To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

Send any inquiries to http://www.renesas.com/inquiry.

[Package Change]

Date: May.18.2005

RENESAS TECHNICAL UPDATE

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RenesasTechnology Corp.

Product Category	SRAM		Document No.	TN-PME-A001A/E	Rev.	1.0
Title	Notice about the switch to lead-free parts on SRAMs		Information Category	Package Change		
Applicable Product	256Kbit/1Mbit/2Mbit/4Mbit/ 8Mbit/16Mbit Low Power SRAM 4Mbit Fast SRAM 18Mbit Network SRAM	Lot No. A.S.A.P.	Reference Document	-		

Please be informed that we, Renesas is proceeding with the switch from leaded to lead-free parts on all Renesas products in order to discontinue the use of the element of Pb by the end of 2005 which is specified one of the hazardous substances, based on RoHS-compliance. Under this situation, all Renesas SRAM parts is scheduled to switch to lead-free as follows.

<Content of change>

To switch to lead-free for all SRAM parts (Please refer to following pages for the details.)

<Objective products>

256Kbit LP SRAM : M5M5256D** series

1Mbit LP SRAM : M5M51008D** series, M5M5V108D** series

4Mbit LP SRAM : R1LP0408C** series, R1LV0408C** series, R1LV0414C** series, R1LV0416C** series, M5M5V416C** series

8Mbit LP SRAM : HM628100** series, HM62V8100** series, HM6216514** series, M5M5W816** series, M5M5W817** series

16Mbit LP SRAM : R1LV1616H** series, HM62V16100** series, HM62A16100** series

4Mbit Fast SRAM : R1LP0404D** series, R1LP0408D** series, R1LP0416D** series, R1LW0404D** series, R1LW0408D** series, R1LW0416D** series

18Mbit Network SRAM : M5M5V5636** series, M5M5V5A36** series

<Reliability report>

already available

<Sample availability>

already available

<Completion date of this switch>

We will start to ship out only lead-free parts from January, 2006.

Sincerely yours.

Process change notice for Renesas SRAM products

Please be informed that Renesas aims at stopping the use of Pb element which is specified one of hazardous substances by the end of 2005 and is promoting our activity toward lead-free, based on RoHS-compliance. Under the current situation, hereafter, we would like to inform you especially about the lead-free program for SRAM products as follows.

1. Current status about Renesas lead-free program

(a)Renesas has completed all basic evaluations of lead-free materials (appearance, joint strength, solder wettability, solderability) and basic reliability examinations of packages (thermal endurance, temperature cycle evaluation and so on), and confirmed no abnormality.
Also from SRAM production point of view, lead-free support is no problem at all.

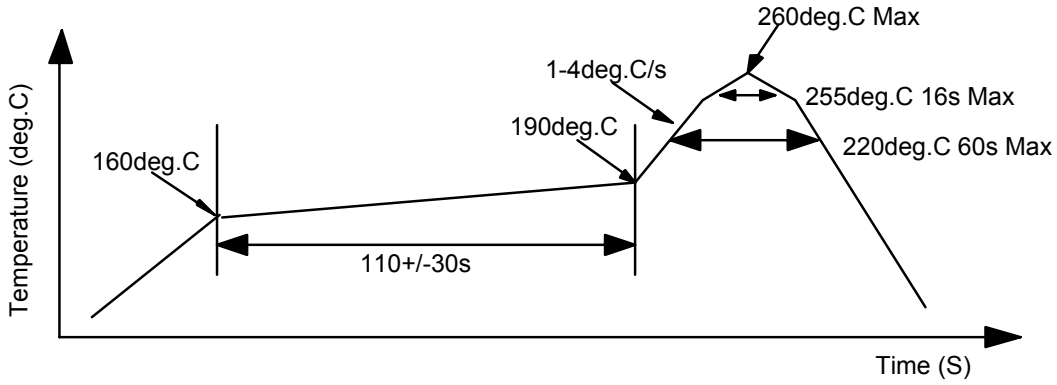
(b)Renesas has also completed examinations against package thermal endurance based on the thermal profile (peak temp.=260deg.C) shown in Fig.1 and confirmed good results for Renesas all SRAM products.

2. Schedule to switch to SRAM lead-free products

We are planning to complete leaded SRAM products by the end of 2005 and will start shipping lead-free ones from January in 2006. After we switch to lead-free production, we are unable to accept both products production in parallel, from our production control point of view. If you should have any concerns on the switch to lead-free, please contact our local sales office in your region by the end of May. In case of no reply from your side, we would judge you could accept the content of this PCN.

3. Others

As mentioned, we confirmed there was no problem on thermal endurance for our all SRAM products under the condition of the following temperature profile shown in Fig.1. And also we confirmed no problem on solderability. However the differences on temperature profile and/or solder paste material between Renesas and customers could be sometimes seen. Therefore we would recommend you to confirm solderability by yourself.



As for BGA products especially, there may be a possibility to degrade the solderability and/or quality after soldering if leaded paste material can be used. Thus please refer to the following page where we describe our requests to all customers.

Notice to Customers Regarding BGA Products

Soldering lead-free ball BGAs with leaded (Sn-Pb) solder pastes may cause lower mountability and/or solder joint reliability, depending on the paste material and process conditions.
Renesas recommends the use of Sn-Ag-Cu lead-free pastes, which composition is also used for BGA balls' material, for soldering lead-free BGAs. If other types of pastes are used, please confirm mountability and solder joint reliability according to your methods and criteria.

(1) Temperature cycling resistance of BGA solder joint

- Evaluated Balls and Paste
  - Sn-37Pb balls/Sn-3.0Ag-0.5Cu paste
  - Sn-3.0Ag-0.5Cu balls/Sn-37Pb paste
  - Sn-37Pb balls/Sn-37Pb paste
  - Sn-3.0Ag-0.5Cu balls/Sn-3.0Ag-0.5Cu paste
- Evaluated package
  FBGA 175 (13 mm sq. 0.8 mm ball pitch)
- Mounting board
  4-layer FR-4 0.8 mm thick
  Land diameter: 0.32 mm
  Solder resist opening diameter: 0.52 mm

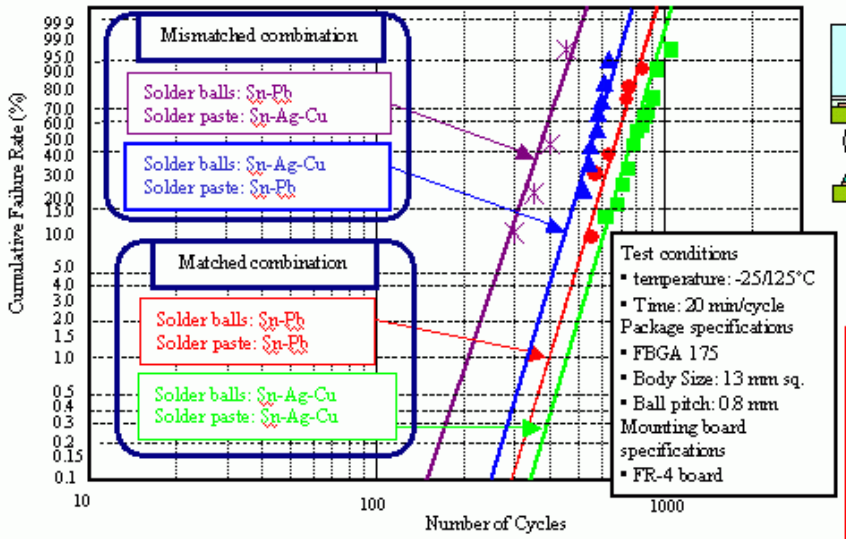


Fig. 2 Temperature cycling results of board-mount FBGA

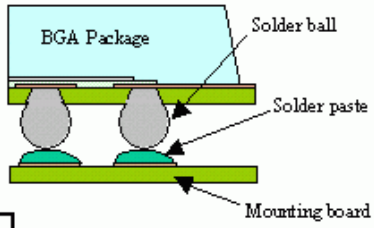


Fig. 1 Schematic illustration of BGA mounted on board

The mismatched combinations (different materials between balls and paste) are undesirable because of smaller number of cycles to failure, compared with the matched combinations (same materials between balls and paste).

(2) Mechanical impact resistance of BGA solder joint

When strong mechanical impact is applied to boards on which BGAs are mounted, ball separation may occur. We performed the mechanical impact test shown in Fig. 3 to compare impact strengths of mismatched and matched cases. It was found that ball separation in the mismatched case occurred with weaker impact than in the matched cases as shown in Fig. 5. Mismatched combination is therefore undesirable because of lower mechanical impact resistance.

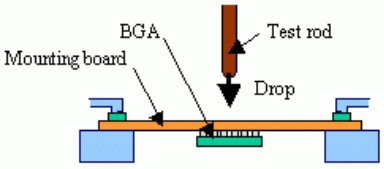


Fig.3 Mechanical impact test method

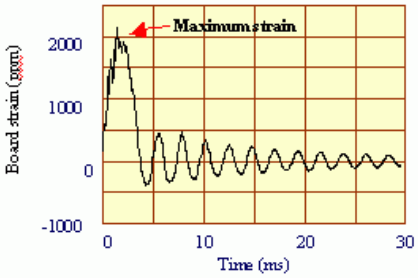


Fig.4 Example of measured board strain

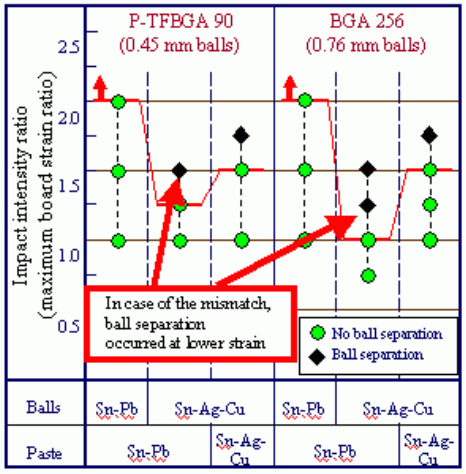


Fig.5 Impact strength test results