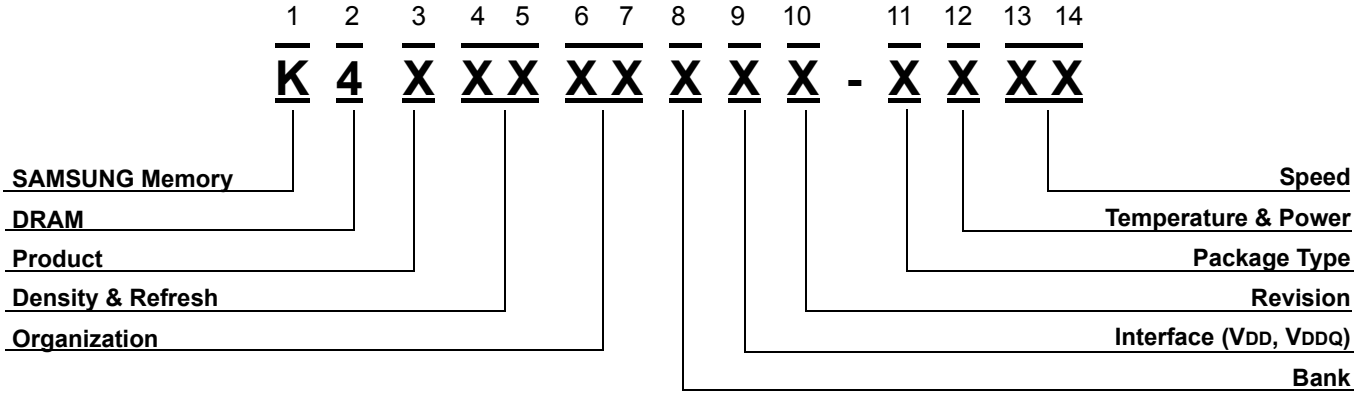
Graphic Memory

Product Guide

1. GRAPHIC MEMORY ORDERING INFORMATION



1. SAMSUNG Memory

2. DRAM

3. Product

N : gDDR2 SDRAM
W : gDDR3 SDRAM
J : GDDR3 SGRAM
G : GDDR5 SGRAM

4~5. Density & Refresh

51 : 512M, 8K/64ms
52 : 512M, 8K/32ms
10 : 1G, 8K/32ms
1G : 1G, 8K/64ms
2G : 2G, 8K/64ms
4G : 4G, 8K/64ms

6~7. Organization

16 : x16
32 : x32

8. Bank

3 : 4Banks
4 : 8Banks

9. Interface (VDD, VDDQ)

Q : SSTL_2 (1.8V, 1.8V)
5 : SSTL_2 (1.8V,1.8V,LP)
6 : SSTL_15 (1.5V,1.5V)
F : POD_15 (1.5V,1.5V)
K : POD_18 (1.8V,1.8V)

10. Revision

M : 1st Gen. A : 2nd Gen.
B : 3rd Gen. C : 4th Gen.
D : 5th Gen. E : 6th Gen.
F : 7th Gen. G : 8th Gen.
H : 9th Gen. I : 10th Gen.
Q : 17th Gen. Z : 26th Gen.

11. Package Type

gDDR2
H : 84FBGA(Halogen Free & Lead Free)
B : 84FBGA(Halogen Free & Lead Free & Flip Chip)

gDDR3
E : 100FBGA(Halogen Free & Lead Free)
H : 96FBGA(Halogen Free & Lead Free)

GDDR3
B : 136FBGA(Lead Free)
H : 136FBGA(Halogen Free & Lead Free)

GDDR5
H : 170FBGA(Halogen Free & Lead Free)

12. Temperature & Power(VDD)

C : Commercial Normal
J : Commercial High
L : Commercial Low

13~14. Speed

1A[1)]	: 0.935ns	(2.1Gbps)	28	: 0.28ns	(7.0Gbps)
11[2)]	: 1.07ns	(1.8Gbps)	03	: 0.33ns	(6.0Gbps)
12	: 1.25ns	(1.6Gbps)	04	: 0.40ns	(5.0Gbps)
14	: 1.4ns	(1.4Gbps)	05	: 0.50ns	(4.0Gbps)
15	: 1.5ns	(1.3Gbps)	5C	: 0.56ns	(3.6Gbps)
16	: 1.6ns	(1.2Gbps)	06	: 0.62ns	(3.2Gbps)
18	: 1.8ns	(1.1Gbps)	6A	: 0.66ns	(3.0Gbps)
19	: 1.875ns	(1.06Gbps)	07	: 0.71ns	(2.8Gbps)
20	: 2.0ns	(1.0Gbps)	7A	: 0.77ns	(2.6Gbps)
22	: 2.2ns	(0.9Gbps)	08	: 0.8ns	(2.4Gbps)
25	: 2.5ns	(0.8Gbps)	09	: 0.9ns	(2.2Gbps)

NOTE :
1)Graphic high speed binning was unified to EDP binning(2000Mbps→2133Mbps)
2)Graphic high speed binning was unified to EDP binning(1800Mbps→1866Mbps)

2. GRAPHIC MEMORY COMPONENT PRODUCT GUIDES

Product	Density	Banks	Part Num.	PKG & Speed	Org.	Interf.	Ref.	Voltage(V)	PKG.	PKG Type	Status
gDDR2 SDRAM	512Mb G-die	4Banks	K4N51163QG	HC20/25	32Mx16	SSTL_18	8K/64ms	1.8V ± 0.1V	84ball FBGA	Halogen-Free & Lead-Free	Mass Production
	512Mb Z-die		K4N51163QZ	HC20/25							
	1Gb E-die	8Banks	K4N1G164QE	HC20/25	64Mx16						
	1Gb F-die		K4N1G164QF	BC20/25						Halogen-Free, Lead-Free & Flip-Chip	CS May. '10
gDDR3 SDRAM	1Gb E-die	8Banks	K4W1G1646E	HC1A/11 12/15	64Mx16	SSTL_15	8K/64ms	1.5V ± 0.075V	96ball FBGA	Halogen-Free & Lead-Free	Mass Production
	2Gb B-die		K4W2G1646B	HC12/15	128Mx16						
	2Gb C-die		K4W2G1646C	HC1A/11 12/15	128Mx16						CS May. '10
GDDR3 SGRAM	512Mb I-die	8Banks	K4J52324KI	HC7A/08 1A/12/14	16Mx32	Pseudo Open_ Drain	8K/32ms	1.8V ± 0.1V	136ball FBGA	Halogen-Free & Lead-Free	Mass Production
	1Gb E-die		K4J10324KE	HC7A/08 1A/12/14	32Mx32			1.8V ± 0.1V			Mass Production
GDDR5 SGRAM	1Gb E-die	8Banks	K4G10325FE	HC04/05 5C	32Mx32	POD_15	8K/32ms	1.5V ± 0.045V	170ball FBGA	Halogen-Free & Lead-Free	Mass Production
	2Gb C-die	16Banks	K4G20325FC	TBD	64Mx32	POD_15	16K/32ms	1.5V ± 0.045V	170ball FBGA	Halogen-Free & Lead-Free	CS May. '10