eco+PLUS
Lead Free SOLUTIONS you can TRUST

www.ko-ki.co.jp

#53013E-1
Feb. 19, 2016

KOKI No-Clean LEAD FREE Solder Paste

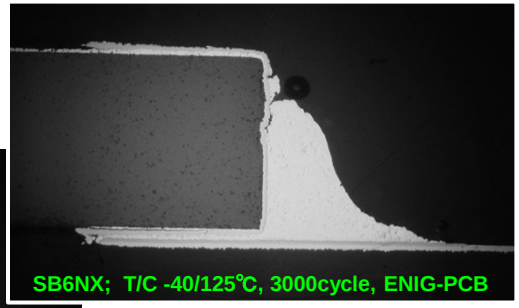
Contents

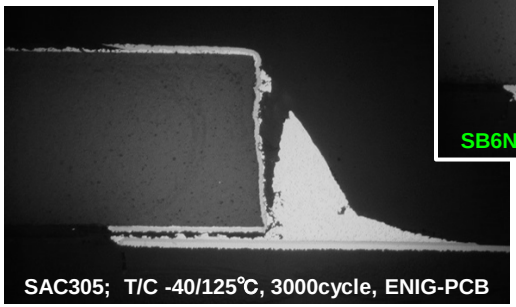
High-Reliability Lead Free Solder Paste

SB6NX58-M500SI

Halogen Free HF

Product Information





This Product Information contains product performance assessed strictly according to our own test procedures and may not be compatible with results at end-users.

KOKI
CHALLENGING NEW TECHNOLOGIES

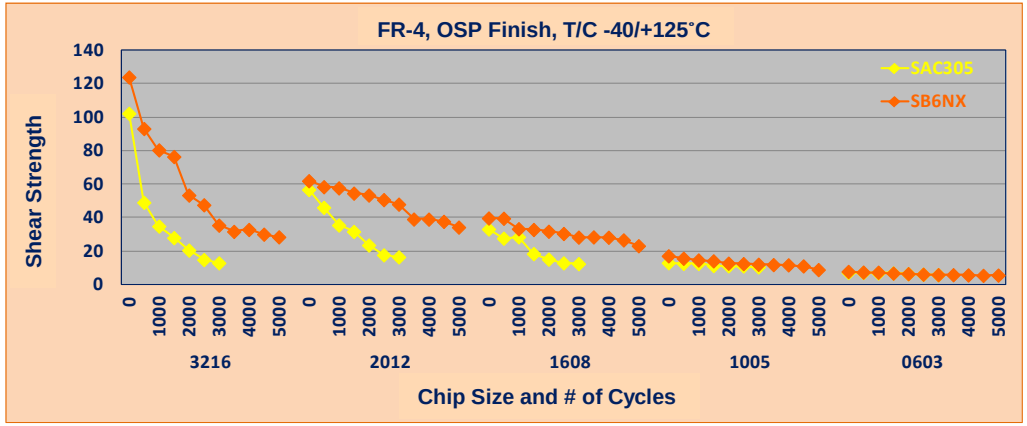
Contents

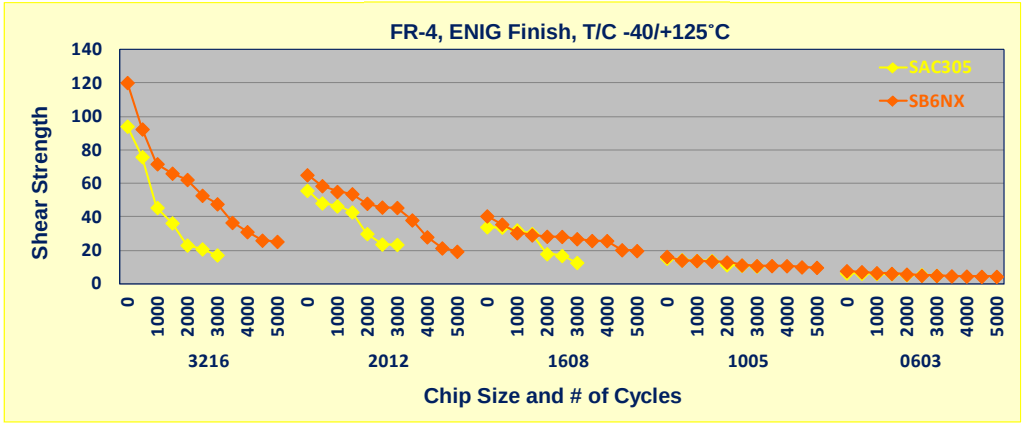
Features

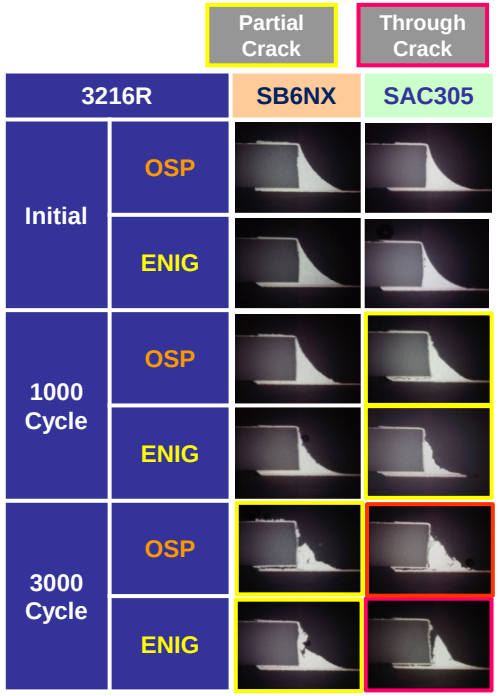
- Alloy composition is Sn/3.5Ag/0.5Bi/6.0In+X: Bismuth and Indium for application to thermal stress environment
- High joint reliability on electroless Ni-Au surface finish
- Achieved good wetting to 0.25φCSP and 0603 chip
- Compatible to Halogen Free requirements (Cl+Br: 0ppm) per test method BS EN14582

Contents

Alloy Properties: Joint Reliability after Thermal Cycle (-40/+125˚C)







PCB: FR4 (Nikkan Industries, L-6504C2 UV)
Cu Pad Finish: OSP and ENIG*
Cu Pad Thickness: 18 µm
PCB Thickness: 1.6 mm
*P Concentration on Ni-P Layer: 7%
Ni-P Layer Thickness: 5 µm

SB6NX solder joints show higher shear strength and less cracks. SB6NX has been confirmed to possess high thermal resistance, which encourages increased joint reliability even after 5000 thermal cycles. Joint reliability of SB6NX serves better than SAC305 on both OSP and ENIG finishing PCBs.

Contents

Specifications

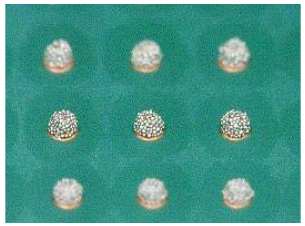
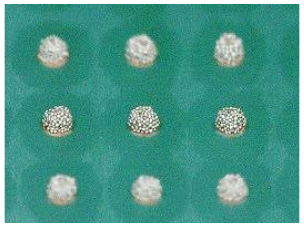
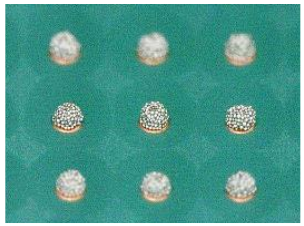
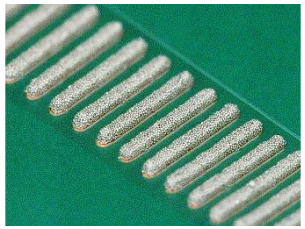
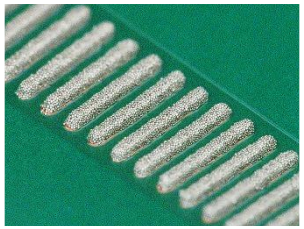
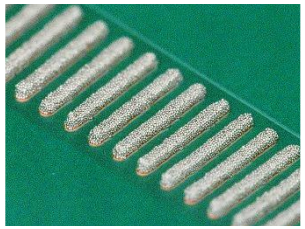
Application		Printing - Stencil
Product		**SB6NX58-M500SI**
Alloy	Alloy Composition (%)	Sn 3.5Ag 0.5Bi 6.0In 0.8Cu
	Melting Point(ºC)	202-204
	Shape	Spherical
	Particle size (um)	20 - 38
Flux	Halide Content (%)	0
	Flux Type*1	ROL0
Product	Flux Content (%)	11.0±1.0
	Viscosity*2 (Pa.s)	200±30
	Copper plate corrosion*3	Passed
	Tack Time	> 48 hours
	Shelf Life(below 10ºC)	6 months

1. Flux type : According to IPC J-STD-004
2. Viscosity: Malcom spiral type viscometer,PCU-205 at 25ºC 10rpm
3. Copper plate corrosion : In accordance with IPC-TM-650-2.6.15

Contents

Continuous Printability

Stencil : 0.12mm thickness, laser cut stencil
SPI: aSPIre KOHYOUNG
Printer : Model YVP-Xg YAMAHA Motor
Squeegee : Metal blade, Angle - 60º
Print speed : 40 mm/sec
Atmosphere :24~26ºC (50~60%RH)
Test pattern : MBGA pad
pattern - Diameter 0.25 mm 0.4mmP QFP

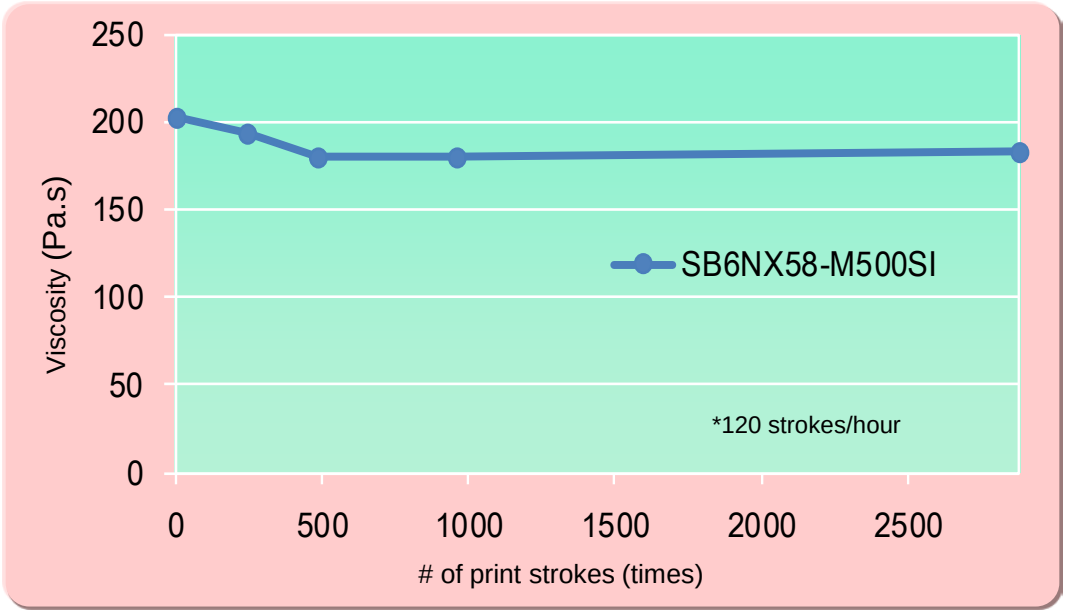
	1st print	10th print	After 200strokes 10th print
0.25mm dia.			
0.4mmP QFP			

Print shape is stable at original and after 200 strokes

Contents

Viscosity Change

- Print (knead) solder paste on the sealed-up stencil continuously up to24 hours to observe Viscosity Change.
- Squeegee : Metal blades
- Squeegee angle : 60º
- Squeegee speed : 30mm/sec.
- Print stroke : 300mm
- Printing environment : 24~26ºC, 40~60%RH

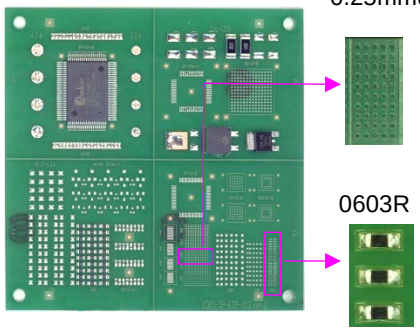


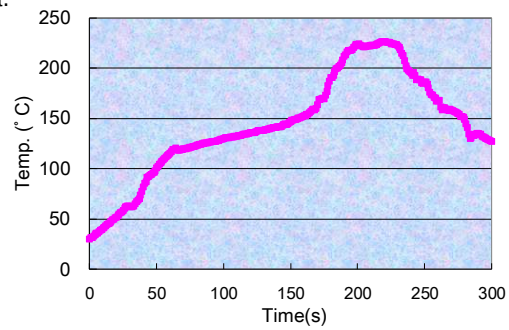
Viscosity shows little change after continuous kneading thanks to the optimal combination of activator constituents.

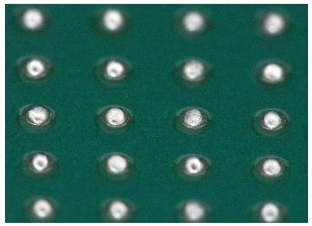
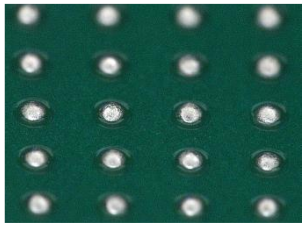
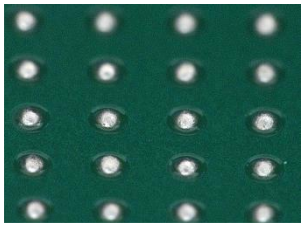
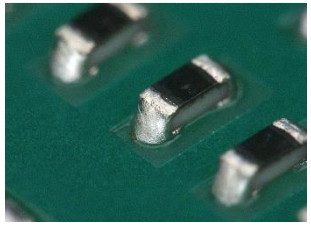
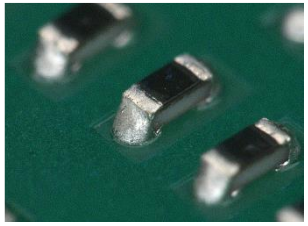
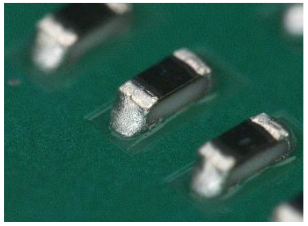
Contents

Super Fine Pattern Wetting

- Material : Glass epoxy FR-4
- Surface treatment : OSP,Ni-Au,ImSn
- Stencil thickness : 0.12mm (laser cut)
- Pad size : 0.25mm diameter
- Component: 0603R chip, 100%Sn
- Stencil aperture : 100%
- Heat source : Hot air convection
- Atmosphere : Air
- Reflow profile : See below



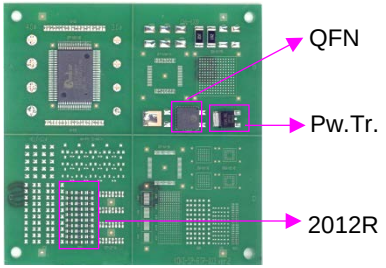


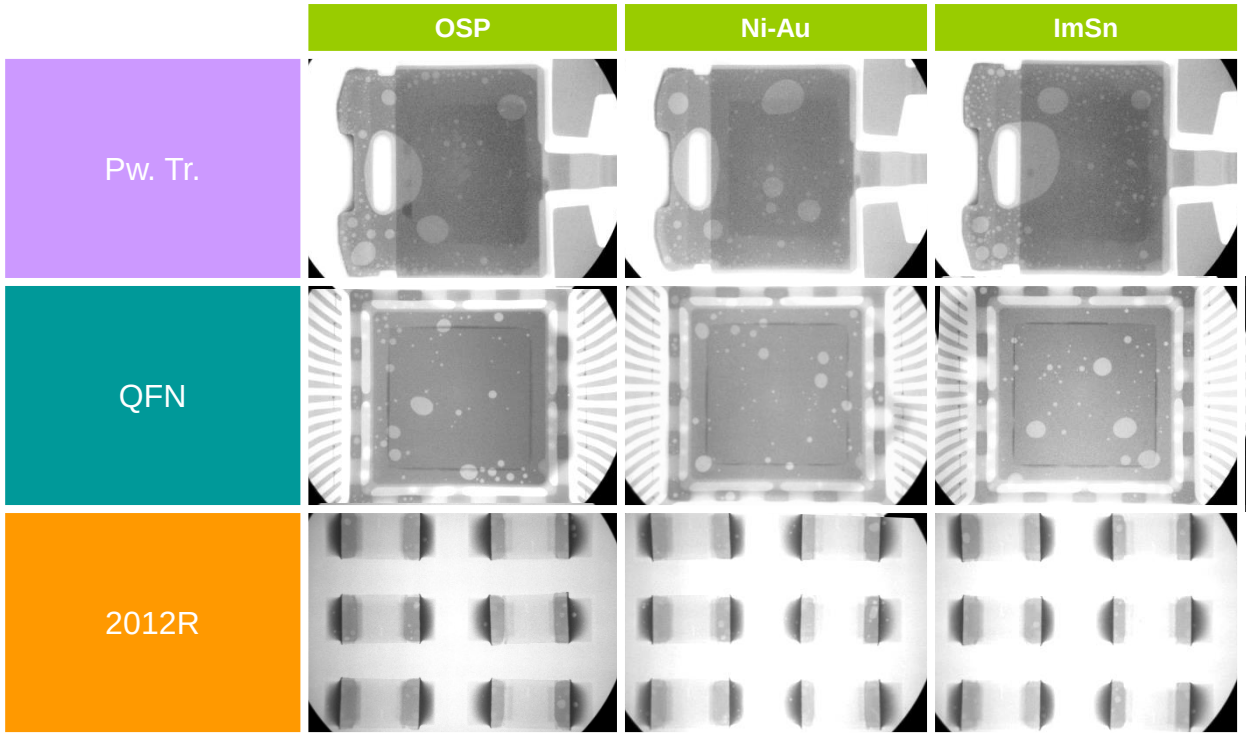
	OSP	Ni-Au	ImSn
0.25mm φCSP			
0603R			

Regardless of the type of surface finishes, SB6NX58-M500SI shows good wettability at super fine prints.

Voiding Property

- Material : Glass epoxy FR-4
- Surface treatment : OSP,Ni-Au,ImSn
- Stencil thickness : 0.12mm (laser cut)
- Component: Pw. Tr, QFN, 2012R chip (100%Sn)
- Stencil aperture : 100%
- Heat source : Hot air convection
- Atmosphere : Air
- Reflow profile : Same as "*Super Fine Pattern Wetting*"





Contents

Other Properties

Item	Result	Method
Tack time	> 48 hours	JIS Z 3284-3
Heat slump	0.3mm pass	JIS Z 3284-3
Solder balling	< Category 3	JIS Z 3284-4
Copper mirror corrosion	Type L	IPC-TM-650 2.3.32
Copper plate corrosion	Pass	IPC-TM-650 2.6.15
Voltage applied SIR	>1E+9	IPC-TM-650 2.6.3.3

Contents

Handling Guide

1. Printing - Recommended printing condition

(1) Squeegee

1. Type	:	Flat
2. Material	:	Rubber or metal blade
3. Angle	:	60~70º (rubber) or metal blade
4. Pressure	:	Lowest
5. Squeegee speed	:	20~100mm/sec.

(2) Stencil

1. Thickness	:	150~100μm for 0.65~0.4mm pitch pattern
2. Type :	:	Laser or electroform
3. Separation speed	:	7.0~10.0mm/sec.
4. Snap-off distance	:	0mm

(3) Ambiance

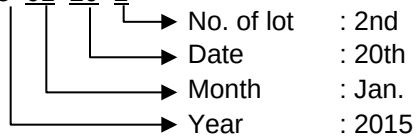
1. Temperature	:	23~27ºC
2. Humidity	:	40~60%RH
3. Air draft	:	Air draft in the printer badly affects stencil life and tack performance of solder pastes.

2. Shelf life

0~10ºC	:	6 months from manufacturing date

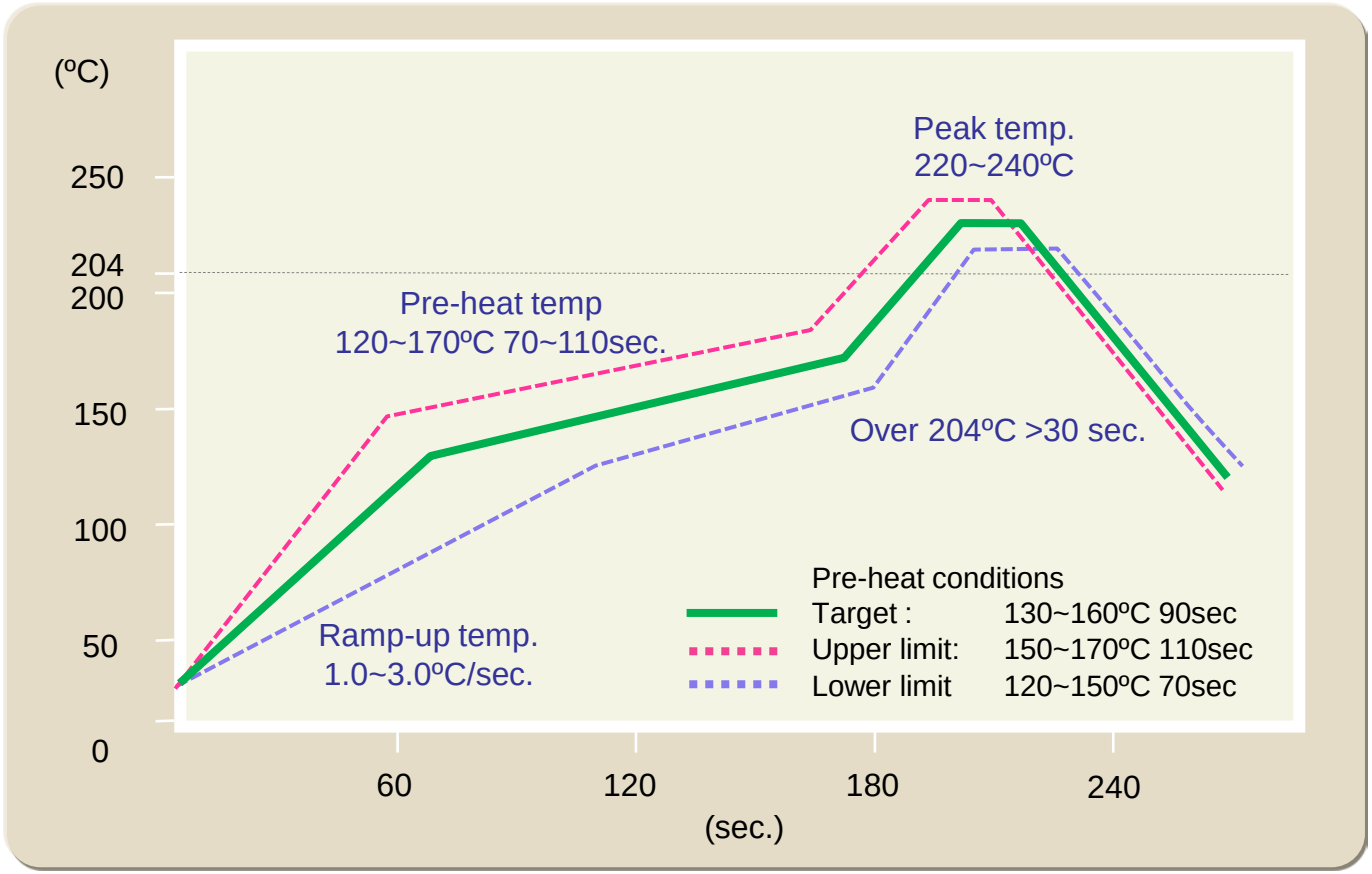
* Manufacturing date can be obtained from the lot number

ex. Lot No. 5 01 20 2



Contents

Handling Guide - Recommended reflow profile



Contents

Handling Guide – Recommended reflow profile