# **Graphics Code Information**

# Component

# Part Number Decoder

SAMSUNG ELECTRONICS RESERVES THE RIGHT TO CHANGE PRODUCTS, INFORMATION AND SPECIFICATIONS WITHOUT NOTICE.

Products and specifications discussed herein are for reference purposes only. All information discussed herein is provided on an "AS IS" basis, without warranties of any kind.

This document and all information discussed herein remain the sole and exclusive property of Samsung Electronics. No license of any patent, copyright, mask work, trademark or any other intellectual property right is granted by one party to the other party under this document, by implication, estoppel or otherwise.

Samsung products are not intended for use in life support, critical care, medical, safety equipment, or similar applications where product failure could result in loss of life or personal or physical harm, or any military or defense application, or any governmental procurement to which special terms or provisions may apply.

For updates or additional information about Samsung products, contact your nearest Samsung office.

All brand names, trademarks and registered trademarks belong to their respective owners.

© 2009 Samsung Electronics Co., Ltd. All rights reserved.



# K4XXXXXXXX - XXXXXXX

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

# 1. Memory (K)

2. DRAM: 4

#### 3. Small Classification

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

# 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. Generation

 M : M-die
 A : A-die

 B : B-die
 C : C-die

 D : D-die
 E : E-die

 F : F-die
 G : G-die

 H : H-die
 I : I-die

 Q : Q-die
 Z : Z-die

#### 11. "—"

# 12. Package

# - 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)

B: 96FBGA (Flip-Chip)

#### - GDDR3

B: 136FBGA (Lead Free)

H: 136FBGA (Halogen Free & Lead Free)

#### - GDDR5

H: 170FBGA (Halogen Free & Lead Free)

## 13. Temp, Power(VDD)

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

## 14~15. Speed (Wafer/Chip Biz/BGD: 00)

1A: 0.935ns (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) 07: 0.71ns (2800Mbps) 19: 1.875ns (1066Mbps) 20: 2.0ns (1000Mbps) 7A: 0.77ns (2600Mbps) 08: 0.8ns (2400Mbps) 22 : 2.2ns (900Mbps) 25: 2.5ns (800Mbps) 09: 0.9ns (2200Mbps)

