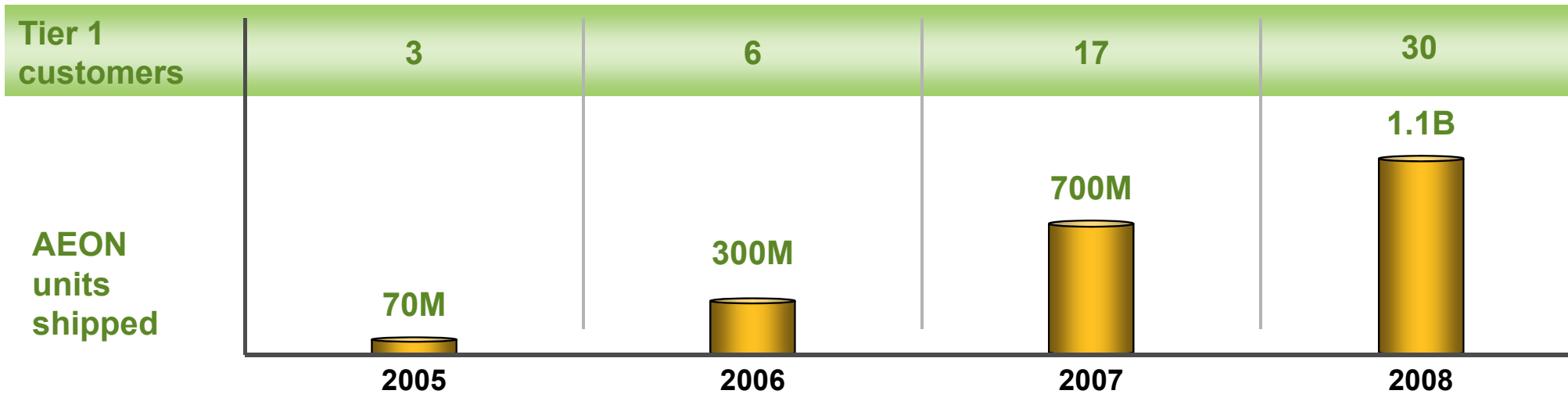




Larry Morrell
Vice President/GM IP Products

AEON Nonvolatile Memory IP



0.25 μ m Qualified
 - Q2 2005
 - 100k cycles
 - 10 year retention

0.18 μ m Qualified
 - Q2 2006
 - 100k cycles
 - 10 year retention

0.13 μ m Qualified
 - Q4 2006
 - 15k cycles
 - 10 year retention

90 nm Qualified
 - Q1 2007
 - 50k cycles
 - 10 year retention

HV Development
 - Q4 2007
 - Up to 150 °C
 - 100k cycles

Planned Products / Qualifications
 - 65 nm / 2.5V qualified
 - 0.25 μ m / 5V qualified
 - AEON/FTP
 - Expanded foundry coverage at UMC / CSM

- True MTP with no process adders
- 81 issued patents to date (>150 pending)
- Automotive grade reliability
- 900 Million IC's shipped to date
- 10k wafers / Q shipped with AEON



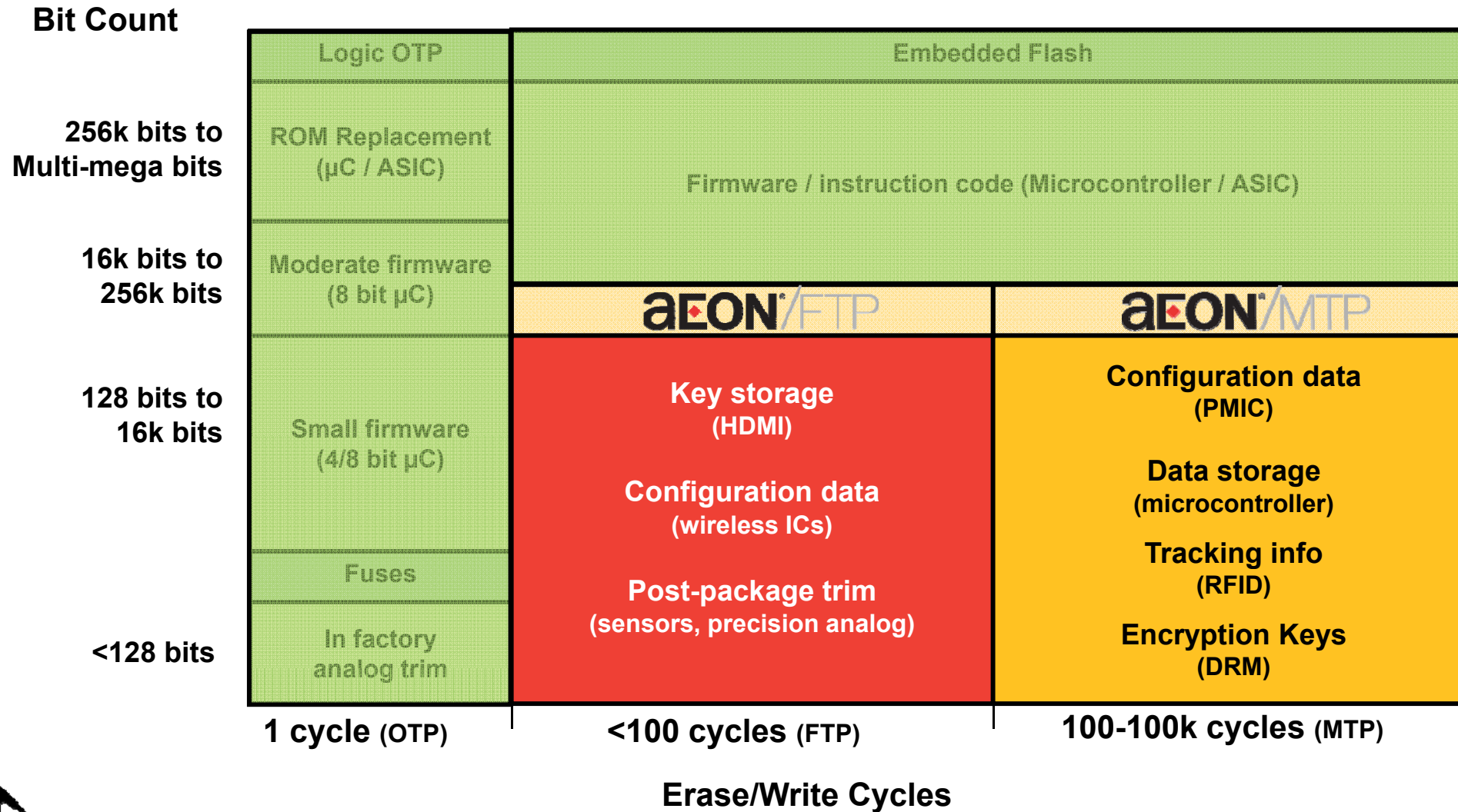
AEON Product Line



| | aEON®/MTP | | aEON®/FTP |
|------------------|--|--|---|
| | EEPROM | Parallel | EEPROM |
| Bit Sizes | 256b → 8kb | 8b → 256b | 64b → 16kb |
| Process | Standard Logic or Mixed Mode ¹ | | |
| Process nodes | 65 nm, 90 nm, 0.13 μm, 0.18 μm, 0.25 μm | 90 nm, 0.13 μm, 0.18 μm, 0.25 μm | 65 nm, 90 nm, 0.13 μm |
| Endurance | Up to 100k cycles | Up to 100k cycles | Up to 100 cycles |
| Retention | 10 years | 10 years | 10 years |
| Key Applications | Power Management RFID External EEPROM replacement | Analog trim Fuse replacement Encryption Keys | 802.11 BlueTooth Sensors HDMI keys |

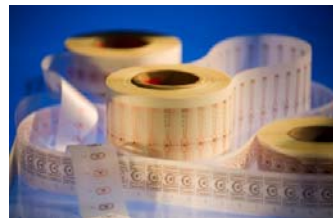
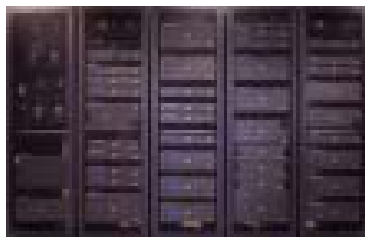


Embedded NVM Application Space



Advantages of AEON/MTP

- Broad process / technology support
 - Currently available in process nodes from 65 nm → 250 nm
 - Gate oxides from 50 Å → 125 Å supported (2.5V → 5V)
- Production proven in high volume applications
 - Over 900 million IC's shipped using AEON/MTP
 - Current shipment rate >100 million IC's / Q (>10k wafers / Q)
- 1000's of configurations available
 - Bit counts from 8 bits → 16k bits
- Key use model
 - Replacement of external EEPROM
- Key specifications
 - Up to 100k write cycle endurance
 - 10 year data retention
 - Support for automotive temperature range (-40 → 150 °C)
- Key Applications
 - Power Management ICs
 - RFID
 - Digital Rights Management Encryption



Advantages of AEON/FTP

- Available in multiple process nodes
 - GDS available at TSMC 130 nm, 90 nm, and 65 nm
 - Additional foundry support in development
- Same technology as production- proven AEON/MTP
 - Patented technology already shipped in >900 million ICs
- Double the density of AEON/MTP
 - Bit counts from 64 bits → 16k bits
- 100% electrically testable
 - Enables factory test & field programming
- Key use model
 - Replacement of OTP for increased reliability and testability
- Key specifications
 - Up to 100 write cycle endurance
 - 10 year data retention
 - Support for industrial temperature range (-40 → 125 °C)
- Key Applications
 - Wireless ICs (802.11, BlueTooth, Zigbee)
 - HDMI / HDCP
 - Sensors
 - Precision analog
 - Post package / in-field trimming



AEON Product Availability

| | | Mainstream Process Nodes | | Advanced Process Nodes | | | HV Process Nodes | |
|-------------------|----------------------|--------------------------|--------|------------------------|-------|-------|------------------|-----------|
| | | 250 nm | 180 nm | 130 nm | 90 nm | 65 nm | 250 nm HV | 180 nm HV |
| AEON/FTP | <i>GDS Avail</i> | | | ● | ● | ● | | |
| | <i>Qual Complete</i> | | | ● | ○ | ○ | | |
| AEON/MTP EEPROM | <i>GDS Avail</i> | ● | ● | ● | ● | ● | ○ | |
| | <i>Qual Complete</i> | ● | ● | ● | ○ | ○ | | |
| AEON/MTP Parallel | <i>GDS Avail</i> | ● | ● | ● | ● | | ● | ○ |
| | <i>Qual Complete</i> | ● | ● | ● | ● | | ○ | |

● = Available Now

○ = In Process

Customers and Foundry Partners

Foundry Partners

Qualified Products



In Development



Fabless Customers



Never stop thinking




Summary

- Embedded Logic NVM has become a key enabler in high volume / high growth applications
- The AEON family of NVM IP has been proven in production with over 900 million units shipped worldwide (>30 million units / month)
- AEON/MTP delivers industry leading performance
- AEON/FTP bridges the gap between AEON/MTP and true OTP with a more cost effective solution
- Contact Impinj to find out more about AEON Logic NVM
 - ipp_info@impinj.com
 - <http://ip-support.impinj.com>



Thank you



- Explore  IP at ChipEstimate.com
- Use Impinj IP to plan your next chip!
- Please stay and talk with Larry Morrell

