Flash Memory Summit
SPI Flash Memory: Future Trends and Applications
August 2009
SPI Adoption Trend
NOR TAM

SPI at 40% of NOR TAM by 2013
33% CAGR growth driven by Mid-High density Multi I/O

Source: WebFeet August, 2009
Market Drivers
Advantage of SPI NOR Interface

<table>
<thead>
<tr>
<th>Package Type</th>
<th>SO8</th>
<th>TSOP48</th>
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<tbody>
<tr>
<td>Package Dimensions</td>
<td>30mm² (5x6)</td>
<td>240mm² (12x20)</td>
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<tr>
<td>Number of pads</td>
<td>8</td>
<td>48</td>
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Over 80% reduction in package size and pin count
Memory Subsystems
SPI NOR Adoption in High Growth Markets

SPI Multi-IO gaining momentum in new usage models
Memory Performance Evolution

Memories Bandwidth Over Time

- DDR1
- DDR2
- DDR3
- ONFI1.0
- ONFI2.0
- ONFI2.1
- Future
- DRAM x8
- NAND x8
- SPI
Performance Comparison
3V NOR Flash Memory Solutions

- **Sustained Throughput (MB/S)**
- **Pin Count**

Higher performance
SPI enabling new applications

- **x16**
  - Async/Page NOR
  - 48 pins
  - 61MB/s

- **x1 SPI**
  - 8 pins
  - 20MB/s

- **x4 SPI**
  - 20 pins
  - 80MB/s

- **SPI (Next Gen)**
  - 8 pins
  - 80MB/s
Application Performance Requirements

STD SPI
- PC BIOS
- ATV
- WLAN
- DSL Modem
- DVD
- CD Drive

MIO SPI
- Printer
- LCD
- DTV
- Networking
- DVDR
- Std Def STB

NEXT GEN SPI
- MFP
- Next Gen DTV
- DSC
- Blu Ray
- High Def STB
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