Silver Less / Low Silver Lead-free Solder Paste

Realize cost reduction and high joining reliability at the same time

HLS series

Product lineup

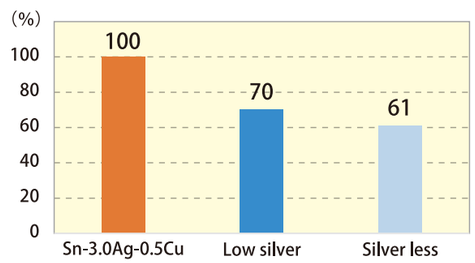
Patented

		Product name	Alloy composition	Melting point※2	Application
Silver less	0.1Ag	PS20BR-600A-HLS	Sn-0.1Ag-0.7Cu-2.0Bi+α※1	225℃	general size chip
		For 0402 chip size PS20BR-700A-HLS			0402 chip
Low Silver	1.1Ag	PS24BR-600A-HLS	Sn-1.1Ag-0.7Cu-1.7Bi+β※1	223℃	general size chip
		For 0402 chip size PS24BR-700A-HLS			0402 chip

※1：α，β：Additional trace elements　※2：JIS Z 3198-1

Reduce total cost in the mass production use

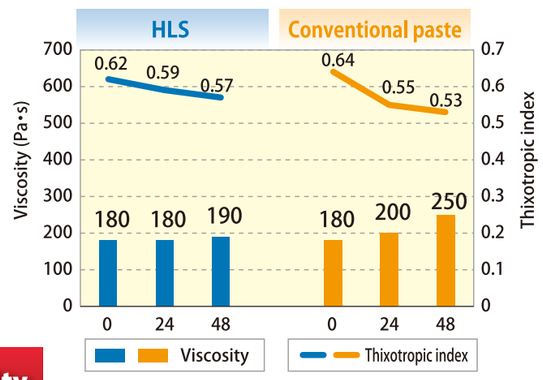
Cost of solder alloy



The cost was calculated, based on the price of Sn-3.0Ag-0.5Cu on March 2015 as 100 quotations

Reduction of price and disposal quantity by less sliver and stable viscosity

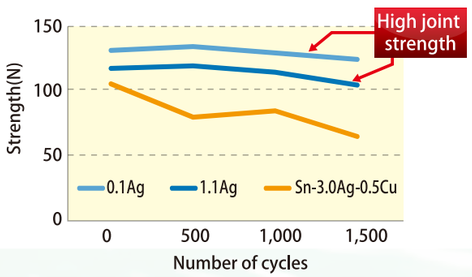
Viscosity and Thixotropy change



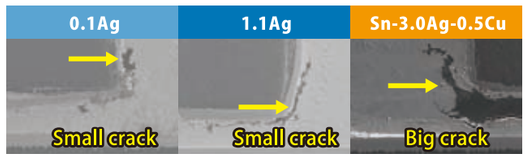
Test condition
- No replace solder paste

High joining reliability after thermal cycle test

Joint strength during thermal cycles test



Cross Section Pictures

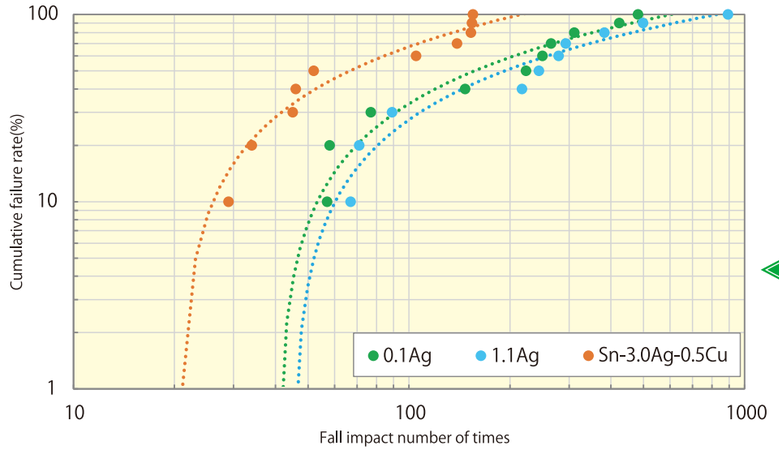


Test condition
- Thermal condition：-40⇔125℃ (30min. Each)
- Component：3216 chip resistance

High joining reliability for thermal cycle test(1500cycles)

Superior fall impact resistance

Fall impact resistance

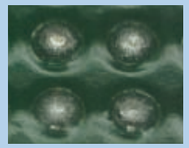
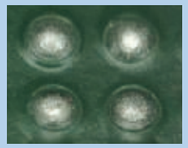
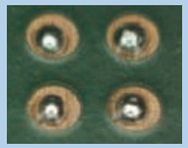
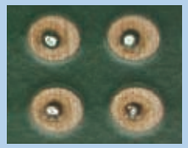
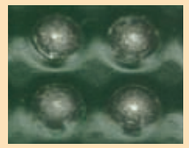
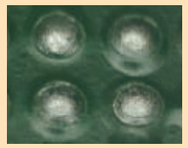
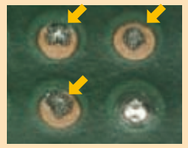
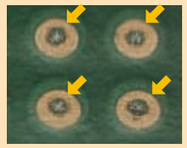


Test condition
- Component：0.5mm pitch LGA
- Fall impact condition：Base on JEDEC 1500G

Superior fall impact resistances compared with Sn-3.0Ag-0.5Cu

Excellent Wettability

Wettability test

	Stencil mask opening rate			
φ0.3mm land	100% (φ0.3mm)	80% (φ0.24mm)	60% (φ0.18mm)	40% (φ0.12mm)
HLS				
Conventional				

Test condition
- Reflow condition：Air
- Print thickness：120μm

Excellent wettability by flux optimization