SAMSUNG Technical Notification

[Production plan for Pb free DRAM device]

November, 2003

Memory Quality Assurance

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Contents of Notification

This notification describes the information for the production plan of Pb free device in Samsung. The contents are as follows ;

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Background & Purpose

- SAMSUNG Electronics applies the principle of Green Management in major policy decisions and is gaining trust through open-minded business

- We take into account the environmental soundness of the product throughout its life cycle - from distribution, consumption and disposal - as we continue to develop more sustainable products

- An eco-product refers to a product that does not contain materials harmful to human body, such as Pb and halogen substances, at all. Usually, Pb is found in lead finish, solder ball and solder paste while halogen substances are used for PWB (printed wiring board) and epoxy molding compounds. However, eco-products are absolutely free from all toxic substances. That is, toxic substances are not used 'intentionally' for eco-product.

- SAMSUNG Electronics is supplying eco-products that do not contain RoHS-banned substances, which are Pb, Hg, Cd, Cr+6, PBB (poly bromide biphenyl) and PBDEs (poly brominated diphenyl ethers). Moreover, we at SAMSUNG Electronics are making continuous efforts to develop products that don't require internationally banned toxic chemical.

Part Number – DDR1

Component

	PKG Type	Leaded P/N	Lead-Free P/N
Component	TSOP	K4H560838E-TCB3	K4H560838E-UCB3
	sTSOP	K4H560838E-NCB3	K4H560838E-VCB3
	FBGA	K4H560838E-GCB3	K4H560838E-ZCB3

Module

	DIMM Type	PKG	Leaded P/N	Lead-Free P/N
Module	R-DIMM	TSOP	M312L6420ETS-CB0	M312L6420EUS-CB0
		FBGA	M312L6420EG0-CB3	M312L6420EZ0-CB3
	U-DIMM	TSOP	M368L6423ETN-CB3	M368L6423EUN-CB3
	SODIMM	TSOP	M470L3224FT0-CB3	M470L3224FU0-CB3
		sTSOP	M470L6423EN0-CB3	M470L6423EV0-CB3

Part Number – DDR2

Component

	PKG Type	Leaded P/N	Lead-Free P/N
Component	FBGA	K4T51083QB-GCD5	K4T51083QB-ZCD5

Module

	DIMM Type	PKG	Leaded P/N	Lead-Free P/N
Module	R-DIMM	FBGA	M393T6553BG0-CD5	M393T6553BZ0-CD5
	U-DIMM	FBGA	M378T6553BG0-CD5	M378T6553BZ0-CD5
	SODIMM	FBGA	M470L6554BG0-CD5	M470L6554BZ0-CD5

SAMSUNG PROPRIETARY

Part Number – SDRAM

Component

	PKG Type	Leaded P/N	Lead-Free P/N
Component	TSOP	K4S560832E-TC75	K4S560832E-UC75
	sTSOP	K4S560832E-NC75	K4S560832E-VC75

Module

	DIMM Type	PKG	Leaded P/N	Lead-Free P/N
Module	R-DIMM	TSOP	M390S3253ET1-C7A	M390S3253EU1-C7A
	U-DIMM	TSOP	M366S6453ETS-C7A	M366S6453EUS-C7A
	SODIMM	TSOP	M464S3254ETS-C7A	M464S3254EUS-C7A
		sTSOP	M464S6453EN0-C7A	M464S6453EV0-C7A

Part Numbering System - Graphic

Component

	PKG Type	Leaded P/N	Lead-Free P/N
Component	TSOP	K4D261638F-TC	K4D261638F-LC
		K4D551638E-TC	K4D551638E-LC
		K4D551638F-TC	K4D551638F-LC
	FBGA	K4D263238E-GC	K4D263238E-VC
		K4D26323QG-GC	K4D26323QG-VC
		K4D55323QF-GC	K4D55323QF-VC
		K4N55163QF-GC	K4N55163QF-VC
		K4N55323QF-GC	K4N55323QF-VC
		K4J55323QF-GC	K4J55323QF-VC
	TQFP	K4D263238F-QC	K4D263238F-UC

Part Numbering System - Mobile 1

Component

	PKG Type	Leaded P/N	Lead-Free P/N
Component (M-SDR)	54FBGA	K4M64163PG - R***	K4M64163PG - B***
		K4S64163L(3)F - R***	K4S64163L(3)F - B***
		K4M64163PH - R***	K4M64163PH - B***
		K4S64163L(3)H - R***	K4S64163L(3)H - B***
		K4M28163PE - R***	K4M28163PE - B***
		K4S28163L(3)D - R***	K4S28163L(3)D - B***
		K4M28163PF - R***	K4M28163PF - B***
		K4M28163L(3)F - R***	K4M28163L(3)F - B***
		K4M56163PE - R***	K4M56163PE - B***
		K4S56163L(3)C - R***	K4S56163L(3)C - B***
	54BOC	K4S56163L(3)F - X***	K4S56163L(3)F - Z***
Component (M-DDR)	60FBGA	K4X28163PE - L***	K4X28163PE - F***
		K4X56163PE - L***	K4X56163PE - F***

Part Numbering System - Mobile 2

Component

	PKG Type	Leaded P/N	Lead-Free P/N
Component (M-SDR)	90FBGA	K4S64323L(3)F - S***	K4S64323L(3)F - D***
		K4S28323L(3)E - S***	K4S28323L(3)E - D***
	90FBGA (smaller)	K4S64323L(3)H - F***	K4S64323L(3)H - H***
		K4S28323L(3)E - F***	K4S28323L(3)E - H***
		K4S28323L(3)F - F***	K4S28323L(3)F - H***
	DDP 54FBGA	K4S51163L(3)C - Y***	K4S51163L(3)C - P***
		K4S51153L(3)C - Y***	K4S51153L(3)C - P***
		K4M51163L(3)E - Y***	K4M51163L(3)E - P***
		K4M51153L(3)E - Y***	K4M51153L(3)E - P***
		K4M51163PE - Y***	K4M51163PE - P***
	DDP 90FBGA	K4M56323L(3)E - M***	K4M56323L(3)E - E***
		K4S51323L(3)C - M***	K4S51323L(3)C - E***
		K4M51323L(3)E - M***	K4M51323L(3)E - E***

Part Numbering System - RDRAM

Component

	PKG Type	Leaded P/N	Lead-Free P/N
Component	54 FBGA	K4R271669F-RCxx	K4R271669F-TCxx
	84 FBGA	K4R571669E-FCxx	K4R571669E-GCxx
	92 FBGA	K4R881868D-FCxx	K4R881869D-GCxx
		K4R761869A-FCxx	K4R761869A-GCxx

Module

	DIMM Type	PKG	Leaded P/N	Lead-Free P/N
Module	X16 RIMM	FBGA	MR16R162xxF0-Cxx	MR16R162xDG0-Cxx
			MR18R162xxF0-Cxx	MR18R162xDG0-Cxx
	X32 RIMM		MD16R162xxF0-Cxx	MD16R162xxG0-Cxx
			MD18R162xxF0-Cxx	MD18R162xxG0-Cxx
	NexMod		MN18R162xxF0-Cxx	MN18R162xxG0-Cxx
			MP18R162xxF0-Cxx	MP18R162xxG0-Cxx
	SoRIMM		-	MS18R162xxH0-Cxx

Module Label

❑ Leaded DDR Module (Normal)

❑ Pb free DDR Module (New)

- Change SAMSUNG Logo Color to Blue
- Add SAMUSNG Pb free Symbol with Green Color

LF(Pb Free) Symbol

Production Schedule

- **Production Plan**
  - **Ready from February, 2004**
  - **For all DRAM devices (Component & Module)**

- **Sample Availability**
  - **Provide in 2 months after receiving customer request.**

for new product (die revision, density-up, …) in the future,

we would like to perform the customer qualification for both Leaded and Pb free devices in the same time.

Material Information

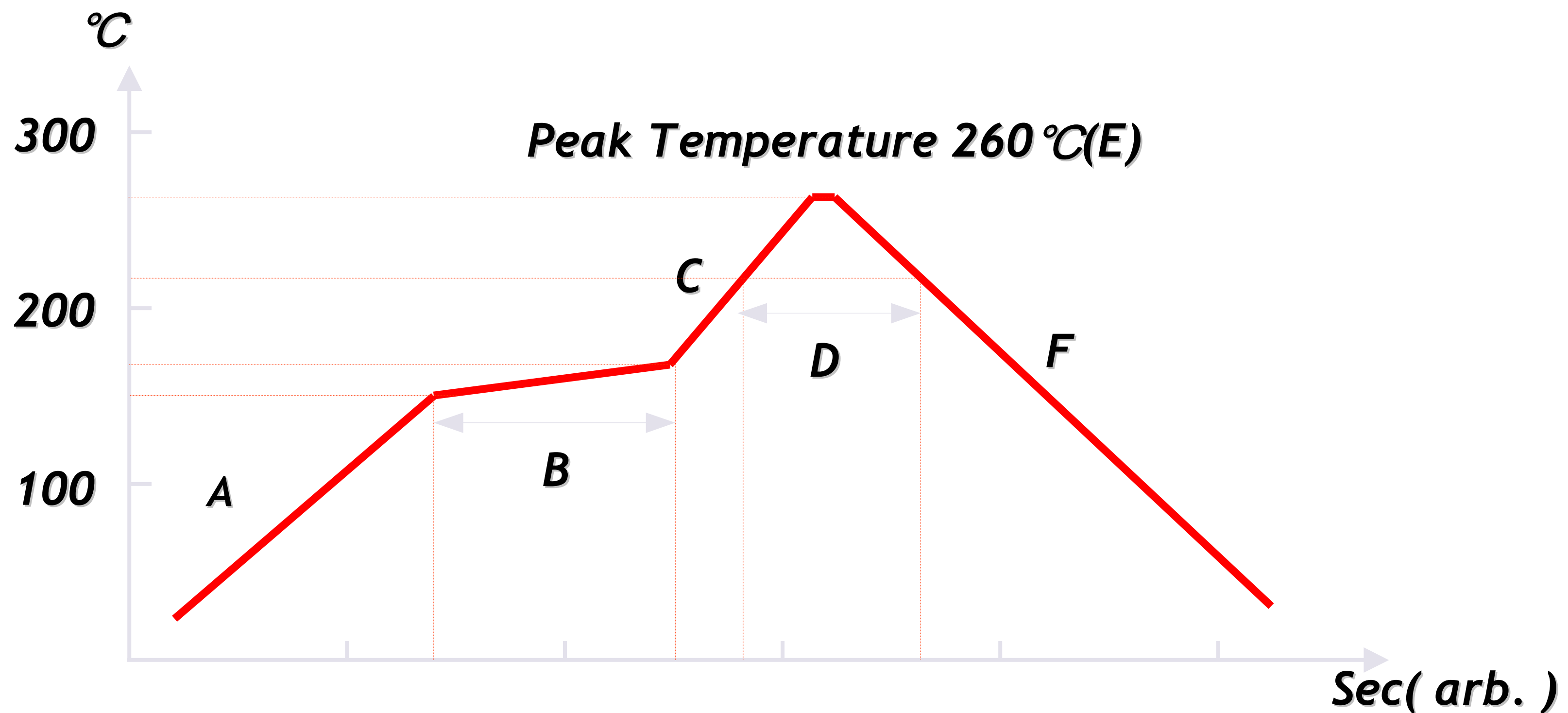
- **Lead Frame Type Package**
  - **Lead finish ; Sn-Bi plating (Bi : 1~ 4 %)**
- **Ball Type Package**
  - **Solder ball ; Sn-3.0Ag-0.5Cu**
- **Memory Module**
  - **Solder paste ; Sn-3.0Ag-0.5Cu**
  - **Passive element ; Tin plating**

For the module passive elements such as resistors and capacitors,

- Current : Using SnPb plating or Tin plating elements

- New (February `04~) : Tin plating only elements

Reflow Profile



Items	A	B	C	D	E	F
Condition	1~3 ℃/sec	160~190 ℃ 90±30sec	1~3 ℃/sec	220 ℃ 40±20sec	Max. 260 ℃	1~3 ℃/sec