KOA SPEER ELECTRONICS, INC.

spec sheet

SS-224 R2
AHA 11/06/01

ISO 9002 CERTIFIED

Multilayer Ferrite Chip Bead Array Type FBA

1. Scope of Application

Noise suppression in signal I/O lines and other circuits that require multiple chip beads for noise suppression.

1.1 Applications

- Computers
- Peripherals
- Telecommunications equipment
- Data communications

2. Features

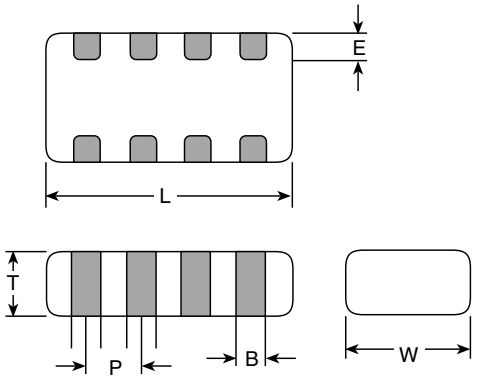
The Multilayer Ferrite Chip Bead Array retains all the features of Multilayer Ferrite Chip Beads. In addition, it provides multiple circuits in a single package, which reduce the required land space on PCB and reduce the cost for assembly.

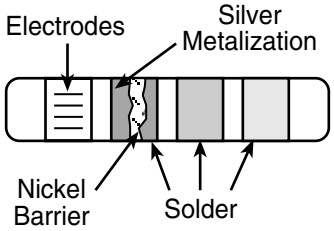
3. Dimension and Structure

Table 1

L Inch (mm)	W Inch (mm)	T Inch (mm)	B Inch (mm)	P Inch (mm)	E Inch (mm)
0.126 ± 0.008	0.063 ± 0.008	0.031± 0.008	0.014 ± 0.008	0.031 ± 0.004	0.012 ± 0.008
(3.20 ± 0.20)	(1.60 ± 0.20)	(0.80 ± 0.20)	(0.35 ± 0.20)	(0.80 ± 0.10)	(0.30 ± 0.20)

3.1 Dimensions





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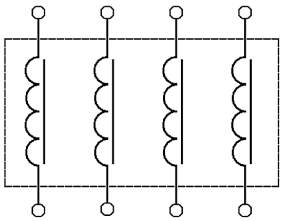
3. Dimension and Structure

3.2 Circuit



4. Ordering and Specifying Information*

FBA	2B	4	A	TE	300	P
Type	Size	Circuits	Characteristics	Packaging	Impedance	Tolerance
	2B (1206)	Number of circuits	A: Standard B: High Speed	TE: Tape & Reel 7": 3,000 pcs/reel	2 significant figure + 1 Multiplier Example: 300 = 30Ω	P:±25%

* Please note: KSE's part numbers do not contain any spaces or hyphens.

5. Standard Applications

Ordering Code	Impedance @ 100MHz Ω	Maximum DC Resistance Ω	Allowable DC Current (mA)	Operating Temperature
FBA2B4ATE300P	30	0.1	200	-55°C to 125°C
FBA2B4ATE600P	60	0.25	200	
FBA2B4ATE121P	120	0.3	150	
FBA2B4ATE221P	220	0.3	150	
FBA2B4ATE301P	300	0.4	250	
FBA2B4ATE601P	600	0.5	100	
FBA2B4ATE102P	1,000	0.7	50	
FBA2B4BTE121P	120	0.5	100	
FBA2B4BTE221P	220	0.55	100	
FBA2B4BTE471P	470	0.55	100	
FBA2B4BTE601P	600	0.65	100	

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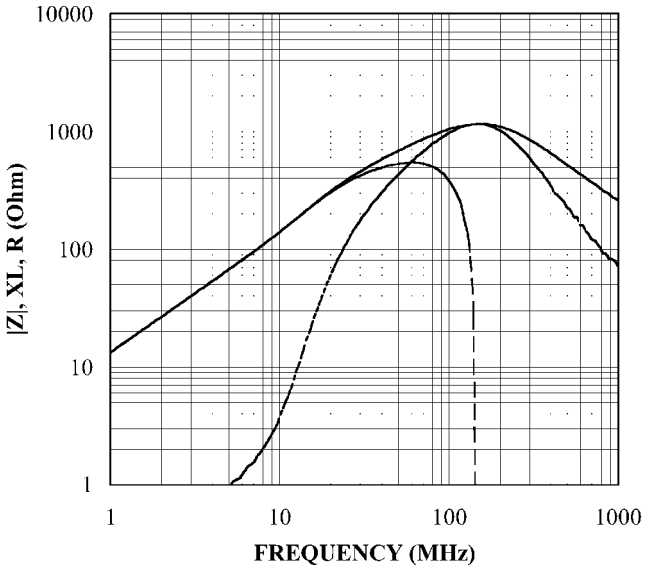
6. Graphs*

FBA12064A102P



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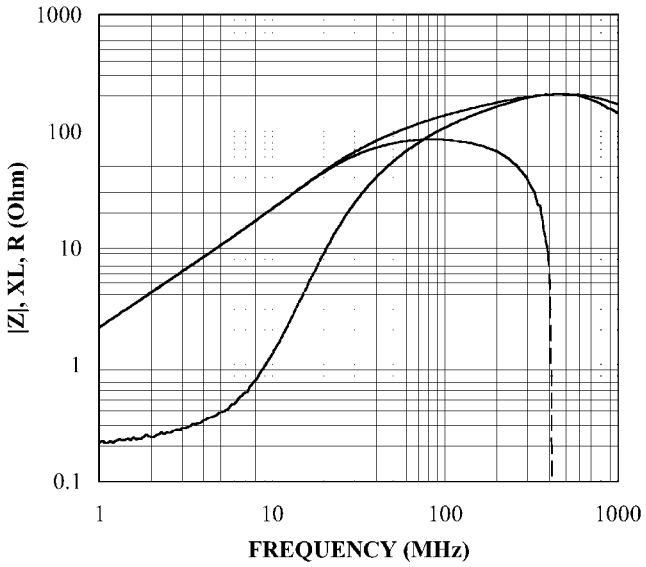

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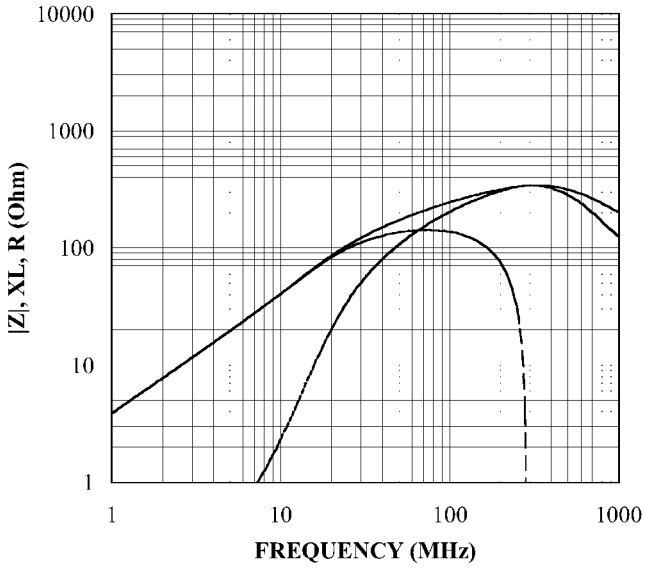

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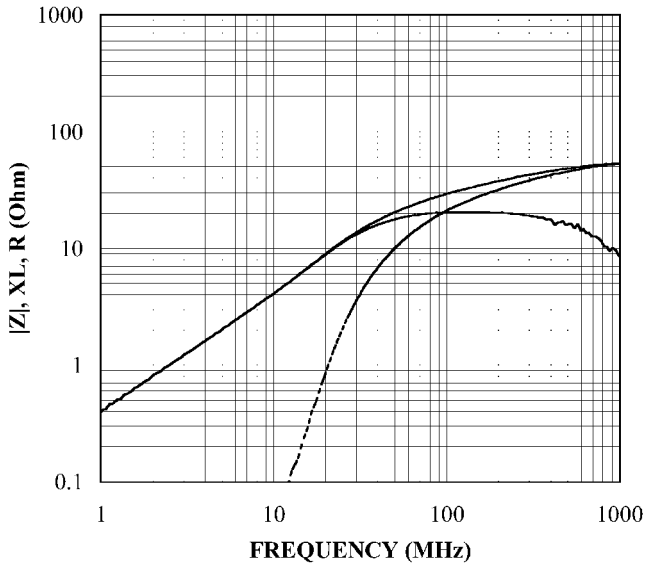

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6. Graphs* (continued)

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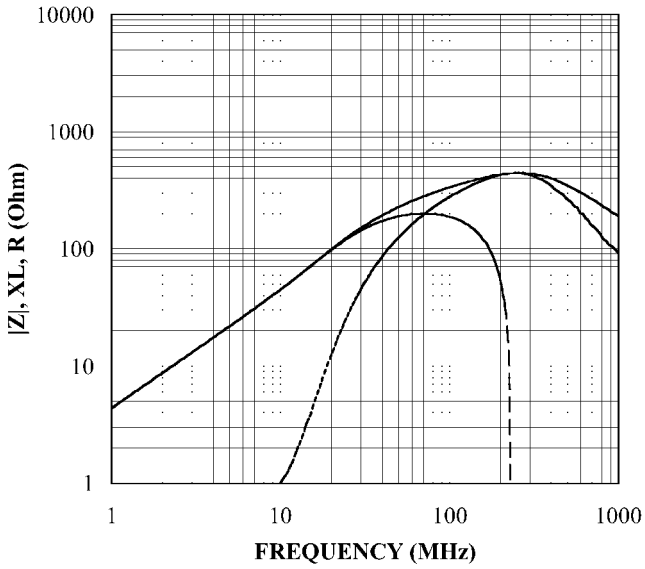

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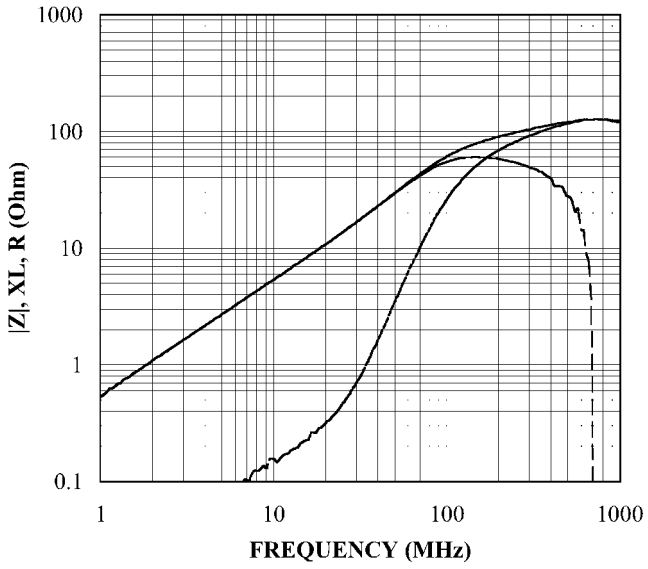

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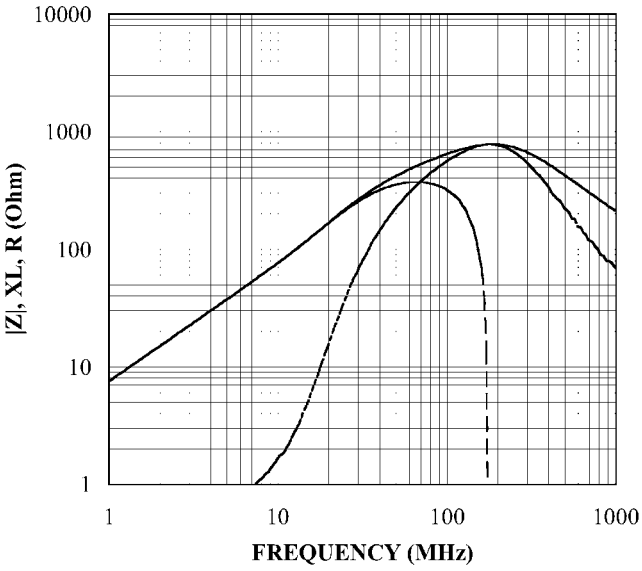

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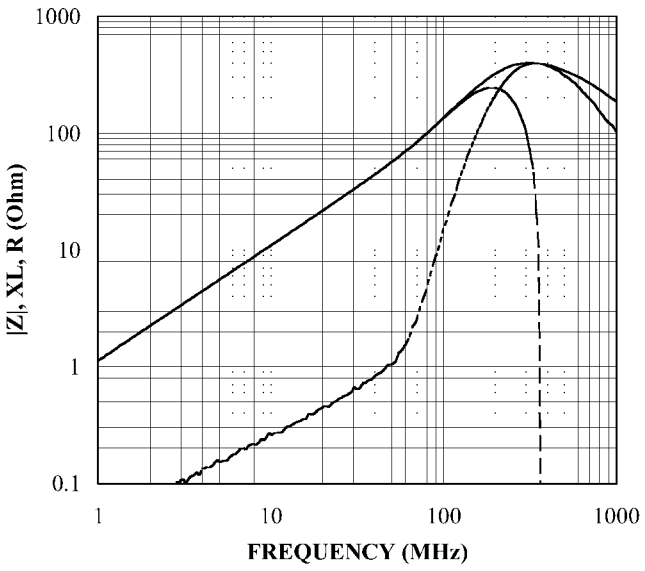

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6. Graphs* (continued)

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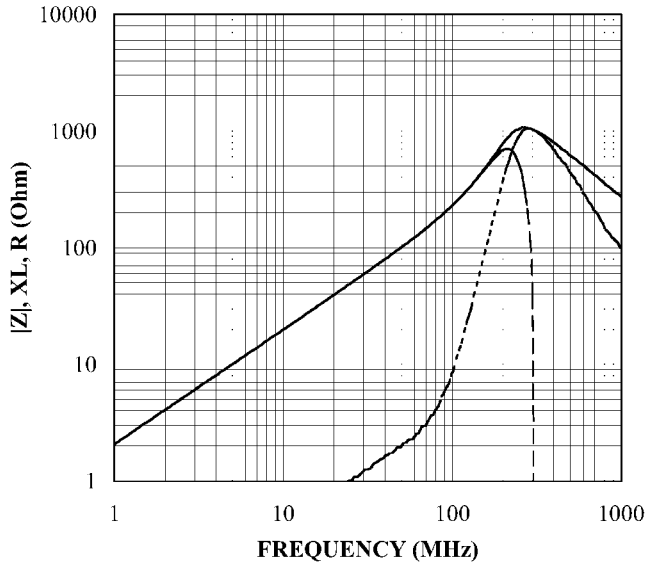

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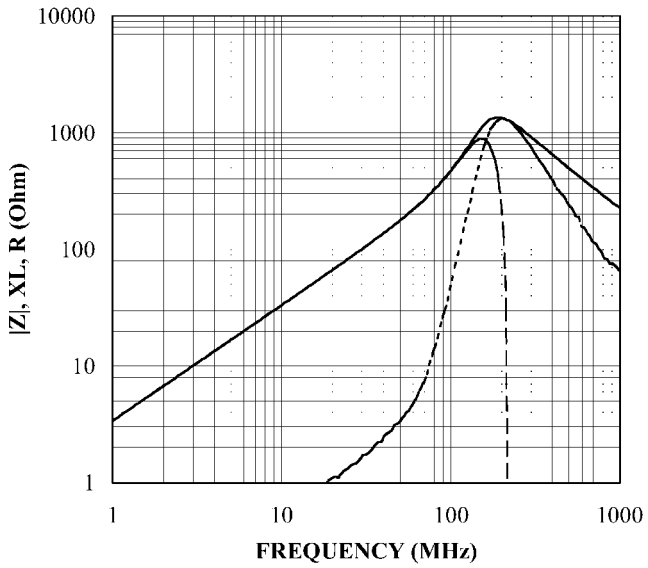

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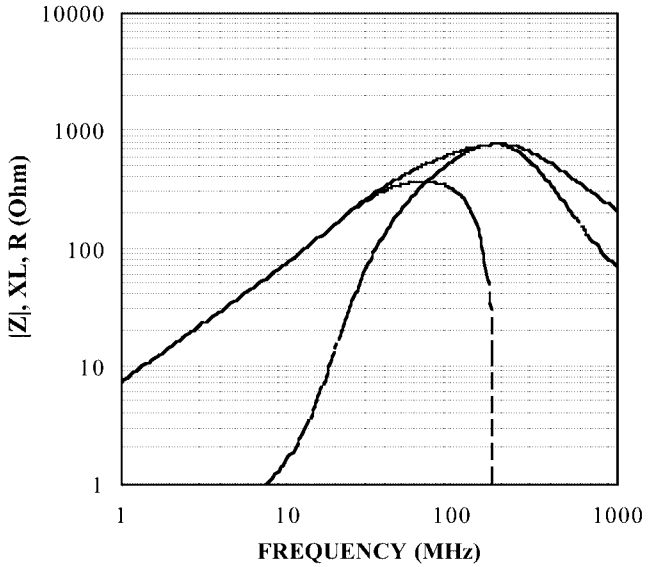

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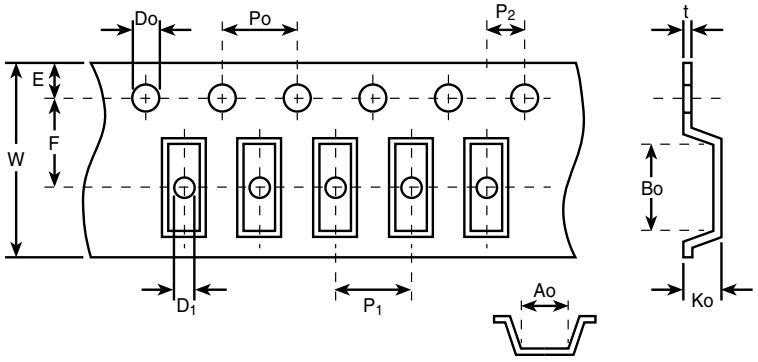
6. Packaging Specifications

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)

Tape	Ao	Bo	Ko
1206 (3216)	0.071±0.002 (1.8±0.1)	0.138±0.002 (3.5±0.1)	0.048±0.002 (1.2±0.1)

Tape	E	F	W
1206 (3216)	0.069±0.004 (1.75±0.10)	0.138±0.002 (3.50±.005)	0.318±0.002 (8.1±0.1)



Tape	P_1	Po	P_2	Do	D_1	t
1206 (3216)	0.157±0.004 (4.0±0.1)	0.157±0.004 (4.0±0.1)	0.079±0.002 (2.00±0.05)	0.059±0.004 (1.5+0.1/-0.0)	0.039 min. (1.0 min.)	0.009±0.001 (0.23±0.02)

8. Chip Quantities Per Reel

Chip Size	Parts on 7 inch (178mm) Reel
2B (1206)	3,000

9. 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 ±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 ±10°C **Preheat Time:** 60 sec **Solder Temp:** 260°C ±5°C **Dip Time:** 10 ±1 sec

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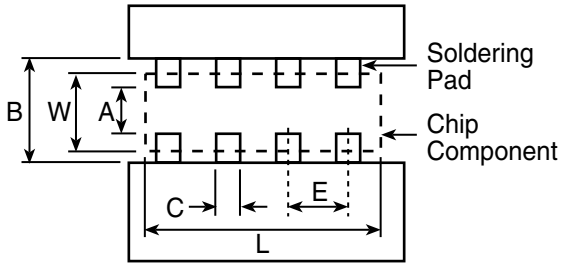
9. Characteristics (continued)

Item	Requirement	Conditions
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 ±5°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 ±5°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 ±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.	**Type** 1206 — **W(kgf)** 1.5 — **Time** 30 sec ±2 sec
Terminal Strength (push test)	**Appearance:** There shall be no evidence of mechanical degradations to terminals or body.	**Type** 1206 — **W(kgf)** 2.3 — **Time** 60 sec
Bending Strength	**Appearance:** There shall be no physical or mechanical damage **Impedance:** Relative to initial value before test ±10%	**Board:** 90x40x1.6mm **Bend:** 1mm **Time:** 5 sec
Mechanical Shock	**Appearance:** There shall be no physical or mechanical damage **Impedance:** Relative to initial value before test ±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 ±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).

9. Characteristics (continued)

Item	Requirement	Conditions
Thermal Shock	**Appearance:** There shall be no physical or mechanical damage. **Impedance:** Relative to initial value ±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.	**Step / Temperature / Time** 1-start / -40°C ±2°C / ——— 2-hold / -40°C ±2°C / 30 min ±5 min 3-transfer / ——— / 0.5 min max. 4-hold / +105°C ±2°C / 30 min ±5 min 5-transfer / ——— / 0.5 min max. Steps 1 thru 5 constitute one complete cycle and the test shall consist of a total of 500 cycles.
Load Humidity	**Appearance:** There shall be no physical or mechanical damage **Impedance:** Relative to initial value ±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°C ±2°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 ±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°C ±2°C **Time:** 1,000 hours total **Apply:** 100% rated current

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



Chip Size	Component Size		A	B	C	E
	L	W				
1206 (3216)	.020 (0.5 x n)	.039 (1.0)	.020 (0.5)	.059 (1.5)	.012 (0.3)	.020 (0.5)

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