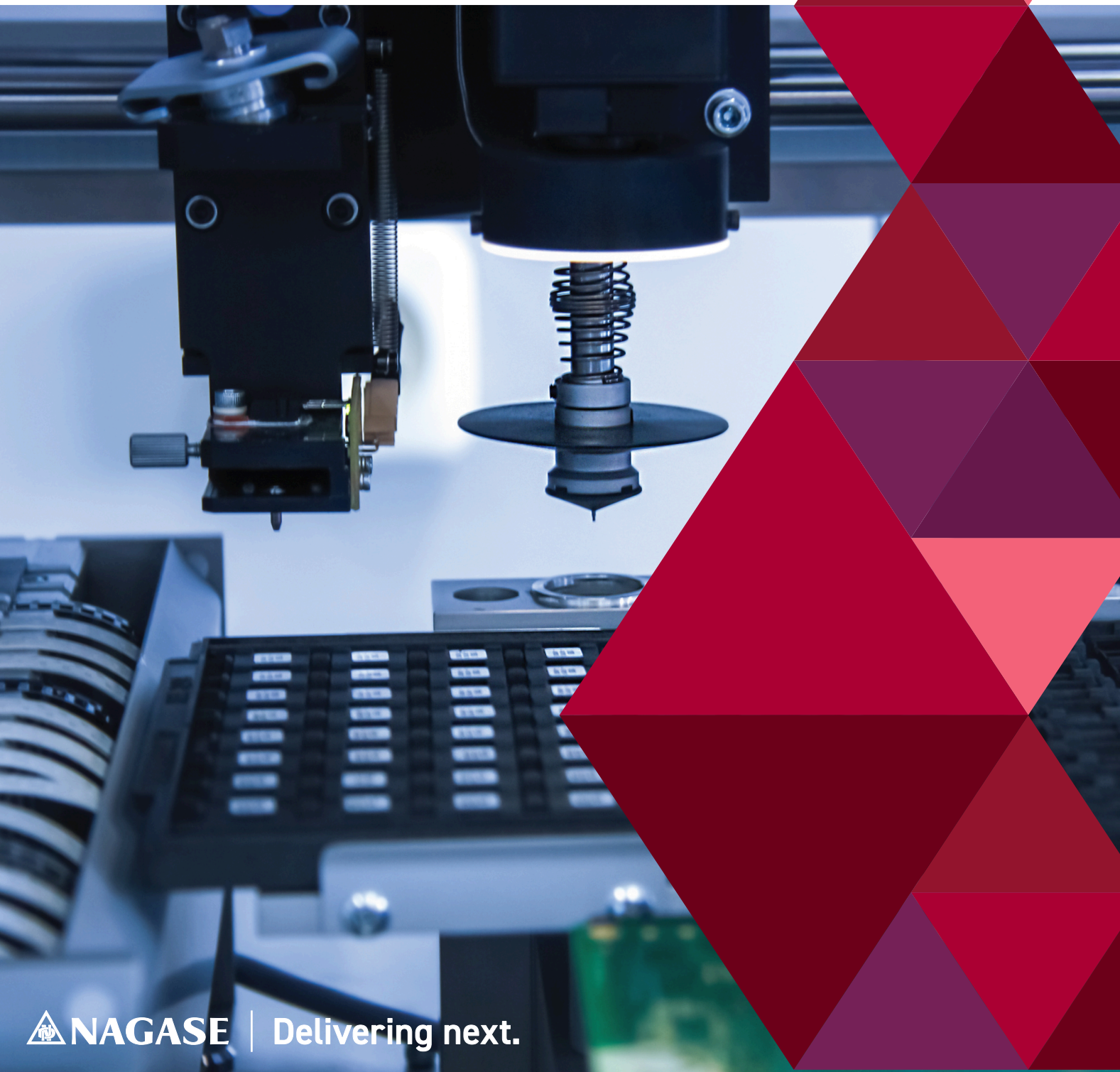




Materials for Power Devices and Electronic

Reflow Positioning Jigs



High Thermal Conductivity Composite

ACM is a Graphite-Aluminum composite material manufactured through squeeze casting, offering superior thermal management for semiconductor chips, discrete devices, and substrates.

Features

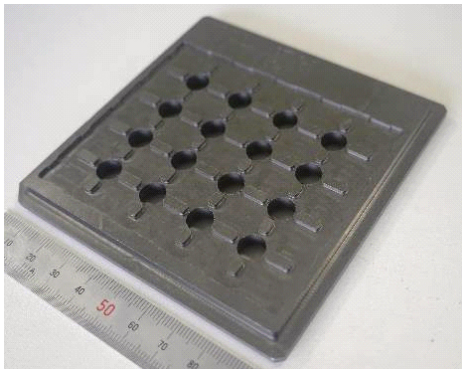
- » High heat dissipation
- » Low CTE
- » Lightweight
- » Machinability

Substitutes

- » Aluminum
- » Copper
- » Molybdenum
- » Tungsten

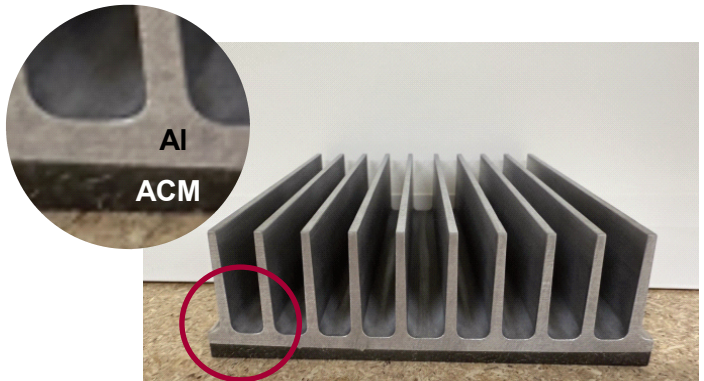
Effect

- » Size and weight reduction
- » High thermal performance
- » High reliability and Long Life



ACM - H3

*ACM can be metal plated



ACM - Aluminum seamless integration possible. High thermal conductivity and low thermal expansion, the ACM and aluminum are together without bonding.

Name	Our Material					Standard Material				
	ACM-io	ACM-a	ACM-H1	ACM-H2	ACM-H3	Cu (C1020 0)	Al (A9105 0)	Cu-Mo (Cu15-Mo85)	Cu-W (Cu6-W94)	AlSiC (SiC70 %)
Characteristic	Isotropic	Anisotropic								
Density (g/cm ³)	2.10	2.10	2.34	2.56	2.77	8.9	2.7	10.0	6.4	3.0
Young's Modulus (GPa) XY/Z	16.0	3.6 / 1.5	27.0 / 34.0	36.0 / 42.0	123 / 111	117	71	280	350	330
Thermal Expansion Coefficient (ppm/K) XY/Z	7.0~8.0	7.4 / 6.8	4.7 / 17.1	5.8 / 17.1	7.6 / 8.8	17.0	20	7.0	5.9	3.0
Thermal conductivity (W/m*K) XY/Z	164	361 / 188	470 / 106	466 / 159	256 / 217	390	220	170	141	190
Thermal Diffusivity (ml/S) XY/Z	104	244 / 127	203 / 45	189 / 64	93 / 80	112	90	-	-	-
Specific Heat (J/g*K) XY/Z	0.75	0.70	1.09	0.99	0.96	0.39	0.92	0.28	0.15	0.70
Machinability	A	A	A	B	C	A	A	B	B	C
Standard Size (mm)	150 x 200 x 250	150t x 200 x 250	200 x 30t	200 x 40t	200 x 40t	-	-	-	-	-

The above data are reference values and not guaranteed values.

ACM series Aluminum & Graphite

Features

- » High Thermal Conductivity
- » Low α
- » Low Density

Alternative

- » Aluminum
- » Copper
- » Carbon

ACM series materials, which are composite materials of graphite and aluminum, realize miniaturization, high performance, and sustainability through high heat dissipation in fields such as electronic devices, semiconductors, automobiles, aerospace, relay stations, and data centers.

ACM - a

- » Thermal Diffusivity: Two times of copper
- » Thermal Conductive: 360 W/m²*k
- » Density: 2.1 = 1/4 of copper

ACM - H1 / H2

- » Thermal Conductive: 460 W/m²*k
- » α : 1/5 of copper
- » Young's Modulus: Two times of graphite

ACM - H3

- » Thermal Conductive: 256 W/m²*k
- » Young's Modulus: 1.5 times of AL
- » α : 1/3 of Al $\frac{2}{3}$ Titanium

ACM - H4 / H5

- » Thermal Conductive: Same as ceramics
- » α : Same as ceramics
- » Bending strength: Two times of graphite

	Our Material							Standard Material					
Name	ACM-io	ACM-a	ACM-H1	ACM-H2	ACM-H3	ACM-H4	ACM-H5	Cu (C10200)	Al (A1050)	Graphite (CIP)	Cu-Mo (Cu15-Mo85)	Cu-W (Cu6-W94)	AlSiC (SiC60%)
Material	Graphite/Al												
Characteristic	Isotropic	Anisotropic								Isotropic			
Density (g/cm ³)	2.10	2.10	2.34	2.56	2.77	2.37	2.39	8.90	2.70	1.80	10.0	6.40	2.95
Young's Modulus (GPa) XY/Z	16.0	1.5 / 3.6	27.0 / 34.0	36.0 / 42.0	123 / 111	39 / 46	89 / 89	117	71	10.8	280	350	220
Thermal Expansion Coefficient (ppm/K) XY/Z	7.0~8.0	6.8 / 7.4	4.7 / 17.1	5.8 / 17.1	7.6 / 8.8	7.6 / 15.8	6.2 / 6.8	17.0	20	4.5	7.0	5.9	8.0
Thermal conductivity (W/m ² *K) XY/Z	164	188 / 361	470 / 106	466 / 159	256 / 217	193 / 132	170 / 160	390	220	128	170	141	175
Thermal Diffusivity (m ² /S) XY/Z	-	127 / 244	203 / 45	189 / 64	93 / 80	81 / 56	72 / 67	112	90	-	-	-	-
Specific Heat (J/g*K) XY/Z	-	0.70	1.09	0.99	0.96	1.11	0.95	0.39	1	0.70	0.28	0.15	0.70
Machinability	⊙	⊙	⊙	⊙	△	⊙	⊙	⊙	⊙	⊙	○	○	△
Standard Size (mm)	150 x 200 x 250	150 x 200 x 250	200 x 30t	200 x 40t	200 x 40t	200 x 40t	200 x 40t	-	-	-	-	-	-

Find out more



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