Particle-arrayed Anisotropic Conductive Film (ACF) ArrayFIX®

Film-type adhesive with uniformly dispersed particles that provide electrical interconnection

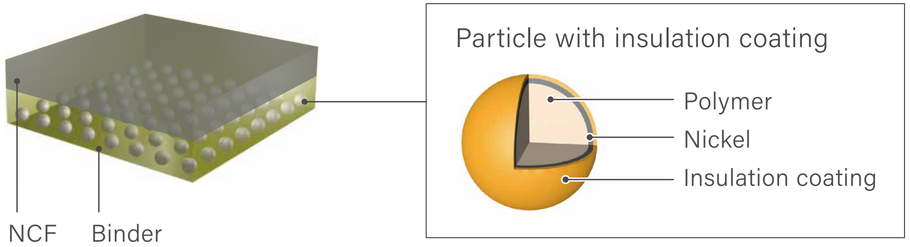
Product Name

PAF300 series　PAF400 series　PAF700 series

Features

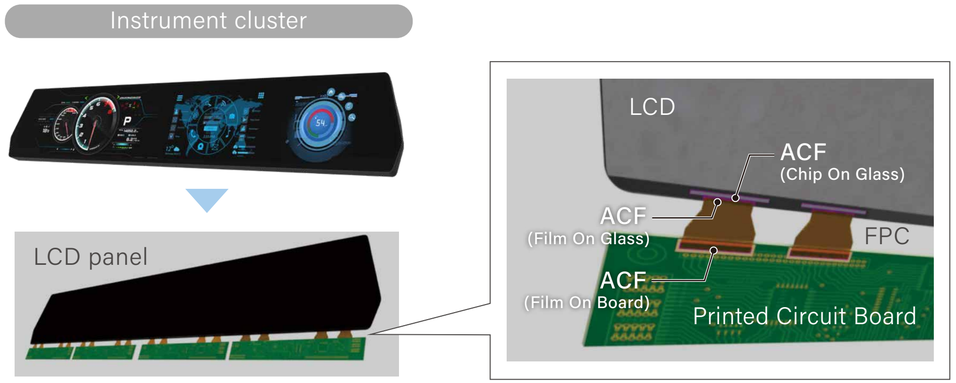
- Conductive particles are arrayed at targeted positions and are immobilized during bonding to obtain stable connectivity with sufficient number of particles.
- Reduced risk of short-circuit for fine-pitch connections by immobilization and decrease in number of conductive particles
- Provides minimum connection area of 1,000 μm² and minimum space of 5μm for interconnection of COF/COG/COP and a panel
- 0.6 width available

Structure



Applications

Suitable for flat-panel displays, various types of sensors, sensor boards, organic EL lighting devices



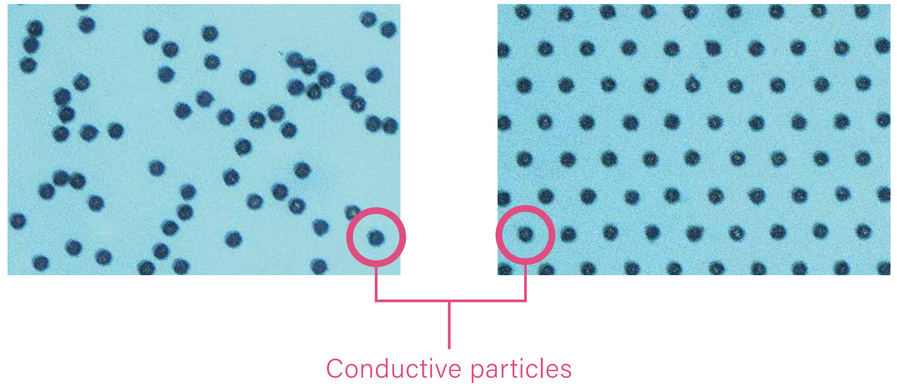
Dispersion of conductive particles

Dexerials' conventional ACF

Particle diameter: φ3.2 μm
Area density of particles: 12 kpcs/mm²

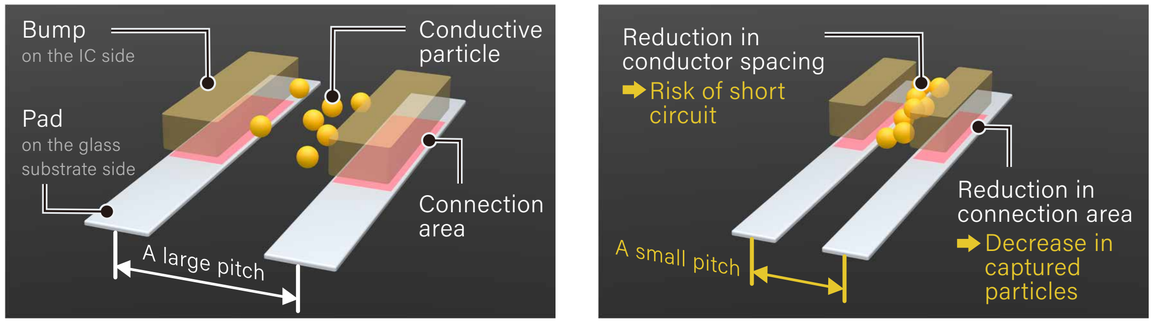
Particle-arrayed type ACF

Particle diameter: φ3.2 μm
Area density of particles: 12 kpcs/mm²



Fine pitch

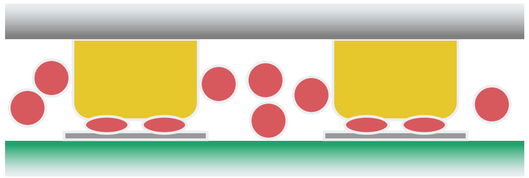
As demand for high-resolution multi-functional displays increases, so has the need for fine pitch



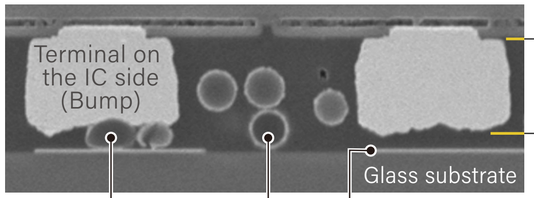
Particles between terminals (bumps) [comparison for COG connection]

Dexerials' conventional ACF

Illustration of the cross section
(Area density of particles: 60 kpcs/mm^2)



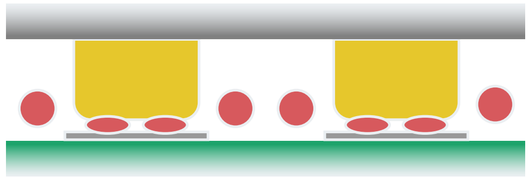
Sectional view (SEM image)



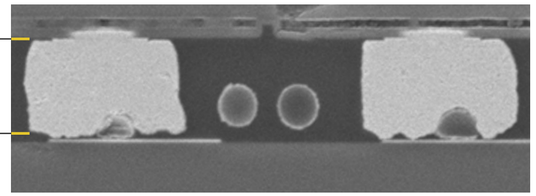
Conductive particles　Terminal on the glass substrate

Particle-arrayed type ACF

Illustration of the cross section
(Area density of particles: 28 kpcs/mm^2)



Sectional view (SEM image)



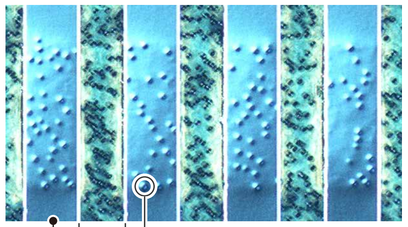
* The images above show cross sections of samples which were cut to observe particles between terminals.

Captured particles

Automated Optical Inspection (AOI) Results

Dexerials' conventional ACF

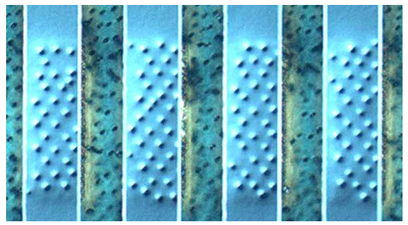
Particle diameter: φ3.2 µm
Area density of particles: 60 kpcs/mm^2



Bond mark of conductive particle
Space between terminals
Terminal on the glass substrate

Particle-arrayed type ACF

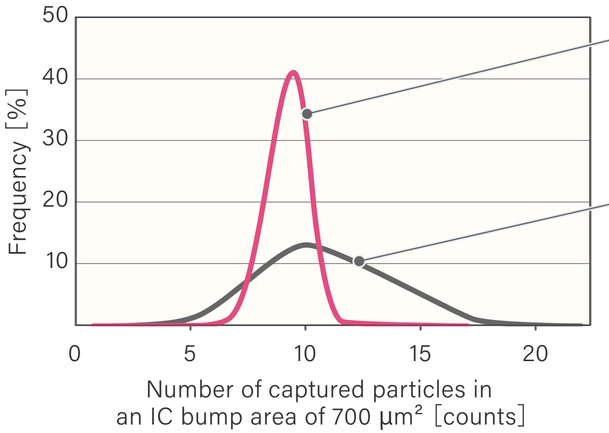
Particle diameter: φ3.2 µm
Area density of particles: 28 kpcs/mm^2



Smaller number of particles are captured effectively.

* The images above are obtained by observing terminal areas from the backside of a glass substrate (opposite to the circuit side) in order to see captured particles.

Difference in the number of captured particles between Dexerials' conventional ACF and particle-arrayed type ACF



Particle-arrayed type ACF

Particle diameter:
φ3.2 µm
Area density of particles:
28 kpcs/mm^2

Dexerials' conventional ACF

Particle diameter:
φ3.2 µm
Area density of particles:
60 kpcs/mm^2

Bonding conditions:
Temperature: 150 [℃], Pressure: 60 [MPa], Time: 5 [sec]

Specifications

Item series		PAF300 series	PAF400 series	PAF700 series
Panel		LCD	OLED	LCD/OLED
Connection Type		COG	COG/COP	FOG/FOP
Connection material		IC	IC	FPC
Minimum space *1		5 µm	8 µm	5 µm
Minimum connection area *2		400 µm^2	720 µm^2	1000 µm^2
Thickness		16 µm	10 µm	10 µm
Particle Density		20 Kpcs/mm^2	16 Kpcs/mm^2	12 Kpcs/mm^2
Particle Type		Ni plated on a polymer core particle	Ni plated on a polymer core particle	Ni plated on a polymer core particle
Particle Diameter		3.2 µm	3.0 µm	3.2 µm
Insulation coating		Yes	Yes	Yes
Main bonding conditions *3	Temp.	130 to 160 °C	190 to 230 °C	160 to 180 °C
	Time	5 sec.	5 sec.	5 sec.
	Pressure	40 - 80 MPa	60 - 90 MPa *4	LCD: 3 - 6 MPa OLED: 4 - 8 MPa

*1: Minimum space: Space between adjacent circuits.
*2: Please contact us for information on σ value control of the minimum connection area for each product individually.
*3: Pressure of main boding: The pressure for COG bonding is provided for the total bump area. The pressure for FOG, FOB, and FOF bonding is provided for the bonded area. These values vary depending on customers' panels.
*4: Recommended pressure at COG bonding. Please contact us for information on the pressure at COP mounting.

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