

高熱伝導性 AlN 基板およびその金属化製品に関する研究

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High Thermal Conductivity AlN Substrate and Its Metallized Products

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1 はじめに

電子機器の高速化、小型化、軽量化、高信頼性化への要求が高まるとともに、



Table 1 Properties of developed AlN substrate

Table 2 Characteristics of Cu-bonded AlN substrate

No.	Property	Value
1	Thermal conductivity	200 W/mK
2	Thermal expansion coefficient	4.5 ppm/K
3	Young's modulus	300 GPa
4	Hardness	25 GPa
5	Flexural strength	1500 MPa
6	Flexural modulus	250 GPa
7	Surface roughness (Ra)	0.1 μm
8	Surface flatness	±0.1 μm
9	Surface cleanliness	Class 1000
10	Surface adhesion	10 MPa
11	Surface oxidation resistance	1000 h
12	Surface corrosion resistance	1000 h
13	Surface wear resistance	1000 h
14	Surface abrasion resistance	1000 h
15	Surface impact resistance	1000 h
16	Surface vibration resistance	1000 h
17	Surface shock resistance	1000 h
18	Surface thermal shock resistance	1000 h
19	Surface chemical resistance	1000 h
20	Surface electrical resistance	1000 h
21	Surface electrical conductivity	1000 h
22	Surface electrical insulation	1000 h
23	Surface electrical breakdown	1000 h
24	Surface electrical aging	1000 h
25	Surface electrical stability	1000 h
26	Surface electrical reliability	1000 h
27	Surface electrical safety	1000 h
28	Surface electrical security	1000 h
29	Surface electrical integrity	1000 h
30	Surface electrical soundness	1000 h
31	Surface electrical soundness	1000 h
32	Surface electrical soundness	1000 h
33	Surface electrical soundness	1000 h
34	Surface electrical soundness	1000 h
35	Surface electrical soundness	1000 h
36	Surface electrical soundness	1000 h
37	Surface electrical soundness	1000 h
38	Surface electrical soundness	1000 h
39	Surface electrical soundness	1000 h
40	Surface electrical soundness	1000 h
41	Surface electrical soundness	1000 h
42	Surface electrical soundness	1000 h
43	Surface electrical soundness	1000 h
44	Surface electrical soundness	1000 h
45	Surface electrical soundness	1000 h
46	Surface electrical soundness	1000 h
47	Surface electrical soundness	1000 h
48	Surface electrical soundness	1000 h
49	Surface electrical soundness	1000 h
50	Surface electrical soundness	1000 h

No.	Characteristic	Value
1	Cu bonding strength	10 MPa
2	Cu bonding adhesion	10 MPa
3	Cu bonding durability	1000 h
4	Cu bonding reliability	1000 h
5	Cu bonding safety	1000 h
6	Cu bonding security	1000 h
7	Cu bonding integrity	1000 h
8	Cu bonding soundness	1000 h
9	Cu bonding soundness	1000 h
10	Cu bonding soundness	1000 h
11	Cu bonding soundness	1000 h
12	Cu bonding soundness	1000 h
13	Cu bonding soundness	1000 h
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37	Cu bonding soundness	1000 h
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39	Cu bonding soundness	1000 h
40	Cu bonding soundness	1000 h
41	Cu bonding soundness	1000 h
42	Cu bonding soundness	1000 h
43	Cu bonding soundness	1000 h
44	Cu bonding soundness	1000 h
45	Cu bonding soundness	1000 h
46	Cu bonding soundness	1000 h
47	Cu bonding soundness	1000 h
48	Cu bonding soundness	1000 h
49	Cu bonding soundness	1000 h
50	Cu bonding soundness	1000 h

図 10 高熱伝導性 AlN 基板の断面図

図 11 高熱伝導性 AlN 基板の断面図

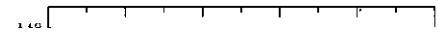


図 12 高熱伝導性 AlN 基板の断面図

図 13 高熱伝導性 AlN 基板の断面図