



Hi-performance **Lead Free Solder Paste**

S3X58-M405-2 series

■ Features

- 1) A combination of Tin, Silver and Copper ternary eutectic alloy, with Koki's unique halide free no-clean fluxing medium, produces equivalent performance to conventional no-clean solder pastes in terms of printing, wetting and reliability.
- 2) Carefully selected flux chemistry ensures unique low voids formation and powerful wetting.
- 3) Perfect melting and wetting at super fine pitch (<0.4mm pitch) and micro components (<0.35mm dia CSP, 0603 chip).
- 4) Conforms to Bellcore tests (Copper mirror, Halides, Surface insulation resistance, Electromigration) GR-78-CORE, Issue 1.

■ Specifications

Application		Printing - Stencil	
Product		S3X58-M405-2	S3X58-M405L-2
Alloy	Composition (%)	Sn96.5, Ag3.0, Cu0.5	
	Melting point (°C)	217 - 218	
	Shape	Spherical	
	Particle size (µm)	20 - 38	
Flux	Halide content (%)		0.0
	Surface insulation resistance *1	Initial value (Ω)	$> 1 \times 10^{13}$
		After humidification (Ω)	$> 1 \times 10^{12}$
	Aqueous solution resistivity*2 (Ω cm)		$> 5 \times 10^4$
Flux type		ROLO	
Product	Flux content (%)	11.5	11.7
	Viscosity*3 (Ps.S)	200	160
	Copper plate corrosion*4	Passed	
	Solder spread factor (%)	> 85	
	Tack time	> 36 hours	
	Shelf life (below 10°C)	6 months	
	Other alloy options	TS58- : SnAg3.5 SX58- : SnAg3.5Cu0.7 SXA58- : SnAg3.5Cu0.5Sb0.2	

1. SIR40°C×90%RH×96Hr

2. Aqueous solution resistivityIn accordance with MIL specifications.

3. Viscosity.....Malcom spiral type viscometer, PCU-205 at 25°C 10rpm

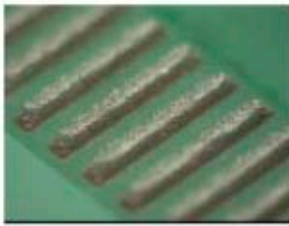
4. Copper plate corrosion.....In accordance with JIS.



*Product performances by S3X58-M405-2 unless specified.

Printability

(Continual printing at 50mm/sec. stencil 130μm laser cut)



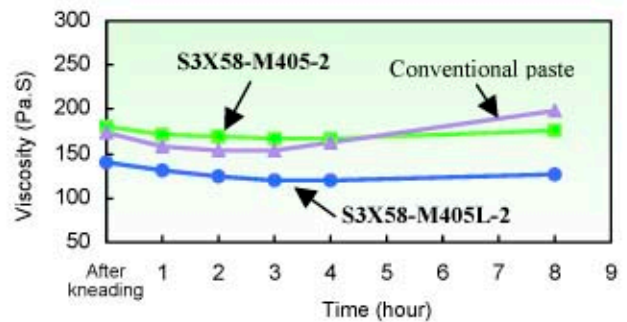
0.4mm pitch
(10th print; parallel)



0.30 mm diameter
(10th print; CSP pattern)

Viscosity variation in continual print

(Squeegee speed : 30mm/sec., print stroke : 300mm)



Solder wetting

(Cu base alloy with Sn plated)



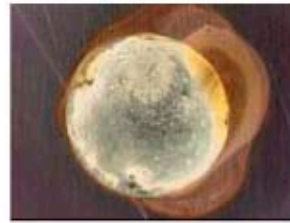
0.65mm pitch QFP



0.25 mm dia. CSP pad

Solder spread

(Cu plate; 190°C×120sec. +> 220×60sec., Peak 220°C)

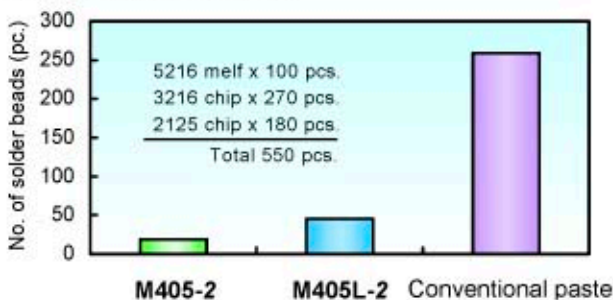


S3X58-M405L-2



Conventional solder paste

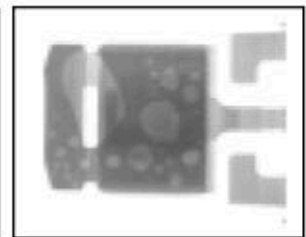
Beading (Reflowed in air)



Voiding (Power transistor ; reflowed in air)

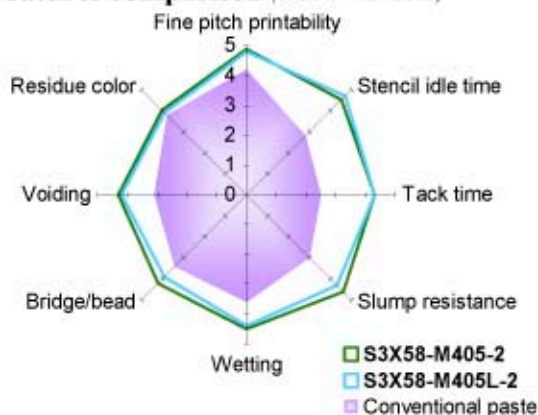


S3X58-M405-2

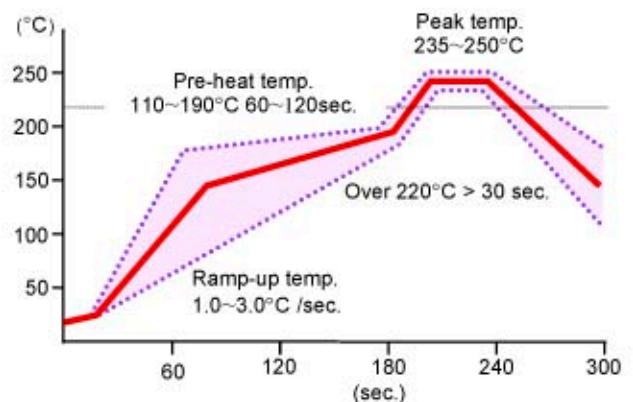


Conventional solder paste

Features comparison (0: Bad → 5: Good)



Recommended reflow profile



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