Koki no-clean solder paste

Contents

Halogen free & ICT testable Solder Paste

SE/SS48-M650-5

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.

Contents

Product features

- Solder alloy composition is Sn63Pb37.
- Genuine halogen free :BS EN14582 (F, Cl, Br, I=0ppm)
- Specially developed flux system ensures EXCELLENT & CONSISTENT ICT TESTABILITY.
- PERFECT MELTING and wetting at super fine pitch (>0.4mm pitch) and micro components (>0.3mm dia CSP, 0603 chip).
- EXCELLENT WETTING to a variety of surface finishing and plating.
- Specially formulated flux chemistry ensures **EXTREMELY LOW VOIDING** with CSPs and broad contact area components, e.g. QFN.
- Designed to prevent occurrence of **HIDDEN PILLOW DEFECTS**.

Contents

Specifications

Application		Printing - Stencil	
Product		SE48-M650-5	SS48-M650-5
Alloy	Alloy Composition (%)	Sn 37Pb	Sn 36Pb 2Ag
	Melting Point (ºC)	183	179 -190
	Shape	Spherical	
	Particle size (µm)	20 - 45	
Flux	Halide Content (%)	0	
	Flux Type	ROL0*3	
Product	Flux Content (%)	10.0±1.0	
	Viscosity*1 (Pa.s)	190±30	
	Cupper plate corrosion*2	Passed	
	Tack Time	> 48 hours	
	Shelf Life (below 10ºC)	6 months	

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

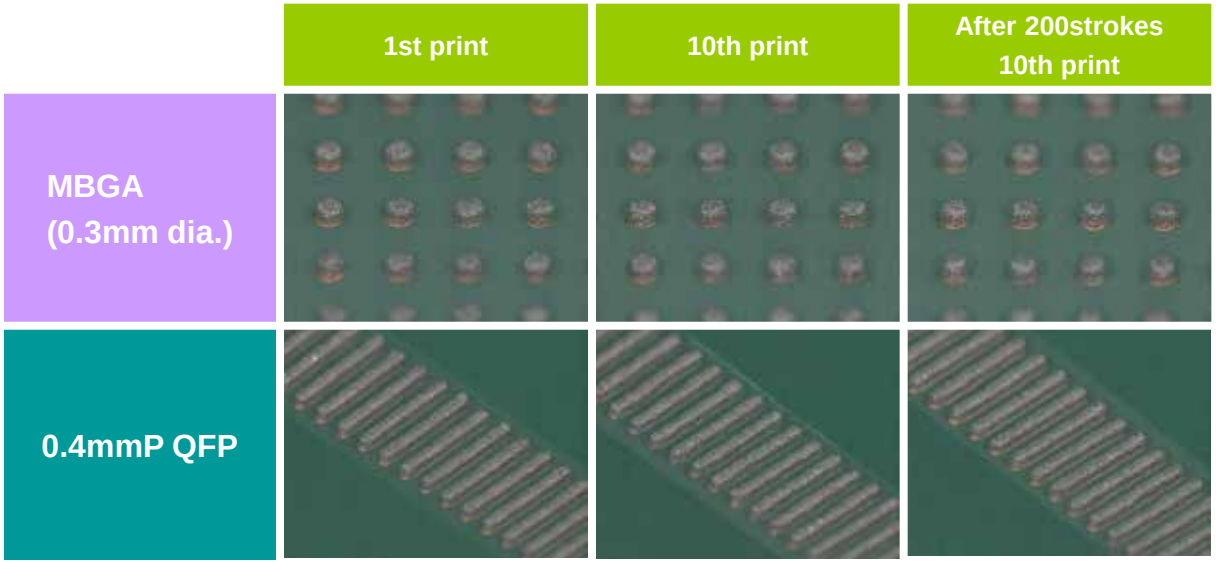
Contents

Continual printing

Test condition;

- Stencil : 0.12mm thickness, laser cut stencil
- Printer : Model YVP-Xg YAMAHA Motor
- Squeegee : Metal blade, Angle - 60 °
- Print speed : 40 mm/sec
- Atmosphere : 24~26 ºC (40~60%RH)
- Test pattern : 0.4mmp QFP pad pattern - Width 0.20 mm Length 1.5 mm Distance 0.2 mm
  MBGA pad pattern - Diameter 0.3mm

*SE48-M650-5



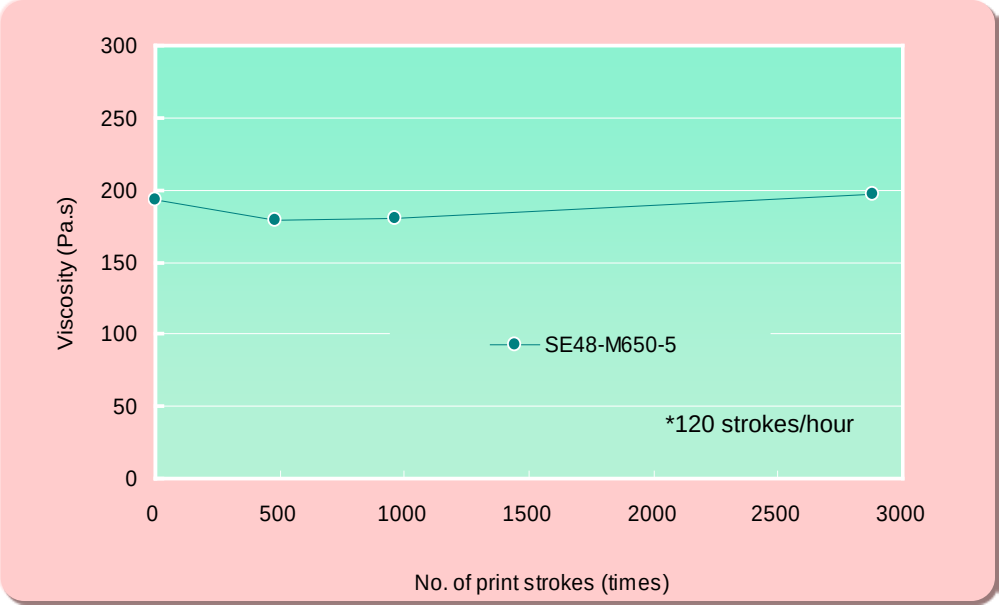
Newly developed additives provide a lubricating effect that greatly improves the paste release properties and assures excellent print quality with MBGA even at high speed printing.

Contents

Viscosity variation

Test condition

- Print (knead) solder paste on the sealed-up stencil continually up for 24 hours to observe viscosity variation.
- Squeegee : Metal blades
- Squeegee angle : 60°
- Squeegee speed : 30mm/sec.
- Print stroke : 300mm
- Printing environment : 24~26 ºC, 40~60%RH



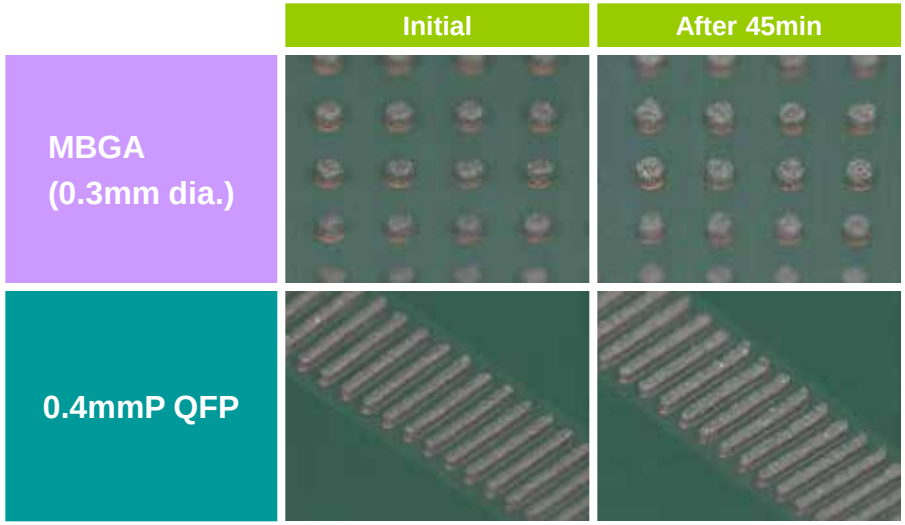
A newly developed flux formula has succeeded to deliver consistent long term printability by preventing excess viscosity drop due to shear thinning. Furthermore excess increase of viscosity due to chemical reaction between solder powder and flux during print rolling, is also eliminated.

Intermittent printability (Stencil idle time)

Print solder paste continuously and stop to idle the paste for 45min. intervals, and resume the printing and observe the 1st print result to verify intermittent printability.

Test condition

- Squeegee : Metal blades
- Squeegee angle : 60°
- Squeegee speed : 40mm/sec.
- Print stroke : 300mm
- Printing environment : 24~26 ºC, 40~60%RH
- Test pattern : 0.4mmP QFP pad pattern - Width 0.20 mm Length 1.5 mm Distance 0.2 mm
  MBGA pad pattern - Diameter 0.3mm



*SE48-M650-5

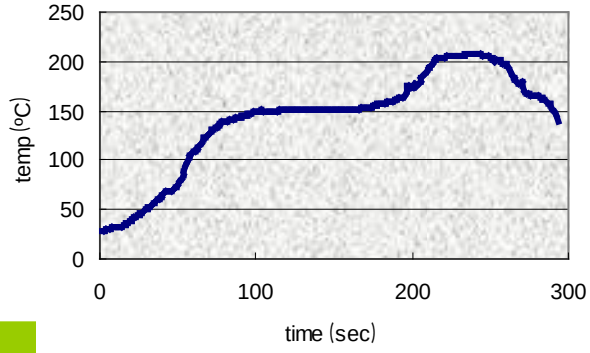
Unique solvent formulation system assures extremely long stencil idle time, eliminating printing faults and improving the process window and production yields.

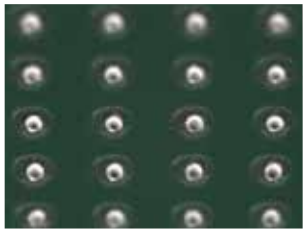
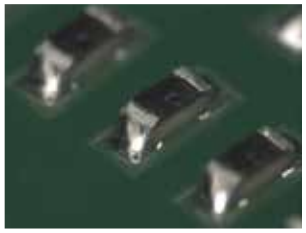
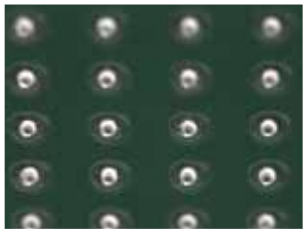
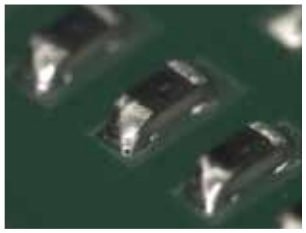
Contents

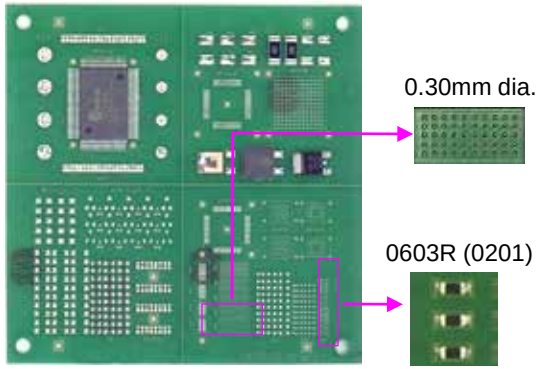
Wetting test

Test conditions

- Material : Glass epoxy FR-4
- Surface treatment : OSP
- Stencil thickness : 0.12mm (laser cut)
- Pad size : 0.30mm diameter
- Component: 0603R (0201) chip
- Stencil aperture : 100% aperture opening to pad
- Heat source : Hot air convection
- Zone structure : 5 pre-heat zones +2 peak zones
- Atmosphere : Air
- Reflow profile : See the reflow profile on the right



	0.25mm dia.CSP	0603R (0201)
Initial		
After 4-hour kneading on sealed-up stencil		



*SE48-M650-5

Larger relative surface areas of solder paste exposed due to miniaturization of components (CSP, 0603 chips), often cause incomplete melting due to excess oxidation during the reflow. An improved flux formula ensures complete coalescence by minimum deterioration of barrier performances .

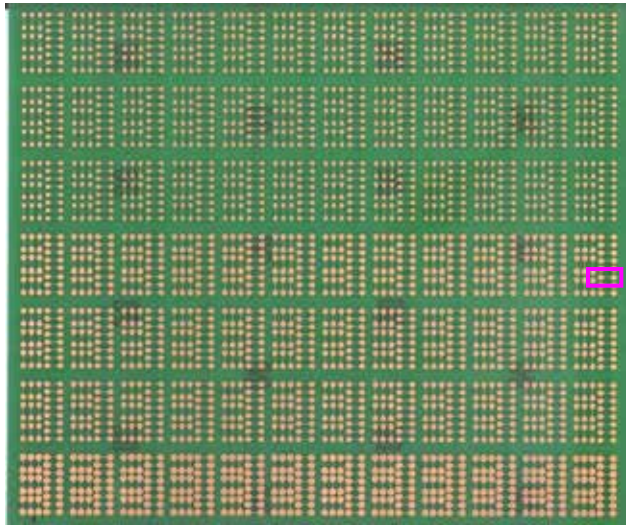
Contents

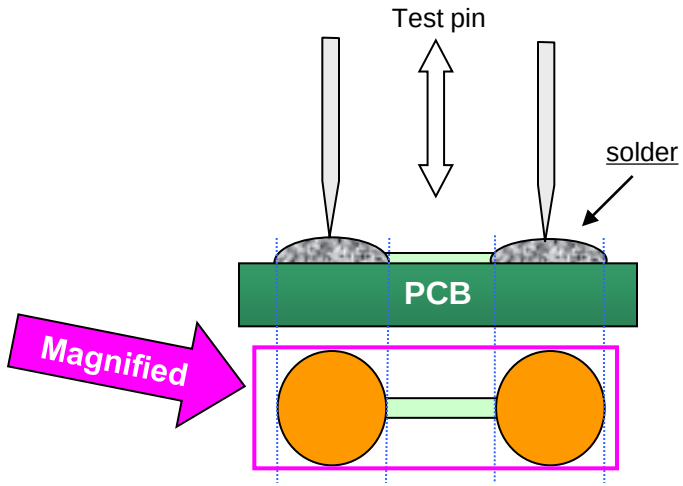
ICT testability

Test condition

Reflow the test board, which is provided with a number of conductive twin pads as shown below, by printing the sample solder paste and measure contact resistance by a couple of ICT probe.

- Material: Glass epoxy FR-4(See below)
- Surface treatment : OSP
- Heat source: Hot air convecition
- Atmosphere : Air
- Reflow profile : Same as “Wetting test”
- Single pin: 1428points
- Crown pin: 816points
- Contact pressure: 100gf

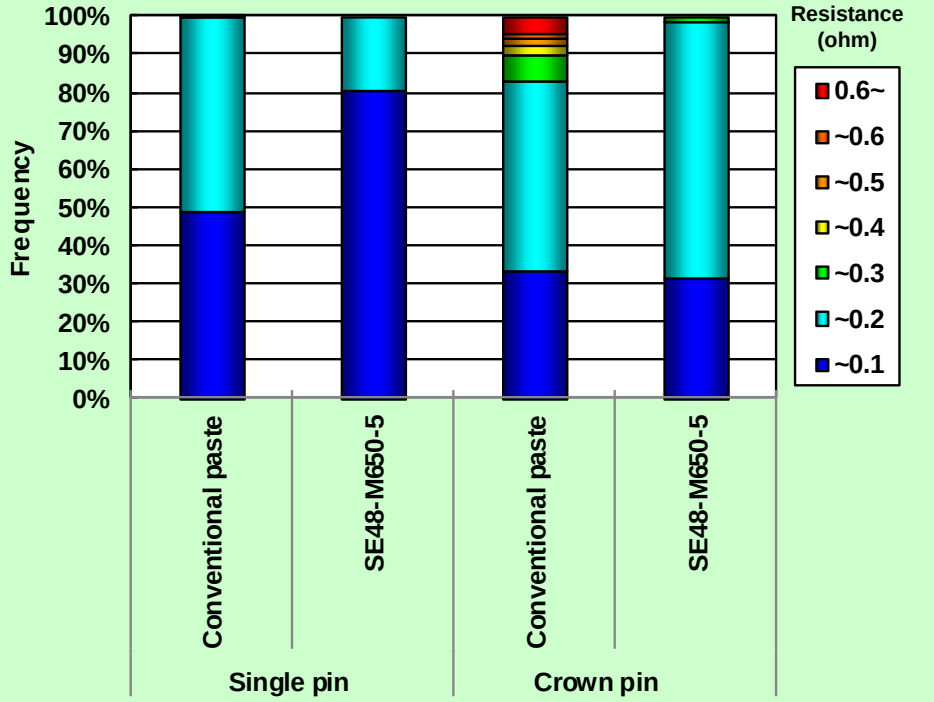




Measure SIR when a test pin contacts the solder after soldering the board shown left.

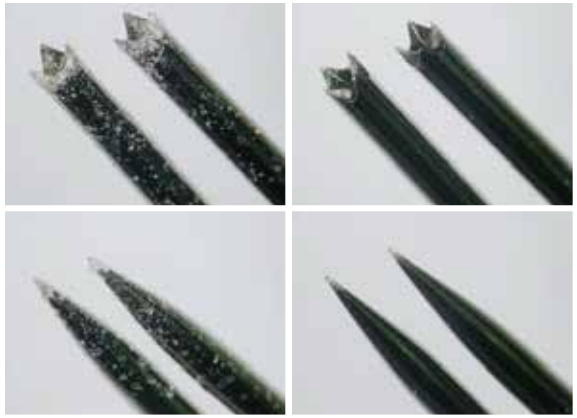
Contents

ICT testability



Picture of after contact

Conventional paste	SE48-M650-5



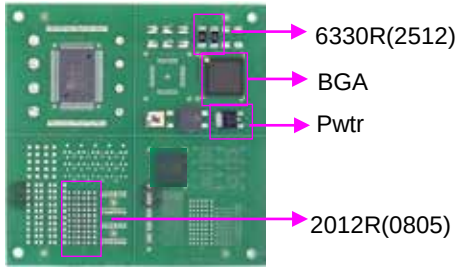
A newly adopted flux chemistry for SE/SS48-M650-5 provides plasticity to the flux residue and realizes easy penetration while preventing the flux residue from cracking and building up on the tip of the test pin

Contents

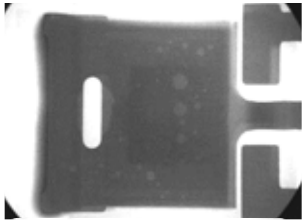
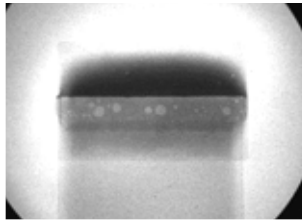
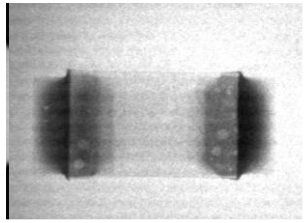
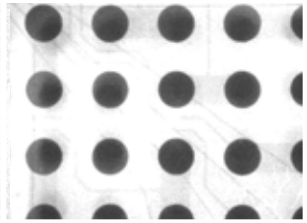
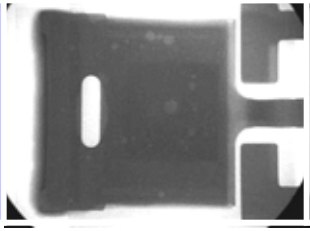
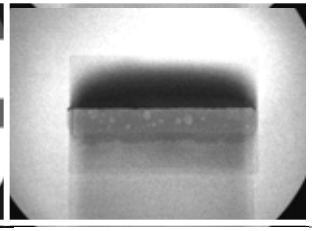
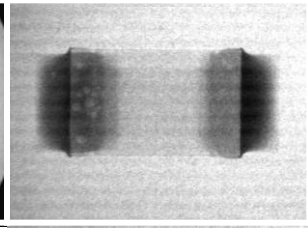
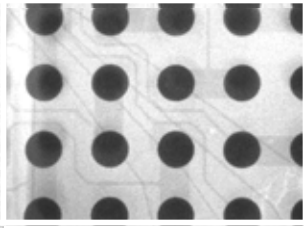
Voiding

Test condition

- Material : Glass epoxy FR-4
- Surface treatment : OSP
- Stencil thickness : 0.12mm(laser cut)
- Components ball - SAC305 : Pwtr,6330R(2512),2012R(0805) 100% - Sn plated BGA
- Heat source : Hot air convection
- Atmosphere : Air
- Reflow profile : Same as *"Wetting test"*



*SE48-M650-5

	Pwtr.	6330R(2512)	2012R(0805)	BGA
Initial				
After 4-hour kneading on sealed-up stencil				

Specially formulated flux chemistry ensures extremely Low Voiding with MBGA and broad contact area components.

Halogen contents

Test condition

* BS EN14582

Elements	Results
F	Not detected
Cl	Not detected
Br	Not detected
I	Not detected

Halogen contents (ppm)

Conforms to Halogen-free standard (Cl+Br: less than 1500ppm) BS EN14582.

Contents

Other properties

Item	Result	Method
Tack time	> 48 hours	JIS Z 3284
Heat slump	0.3mm pass	JIS Z 3284
Solder balling	< Category 3	JIS Z 3284
Copper mirror corrosion	Type L	IPC-JSTD-004A
Copper plate corrosion	Pass	IPC-JSTD-004A JIS Z 3194
Voltage applied SIR	> 1E+9	IPC-JSTD-004A JIS Z 3194

Contents

Handling guide

1. Printing

1) Recommended printing parameters

(1) Squeegee

1. Kind	:	Flat
2. Material	:	Rubber or metal blade
3. Angle	:	60~70º (rubber) or metal blade
4. Pressure	:	40~80N
5. Squeegee speed	:	30~100mm/sec.

(2) Stencil

1. Thickness	:	150~100㎛ 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

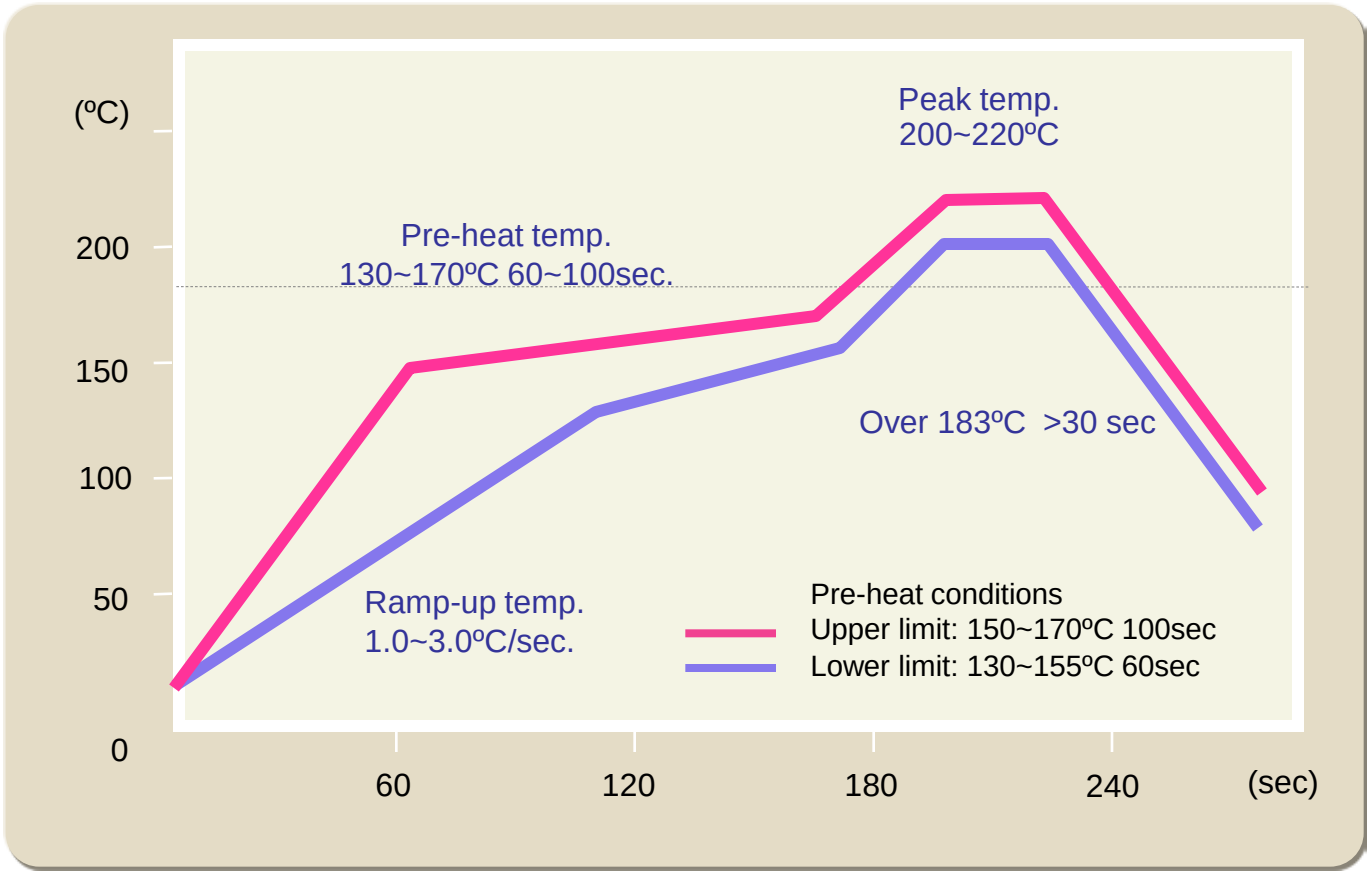
* Manufacturing date can be obtained from the lot number

ex. **Lot No. 3 03 01 2**

No. of lot : 2nd
Date : 1st
Month : Mar.
Year : 2013

Contents

Handling guide - Recommended reflow profile



Contents

Handling guide - reflow profile supplement