

# Graphic Memory

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## Product Guide

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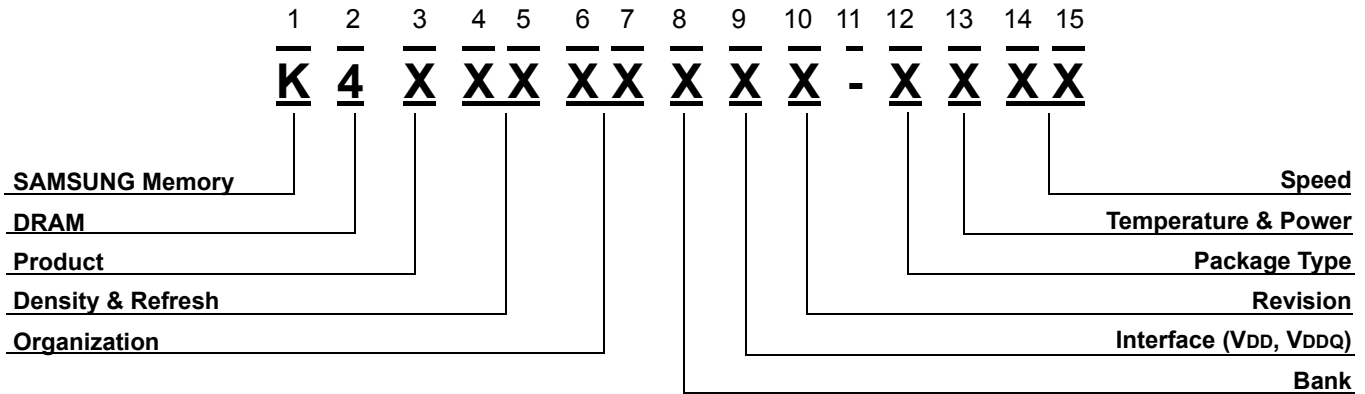
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## 1. GRAPHIC MEMORY ORDERING INFORMATION



### 1. SAMSUNG Memory

### 2. DRAM

### 3. Product

- 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
- 20 : 2G, 16K/32ms
- 1G : 1G, 8K/64ms
- 2G : 2G, 8K/64ms
- 4G : 4G, 8K/64ms
- 41 : 4G, 16K/32ms

### 6~7. Organization

- 16 : x16
- 32 : x32

### 8. Bank

- 3 : 4Banks
- 4 : 8Banks
- 5 : 16Banks

### 9. Interface ( VDD, VDDQ)

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

### 11. "-"

### 12. Package Type

- gDDR3
- E : 100FBGA(Halogen Free & Lead Free)
- H : 96FBGA(Halogen Free & Lead Free)
- B : 96FBGA(Halogen Free & Lead Free & Flip-Chip)
- G : 78FBGA(Halogen Free & Lead Free)
- V : 78FBGA(Halogen Free & Lead Free & Flip-Chip)

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

- GDDR5
- H : 170FBGA(Halogen Free & Lead Free & Flip-Chip)
- F : 170FBGA(Halogen Free & Lead Free)

### 13. Temperature & Power(VDD)

- C : Commercial Normal
- J : Commercial High
- L : Commercial Low
- Y : Commercial Low Voltage

### 14~15. Speed

- |                         |                        |
|-------------------------|------------------------|
| 1B : 0.83ns (2400Mbps)  | 25 : 0.25ns (8000Mbps) |
| 1A : 1.0ns (2133Mbps)   | 28 : 0.28ns (7000Mbps) |
| 11 : 1.07ns (1866Mbps)  | 03 : 0.33ns (6000Mbps) |
| 12 : 1.25ns (1600Mbps)  | 04 : 0.40ns (5000Mbps) |
| 14 : 1.4ns (1400Mbps)   | 05 : 0.50ns (4000Mbps) |
| 15 : 1.5ns (1333Mbps)   | 5C : 0.56ns (3600Mbps) |
| 16 : 1.6ns (1200Mbps)   | 06 : 0.62ns (3200Mbps) |
| 18 : 1.8ns (1100Mbps)   | 6A : 0.66ns (3000Mbps) |
| 19 : 1.875ns (1066Mbps) | 07 : 0.71ns (2800Mbps) |
| 20 : 2.0ns (1000Mbps)   | 7A : 0.77ns (2600Mbps) |
| 22 : 2.2ns (900Mbps)    | 09 : 0.9ns (2200Mbps)  |



## 2. GRAPHIC MEMORY COMPONENT PRODUCT GUIDES

Product	Density	Banks	Part Num.	PKG & Speed	Org.	Interf.	Ref.	Voltage(V)	PKG.	Status
gDDR3 SDRAM	1Gb G-die	8Banks	K4W1G1646G	BC08/1A 11/12/15	64Mx16	SSTL_15	8K/64ms	1.5V ± 0.075V	96ball FBGA	Mass Production
	2Gb C-die		K4W2G1646C	HC1A/11 12/15	128Mx16					Mass Production
	2Gb E-die		K4W2G1646E	BC1A/11 12/15						Mass Production
	4Gb B-die		K4W4G1646B	HC 1A/11/12	256Mx16					Mass Production
GDDR3 SGRAM	1Gb G-die	8Banks	K4J10324KG	HC1A/14	32Mx32	POD_18	8K/32ms	1.8V ± 0.1V	136ball FBGA	Mass Production
GDDR5 SGRAM	1Gb G-die	16Banks	K4G10325FG	HC03/04/05	32Mx32	POD_15	8K/32ms	1.5V ± 0.045V	170ball FBGA	Mass Production
	2Gb D-die		K4G20325FD	FC28/03/04	64Mx32	POD_15	16K/32ms	1.5V ± 0.045V		Mass Production
	4Gb C-die		K4G41325FC	HC28/03/04	128Mx32	POD_15	16K/32ms	1.5V ± 0.045V		ES Sep.'12