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#55002E
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Koki no-clean LEAD FREE solder paste

Super Fine Particle Lead Free Solder Paste

S3X70-M500C-5

Technical Information (*provisional)

This product information contains product performance assessed based on our own test procedures. Product performance may be different according to the handling at the end-users. Please conduct through investigation to determine optimal process condition before mass production application

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CHALLENGING NEW TECHNOLOGIES

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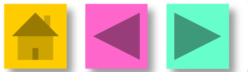

Features

- Alloy Composition: Sn 3.0Ag 0.5Cu
- Ensures **OUTSTANDING** continual **PRINTABILITY** with super fine pattern applications (ex. 0402 components) and sufficient stencil idle time.
- **EXCELLENT WETTING** to severely oxidized patterns or components, such as oxidized Cu substrate, oxidized Sn and NiPd plating.
- **PERFECT MELTING** and wetting at super fine pitch (>0.3mm pitch) and micro components (0402 chip).

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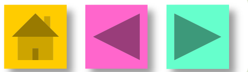

Specifications

Product for		Printing
Product Name		S3X70-M500C-5
Alloy	Alloy Composition (%)	**Sn 3.0Ag 0.5Cu**
	Melt Point (ºC)	217~219
	Powder Shape	Sphere
	Grain Size (um)	10 – 25
Flux	Halide Content (%)	0
	Flux Type*1	ROL0
Solder Paste	Flux Content (%)	11.5±1.0
	Viscosity *2 (Pa.s)	220±30
	Copper Plate Corrosion *3	Passed
	Tack Time	> 48 hours
	Shelf Life (10ºC)	6 months

*1. Flux Type: per IPC J-STD-004
*2. Viscosity: measured with PCU-205 (Malcom), at 25ºC-10rpm
*3. Copper Plate Corrosion: per IPC-TM-650 2.6.15

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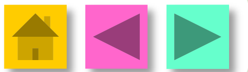
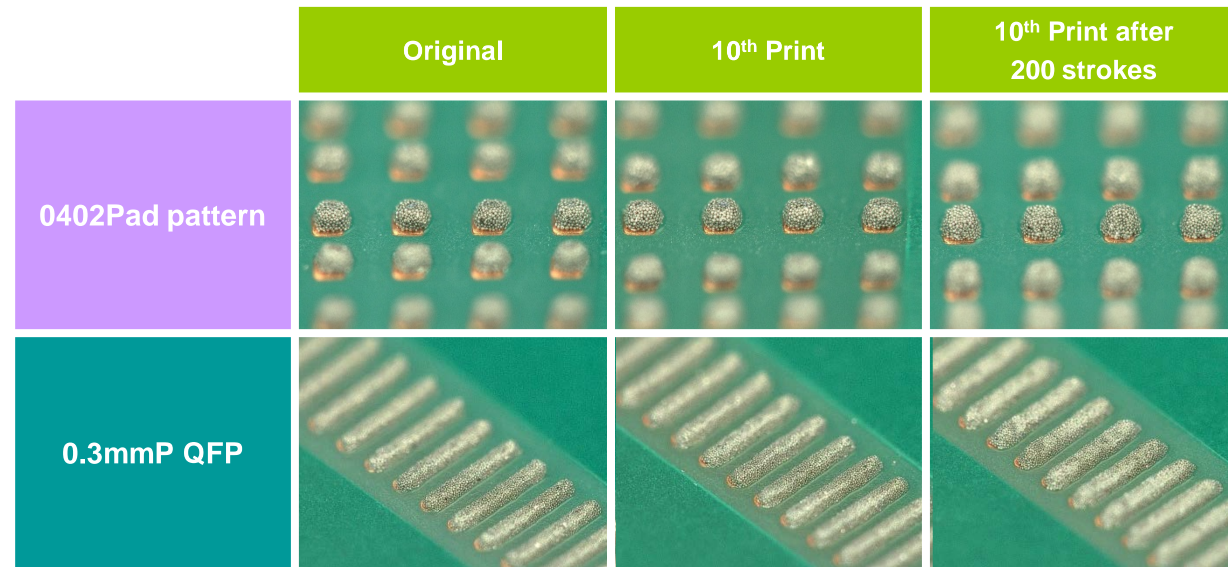


Continuous Printability

Test condition:

・Stencil Thickness:	0.08mm (Laser)
・Printer:	Model YVP-Xg YAMAHA Motor
・Squeegee:	Metal Squeegee (Squeegee angle - 60º)
・Print Speed:	40 mm/sec
・Print Condition:	24~26ºC (50~60%RH)
・Print Test Pattern:	0402: 0.18 x 0.18mm
(aperture size)	Pad , 0.3mmP QFP: 0.3mmW x 1.0mmL



Even after 200 strokes, it can be seen that the solder paste is holding the shape for both circular and rectangular pads.

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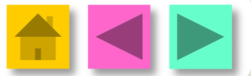
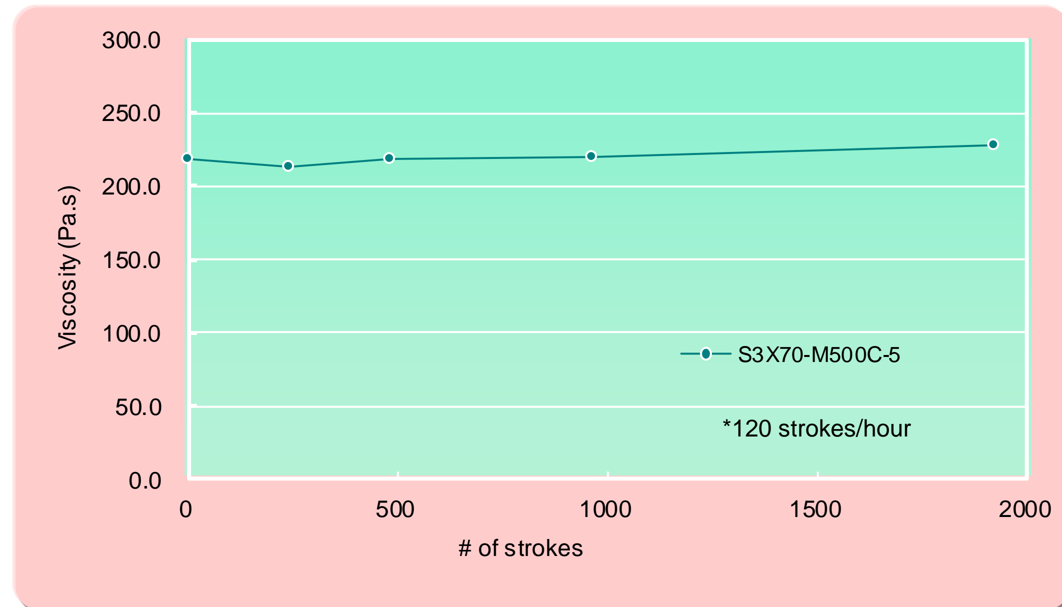


Viscosity Change

Measure the viscosity of the solder paste after continuously rolled on the masked metal stencil.

Test condition:

- Squeegee: Metal squeegee (Squeegee angle - 60º)
- Squeegee Speed: 30mm/sec.
- Squeegee travel distance: 300mm
- Test Condition: 24~26 ºC, 40~60%RH



By suppressing reaction between solder powder and flux, viscosity change due to continual printing is prevented.

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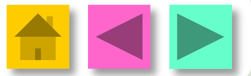
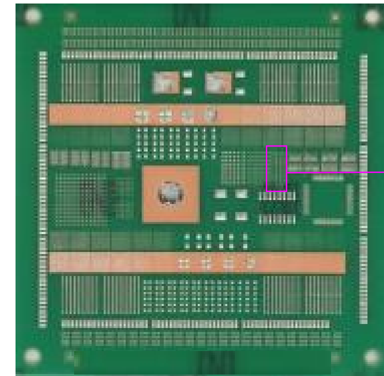
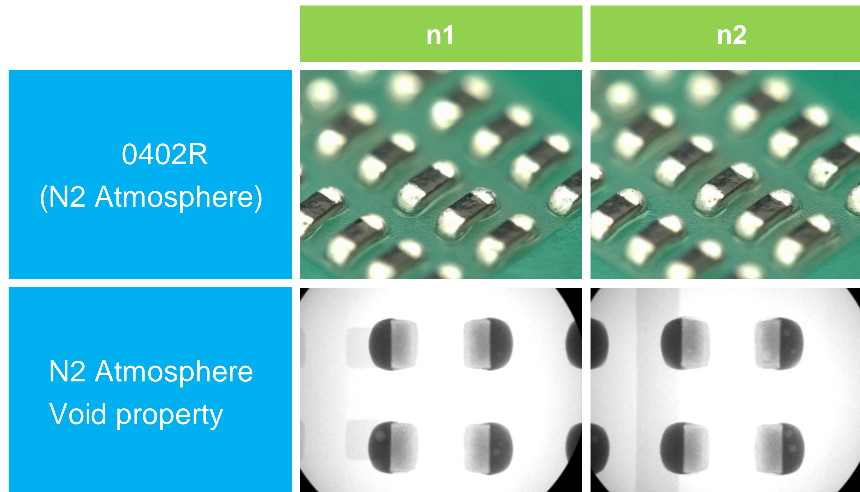


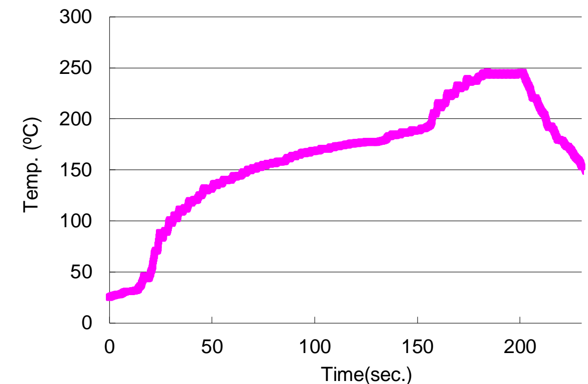
Solder Meltability / Void Property

Test condition:

- PCB: Glass epoxy FR-4
- Surface Finish: OSP
- Stencil Thickness: 0.08mm (Laser)
- Evaluation Pads: 0.18mm dia. CSP, 0402R (Sn plating)
- Aperture: 100%
- Reflow Oven: Hot Air Reflow
- Reflow Atmosphere: N2 Atmosphere(O2:1000ppm)
- Reflow Profile: See the chart below・







Ensures complete meltability with 0402 chip by reflow in N2.

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Other Properties

Item	Result	Specification
Tack Time	> 48 hours	JIS Z 3284-3
Slump Property	0.3mm, pass	JIS Z 3284-3
Solder Ball	< 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
SIR Test	>1E+8	IPC-TM-650-2.6.14.1

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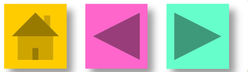

Handling Guide

1. Printing

1) Recommended Printing Condition

(1) Squeegee

1. Shape	: Flat
2. Material	: Polyurethane or metal blade
3. Angle	: 60º
4. Print Pressure	: Relatively low
5. Print Speed	: 20~80mm/sec.

(2) Stencil

1. Thickness	: 120~60μm when pitch is 0.65~0.3mm
2. Manufacturing Method	: Laser or Additive
3. Stencil release speed	: 7.0~10.0mm/sec.
4. Clearance	: 0mm

(3) Process Environment

1. Temperature	: 23~27ºC
2. Humidity	: 40~60%RH
3. Air Conditioning	: Air draft in the printer dries up solder paste faster and deteriorates performance of the solder paste. Control the air flow by using a shield or other method.

2. Shelf Life

0~10ºC : 6 months after production date

* How to interpret Lot Number

ex. **Lot No. 7 01 30 2**

- **2 → Batch #: 2nd Batch**
- **30 → Production – Date: 30th**
- **01 → Production – Month: Jan**
- **7 → Production – Year: 2017**

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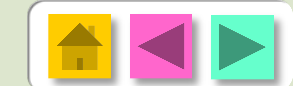

Handling Guide – Recommended Reflow Profile

(ºC)

O2 density <1000ppm

Peak Temperature
230~250ºC

250
219
200
150
100
50
0

Pre-heat Temperature/ Duration
150~190ºC/ 60~100sec.

Duration above 219ºC:
>30 sec.

Ramp-up Speed
1.0~3.0ºC/sec.

Pre-heating Condition
Recommended: 150~180ºC 90sec
Upper Limit: 160~190ºC 100sec
Lower Limit: 150~175ºC 60sec

60 120 180 240
(sec.)

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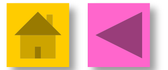

Handling Guide – Supplement on Recommended Reflow Profile