



Value Proposition

Product Offerings



- **Serial Flash (SPI)**
100MHz Fast Read – Fastest in Market
- **Firmware Hub / Low-Pin Count**
2-in-1 patented design
- **Industry-Standard Flash (ISA)**
Socket and command set compatible



- **Unified platform for embedded Flash, EEPROM, MTP, and OTP**
- **Enable multiple NVM in one fusion technology**
- **Scalable and smallest macro size.**
- **e2Logic requiring no additional masks**

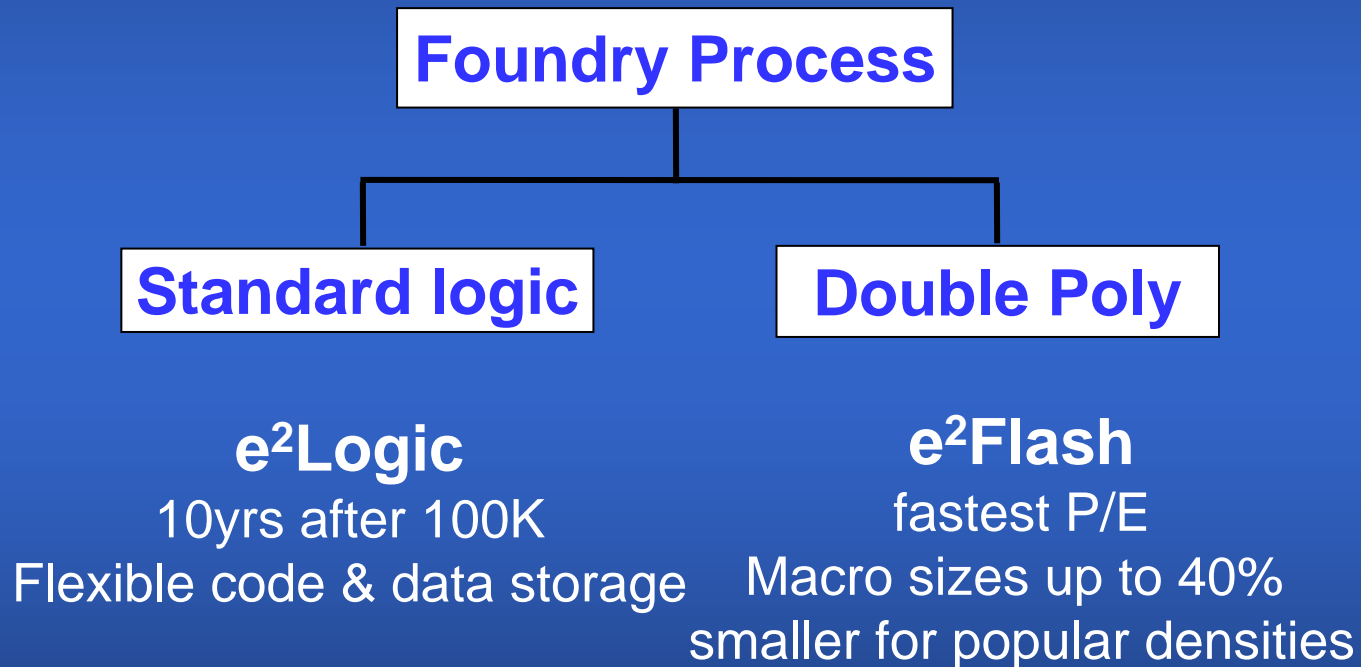
pFusion® Solution

Unified platform

- The only unified platform and fusion macros for Flash, EEPROM, MTP, and OTP
- Enable multiple NVM in one fusion technology.
- World's best endurance, fastest program erase and read speed at temp range of -40°C to +105°C.
- Scalable and smallest macro size.
- Generic logic process for e2Logic.
- Full patent coverage of every solution.

pFusion® Solution

Unified platform



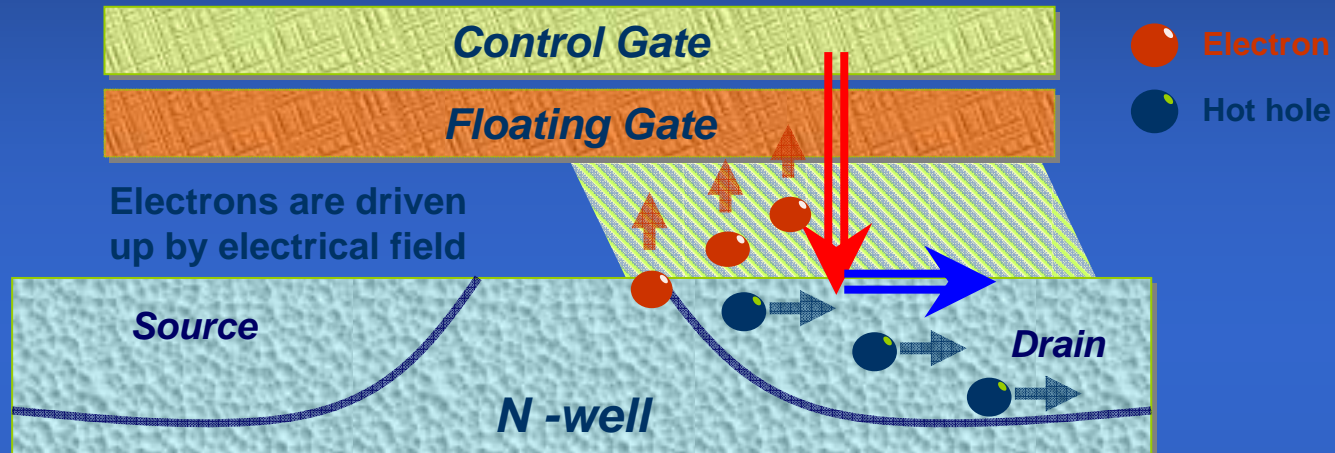
pFusion® Technology

Physics

- pFlash® cell based on two transistor (2T) stacked-gate architecture:
 - enables the most efficient program/erase mechanism
 - reduces stress and degradation
 - facilitates the best endurance
 - provides robust data retention
 - consumes lower power
 - delivers competitive die size
 - is portable and scalable for embedded solutions
- pFlash® architecture builds quality and reliability screening into production test

pFusion® Technology

pFlash® Advantage



- ❖ **Low Power Consumption**
Zero power, <0.1UA/cell program current
- ❖ **High speed programming & erase**
Programming < 20us/word, Erase < 70ms
- ❖ **Free of hot hole injection**
Solid data retention > 20 years
High endurance & reliability > 200K cycles

pFusion® Technology

Technology prowess

	1.5 T nFlash	pFlash	2T nFlash
Erase	Fowler-Nordheim Tunneling Through Thick Oxide	Fowler-Nordheim Tunneling Through Tunnel Oxide	Fowler-Nordheim Tunneling Through Tunnel Oxide
Program	Source -Side CHE Injection	Patented band-to-band Tunneling	Fowler-Nordheim Tunneling
Program speed	< 20 μ S	< 20 μS	> 1 mS
Program Current	5 μ A	100nA	10pA
Failure Mechanism			
Program Disturb	High	None	High
Over erase	None	None	None
Oxide trapping	High	Low	Low
Retention	None	Excellent	Excellent

pFusion[®] Solution

OTP advantage

- The only solution available for generic logic.
- Full patent coverage.
- Operating temp range -40°C to +105°C
- 'Zero' mask penalty
- Smallest macro possible.

pFusion® Solution

MTP Advantage

- ❖ Compatible with generic logic
- ❖ Smallest MTP cell size (patent pending)
- ❖ No program disturb
- ❖ 'Zero' mask penalty
- ❖ Proven production methodologies
- ❖ 2 choices:
 - Low-power
 - Smallest size
 - High-performance
 - Fast access time

pFusion[®] Solution

pFusion Advantage

- ❖ Smallest macro size
- ❖ OTP, MTP, Flash and EEPROM in unified platform macro
- ❖ Fastest program and erase speed
- ❖ Fastest read speed
- ❖ 100MHz operating frequency
- ❖ Superior endurance
- ❖ Operating temp range of -40°C to $+105^{\circ}\text{C}$



Thank you