

# NAND Flash Code Information(1/3)

Last Updated : August 2009

**K** **9** X X X X X X X X - X X X X X X  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

## 1. Memory (K)

## 2. NAND Flash : 9

## 3. Small Classification

(SLC : Single Level Cell, MLC : Multi Level Cell,

SM : SmartMedia, S/B : Small Block)

1 : SLC 1 Chip XD Card

2 : SLC 2 Chip XD Card

3 : 4bit MLC Mono

4 : SLC 4 Chip XD Card

5 : MLC 1 Chip XD Card

6 : MLC 2 Chip XD Card

7 : SLC moviNAND

8 : MLC moviNAND

9 : 4bit MLC ODP

A : 3bit MLC MONO

B : 3bit MLC DDP

C : 3bit MLC QDP

F : SLC Normal

G : MLC Normal

H : MLC QDP

K : SLC Die Stack

L : MLC DDP

M : MLC DSP

N : SLC DSP

O : 3bit MLC ODP

P : MLC ODP

Q : SLC ODP

R : MLC 12-die stack

S : MLC 6 Die Stack

T : SLC SINGLE (S/B)

U : MLC 16 Die Stack

W : SLC 4 Die Stack

## 4~5. Density

12 : 512M      16 : 16M      28 : 128M

32 : 32M      40 : 4M      56 : 256M

64 : 64M      80 : 8M      1G : 1G

2G : 2G      4G : 4G      8G : 8G

AG : 16G      BG : 32G      CG : 64G

DG : 128G      EG : 256G      FG : 256G

GG : 384G      HG : 512G      LG : 24G

NG : 96G      ZG : 48G      00 : NONE

## 6. Technology

0 : Normal (x8)

C : Catridge SIP

M : moviNAND

P : moviMCP

Z : SSD

1 : Normal (x16)

D : DDR

N : moviNAND FAB

T : Premium eSSD

## 7. Organization

0 : NONE

6 : x16

8 : x8

## 8. Vcc

A : 1.65V~3.6V

C : 5.0V (4.5V~5.5V)

E : 2.3V~3.6V

Q : 1.8V (1.7V ~ 1.95V)

S : 3.3V (3V~3.6V/ VccQ1.8V (1.65V~1.95V)

U : 2.7V~3.6V

W : 2.7V~5.5V, 3.0V~5.5V

B : 2.7V (2.5V~2.9V)

D : 2.65V (2.4V ~ 2.9V)

R : 1.8V (1.65V~1.95V)

T : 2.4V~3.0V

V : 3.3V (3.0V~3.6V)

0 : NONE

## 9. Mode

0 : Normal

1 : Dual nCE & Dual R/nB

3 : Tri /CE & Tri R/B

4 : Quad nCE & Single R/nB

5 : Quad nCE & Quad R/nB

6 : 6 nCE & 2 RnB

7 : 8 nCE & 4 RnB

8 : 8 nCE & 2 RnB

9 : 1st block OTP

A : Mask Option 1

L : Low grade

## 10. Generation

M : 1st Generation

A : 2nd Generation

B : 3rd Generation

C : 4th Generation

D : 5th Generation

E : 6th Generation

Y : 25th Generation

Z : 26th Generation

# NAND Flash Code Information(2/3)

Last Updated : August 2009

<b>K</b>	<b>9</b>	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

## 11. "—"

## 12. Package

8 : TSOP1 (Lead-Free, Halogen-Free, CU)  
 9 : 56TSOP1 (Lead-Free, Halogen-Free, CU)  
 A : COB  
 B : FBGA (Halogen-Free, Lead-Free)  
 D : 63-TBGA  
 E : ISM (Lead-Free, Halogen-Free)  
 F : WSOP (Lead-Free)                      G : FBGA  
 H : BGA (Lead-Free, Halogen-Free)  
 I : ULGA (Lead-Free) (12\*17)  
 J : FBGA (Lead-Free)  
 K : ULGA (Lead-Free, Halogen-Free) (12\*17)  
 L : ULGA (Lead-Free, Halogen-Free) (14\*18)  
**M : 52-ULGA (Lead-Free, Halogen-Free) (13\*18)**  
 P : TSOP1 (Lead-Free)  
 Q : TSOP2 (Lead-Free)  
 R : 56-TSOP1 (Lead-Free, Halogen-Free)  
 S : TSOP1 (Lead-Free, Halogen-Free)  
 T : WSOP (Lead-Free, Halogen-Free)  
 U : COB (MMC)  
 V : WSOP                                      W : Wafer  
 Y : TSOP1                                    Z : WELP (Lead-Free)

## 13. Temp

C : Commercial                              I : Industrial  
 S : SmartMedia  
 B : SmartMedia BLUE  
 0 : NONE (Containing Wafer, CHIP, BIZ, Exception handling code)

## 14. Customer Bad Block

B : Include Bad Block  
 D : Daisychain Sample  
 K : Special Handling  
 L : 1~5 Bad Block  
 N : ini. 0 blk, add. 10 blk  
 S : All Good Block  
 0 : NONE (Containing Wafer, CHIP, BIZ, Exception handling code)

## 15. Pre-Program Version

0 : None  
 Serial (1~9, A~Z)

# NAND Flash Code Information(3/3)

Last Updated : August 2009

<u>K</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>-</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

## 16. Packing Type

- Common to all products, except of Mask ROM
- Divided into TAPE & REEL(In Mask ROM, divided into TRAY, AMMO Packing Separately)

Divide	Packing Type	New Marking
Component	TAPE & REEL	T
	Other ( Tray, Tube, Jar )	0 ( Number)
	Stack	S
Module	MODULE TAPE & REEL	P
	MODULE Other Packing	M

## 17~18. Customer "Customer List Reference"

## 三星 flash 命名规则

如何根据 Samsung 的 Nand Flash 的芯片型号 (Part Number) 读懂芯片详细信息 + 举例 K9GAG08U0M 说明

### 【Samsung : NAND Flash Code Information】

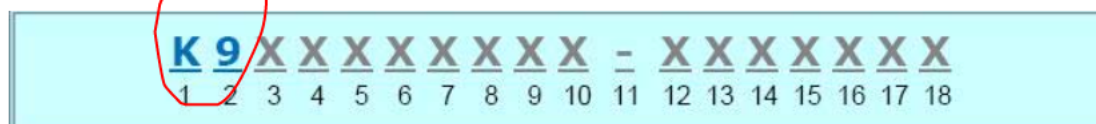
三星的 NAND Flash Code Information:

[http://www.samsung.com/global/business/semiconductor/productInfo.do?fmly\\_id=672&partnum=K9GAG08U0M](http://www.samsung.com/global/business/semiconductor/productInfo.do?fmly_id=672&partnum=K9GAG08U0M)

中的  Part Number Decoder

拷贝出来如下:

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2 : SLC 2 Chip XD Card

3 : 4bit MLC Mono

4 : SLC 4 Chip XD Card

5 : MLC 1 Chip XD Card

6 : MLC 2 Chip XD Card

7 : SLC moviNAND

8 : MLC moviNAND

9 : 4bit MLC ODP

A : 3bit MLC MONO

B : 3bit MLC DDP

C : 3bit MLC QDP

F : SLC Normal

G : MLC Normal

H : MLC QDP

K : SLC Die Stack

L : MLC DDP

M : MLC DSP

N : SLC DSP

O : 3bit MLC ODP

P : MLC ODP

Q : SLC ODP

R : MLC 12-die stack  
S : MLC 6 Die Stack  
T : SLC SINGLE (S/B)  
U : MLC 16 Die Stack  
W : SLC 4 Die Stack

**4~5. Density (注: 实际单位应该是 bit, 而不是 Byte)**

12 : 512M 16 : 16M 28 : 128M  
32 : 32M 40 : 4M 56 : 256M  
64 : 64M 80 : 8M 1G : 1G  
2G : 2G 4G : 4G 8G : 8G  
AG : 16G BG : 32G CG : 64G  
DG : 128G EG : 256G FG : 256G  
GG : 384G HG : 512G LG : 24G  
NG : 96G ZG : 48G 00 : NONE

**6. Technology**

0 : Normal (x8) 1 : Normal (x16)  
C : Catridge SIP D : DDR  
M : moviNAND N : moviNAND FAB  
P : moviMCP T : Premium eSSD  
Z : SSD

**7. Organization**

0 : NONE 8 : x8  
6 : x16

**8. Vcc**

A : 1.65V~3.6V B : 2.7V (2.5V~2.9V)  
C : 5.0V (4.5V~5.5V) D : 2.65V (2.4V ~ 2.9V)  
E : 2.3V~3.6V R : 1.8V (1.65V~1.95V)  
Q : 1.8V (1.7V ~ 1.95V) T : 2.4V~3.0V  
S : 3.3V (3V~3.6V/ VccQ1.8V (1.65V~1.95V)  
U : 2.7V~3.6V V : 3.3V (3.0V~3.6V)  
W : 2.7V~5.5V, 3.0V~5.5V 0 : NONE

**9. Mode**

0 : Normal  
1 : Dual nCE & Dual R/nB  
3 : Tri /CE & Tri R/B  
4 : Quad nCE & Single R/nB  
5 : Quad nCE & Quad R/nB  
6 : 6 nCE & 2 RnB  
7 : 8 nCE & 4 RnB  
8 : 8 nCE & 2 RnB  
9 : 1st block OTP  
A : Mask Option 1  
L : Low grade

**10. Generation**

M : 1st Generation  
A : 2nd Generation

B : 3rd Generation  
C : 4th Generation  
D : 5th Generation  
E : 6th Generation  
Y : 25th Generation  
Z : 26th Generation

**11. "—"**

**12. Package**

8 : TSOP1 (Lead-Free, Halogen-Free, CU)  
9 : 56TSOP1 (Lead-Free, Halogen-Free, CU)  
A : COB  
B : FBGA (Halogen-Free, Lead-Free)  
D : 63-TBGA  
E : ISM (Lead-Free, Halogen-Free)  
F : WSOP (Lead-Free) G : FBGA  
H : BGA (Lead-Free, Halogen-Free)  
I : ULGA (Lead-Free) (12\*17)  
J : FBGA (Lead-Free)  
K : ULGA (Lead-Free, Halogen-Free) (12\*17)  
L : ULGA (Lead-Free, Halogen-Free) (14\*18)  
M : 52-ULGA (Lead-Free, Halogen-Free) (13\*18)  
P : TSOP1 (Lead-Free)  
Q : TSOP2 (Lead-Free)  
R : 56-TSOP1 (Lead-Free, Halogen-Free)  
S : TSOP1 (Lead-Free, Halogen-Free)  
T : WSOP (Lead-Free, Halogen-Free)  
U : COB (MMC)  
V : WSOP W : Wafer  
Y : TSOP1 Z : WELP (Lead-Free)

**13. Temp**

C : Commercial I : Industrial  
S : SmartMedia  
B : SmartMedia BLUE  
0 : NONE (Containing Wafer, CHIP, BIZ, Exception  
handling code)

**NAND Flash Code Information(2/3)**

K 9 X X X X X X X X - X X X X X X X  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

**14. Customer Bad Block**

B : Include Bad Block  
D : Daisychain Sample  
K : Special Handling  
L : 1~5 Bad Block  
N : ini. 0 blk, add. 10 blk  
S : All Good Block  
0 : NONE (Containing Wafer, CHIP, BIZ, Exception

handling code)

### 15. Pre-Program Version

0 : None

Serial (1~9, A~Z)

### 16. Packing Type

- Common to all products, except of Mask ROM
- Divided into TAPE & REEL(In Mask ROM, divided into TRAY, AMMO Packing Separately

Divide	Packing Type	New Marking
Component	TAPE & REEL	T
	Other ( Tray, Tube, Jar )	0 ( Number)
	Stack	S
Component ( Mask ROM )	TRAY	Y
	AMMO PACKING	A
Module	MODULE TAPE & REEL	P
	MODULE Other Packing	M

### 17~18. Customer "Customer List Reference"

#### 【举例说明】

K	9	G	A	G	0	8	U	0	M	-	P	C	B	0			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

K9GAG08U0M 详细信息如下:

1. Memory (K)

2. NAND Flash : 9

3. Small Classification

(SLC : Single Level Cell, MLC : Multi Level Cell,

SM : SmartMedia, S/B : Small Block)

G : MLC Normal

4~5. Density

AG : 16G (Note: 这里单位是 bit 而不是 byte, 因此实际大小是 16Gb=2GB)

6. Technology

0 : Normal (x8)

7. Organization

0 : NONE 8 : x8

8. Vcc

U : 2.7V~3.6V

9. Mode

0 : Normal

10. Generation

M : 1st Generation

11. "—"

12. Package

P : TSOP1 (Lead-Free)

13. Temp

C : Commercial

14. Customer Bad Block

B : Include Bad Block

15. Pre-Program Version

0 : None

整体描述就是：

K9GAG08U0M 是，三星的 MLC Nand Flash，工作电压为 2.7V~3.6V，x8（即 I/O 是 8 位），大小是 2GB（16Gb），TSOP1 封装。



# Hynix 海力士

H 2 7 X X X X X X X X - X X

(1) HYNIX

(2) PRODUCT FAMILY

(4) POWER SUPPLY (VCC)

(8) NAND CLASSIFICATION

(7) ORGANIZATION

(14) BAD BLOCK

(11) PACKAGE TYPE

2 : Flash

S: SLC + Single Die + Small Block

A: SLC + Double Die + Small Block

B: SLC + Quadruple Die + Small Block

F: SLC + Single Die + Large Block

G: SLC + Double Die + Large Block

H: SLC + Quadruple Die + Large Block

J: SLC + ODP + Large Block

K: SLC + DSP + Large Block

T: MLC + Single Die + Large Block

U: MLC + Double Die + Large Block

V: MLC + Quadruple Die + Large Block

W: MLC + DSP + Large Block

Y: MLC + ODP + Large Block

C: Included Bad Block

E: 1~5 Bad Block Included

M: All Good Block

I: TSOP1

B: WSOP

S: USOP

P: LSOP1

T: FBGA

V: LGA

S: WLGA

N: VLGA

F: ULGA

X: Wafer

M: PGD1 (chip)

Y: KGD

U: PGD2

W: 1st

C: 2nd

K: 3rd

D: 4th

M

A

B

C

(5), (6) DENSITY

1: 1 nCE & 1 R/nB; Sequential Row Read Enable

2: 1 nCE & 1 R/nB; Sequential Row Read Disable

4: 2 nCE & 2 R/nB; Sequential Row Read Enable

5: 2 nCE & 2 R/nB; Sequential Row Read Disable

D: Dual Interface; Sequential Row Read Disable

F: 4 nCE & 4 R/nB ; Sequential Row Read Disable

# micron镁光nand命名规则

[www.micron.com/support/designsupport/documents/png](http://www.micron.com/support/designsupport/documents/png)

Standard NAND Flash Part Numbering System

Micron's part numbering system is available at  
Standard NAND Flash\*

MT 29F 2G 08 A A A WP - xx xx xx xx ES : A

Micron Technology Design Revision (shrink)

A = 1st design revision

## 1. Single-Supply Flash

29F = Single-Supply NAND Flash Production Status

29H = High Speed NAND Blank = Production

ES = Engineering samples

## 2. Density QS = Qualification samples

1G = 1Gb MS = Mechanical samples

2G = 2Gb

4G = 4Gb Operating Temperature Range

8G = 8Gb Blank = Commercial (0° C to +70° C)

16G = 16Gb ET = Extended (-40° C to +85° C)

32G = 32Gb WT = Wireless (-25° C to +85° C)

64G = 64Gb

128G = 128Gb Block Option (Reserved for use)

256G = 256Gb Blank = Standard device

## 3. Device Width Flash Performance

08 = 8 bits Blank = Full specification

16 = 16 bits

## 4. Speed Grade (MT29H Only)

Classification 15 = 133 MT/s

12 = 166 MT/s

## 5. Mark Bit/cell Die RnB

A SLC 1 1 Package Code

B SLC 2 1 WP = 48-pin TSOP I (CPL version) (Pb-free)

C SLC 2 1 WC = 48-pin TSOP I (OCPL version) (Pb-free)

D SLC 2 2 H1 = 100-ball VFBGA (Pb-free), 12 x 18 x 1.0

E SLC 2 2 H2 = 100-ball TFBGA (Pb-free), 12 x 18 x 1.2

F SLC 4 2 HC = 63-ball VFBGA, 10.5 x 13 x 1.0

G SLC 4 2 C2 = 52-pad ULGA, 12 x 17 x 0.4 (use TBD)

J SLC 4 + 4 2 + 2 C3 = 52-pad ULGA, 12 x 17 x 0.65

K SLC 8 4 C4 = 52-pad VLGA, 12 x 17 x 1.0 (SDP/DDP/QDP)

Z SLC 1 NA C5 = 52-pad VLGA, 14 x 18 x 1.0 (SDP/DDP/QDP)

C6 = 52-pad LLGA, 14 x 18 x 1.47 (8DP, QDP, DDP)

M MLC 1 1 C7 = 48-pad LLGA, 12 x 20 x 1.47 (8DP)

N MLC 2 1 SWC = 48-pin Stacked TSOP (OCPL version) (Pb-free)

P MLC 2 1 SWP = 48-pin Stacked TSOP (CPL version) (Pb-free)

Q MLC 2 2

R MLC 2 2 Generation (M29 only)/Feature Set

T MLC 4 2 A = 1st set of device features

U MLC 4 2 B = 2nd set of device features (rev only if different than 1st set)

V MLC 4 + 4 2 + 2 C = 3rd set of device features (rev only if different)

W MLC 8 4 D = 4th set of device features (rev only if different)

Y MLC 8 4 etc.

## 6. Operating Voltage Range

A = 3.3V (2.70 - 3.60V), VccQ 3.3V (2.70 - 3.60V)

B = 1.8V (1.70 - 1.95V)

C = 3.3V (2.70 - 3.60V), VccQ 1.8V (1.70 - 1.95V)

\*Contact Micron for help differentiating between standard and next-generation NAND offerings.

intel nand code name

Figure 52. Decoder

