Electroless plating process to Cu/Al clad ceramic boards to power module

- Electroless Ni/(Pd)/Au plating process with solder joint reliability under high temperature use
- Electroless Ag plating solution for silver sintered joint, prevent Cu corrosion
- Electroless Ni/(Pd)/Ag plating process, replacement of Au plating and prevent Ni spike

Process for Cu clad ceramic board

Cleaning	ICP CLEAN T-2
Soft etching	Sodium persulfate
Desmutting	Sulfuric acid
Pre-dipping	Hydrochloric acid
Pd catalyzing	ICP ACCERA DC
Post-dipping	ICP POSTDIP PR
Electroless Ag plating	TOP SILVE ACC

Electroless Ni/(Pd)/Au

Electroless Ni-P plating	ICP NICORON LPW-LFN
(Electroless Pd plating)	(PALLATOP LP)
Electroless Au plating	NPG FLASH GOLD SR

Process for Al clad ceramic board

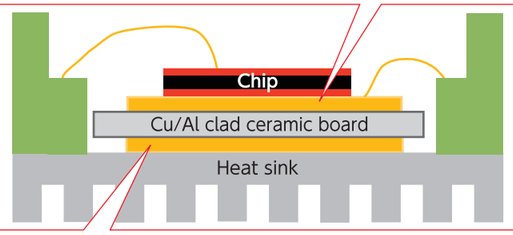
Cleaning	TOP ALCLEAN 161
Etching	TOP ALSOFT 108
Desmutting	TOP DESMUT N-20
1st zincate	SUBSTAR ZN-111
Stripping	Nitric acid
2nd zincate	SUBSTAR ZN-111

Electroless Ni/(Pd)/Ag

Electroless Ni-P plating	ICP NICORON SOF(NP)
(Electroless Pd plating)	(TOP SILVE PD)
Electroless Ag plating	TOP SILVE AG

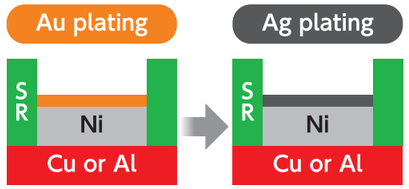
Application for power module

Undercoat for solder jointing between Al electrode under chip and Cu/Al ceramic board



Undercoat for solder jointing between Cu/Al ceramic board and heat sink

Application of TOP SILVE AG



Electroless Ni/Au plating

Electroless Ni/Ag plating

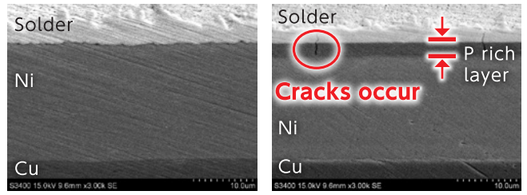
Replacement of Au plating

ICP NICORON LPW-LFN

High solder joint performance

ICP NICORON LPW-LFN

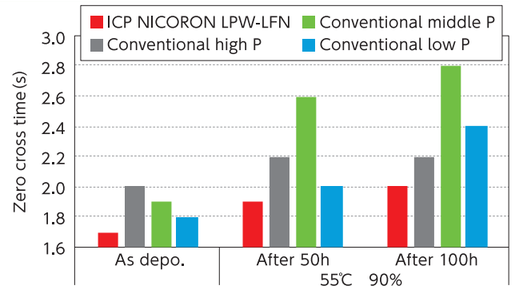
Conventional Middle P content



Sn-3.0Ag-0.5Cu solder dipping
Cross-section SEM image
after 200℃ 300h heat treatment

Even after a long-time heat treatment, prevent the formation of P rich layer, ensure high solder joint performance

High solder wettability

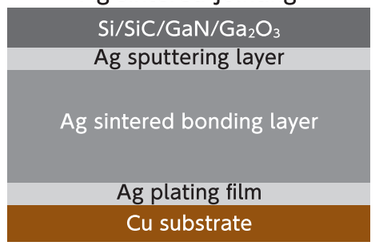


Measuring zero cross time
by meniscograph method
(Dip into Sn-3.0Ag-0.5Cu solder at 250℃)

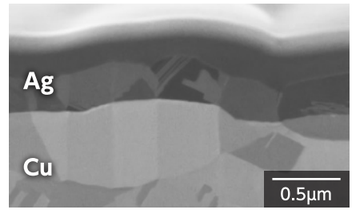
Reduce the decrease of solder wettability after time passage

TOP SILVE ACC

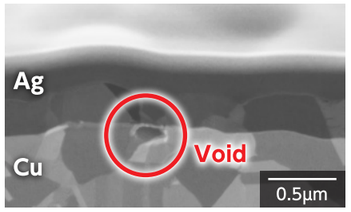
Ag sintered jointing



TOP SILVE ACC



Conventional bath

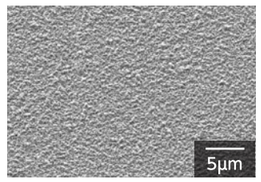


Prevent the corrosion of Cu substrate, applicable to Ag sintered jointing

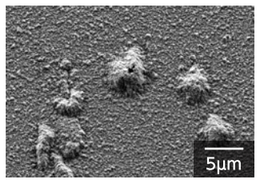
TOP SILVE AG

Flat and smooth Ag plating film

TOP SILVE AG



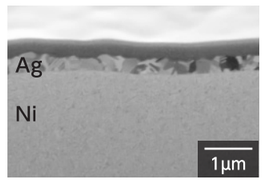
Conventional



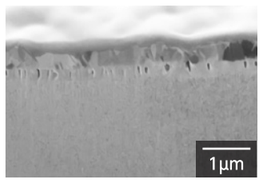
Surface SEM image
after electroless Au plating

Prevent the corrosion of electroless Ni plating (undercoat)

TOP SILVE AG



Conventional



Cross-section SIM image
after electroless Ni/Ag plating