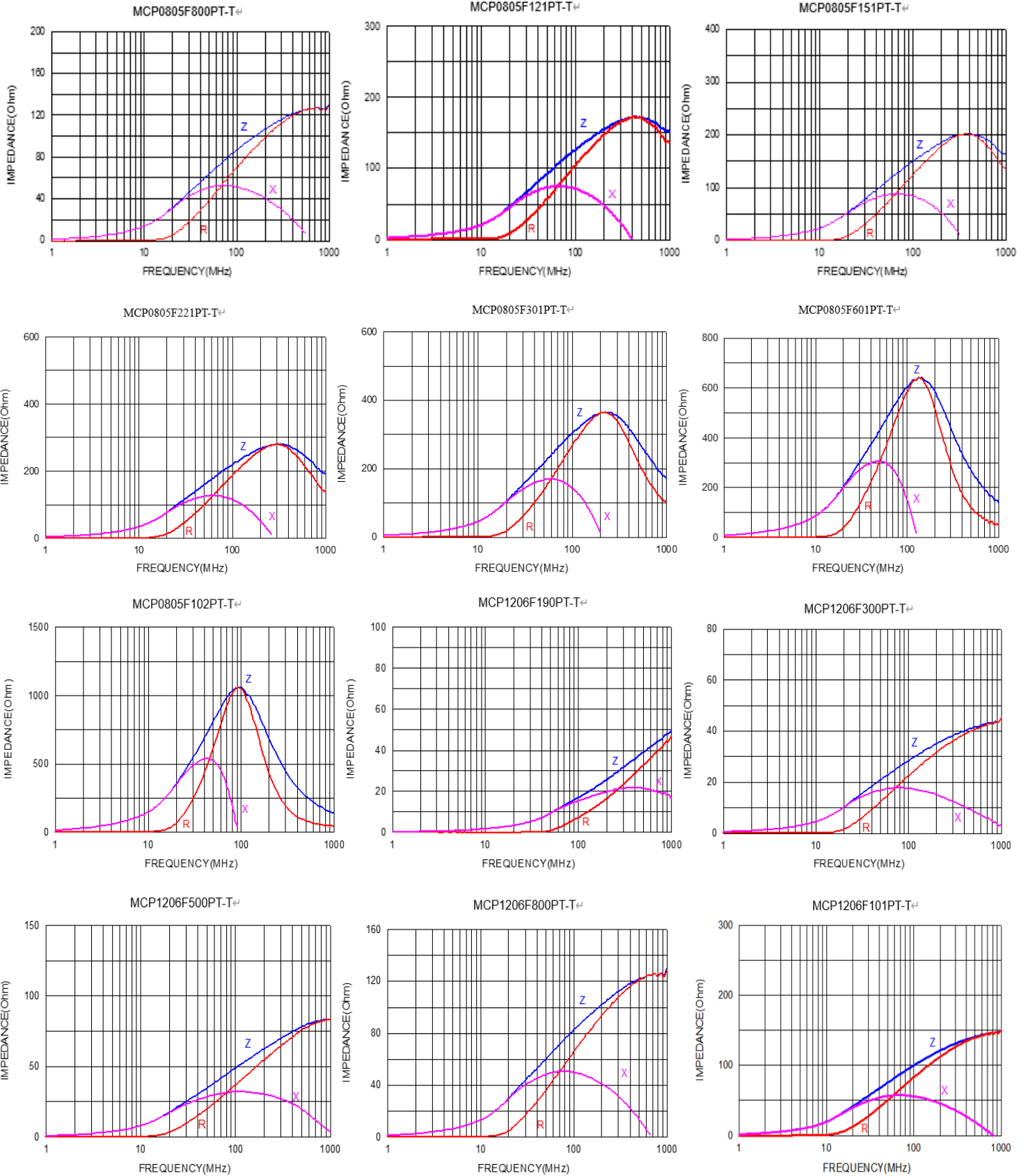
Electrical Characteristics

(Curves not listed are available upon request)



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(Curves not listed are available upon request)



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