

Multi Layer Ferrite Power Beads

ISO 9002 CERTIFIED

Type CZP

1. General

- Designed to reduce noise at high frequencies
- Standard EIA Packages: 1J, 2A, 2B
- Nickel barrier with solder overcoat for excellent solderability
- Magnetically shielded

2. Dimensions

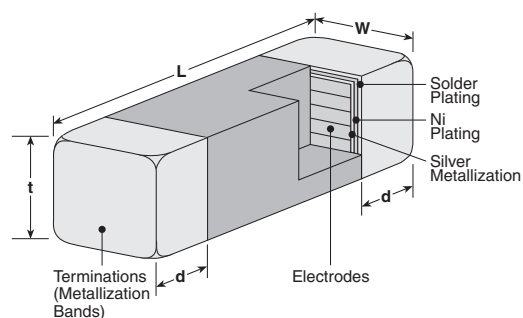


Table 1

Dimensions - inches (mm)				
Part	L	W	t	d
1J (0603)	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)
2A (0805)	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±0.010 (0.51±0.25)
2B (1206)	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±0.010 (0.51±0.25)

3. Type Designation

The type designation shall be in the following form:

New Type

CZP	2A	F	T	TD	500	P
Type	Size	Permeability Code	Termination Material	Packaging	Impedence	Tolerance
	1J 2A 2B	F P	T: Sn L: SnPb	TE: 7" Embossed Plastic 1J, 2A: 4,000 pcs/reel 2B: 3,000 pcs/reel	2 significant figures + 1 multiplier	P: ±25%

4. Standard Applications

Ordering Code	Impedance @ 100MHz [†] Ω	Maximum DC Resistance ^{††} Ω	Allowable DC Current (mA)	Operating Temperature
CZP1JF*TE050P	5	0.04	1,000	-55°C to 125°C
CZP1JF*TE300P	30	0.06	3,000	
CZP1JF*TE600P	60	0.1	500	
CZP1JF*TE121P	120	0.1	2,000	
CZP1JF*TE181P	180	0.15	1,500	
CZP1JF*TE301P	300	0.1	2,000	
CZP2AF*TE070P	7	0.02	3,000	-55°C to 125°C
CZP2AF*TE100P	10	0.02	3,000	
CZP2AF*TE110P	11	0.025	3,000	
CZP2AF*TE150P	15	0.025	3,000	
CZP2AF*TE220P	22	0.025	3,000	
CZP2AF*TE300P	30	0.015	3,000	
CZP2AF*TE400P	40	0.03	2,000	
CZP2AF*TE450P	45	0.03	2,000	
CZP2AF*TE600P	60	0.025	3,000	
CZP2AF*TE800P	80	0.1	1,000	
CZP2AF*TE201P	200	0.15	1,000	
CZP2AF*TE221P	220	0.05	2,000	
CZP2AF*TE301P	300	0.15	1,000	
CZP2AF*TE601P	600	0.2	1,000	
CZP2AF*TE102P	1000	0.2	1,000	
CZP2BF*TE190P	19	0.02	3,000	-55°C to 125°C
CZP2BF*TE260P	26	0.02	3,000	
CZP2BF*TE300P	30	0.02	3,000	
CZP2BF*TE310P	31	0.02	3,000	
CZP2BF*TE500P	50	0.025	3,000	
CZP2BF*TE650P	65	0.03	2,000	
CZP2BF*TE700P	70	0.03	2,000	
CZP2BF*TE800P	80	0.03	2,000	

*Add Termination Material Character (L,T)

† Impedance Test Method: HP4291A

†† DCR Test Method: Keithley 580

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4. Standard Applications (continued)

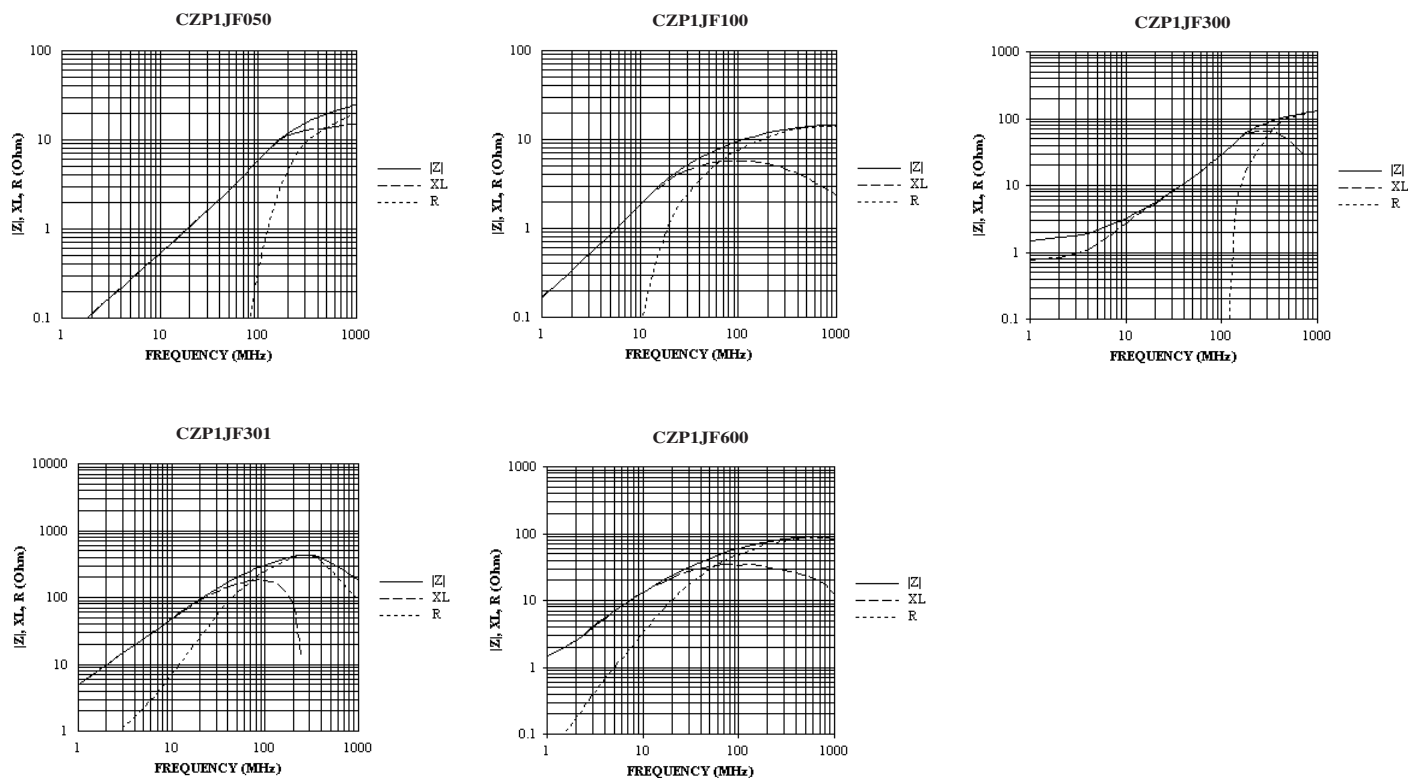
Ordering Code	Impedance @ 100MHz [†] Ω	Maximum DC Resistance ^{††} Ω	Allowable DC Current (mA)	Operating Temperature
CZP2BF*TE900P	90	0.1	1,000	-55°C to 125°C
CZP2BF*TE101P	100	0.1	1,000	
CZP2BF*TE121P	120	0.1	1,000	
CZP2BP*TE700P	70	0.2	3,000	
CZP2BF*TE601P	600	0.2	1,000	
CZP2BP*TE101P	100	0.03	3,000	
CZP2BP*TE121P	120	0.04	3,000	
CZP2BP*TE601P	600	0.1	1,500	

*Add Termination Material Character (L,T)

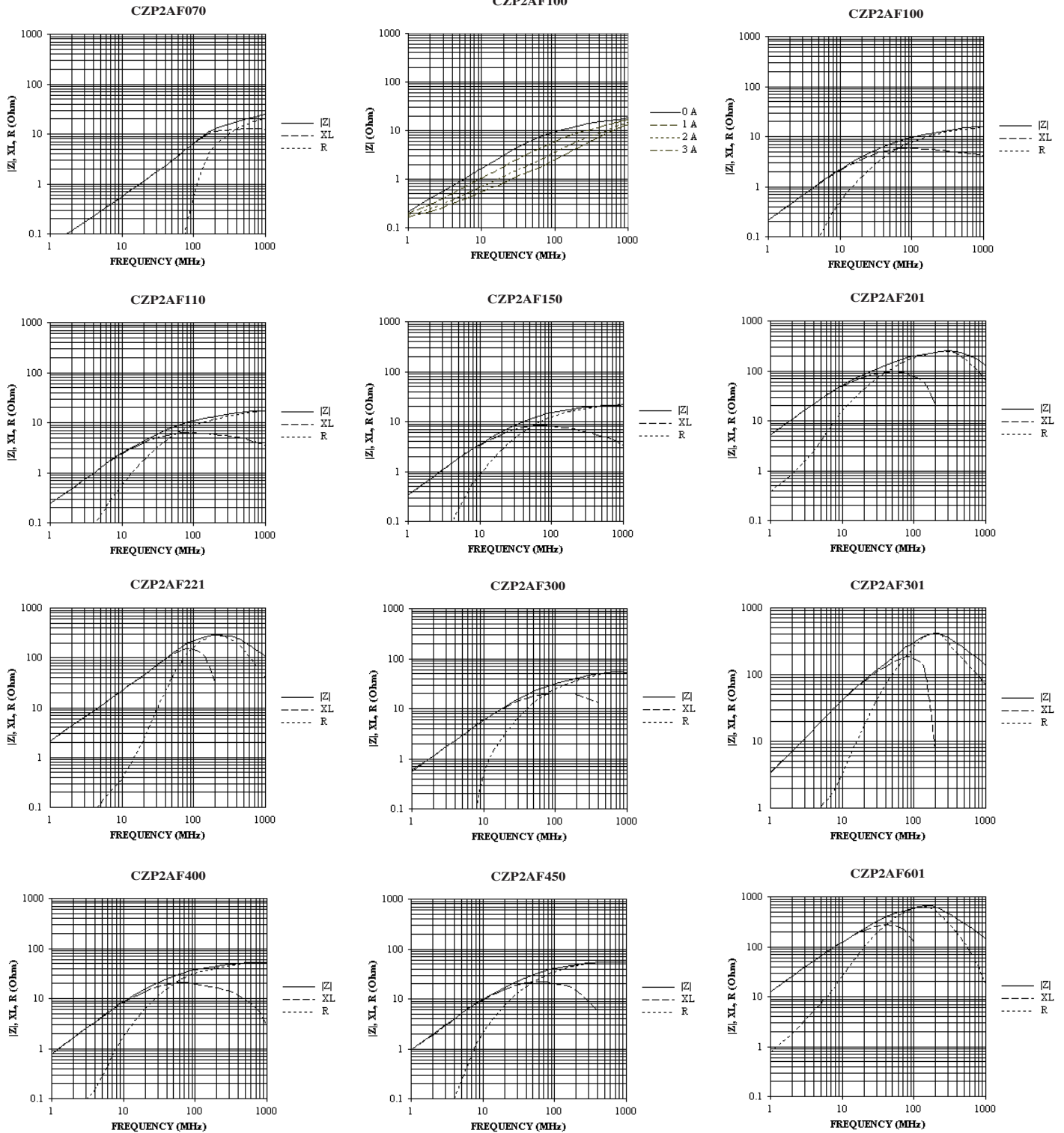
[†] Impedance Test Method: HP4291A

^{††} DCR Test Method: Keithley 580

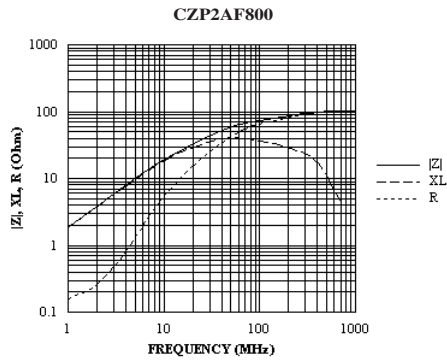
5. 0603 (1J) Graphs



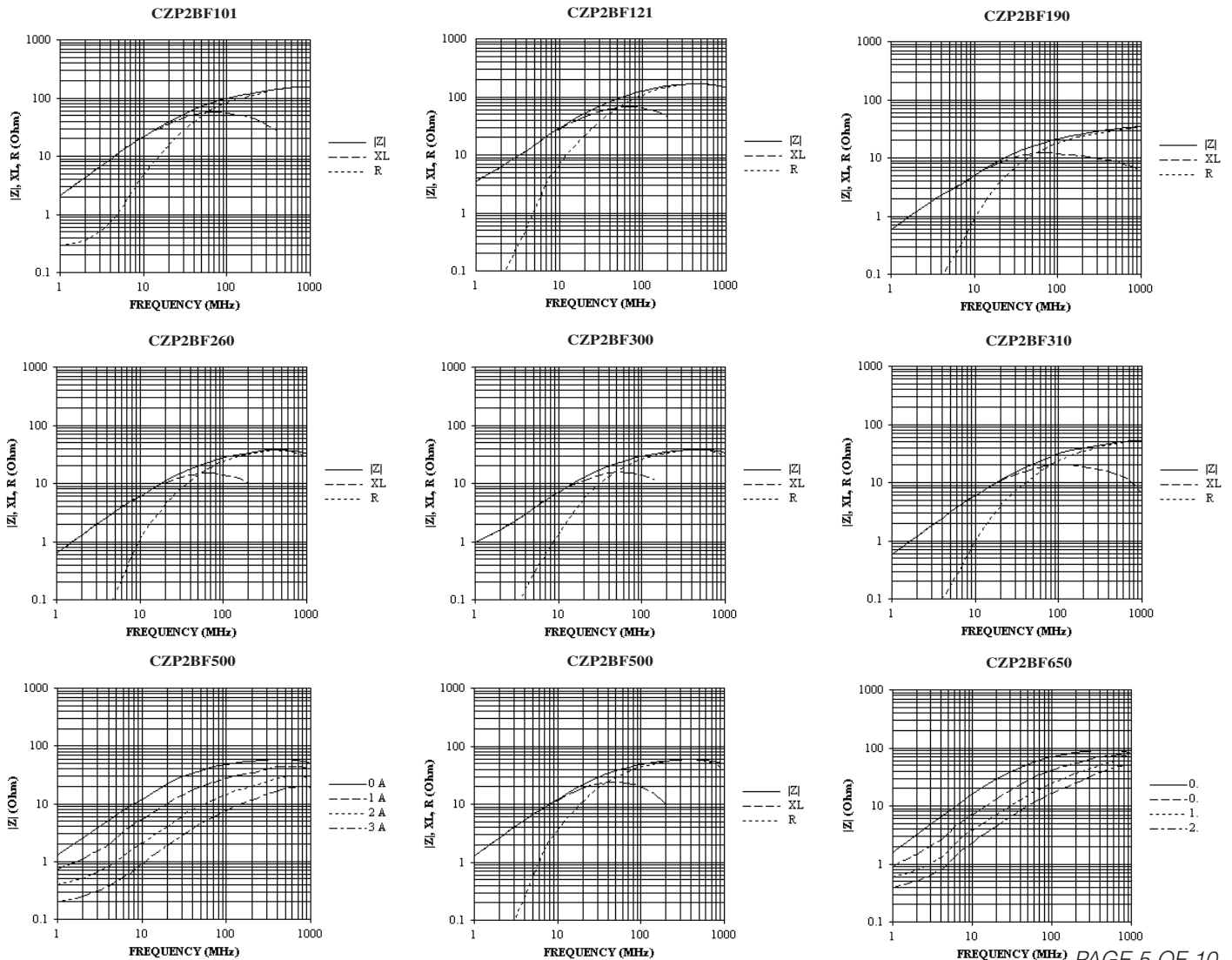
5. 0805 (2A) Graphs



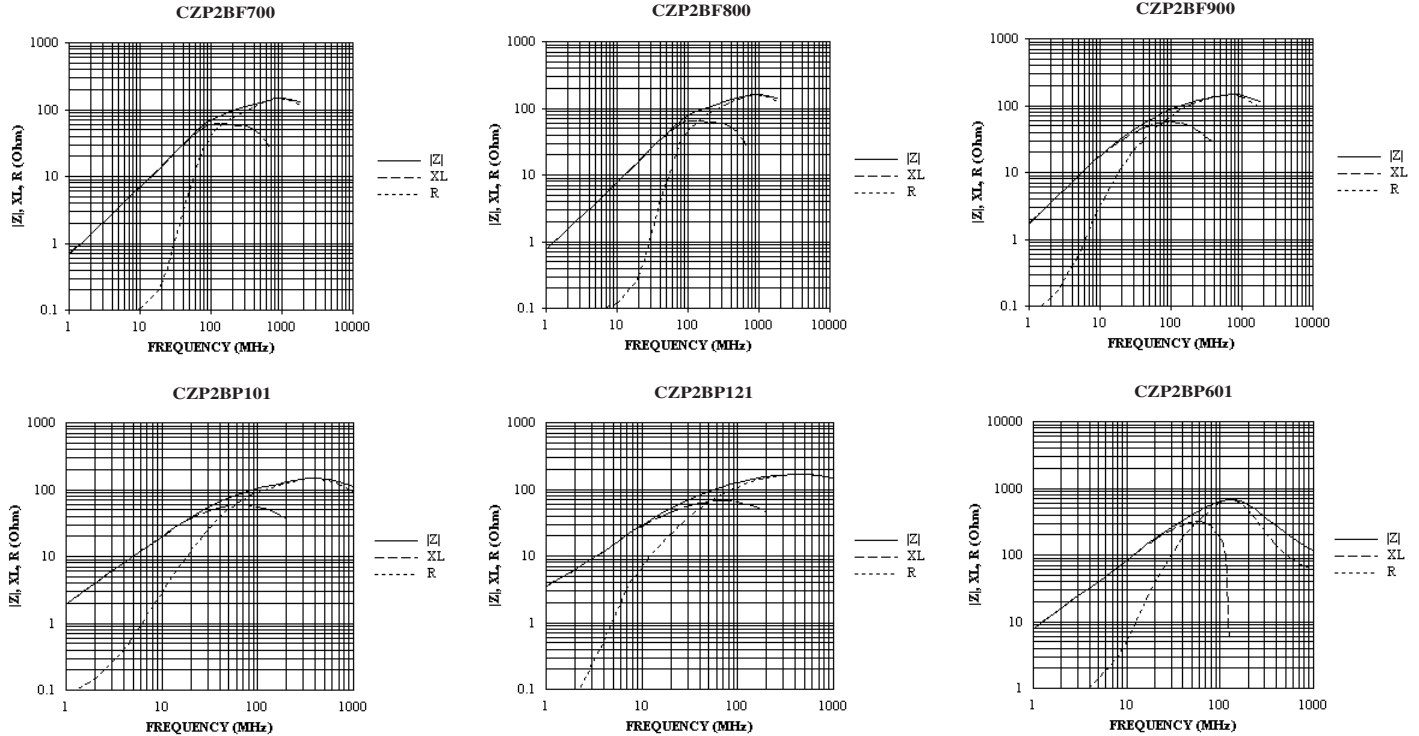
5. 0805 (2A) Graphs (continued)



5. 1206 (2B) Graphs



5. 1206 (2B)Graphs (continued)



5. Characteristics

Item	Requirement	Conditions												
Operating Temperature	-55°C ~ +125°C													
Storage Temperature	40°C @ 70% Humidity	Sealed plastic bags with desiccant shall be used to reduce the potential of oxidation on the terminations during storage.												
Resistance to Solder Heat	Change in Impedance: Relative to value before test $\pm 20\%$. Appearance: There shall be no cracking Solder Coverage: More than 75% of the terminal electrode shall be covered with solder.	Flux: 5-10 sec dip After Flux: Air dry for 15 sec Preheat: 150°C $\pm 10^\circ\text{C}$ Preheat Time: 60 sec Solder Temp: 260°C $\pm 5^\circ\text{C}$ Dip Time: 10 ± 1 sec												
Solderability	Solder Coverage: More than 95% of the termination shall be covered with solder.	Flux: 5-10 sec dip After Flux: Air dry for 15 sec Solder Temp: 245°C $\pm 5^\circ\text{C}$ Dip Time: 5 ± 0.5 sec												
Leach Resistance	Appearance: There shall be no visible signs of physical or mechanical damage (i.e. no cracks). Terminations: Termination must not be leached away for more than 5%.	The bead shall be subjected to the following 5 steps for the period of time shown below. The 5 steps constitute one (1) rotation. 4 rotations shall be carried out. 1) Flux: 5-10 sec 2) After Flux: Air dry for 15 sec 3) Solder Temp: 230°C $\pm 5^\circ\text{C}$ 4) Dip Time: 5 ± 0.5 sec 5) Cool: Air cool for 60 seconds												
Insulation Resistance	Insulation Resistance: Min 1G ohms													
Solvent Resistance	Change in Impedance: Relative to value before test $\pm 10\%$.	Cleaning by: Washer: Ultrasonic washer (100W) Solvent: Isopropyl alcohol Time: 3 minutes												
Terminal Strength (hanging test)	Appearance: The terminal electrode shall not break off, nor shall there be damage to the body.	<table> <tr> <th>Type</th><th>W(kgf)</th><th>Time</th></tr> <tr> <td>1J</td><td>0.5</td><td>30 sec ± 2 sec</td></tr> <tr> <td>2A</td><td>1.0</td><td>30 sec ± 2 sec</td></tr> <tr> <td>2B</td><td>1.5</td><td>30 sec ± 2 sec</td></tr> </table>	Type	W(kgf)	Time	1J	0.5	30 sec ± 2 sec	2A	1.0	30 sec ± 2 sec	2B	1.5	30 sec ± 2 sec
Type	W(kgf)	Time												
1J	0.5	30 sec ± 2 sec												
2A	1.0	30 sec ± 2 sec												
2B	1.5	30 sec ± 2 sec												
Terminal Strength (push test)	Appearance: There shall be no evidence of mechanical degradations to terminals or body.	<table> <tr> <th>Type</th><th>W(kgf)</th><th>Time</th></tr> <tr> <td>1J</td><td>1.4</td><td>60 sec</td></tr> <tr> <td>2A</td><td>1.8</td><td>60 sec</td></tr> <tr> <td>2B</td><td>2.3</td><td>60 sec</td></tr> </table>	Type	W(kgf)	Time	1J	1.4	60 sec	2A	1.8	60 sec	2B	2.3	60 sec
Type	W(kgf)	Time												
1J	1.4	60 sec												
2A	1.8	60 sec												
2B	2.3	60 sec												
Bending Strength	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value before test $\pm 10\%$.	Board: 90x40x1.6mm Bend: 1mm Time: 5 sec												

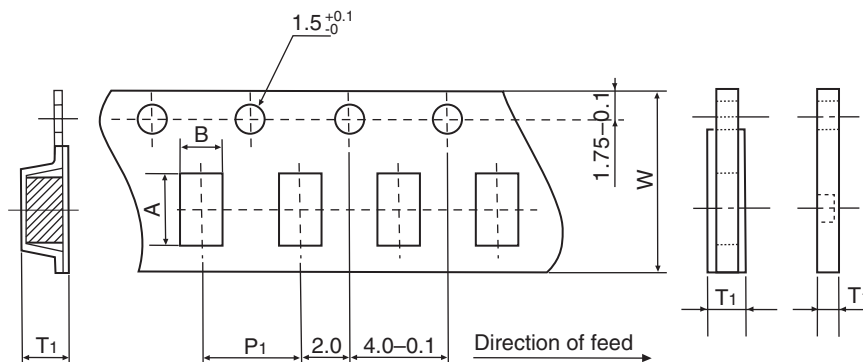
5. Characteristics (continued)

Item	Requirement	Conditions																		
Mechanical Shock	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value before test $\pm 10\%$.	Force: 50G Time: 11 msec There shall be 3 shocks in each of 6 directions (18 shocks total).																		
Vibration	Impedance: Relative to initial value $\pm 10\%$.	Only endurance conditioning by sweeping shall be made. The entire frequency range from 10-2,000Hz and return to 10Hz in 20 minutes (this shall constitute one cycle). Amplitude: 1.5mm The test shall have a 15G peak and shall be applied for a period of 4 hours (12 cycles) in each of 3 mutually perpendicular directions (a total of 36 cycles within a total of 12 hours).																		
Thermal Shock	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value $\pm 20\%$. DCR: The DCR shall not exceed initial specified value. Testing of the parts will be made at 0 hours, 250 hours and 500 hours. Before testing, the parts shall be allowed to cool to room temperature for 24 hours.	<table border="1"> <thead> <tr> <th>Step</th><th>Temperature</th><th>Time</th></tr> </thead> <tbody> <tr> <td>1-start</td><td>$-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$</td><td>_____</td></tr> <tr> <td>2-hold</td><td>$-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$</td><td>30 min ± 5 min</td></tr> <tr> <td>3-transfer</td><td>_____</td><td>0.5 min max.</td></tr> <tr> <td>4-hold</td><td>$+105^{\circ}\text{C} \pm 2^{\circ}\text{C}$</td><td>30 min ± 5 min</td></tr> <tr> <td>5-transfer</td><td>_____</td><td>0.5 min max.</td></tr> </tbody> </table> Steps 1 thru 5 constitute one complete cycle and the test shall consist of a total of 500 cycles.	Step	Temperature	Time	1-start	$-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$	_____	2-hold	$-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$	30 min ± 5 min	3-transfer	_____	0.5 min max.	4-hold	$+105^{\circ}\text{C} \pm 2^{\circ}\text{C}$	30 min ± 5 min	5-transfer	_____	0.5 min max.
Step	Temperature	Time																		
1-start	$-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$	_____																		
2-hold	$-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$	30 min ± 5 min																		
3-transfer	_____	0.5 min max.																		
4-hold	$+105^{\circ}\text{C} \pm 2^{\circ}\text{C}$	30 min ± 5 min																		
5-transfer	_____	0.5 min max.																		
Load Humidity	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value $\pm 15\%$. Measurements shall be taken at 0 hours, 250 hours, 500 hours and 1,000 hours and shall meet the conditions stated above.	Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Relative Humidity: 85% Time: 1,000 hours total Apply: 100% rated current																		
Life Test	Appearance: There shall be no physical or mechanical damage Impedance: Relative to initial value $\pm 15\%$ Measurements shall be taken at 0 hours, 250 hours, 500 hours and 1,000 hours and shall meet the conditions stated above.	Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Time: 1,000 hours total Apply: 100% rated current																		

6. Packaging Specifications

KOA's multilayer components are provided on tape-and-reel for use in pick-and-place machines. The reel size is 7 inch.

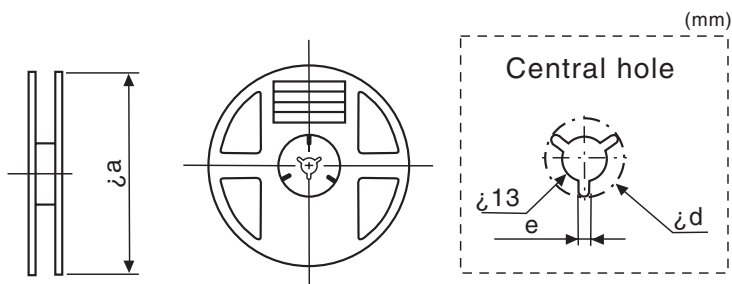
7. Dimensions - inches (mm)



Dimensions - inches (mm)

Tape	A	B	W	P ₁	T ₁
1J 0603	0.075±0.002 (1.9±0.1)	0.043±0.002 (1.1±0.1)	0.318±0.002 (8.1±0.1)	0.157±0.004 (4.0±0.1)	0.043±0.002 (1.1±0.1)
2A 0805	0.093±0.002 (2.4±0.1)	0.063±0.002 (1.6±0.1)	0.318±0.002 (8.1±0.1)	0.157±0.004 (4.0±0.1)	0.046±0.002 (1.2±0.1)
2B 1206	0.138±0.002 (3.5±0.1)	0.071±0.002 (1.8±0.1)	0.318±0.002 (8.1±0.1)	0.157±0.004 (4.0±0.1)	0.071±0.002 (1.8±0.1)

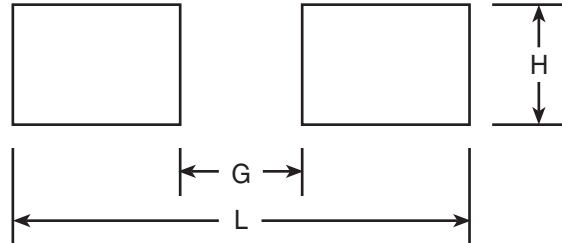
Dimensions - inches (mm)



Tape	øa	ød	e
1J 0603	7 (178)	0.827 (21)	0.079 (2.0)
2A 0805			
2B 1206			

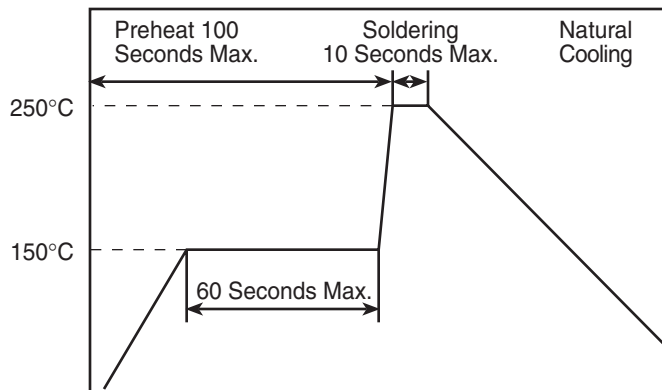
9. Recommended PC Board Land Patterns - mm (inches)

Chip Size	L	G	H
1J (0603)	2.6 (0.102)	0.6 (0.023)	0.8 (0.031)
2A (0805)	3.0 (0.118)	1.0 (0.039)	1.0 (0.039)
2B (1206)	4.4 (0.173)	2.2 (0.087)	1.4 (0.055)



10. Recommended Temperature Profiles for Soldering

**Recommended Temperature Profile
for Wave Soldering**



**Recommended Temperature Profile
for Reflow Soldering**

