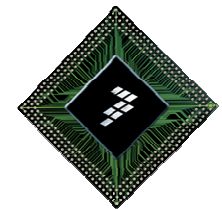


March 1, 2007

Freescal e RoHS Compliant BGA Update

iNEMI SnPb-Compatible BGA Workshop



Wayne Lindsay
PBGA Product Package Engineering

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Our Company

RoHS Compliance Strategy

Detail by BGA Package Platform



Company Overview

**Semiconductor design and manufacturing company
established in 1953**

Focused on the automotive, consumer, industrial, mobile communications, networking, and enabling technologies

Engaged with **10,000+ customers** globally; over
100 of the top electronic manufacturers

\$6.4 billion in revenue in 2006

Headquartered in **Austin, Texas**

24,000 employees in over **30** countries

Company History

1952-2003 – Motorola's semiconductor unit, Freescale's predecessor, establishes a reputation as a technology leader

May 17, 2004 – Michel Mayer named Chairman and CEO of Freescale Semiconductor

July 16, 2004 – Freescale becomes a publicly-traded company after more than 50 years as part of Motorola

- Second largest technology public offering in 2004 behind Google
- Traded on NYSE FSL
- Part of the S&P 500 and Philadelphia Semiconductor Index

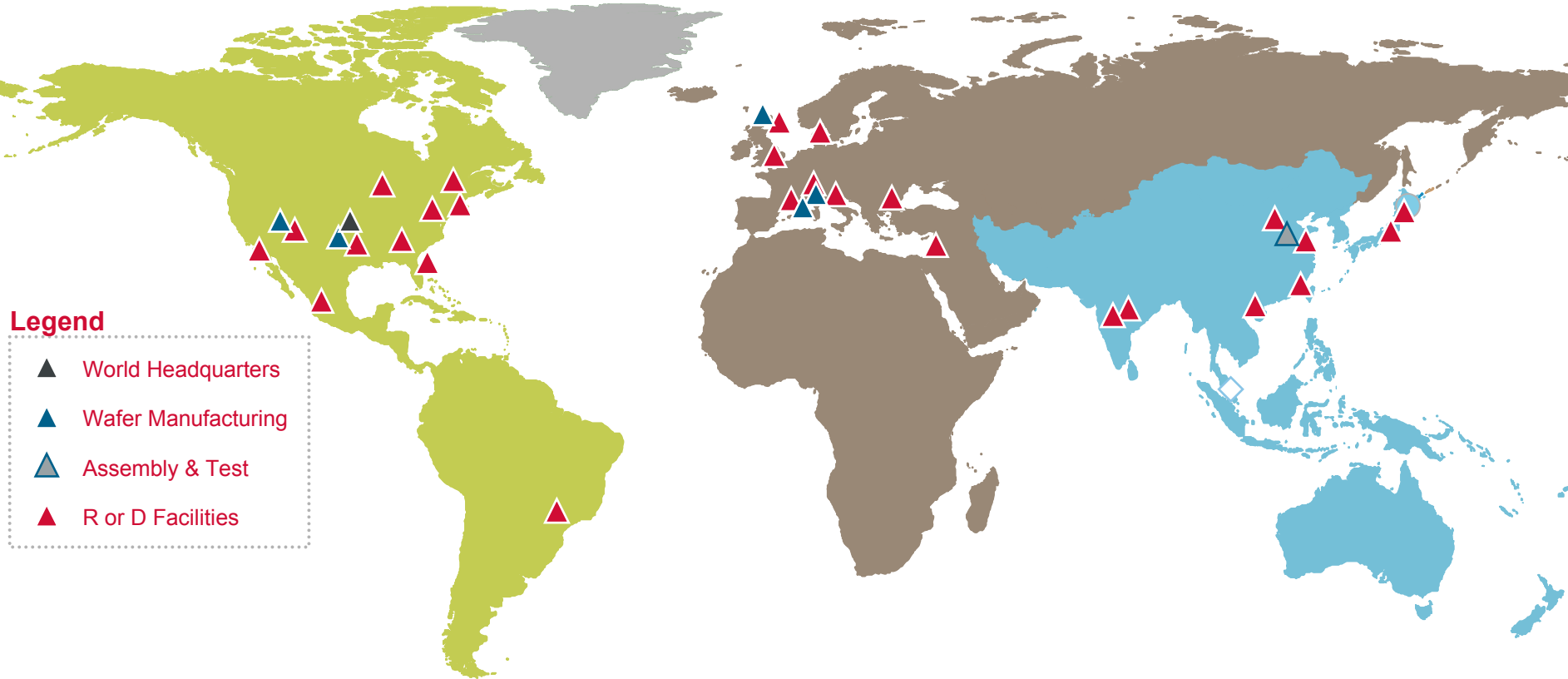
December 1, 2006 – Freescale becomes a private company

- Acquired for \$17.6 billion by a group of private equity firms led by The Blackstone Group and including The Carlyle Group, Permira Advisers LLC and Texas Pacific Group,
- Largest leveraged buyout in the technology industry
- Stock de-listed from NYSE

Freescale Senior Leadership Team



Operating Around the World



Legend

- ▲ World Headquarters
- ▲ Wafer Manufacturing
- ▲ Assembly & Test
- ▲ R or D Facilities

Americas

- 9,200 employees
- 4 factories
- 10 design centers

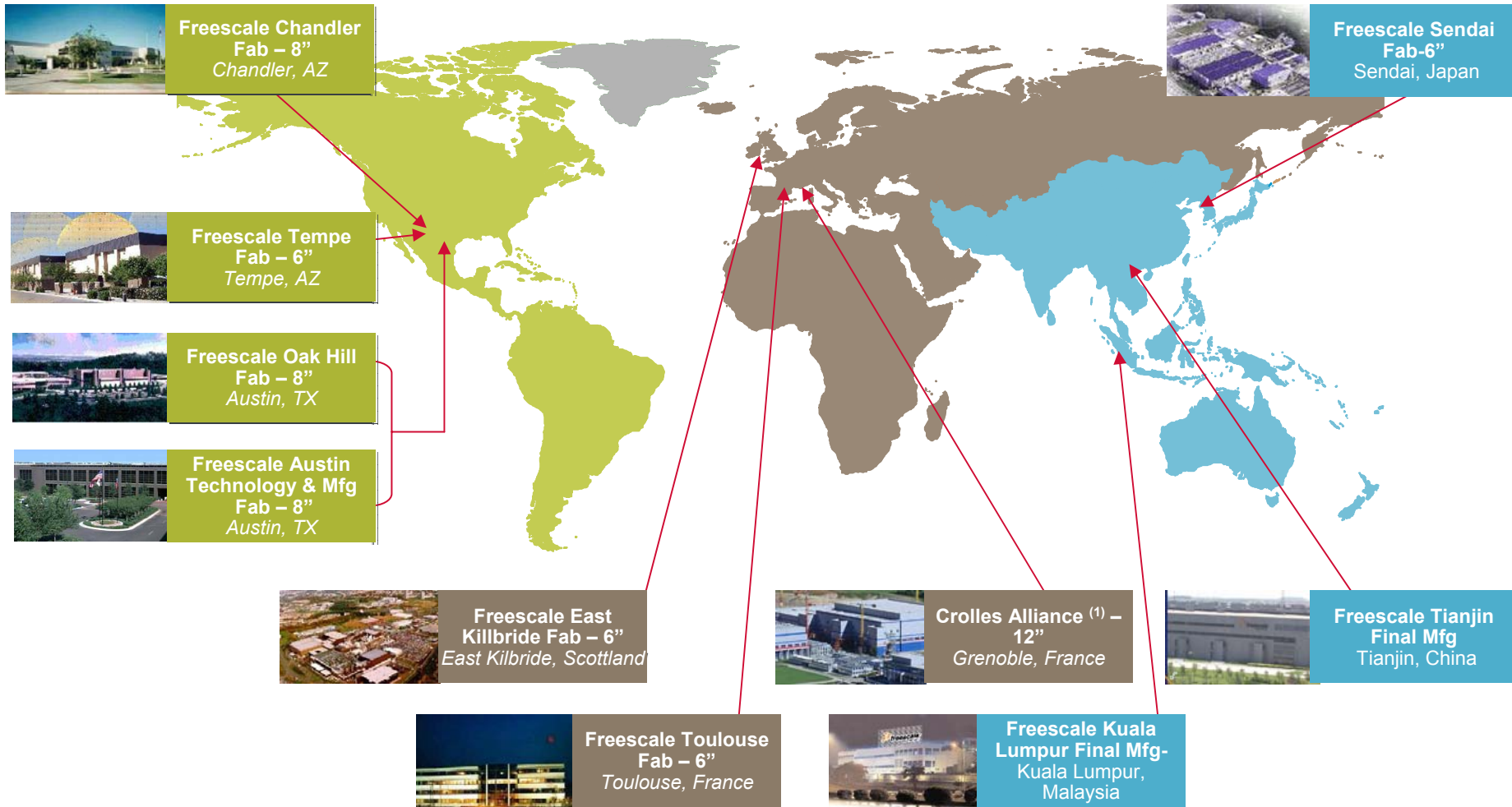
EMEA

- 4,500 employees
- 3 factories
- 8 design centers

Asia Pacific/Japan

- 9,000 employees
- 3 factories
- 8 design centers

Internal Worldwide Manufacturing

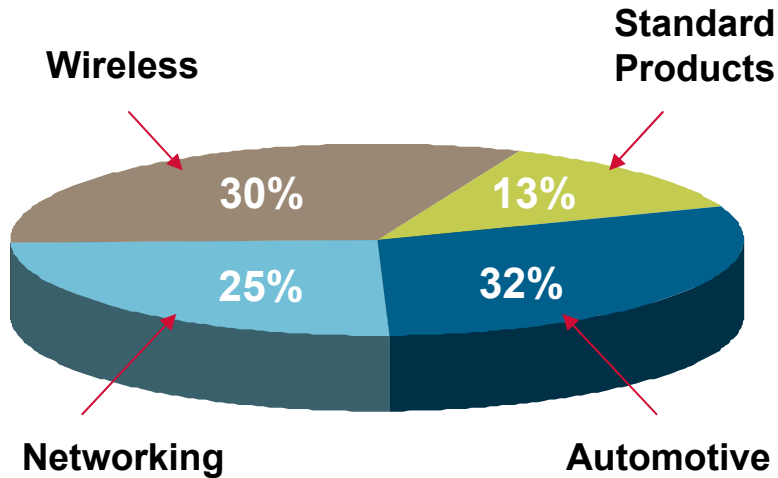


Note (1): The Crolles facility is jointly owned by Freescale, ST Microelectronics and Philips

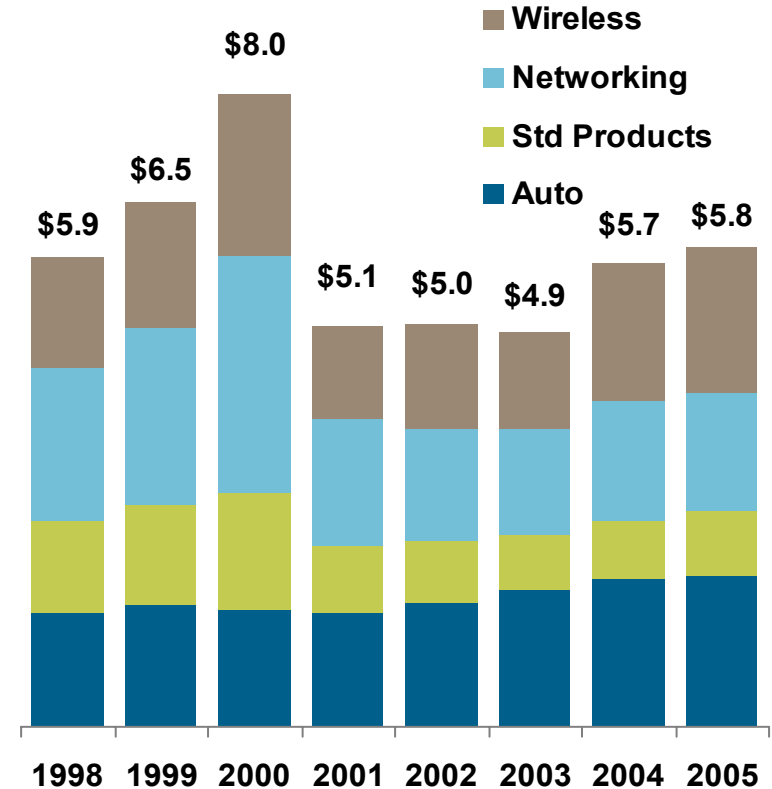
2005 Revenue Profile

2005 Business Segments

2005 Sales: \$5.8B

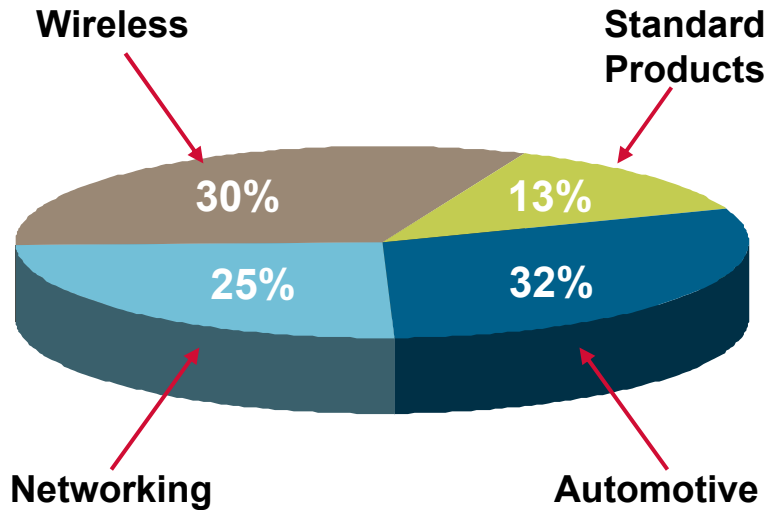


Revenue by Business Segment

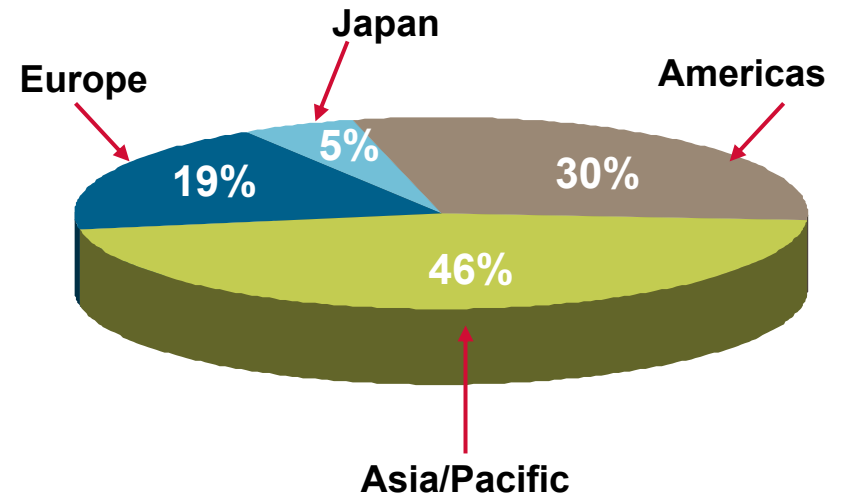


Results by Business and Region—2005

Business Sales



Regional Sales



Our Company

RoHS Compliance Strategy

Detail by BGA Package Platform

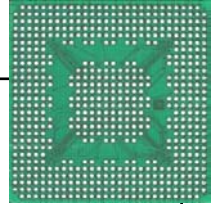
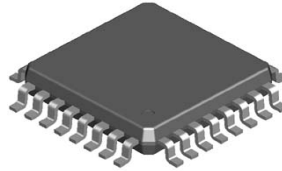
RoHS Compliance Strategy

Freescale is transitioning its portfolio to RoHS compliant and high temperature attach qualified products for lead (Pb) free board-attach assembly processing. We are shipping RoHS compliant products.

- Lead-frame products are migrating to lead (Pb) free packages with matte tin (Sn) plating; migration may require new lead-frames and new mold compound.
- BGA products are migrating to either SnAgCu or SnAg spheres; migration may require new substrates, epoxy and mold compound. For backward compatibility, Freescale continues to support BGA packages with SnPb spheres.
- RoHS compliant products are qualified per JEDEC standard Package Peak Temperature with a Moisture Sensitivity Level of 3 or better.
- Volume production is migrating to RoHS compliant, lead (Pb) free package solutions. Our semiconductor products already meet RoHS requirements for cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.
- Silicon Evaluation Systems and Reference Designs are migrating to RoHS Compliance.

Guiding principle: Freescale expects rapid transition to RoHS compliant product offerings to drive high product quality and service. We anticipate market forces will drive an industry transition to RoHS compliant, high temperature attach qualified material sets by the end of 2008 across all products.

Freescale Portfolio Transition Timeline



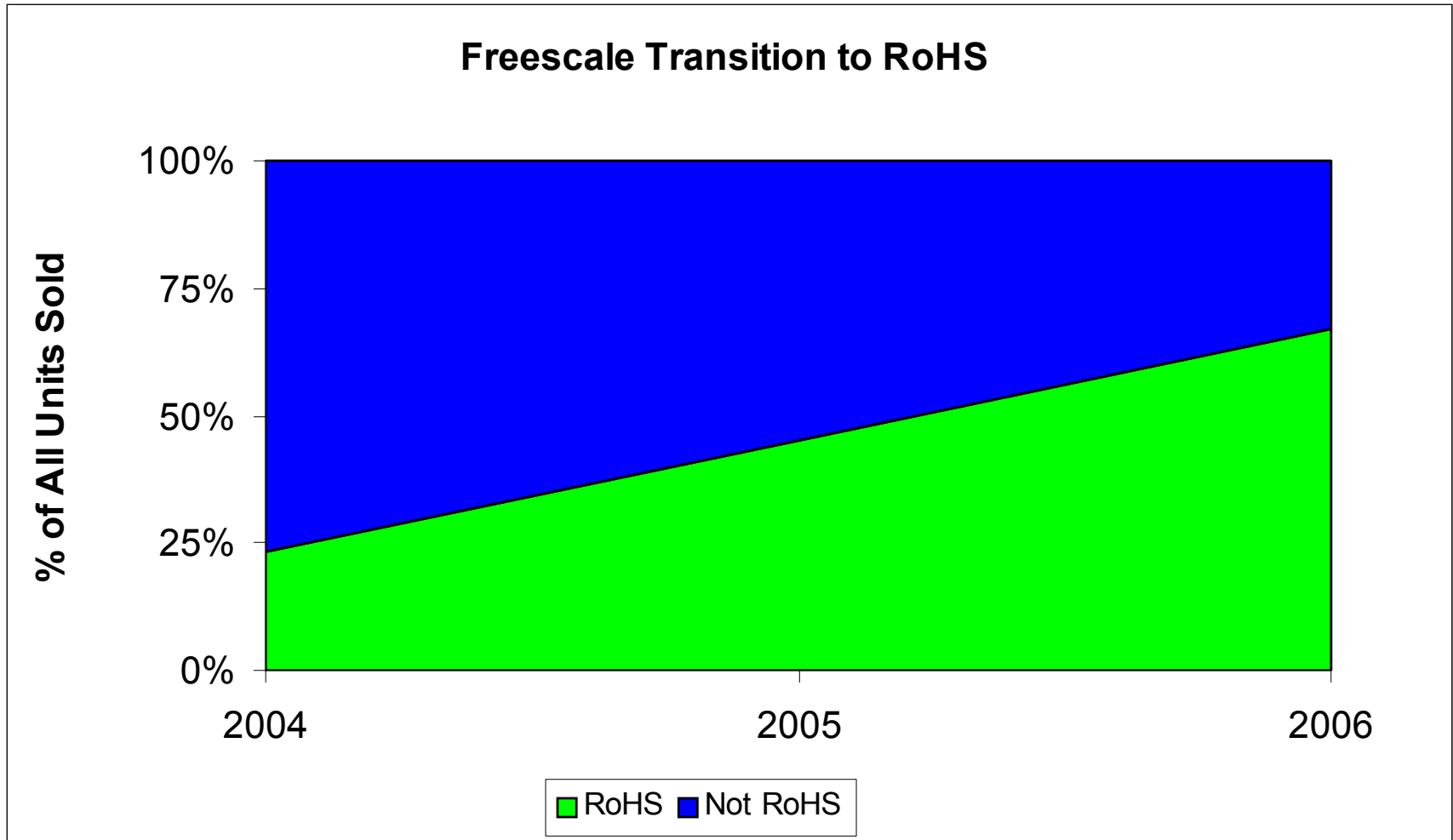
	Leadframe Packages	BGA (Ball Grid Array) Packages
RoHS Compliant Products	<p>Packages are qualified and available today to meet RoHS high temperature attached qualified production requirements.</p> <p>New product introductions are RoHS compliant & high temperature attach qualified material sets.</p>	<p>Packages are qualified and available today to meet RoHS high temperature attached qualified production requirements.</p> <p>New product introductions have high temperature attach qualified material sets and have RoHS (SnAgCu or SnAg) sphere options.</p>
Products Not Compliant To RoHS	<p>Initial Device Migration (GPCN) issued in Dec 2005: 30 June 2006 – Last order 31 December 2006 – Last shipment</p> <p>Existing products not compliant to RoHS will be supported throughout the transition, using the GPCN process to announce last shipment dates.</p>	<p>Existing RoHS non-compliant products will be supported throughout the transition, using the GPCN process to announce last shipment dates.</p> <p>To support backward compatibility, Freescale continues to offer existing BGA products with both RoHS (SnAgCu or SnAg) and non-RoHS (SnPb) packages.</p> <p>New products introduced with high temperature material sets will include non-RoHS (SnPb) sphere options.</p>

Achieving RoHS Compliance

- **To drive towards RoHS compliance, Freescale will:**
 - manage conversion timelines with supply chain partners;
 - consolidate product qualifications when appropriate;
 - reflect conversion plans on customer horizon reports, where applicable;
 - use standard portfolio management practices to determine product discontinuance or conversion dates; and,
 - use the GPCN process to announce last shipment dates for non-compliant parts.
- **When supplying devices not compliant to RoHS after July 2006, Freescale reserves the right to:**
 - transfer assembly sites and review pricing as necessary;
 - extend lead times as production volumes decline, where applicable; and,
 - ship all inventory by last ship date for non-compliant products.
- **To generate material content disclosure reports and compliance certification, Freescale supports industry standard formats:**
 - iNEMI / IPC-1752 certification and content declaration;
 - AIAG / Compliance Connect certification and content declaration; and,
 - automated delivery of certification, declaration and manufacturing parameters.

Prompt transition to RoHS compliant, high temperature attach qualified products will minimize supply disruptions.

Conversion Status



Our Company

RoHS Compliance Strategy

Detail by BGA Package Platform

Wire Bond BGA Technology

MAP-BGA (7 - 19 mm body sizes, 0.5 – 1.0 mmp) –

- Mold Array Process BGA (lamine substrate)
- Au pad on substrate is compatible with either SnPb or Pb-free spheres
- Platform transition to high temperature capable materials (mold compound, etc.) supporting both Pb-free and SnPb spheres complete
- Platform is undergoing rapid transition to fully RoHS compliant
- Approximately 80% of MAP-BGA volume is RoHS as of end 2006
- Little or no demand for SnPb on NPI

MAP-BGA (Automotive applications, 0.8 – 1.0 mmp) –

- Au pad on substrate is compatible with either SnPb or Pb-free spheres
- Continuing to support both Pb-free and SnPb options

Wire Bond BGA Technology

PBGA (23 mm body size and larger) –

- Au pad on substrate is compatible with either SnPb or Pb-free spheres
- NPI (new product introduction) has high temperature capable materials (mold compound, etc.) supporting both Pb-free and SnPb spheres
- RoHs compliant legacy products qualified with new materials sets
- Legacy products retaining SnPb spheres will migrate to new materials
- Approximately 10% of PBGA volume is RoHS as of end 2006
- Low rate driven by significant automotive volume in PBGA
- For Pb-free- SAC qualified, Sn3.5Ag undergoing internal qualification

TBGA (Tape Ball Grid Array, Die Down) –

- Au pad on substrate is compatible with either SnPb or Pb-free spheres
- Approximately 40% of TBGA volume is RoHS as of end 2006
- For Pb-free- SAC qualified, Sn3.5Ag undergoing internal qualification

Flip Chip BGA Technology

FC CBGA (LTCC or Purple Alumina) –

- Legacy products using 90Pb10Sn high Pb spheres
- No plan to migrate to RoHS compliant
- No NPI (new product introductions)

FC HCTE (High CTE or Green Ceramic Substrate) –

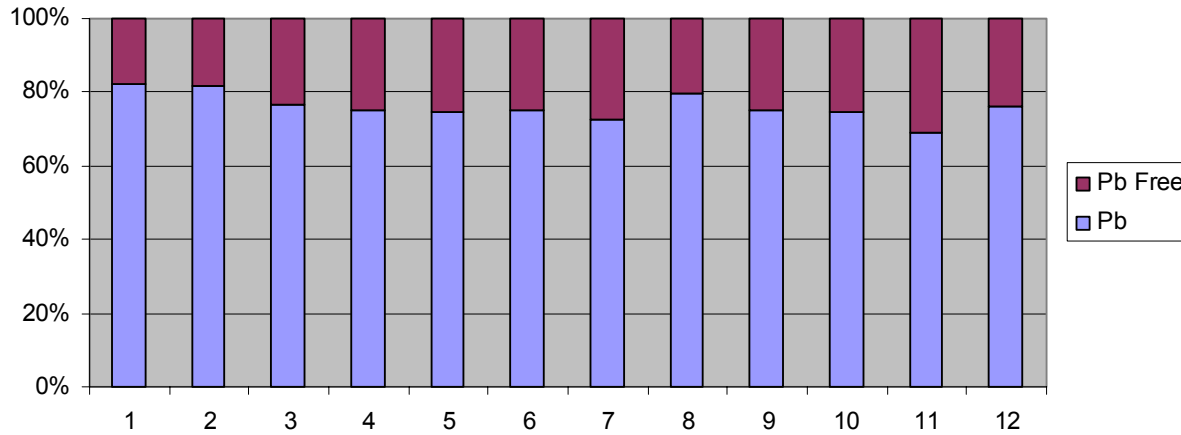
- CTE (Coefficient of Thermal Expansion) matched to PCB
- Au pad on substrate is compatible with either SnPb or Pb-free spheres
- For Pb-free- SAC qualified, Sn3.5Ag internal qualification planned

FC PBGA (High CTE FR4 Organic Substrate) –

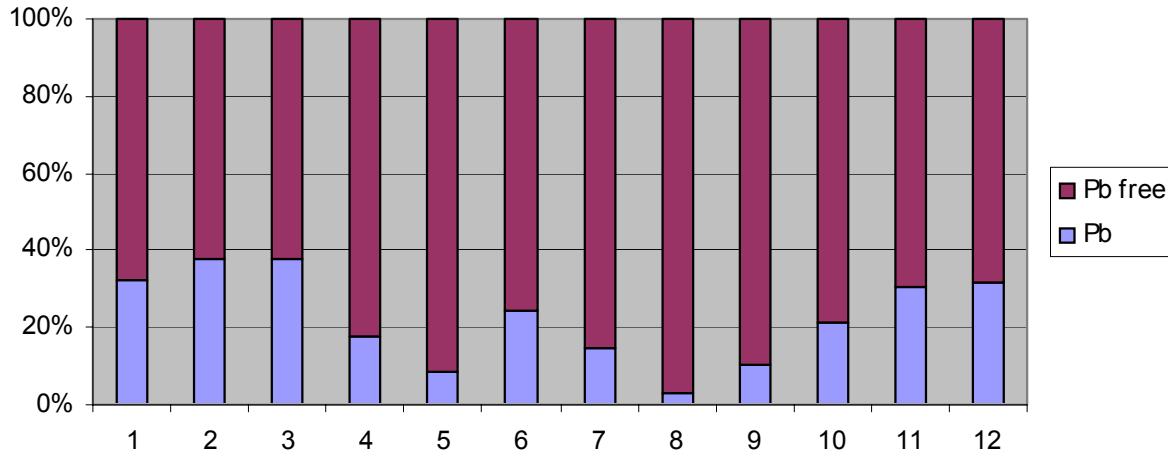
- ENIG finish on pads compatible with either Pb or Pb free spheres
- Industry moving to SOP (Solder on Pad) substrate pad finish
- Freescale SOP to utilize only Pb-free solder on substrate
- SnPb spheres available - would be attached to Pb-free solder pad
- For Pb-free- SAC qualified, Sn3.5Ag internal qualification planned

12 Month FC-BGA Trends

12 month Flip Chip BGA Sphere Trend



Trend for all FC-BGA shipments last year 20% RoHS compliant.



Trend for FC-BGA NPI, qualified within last year 70% RoHS compliant.

Freescale Portfolio Transition

MAP-BGA package family experiencing rapid transition to RoHS

- Little or no demand for SnPb anticipated for NPI

BGA package family transition to RoHS is gaining momentum

- RoHS compliant is primary product offering for NPI
- Freescale continues to support SnPb sphere option on NPI

Existing BGA RoHS non-compliant products will continue to be available throughout the transition

- Legacy products may require changes to align with high temperature capable materials sets

