Cu/Al clad ceramic boards to power modules

Electroless plating process

- 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 RP

Electroless Ag plating
TOP SILVE ACC

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)/Au plating　Electroless Ni/(Pd)/Ag plating

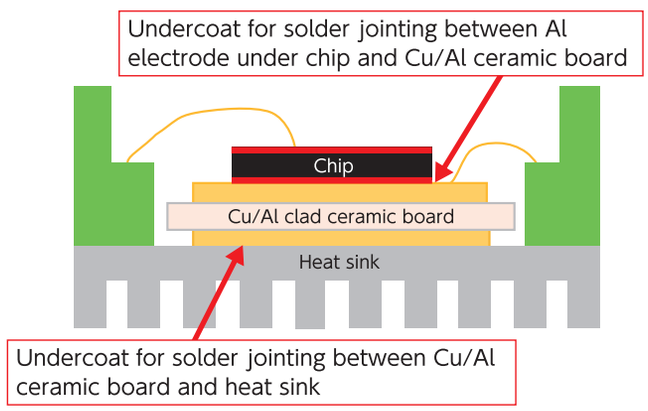
Electroless Ni/(Pd)/Au plating

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

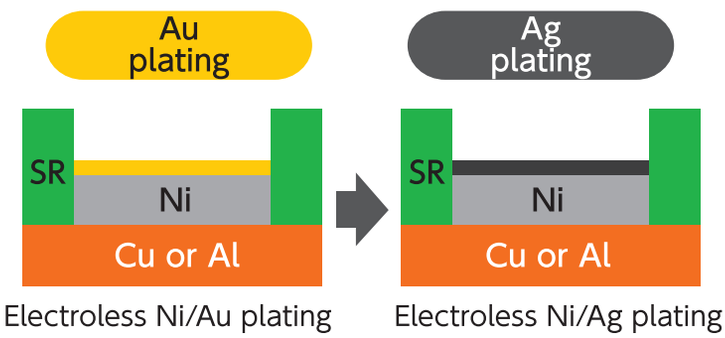
Electroless Ni/(Pd)/Ag plating

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

Application for power module



Application of TOP SILVE AG

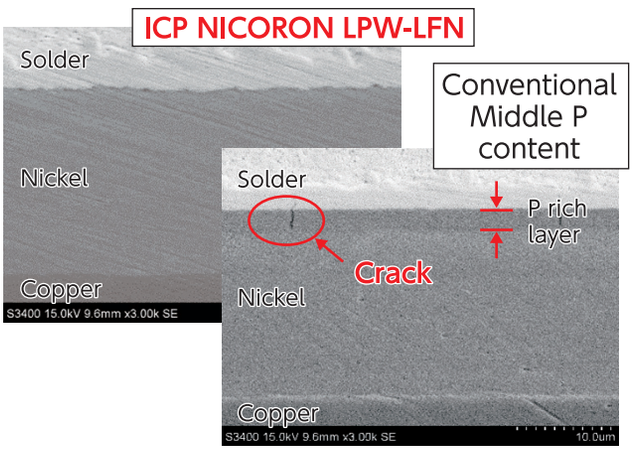


Electroless Ni/Au plating　Electroless Ni/Ag plating

Replacement of Au

ICP NICORON LPW-LFN

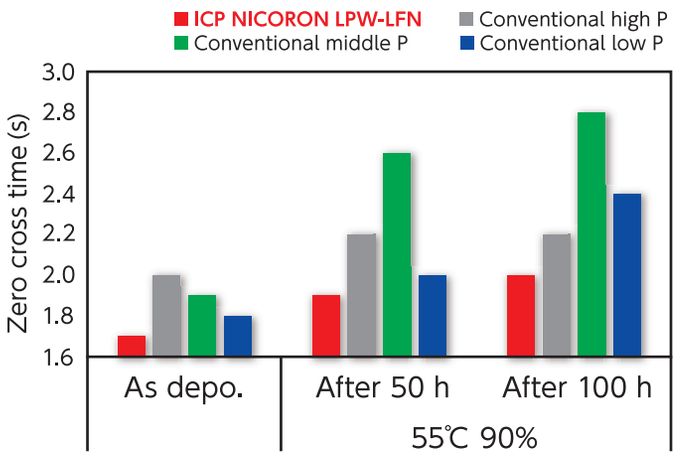
High solder joint performance



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

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

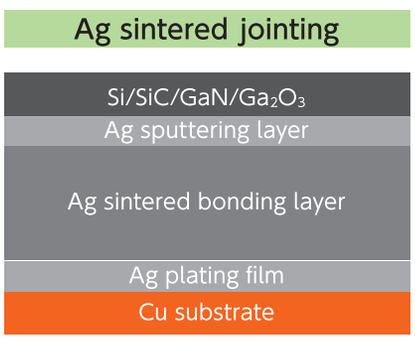
High solder wettability

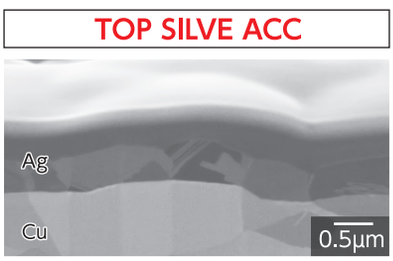


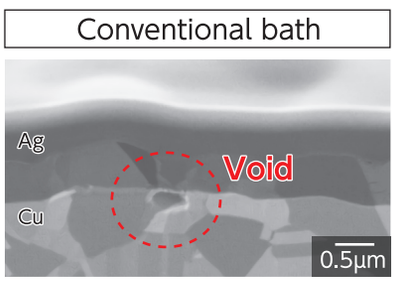
Measuring zero cross time by meniscograph method
(dip into Sn-3.0Ag-0.5Cu solder at 250 ℃)

Reduce the decrease of solder wettability after time passage

TOP SILVE ACC



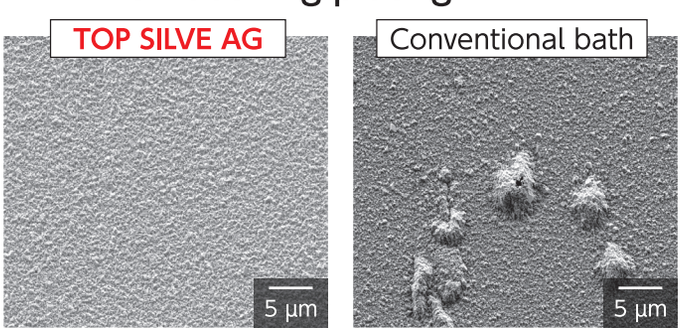




Prevent the corrosion of Cu substrate, applicable to Ag sintered jointing

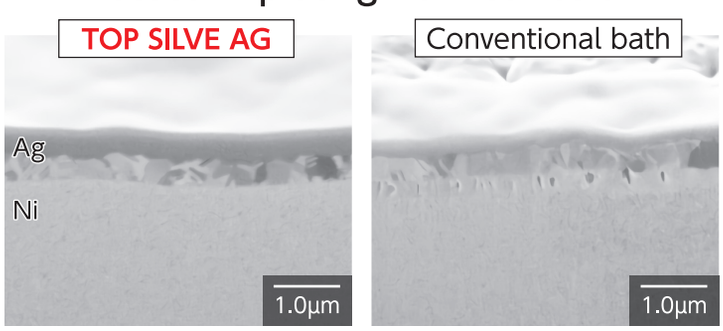
TOP SILVE AG

Smooth Ag plating film



Surface SEM image after electroless Ag plating

Protect Ni plating from corrosion



Cross-section SIM image after electroless Ni/Ag plating