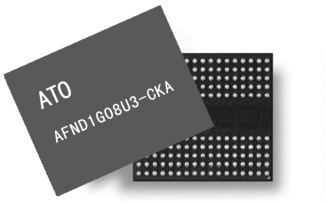
ATOSOLUTION

三．韩国 ATO 存储器件

➢ 简介：

韩国ATO半导体公司是一家专业的存储器产品制造商，其产品线有NAND FLASH 、DDR2、DDR3等，有工业级和商业级，产品通过ISO9001：2000和ISO14001：2004，广泛应用于测量仪表、导航测绘、医疗监控、电力监控、消费电子、数码相机等众多领域。



To Be The Best Partner
For Your Memory Solution

➢ 产品优势：

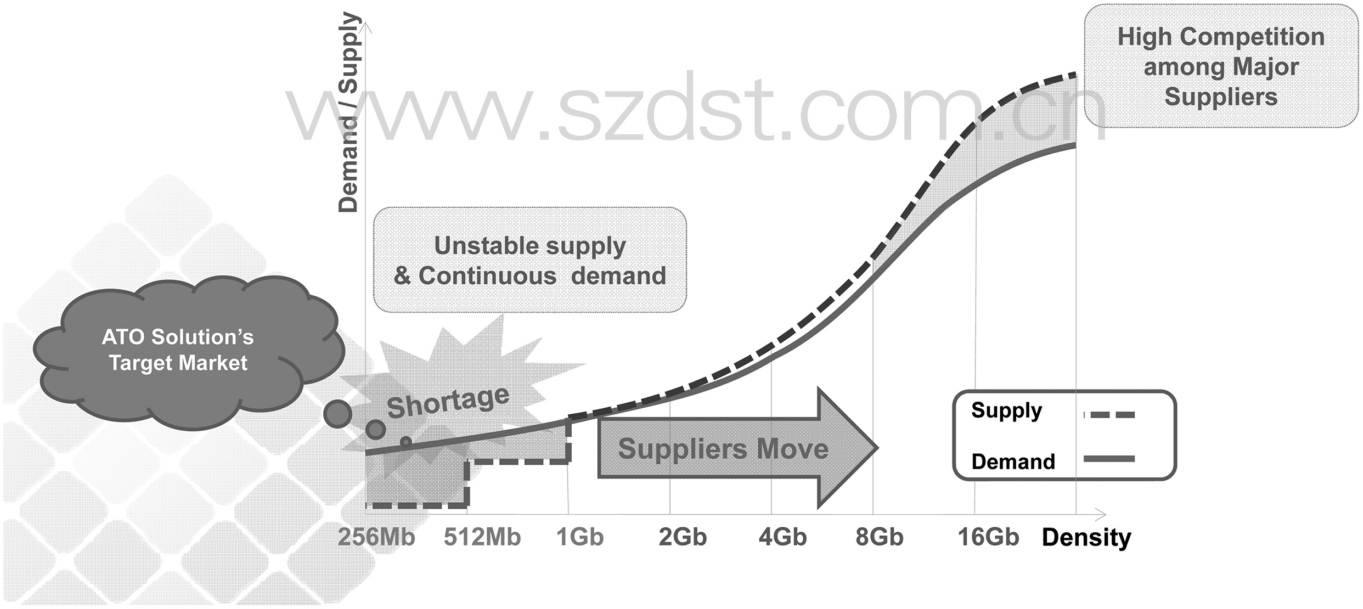
韩国ATO公司主流产品NAND FLASH 是在国际知名品牌HYNIX的韩国工厂封装测试而成，具体可靠的稳定性，便宜的价格，较短的交期（2周），可以完全兼容替换已经停产的SAMSUNG和其他品牌的NAND FLASH ，比如：可以替代K9F5608-U0M/A/B/C/D、K9F1208-U0M/A/B/C、K9F1G08-U0A/B/C等紧缺涨价的型号，填补市场空白，有效降低客户的采购成本。

➢ AOT目前主要客户：

SONY SAMSUNG hynix FUJIFILM altek OLYMPUS SPREADTRUM PENTAX

Low Density NAND Flash

- ✓ IDMs are focusing on high density NAND Flash Memory
  - Capacity and Technology driven
- ✓ Market still needs continuous high reliable product and service



ATOSOLUTION World Class Memory Solution Provider

SLC NAND FLASH PRODUCT LIST

ATO solution's offering own 256Mb/ 512Mb/ 1Gb(only 3.3V, x8) densities with 1.8V and 3.3V option in various type of applications such as MP3, digital still camera, Camcorder, memory card, and others consumer electronics such as black box , navigation.

SLC NAND FLASH

1 bit ECC per 528 Byte

容 量	电 压	型 号	特 性			替换型号
			Bus Width	速 度	封 装	
256Mbit (Small Block)	1.8V	AFND5608(16)S1	X8 / x16	50ns	TSOP/ FBGA	K9F5608U0A/B/C/D
	3.3V	AFND5608(16)U1	X8 / x16	30ns	TSOP/ FBGA	K9F5608U0A/B/C/D
512Mbit (Small Block)	1.8V	AFND1208(16)S1	X8 / x16	50ns	TSOP/ FBGA	K9F1208U0A/B/C/D
	3.3V	AFND1208(16)U1	X8 / x16	30ns	TSOP/ FBGA	K9F1208U0A/B/C/D
1Gbit (Large Block)	3.3V	AFND1G08U3	X8	25ns	TSOP/ FBGA	K9F1G08U0C/D

PACKAGE OPTION

Density	PACKAGE		
	TSOP(48 Pin)	FBGA (48 Ball)	
256Mbit	12mm x 20mm	9mm x 9mm	
512Mbit			
1Gbit	12 mm x 20mm	9mm x 9mm	6.5mm x 8mm

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Edge in design competiveness

➢ **Die Size Comparison Table**

Product	Company	Die Size (mm2)	Tech (nm)	W/F Size	Ratio
256Mb (1.8V/3.3V)	HYNIX	35.82	90	8”	2.74
	MICRON	35.82	90	8”	2.74
	SAMSUNG	37.44	90	12”	2.86
	ATO Solution	13.07	57	8”	1
512Mb (1.8V/3.3V)	HYNIX	33.11	57	8”	1.58
	SAMSUNG	38.47	63	12”	1.85
	TOSHIBA	29.63	43	12”	1.42
	ATO Solution	20.85	57	8”	1
1Gb (3.3V) For 1bit ECC	HYNIX	30.99	48	12”	1.09
	POWERCHIP	30.97	50	12”	1.09
	ATO Solution	28.22	57	8”	1

主要产品参数说明 _ 256Mb / 512Mb / 1Gb

特 性	描 述		
Density	256Mb	512Mb	1Gb
Architecture	Single-Level Cell		
Power Supply	1.8V: 1.7V ~ 1.95V / 3.3V: 2.7V ~ 3.6V		3.3V: 2.7V ~ 3.6V
Memory Cell Array	x8 : (32M + 1024K) x 8bits x16 : (16M + 512K) x 16bits	x8 : (64M + 2M) x 8bits X16 : (32M + 1M) x 16bits	x8 : (128M + 4M) x 8bits
Page Size	x8:(512 + 16)Bytes / x16:(256 + 8)Words		x8:(2K + 64)Bytes
Random Access	15us(1.8V) / 12us(3.3V)		25us
Serial Page Access	50ns(1.8V) / 30ns(3.3V)		25ns
Program / Block Erase Time	200us(Typ) / 2ms(Typ)		
Copy Back Program Operation	Fast Page copy without external buffering		
OTP area	16Kbytes/8K words(32 pages)		16Kbytes(8 pages)
Hardware Data Protection	Program / Erase locked during Power transitions		
Endurance / Data Retention	100K Program / Erase Cycles with 1bit ECC / 10years		
Temperature Range	0℃ to +70℃ / -40℃ to +85℃		
Package Information	48P TSOP (12x20mm) / 48B fBGA (9x9mm)		48P TSOP (12x20mm) 48B fBGA (9x9mm) 48B fBGA (6.5x8mm)

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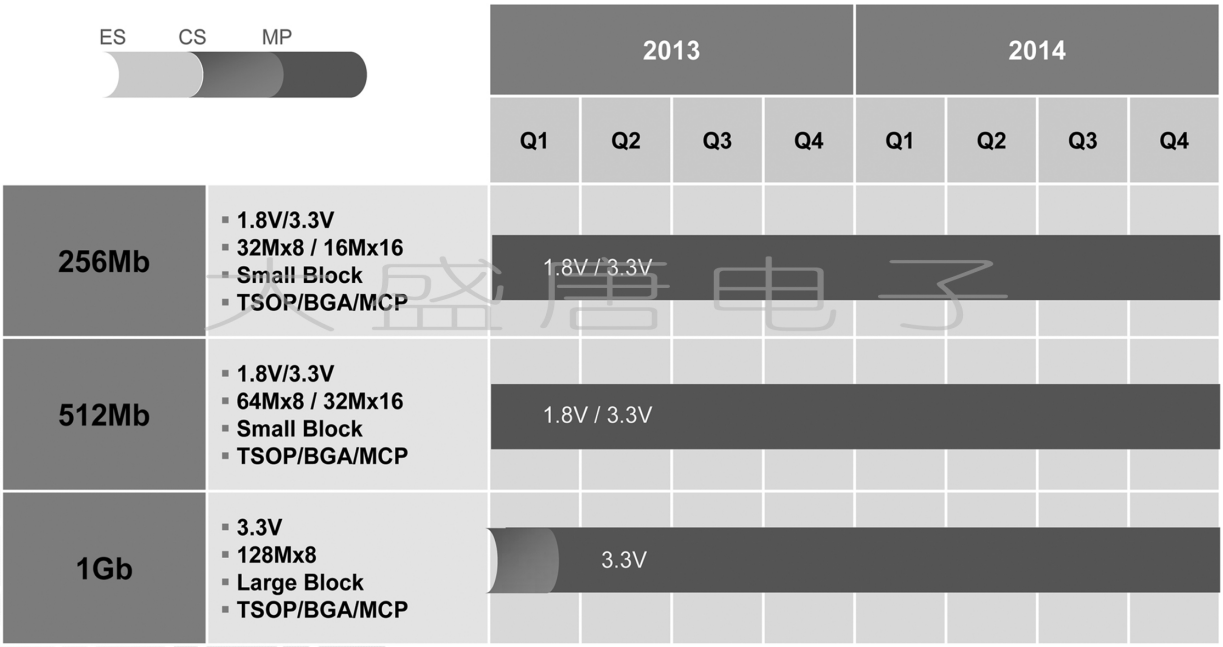
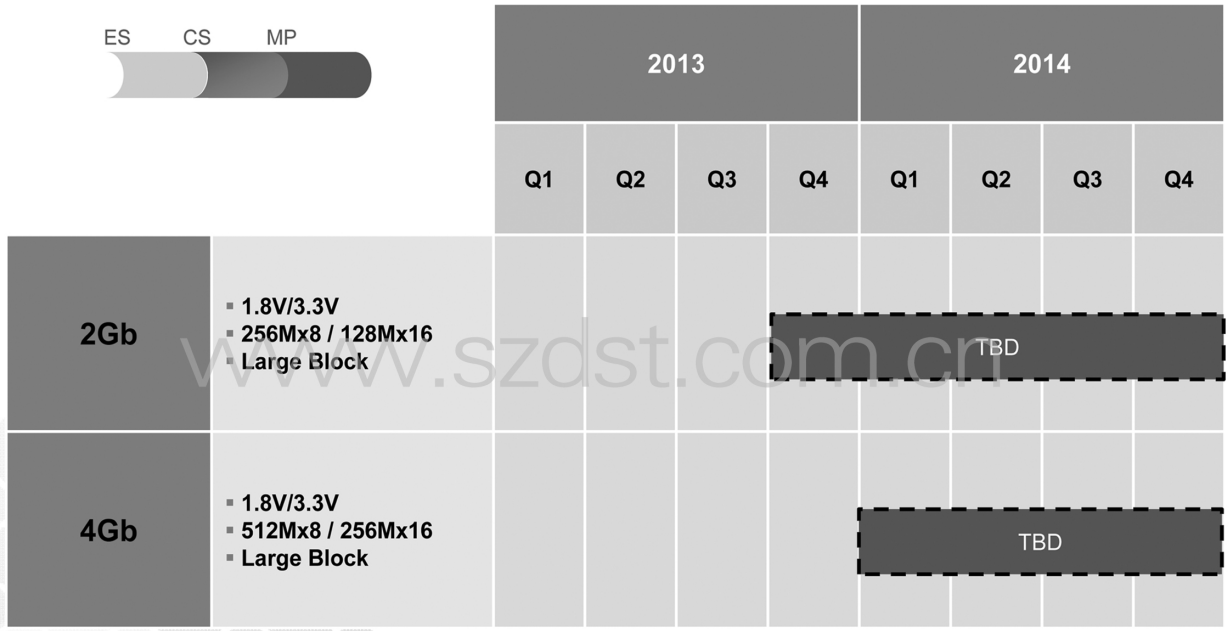
ATO公司SLC NAND FLASH产品线规划



NOTE) Endurance(256Mb/512Mb/1Gb) : 100K Program/Erase Cycles (with 1bit/528byte ECC)



NOTE) Endurance(2Gb/4Gb) : 100K Program/Erase Cycles (with 4bit/528byte ECC)

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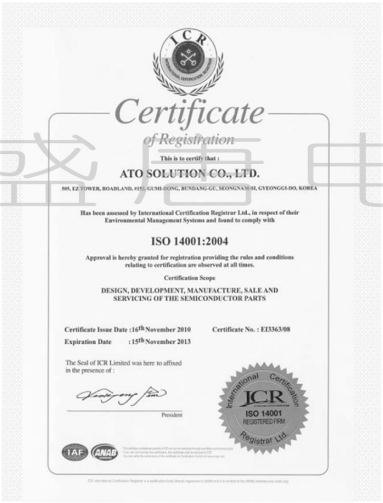
ATO产品认证

ISO9001 : 2008	ISO14001 : 2004	Eco-Partner
• Oct 02, 2008 Acquired ISO9001	• Oct 02, 2008 Acquired ISO14001	• Feb 09, 2009 Acquired Eco-Partner


Certificate
of Registration
This is to certify that :
ATO SOLUTION CO., LTD.
505, EZ TOWER, ROADLAND, #153, GUMI-DONG, BUNDANG-GU, SEONGNAM-SI, GYEONGGI-DO, KOREA
Has been assessed by International Certification Registrar Ltd., in respect of their Quality Management Systems and found to comply with
ISO 9001:2008
Approval is hereby granted for registration providing the rules and conditions relating to certification are observed at all times.
Certification Scope
DESIGN, DEVELOPMENT, MANUFACTURE, SALE AND SERVICING OF THE SEMICONDUCTOR PARTS
Certificate Issue Date :16th November 2010 Certificate No. : QI8221/08
Expiration Date : 15th November 2013
The Seal of ICR Limited was here to affixed in the presence of :
President
International Certification JCR ISO 9001 REGISTERED FIRM Registrar Ltd.
IAF ANAB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Has been assessed by International Certification Registrar Ltd., in respect of their Environmental Management Systems and found to comply with
ISO 14001:2004
Approval is hereby granted for registration providing the rules and conditions relating to certification are observed at all times.
Certification Scope
DESIGN, DEVELOPMENT, MANUFACTURE, SALE AND SERVICING OF THE SEMICONDUCTOR PARTS
Certificate Issue Date :16th November 2010 Certificate No. : EI3363/08
Expiration Date : 15th November 2013
The Seal of ICR Limited was here to affixed in the presence of :
President
International Certification JCR ISO 14001 REGISTERED FIRM Registrar Ltd.
IAF ANAB


Eco-Partner Certificate
Certificate Number : EPC-5245
Certificate Period : Dec. '08 ~ Dec. '10
Samsung Electronics hereby certifies that
ATO SOLUTION CO., LTD
as Eco-Partner Affiliate Company, This company has fulfilled the Samsung Electronics Standards for control of substances with environmental impacts within products, and has established stable environmental quality control system.
Feb.09th, 2009
Yoon-Woo Lee
Vice Chairman & C.E.O
Samsung Electronics Co., Ltd.

Division	Certificate No.	Registration Date	Expired Date	Sponsor
ISO9001: 2008	QI8221/08	2008.10	2013.11	ICR
ISO14001:2004	EI3363/08	2008.10	2013.11	ICR
Eco-Partner	EPC-5245	2009.02	-	SAMSUNG