

**SAMSUNG**

# PRODUCT SELECTION GUIDE

Displays, Memory and Storage

1H 2013



# Samsung Semiconductor, Inc.

Samsung continues to lead the industry with the broadest portfolio of memory products and technology. Its DRAM, flash, mobile, and graphics memory are found in computers—from ultra-mobile notebooks to powerful servers—and in a wide range of handheld devices such as smartphones and tablets. Samsung also delivers the industry’s widest line of storage products from the consumer to the enterprise level. These include optical disk drives as well as flash storage, such as Solid State Drives, and a range of embedded and removable flash storage products.

Markets		DRAM	SSD	FLASH	ASIC	LOGIC	TFT/LCD	ODD
Mobile/Wireless		●	N/A	●	●	●	●	●
Notebook PCs/ Ultrabooks		●	●	●	●	●	●	●
Desktop PCs/ Workstations		●	●	●	●	●	●	●
Servers		●	●	●	●	●	●	●
Networking/ Communications		●	●	●	●	●	N/A	●
Consumer Electronics		●	N/A	●	●	●	●	●

[samsung.com/us/oem-solutions](http://samsung.com/us/oem-solutions)

SEMICONDUCTOR  
MICROPROCESSOR  
INNOVATION  
DDR4  
CUTTING-EDGE  
EDGE FLASH  
ENTERPRISE  
E-MODE DESIGN  
NAND  
SSD  
DYNAMIC  
LOGIC INNOVATION  
MEMORY  
GREEN  
CUTTING  
EDGE  
R3 STORAGE  
ENTERPRISE  
POWER TOGGLE-MODE  
NAND



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- Sales Representatives and Distributors
- To access our online sales portal, visit: <https://smarttools.ssi.samsung.com>

## DDR4 SDRAM REGISTERED MODULES

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
8GB	1.2V	1Gx 72	M393A1G40DB0-C(NA/QB)	4Gb (1G x4) * 18	Lead Free & Halogen Free, Flip Chip	1866/2133	1	3Q'13
16GB	1.2V	2Gx72	M393A2G40DB0-C(NA/QB)	4Gb (1G x4) * 36	Lead Free & Halogen Free, Flip Chip	1866/2133	2	3Q'13

NOTES: Register is not fixed yet NA = DDR4-1866 (14-14-14), QB = DDR4-2133(16-16-16)

## DDR4 SDRAM LOAD REDUCED MODULES

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
32GB	1.2V	4Gx 72	M386A4GDPO-C(NA/QB)	4Gb MDP (2Gx4) * 36	Lead Free & Halogen Free	1866/2133	4	4Q'13

NOTES: Register is not fixed yet NA = DDR4-1866 (14-14-14), QB = DDR4-2133(16-16-16)

## DDR3 SDRAM REGISTERED MODULES

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
1GB	1.5V	128Mx72	M393B2873GB0-C(F8/H9/K0/MA)(08/09)	1Gb (128M x8) * 9	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
2GB	1.5V	256Mx72	M393B5673GB0-C(F8/H9/K0/MA)(08/09)	1Gb (128M x8) * 18	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	2	Now
			M393B5670GB0-C(F8/H9/K0/MA)(08/09)	1Gb (256M x4) * 18	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
			M393B5773CH0-C(F8/H9)(04/05)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333	1	Now
			M393B5773DH0-C(F8/H9/K0/MA)(08/09)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
4GB	1.5V	512Mx72	M393B5170GB0-C(F8/H9/K0/MA)(08/09)	1Gb (256M x4) * 36	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	2	Now
			M393B5273CH0-C(F8/H9)(04/05)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M393B5273DH0-C(F8/H9/K0/MA)(08/09)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
			M393B5270CH0-C(F8/H9)(04/05)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333	1	Now
			M393B5270DH0-C(F8/H9/K0/MA)(08/09)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
8GB	1.5V	1Gx72	M393B1K73CH0-C(F8/H9)(04/05)	2Gb (256M x8) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B1K73DH0-C(F8/H9)(08/09)	2Gb (256M x8) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B1K70CH0-C(F8/H9)(04/05)	2Gb (512M x4) * 36	Lead Free & Halogen Free	1066/1333	2	Now
			M393B1K70DH0-C(F8/H9/K0/MA)(08/09)	2Gb (512M x4) * 36	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
16GB	1.5V	2Gx72	M393B2K70CM0-C(F8/H9)(04/05)	2Gb DDP (1G x4) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B2K70DM0-C(F8/H9)(08/09)	2Gb DDP (1G x4) * 36	Lead Free & Halogen Free	1066/1333	4	Now
8GB	1.5V	1Gx72	M393B1G70BH0-C(F8/H9/K0/MA)(08/09)	4Gb (1G x4) * 18	Lead Free & Halogen Free	1066/1333	1	Now
16GB	1.5V	2Gx72	M393B1G73BH0-C(F8/H9/K0/MA)(08/09)	4Gb (512M x8) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
			M393B2G70BH0-C(F8/H9/K0/MA)(08/09)	4Gb (1G x4) * 36	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
32GB	1.5V	4Gx72	M393B2G73BH0-C(F8/H9)(08/09)	4Gb (512M x8) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B4G70BM0-C(F8/H9)(08/09)	4Gb DDP (2G x4) * 36	Lead Free & Halogen Free	1066/1333	4	Now
2GB	1.35V	256Mx72	M393B5773CH0-Y(F8/H9)(04/05)	2Gb (256M x4) * 9	Lead Free & Halogen Free	1066/1333	1	Now
4GB	1.35V	512Mx72	M393B5773DH0-Y(F8/H9/K0)(08/09)	2Gb (256M x4) * 9	Lead Free & Halogen Free	1066/1333/1600	1	Now
			M393B5173GB0-Y(F8/H9)(08/09)	1Gb (128M x8) * 36	Lead Free & Halogen Free, Flip Chip	1066/1333	4	Now
			M393B5170GB0-Y(F8/H9/K0)(08/09)	1Gb (256M x4) * 36	Lead Free & Halogen Free, Flip Chip	1066/1333/1600	2	Now
			M393B5273CH0-Y(F8/H9)(04/05)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M393B5273DH0-Y(F8/H9/K0)(08/09)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now
			M393B5270CH0-Y(F8/H9)(04/05)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333	1	Now
			M393B5270DH0-Y(F8/H9/K0)(08/09)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333/1600	1	Now
8GB	1.35V	1Gx72	M393B1K73CH0-Y(F8/H9)(04/05)	2Gb (256M x8) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B1K73DH0-Y(F8/H9)(08/09)	2Gb (256M x8) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B1K70CH0-Y(F8/H9)(04/05)	2Gb (512M x4) * 36	Lead Free & Halogen Free	1066/1333	2	Now
			M393B1K70DH0-Y(F8/H9/K0)(08/09)	2Gb (512M x4) * 36	Lead Free & Halogen Free	1066/1333/1600	2	Now
16GB	1.35V	2Gx72	M393B2K70CM0-Y(F8/H9)(04/05)	2Gb DDP (1G x4) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B2K70DM0-Y(F8/H9)(08/09)	2Gb DDP (1G x4) * 36	Lead Free & Halogen Free	1066/1333	4	Now
8GB	1.35V	1Gx72	M393B1G70BH0-Y(F8/H9/K0)(08/09)	4Gb (1G x4) * 18	Lead Free & Halogen Free	1066/1333/1600	1	Now
16GB	1.35V	2Gx72	M393B1G73BH0-Y(F8/H9/K0)(08/09)	4Gb (512M x8) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now
			M393B2G70BH0-Y(F8/H9/K0)(08/09)	4Gb (1G x4) * 36	Lead Free & Halogen Free	1066/1333/1600	2	Now
32GB	1.35V	4Gx72	M393B2G73BH0-Y(F8/H9)(08/09)	4Gb (512M x8) * 36	Lead Free & Halogen Free	1066/1333	4	Now
			M393B4G70BM0-Y(F8/H9)(08/09)	4Gb DDP (2G x4) * 36	Lead Free & Halogen Free	1066/1333	4	Now

NOTES: 04 = IDT B0 register      F8 = DDR3-1066 (7-7-7)      05 = Inphi C0 register      H9 = DDR3-1333 (9-9-9)      08 = IDT A1      K0 = DDR3-1600 (11-11-11)  
 09 = Inphi UV GS02      MA = DDR3-1866 (13-13-13)  
 \* K0 (1600Mbps) available in ES only

## DDR3 SDRAM LOAD REDUCED REGISTERED MODULES

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
16GB	1.35V	2Gx72	M386B2K70DM0-YH90	2Gb DDP (1G x4) * 36	Lead Free & Halogen Free	1333	4	Now
32GB	1.35V/1.5V	4Gx72	M386B4G70BMO-YK0(3/4)/CMA(3/4)	4Gb DDP (2G x4) * 36	Lead Free & Halogen Free	1333/1600/1866	4	2Q'13
64GB	1.35V/1.5V	8Gx72	M386B8G70B00-YH94/CK04	4Gb QDP (4G x4) * 36	Lead Free & Halogen Free	1333/1600	8	2Q'13

NOTES: 0 = Inphi iMB GS02A  
 3 = Inphi iMB GS02B  
 4 = Montage C1

## DDR3 SDRAM VLP REGISTERED MODULES

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
1GB	1.5V	128Mx72	M392B2873GB0-C(F8/H9/K0/MA)(08/09)	1Gb (128M x8) * 9	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
2GB	1.5V	256Mx72	M392B5673GB0-C(F8/H9/K0/MA)(08/09)	1Gb (128M x8) * 18	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	2	Now
			M392B5670GB0-C(F8/H9/K0/MA)(08/09)	1Gb (256M x8) * 18	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
			M392B5773CHO-C(F8/H9)(04/05)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333	1	Now
			M392B5773DHO-C(F8/H9/K0/MA)(08/09)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
4GB	1.5V	512Mx72	M392B5273CHO-C(F8/H9)(04/05)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M392B5273DHO-C(F8/H9/K0/MA)(08/09)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
			M392B5270CHO-C(F8/H9)(04/05)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333	1	Now
			M392B5270DHO-C(F8/H9/K0/MA)(08/09)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
8GB	1.5V	1Gx72	M392B1K73CM0-C(F8/H9)(04/05)	2Gb DDP (512M x8) * 18	Lead Free & Halogen Free	1066/1333	4	Now
			M392B1K73DM0-C(F8/H9)(08/09)	2Gb DDP (512M x8) * 18	Lead Free & Halogen Free	1066/1333	4	Now
			M392B1K70CM0-C(F8/H9)(04/05)	2Gb DDP (1G x4) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M392B1K70DM0-C(F8/H9/K0/MA)(08/09)	2Gb DDP (1G x4) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
			M392B1G73BH0-C(F8/H9/K0/MA)(08/09)	4Gb (512M x8) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
			M392B1G70BH0-C(F8/H9/K0/MA)(08/09)	4Gb (1G x4) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
16GB	1.5V	2Gx72	M392B2G70BMO-C(F8/H9/K0/MA)(08/09)	4Gb DDP (2G x4) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
			M392B2G73BMO-C(F8/H9)(08/09)	4Gb DDP (1G x8) * 18	Lead Free & Halogen Free	1066/1333	4	Now
2GB	1.35V	256Mx72	M392B5773CHO-Y(F8/H9)(04/05)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333	1	Now
			M392B5773DHO-Y(F8/H9/K0)(08/09)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333/1600	1	Now
4GB	1.35V	512Mx72	M392B5273CHO-Y(F8/H9)(04/05)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M392B5273DHO-Y(F8/H9/K0)(08/09)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now
			M392B5270CHO-Y(F8/H9)(04/05)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333	1	Now
			M392B5270DHO-Y(F8/H9/K0)(08/09)	2Gb (512M x4) * 18	Lead Free & Halogen Free	1066/1333/1600	1	Now
8GB	1.35V	1Gx72	M392B1K73CM0-Y(F8/H9)(04/05)	2Gb DDP (512M x8) * 18	Lead Free & Halogen Free	1066/1333	4	Now
			M392B1K73DM0-Y(F8/H9)(08/09)	2Gb DDP (512M x8) * 18	Lead Free & Halogen Free	1066/1333	4	Now
			M392B1K70CM0-Y(F8/H9)(04/05)	2Gb DDP (1G x4) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M392B1K70DM0-Y(F8/H9/K0)(08/09)	2Gb DDP (1G x4) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now
			M392B1G73BH0-Y(F8/H9/K0)(08/09)	4Gb (512M x8) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now
			M392B1G70BH0-Y(F8/H9/K0)(08/09)	4Gb (1G x4) * 18	Lead Free & Halogen Free	1066/1333/1600	1	Now
16GB	1.35V	2Gx72	M392B2G70BMO-Y(F8/H9/K0)(08/09)	4Gb DDP (2G x4) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now
			M392B2G70BMO-Y(F8/H9)(08/09)	4Gb DDP (1G x8) * 18	Lead Free & Halogen Free	1066/1333	4	Now
32GB	1.35V	4Gx72	M392B4G70BEO-Y(F8/H9)(08)	4Gb QDP (4G x4) * 18	Lead Free & Halogen Free	1066/1333	4	Now

NOTES: 04 = IDT B0 register  
 05 = Inphi C0 register  
 08 = IDT A1  
 09 = Inphi UV GS02  
 F8 = DDR3-1066 (7-7-7)  
 H9 = DDR3-1333 (9-9-9)  
 K0 = DDR3-1600 (11-11-11)  
 MA = DDR3-1866 (13-13-13)

## DDR3 SDRAM UNBUFFERED MODULES

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
0.0625 in	1.5V	128Mx64	M378B2873GB0-C(F8/H9/K0/MA)	1Gb (128M x8) * 8	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
2GB	1.5V	256Mx64	M378B5673GB0-C(F8/H9/K0/MA)	1Gb (128M x8) * 16	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	2	Now
			M378B5773CH0-C(F8/H9)	2Gb (256M x8) * 8	Lead Free & Halogen Free	1066/1333	1	Now
			M378B5773DH0-C(F8/H9/K0/MA)	2Gb (256M x8) * 8	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
4GB	1.5V	512Mx64	M378B5273CH0-C(F8/H9)	2Gb (256M x8) * 16	Lead Free & Halogen Free	1066/1333	2	Now
			M378B5273DH0-C(F8/H9/K0/MA)	2Gb (256M x8) * 16	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
8GB	1.5V	1024Mx64	M378B1G73BH0-C(F8/H9/K0/MA)	4Gb (512M x8) * 16	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now

## DDR3 SDRAM UNBUFFERED MODULES (ECC)

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
0.0625 in	1.5V	128Mx72	M391B2873GB0-C(F8/H9/K0/MA)	1Gb (128M x8) * 9	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
2GB	1.5V	256Mx72	M391B5673GB0-C(F8/H9/K0/MA)	1Gb (128M x8) * 18	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	2	Now
			M391B5773CH0-C(F8/H9)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333	1	Now
			M391B5773DH0-C(F8/H9/K0/MA)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
4GB	1.5V	512Mx72	M391B5273CH0-C(F8/H9)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M391B5273DH0-C(F8/H9/K0/MA)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
8GB	1.5V	1024Mx72	M391B1G73BH0-C(F8/H9/K0/MA)	4Gb (512M x8) * 18	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
1GB	1.35V	128Mx72	M391B2873GB0-Y(F8/H9/K0)	1Gb (128M x8) * 9	Lead Free & Halogen Free, Flip Chip	1066/1333/1600	1	Now
2GB	1.35V	256Mx72	M391B5673GB0-Y(F8/H9/K0)	1Gb (128M x8) * 18	Lead Free & Halogen Free, Flip Chip	1066/1333/1600	2	Now
			M391B5773CH0-Y(F8/H9)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333	1	Now
			M391B5773DH0-Y(F8/H9/K0)	2Gb (256M x8) * 9	Lead Free & Halogen Free	1066/1333/1600	1	Now
4GB	1.35V	512Mx72	M391B5273CH0-Y(F8/H9)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333	2	Now
			M391B5273DH0-Y(F8/H9/K0)	2Gb (256M x8) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now
8GB	1.35V	1024Mx72	M391B1G73BH0-Y(F8/H9/K0)	4Gb (512M x8) * 18	Lead Free & Halogen Free	1066/1333/1600	2	Now

NOTES: F8 = DDR3-1066 (7-7-7) H9 = DDR3-1333 (9-9-9) K0 = DDR3-1600 (11-11-11) MA = DDR3-1866 (13-13-13)

## DDR3 SDRAM SODIMM MODULES

Density	Voltage	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Ranks	Production
1GB	1.5V	128Mx64	M471B2873GB0-C(F8/H9/K0/MA)	1Gb (128M x8) * 8	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
2GB	1.5V	256Mx64	M471B5673GB0-C(F8/H9/K0/MA)	1Gb (128M x8) * 16	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	2	Now
			M471B5773CHS-C(F8/H9)	2Gb (256M x8) * 8	Lead Free & Halogen Free	1066/1333	1	Now
			M471B5773DH0-C(F8/H9/K0/MA)	2Gb (256M x8) * 8	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
4GB	1.5V	512Mx64	M471B5273CH0-C(F8/H9)	2Gb (256M x8) * 16	Lead Free & Halogen Free	1066/1333	2	Now
			M471B5273DH0-C(F8/H9/K0/MA)	2Gb (256M x8) * 16	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
			M471B5173BH0-C(F8/H9/K0/MA)	4Gb (512M x8) * 8	Lead Free & Halogen Free	1066/1333/1600/1866	1	Now
8GB	1.5V	1024Mx64	M471B1G73BH0-C(F8/H9/K0/MA)	4Gb (512M x8) * 16	Lead Free & Halogen Free	1066/1333/1600/1866	2	Now
1GB	1.35V	128Mx64	M471B2873GB0-Y(F8/H9/K0)	1Gb (128M x8) * 8	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	1	Now
2GB	1.35V	256Mx64	M471B5673GB0-Y(F8/H9/K0)	1Gb (128M x8) * 16	Lead Free & Halogen Free, Flip Chip	1066/1333/1600	2	Now
			M471B5773CHS-Y(F8/H9)	2Gb (256M x8) * 8	Lead Free & Halogen Free	1066/1333	1	Now
			M471B5773DH0-Y(F8/H9/K0)	2Gb (256M x8) * 8	Lead Free & Halogen Free	1066/1333/1600	1	Now
4GB	1.35V	512Mx64	M471B5273CH0-Y(F8/H9)	2Gb (256M x8) * 16	Lead Free & Halogen Free	1066/1333	2	Now
			M471B5273DH0-Y(F8/H9/K0)	2Gb (256M x8) * 16	Lead Free & Halogen Free	1066/1333/1600	2	Now
			M471B5173BH0-Y(F8/H9/K0)	4Gb (512M x8) * 8	Lead Free & Halogen Free	1066/1333/1600	1	Now
8GB	1.35V	1024Mx64	M471B1G73BH0-Y(F8/H9/K0)	4Gb (512M x8) * 16	Lead Free & Halogen Free	1066/1333/1600	2	Now

NOTES: F8 = DDR3-1066 (7-7-7) H9 = DDR3-1333 (9-9-9) K0 = DDR3-1600 (11-11-11) MA = DDR3-1866 (13-13-13)

## DDR3 SDRAM ECC SODIMM MODULES

Density	Organization	Part Number	Composition	Compliance	Speed (Mbps)	Register	Rank	Production
2GB	1.35V	256Mx64	M474B5773DH0-YH9/K0	2Gb x8*9	Lead Free & Halogen Free	1333/1600	1	Now
4GB	1.35V	512Mx64	M474B5273DH0-YH9/K0	2Gb x8*18	Lead Free & Halogen Free	1333/1600	2	Now
			M474B5173BH0-YH9/K0	4Gb x8*9	Lead Free & Halogen Free	1333/1600	1	Now
8GB	1.35V	1024Mx64	M474B1G73BH0-YH9/K0	4Gb x8*18	Lead Free & Halogen Free	1333/1600	2	Now

NOTES: E6 = PC2-5300 (DDR2-667 @ CL=5) F7 = PC2-6400 (DDR2-800 @ CL=6) E7 = PC2-6400 (DDR2-800 @ CL=5) Voltage = 1.8V

## DDR3 SDRAM COMPONENTS

Density	Voltage	Organization	Part Number	# Pins-Package	Compliance	Speed (Mbps)	Dimensions	Production
1Gb	1.5V	256M x4	K4B1G0446F-HC(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
			K4B1G0446G-BC(F8/H9/K0/MA)	78 Ball -FBGA	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	7.5x11mm	Now
		128M x8	K4B1G0846G-BC(F8/H9/K0/MA)	78 Ball -FBGA	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866	7.5x11mm	Now
		128M x16	K4B1G1646G-BC(F8/H9/K0/MA/NB)	96 Ball -FBGA	Lead Free & Halogen Free, Flip Chip	1066/1333/1600/1866/2133	7.5x13.3mm	Now
2Gb	1.5V	512M x4	K4B2G0446C-HC(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
			K4B2G0446D-HC(F8/H9/K0/MA)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600/1866	7.5x11mm	Now
		256M x8	K4B2G0846C-HC(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
			K4B2G0846D-HC(F8/H9/K0/MA)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600/1866	7.5x11mm	Now
		128M x16	K4B2G1646C-HC(F8/H9/K0/MA)	96 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600/1866	7.5x13.3mm	Now
			K4B2G1646E-BC(F8/H9/K0/MA)	96 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600/1866	7.5x13.3mm	Now
4Gb	1.5V	1G x4	K4B4G0446B-HC(F8/H9/K0/MA)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600/1866	10x11mm	Now
		512M x8	K4B4G0846B-HC(F8/H9/K0/MA)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600/1866	10x11mm	Now
1Gb	1.35V	256M x4	K4B1G0446F-HY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
			K4B1G0446G-BY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free, Flip Chip	1066/1333/1600	7.5x11mm	Now
	1.35V	128M x8	K4B1G0846F-HY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
			K4B1G0846G-BY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free, Flip Chip	1066/1333/1600	7.5x11mm	Now
2Gb	1.35V	512M x4	K4B2G0446C-HY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
			K4B2G0446D-HY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
		256M x8	K4B2G0846C-HY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
			K4B2G0846D-HY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	7.5x11mm	Now
4Gb	1.35V	1G x4	K4B4G0446B-HY(F8/H9/K0)	78 Ball -FBGA	Lead Free & Halogen Free	1066/1333/1600	10x11mm	Now

NOTES: F8 = DDR3-1066 (7-7-7) H9 = DDR3-1333 (9-9-9) K0 = DDR3-1600 (11-11-11) MA = DDR3-1866 (13-13-13) NB = DDR3-2133 (14-14-14)  
\* MA, and NB are available in ES only

## DDR2 SDRAM COMPONENTS

Density	Organization	Part Number	# Pins-Package	Dimensions	Package	Speed (Mbps)	Production
256Mb	16Mx16	K4T56163QN-HC(E6/F7/E7/F8)	84-FBGA	7.5x12.5mm	Lead free & Halogen free	667/800/1066	Now
512Mb	128M x4	K4T51043QJ-HC(E6/F7/E7)	60-FBGA	7.5x9.5mm	Lead free & Halogen free	667/800	Now
	64M x8	K4T51083QJ-HC(E6/F7/E7/F8)	60-FBGA	7.5x9.5mm	Lead free & Halogen free	667/800/1066	Now
	32M x16	K4T51163QJ-HC(E6/F7/E7/F8)	84-FBGA	7.5x12.5mm	Lead free & Halogen free	667/800/1066	Now
1Gb	256M x4	K4T1G044QF-BC(E6/F7/E7)	60-FBGA	7.5x9.5mm	Lead free & Halogen free	667/800	Now
	128M x8	K4T1G084QF-BC(E6/F7/E7/F8)	60-FBGA	7.5x9.5mm	Lead free & Halogen free	667/800/1066	Now
	64M x16	K4T1G164QF-BC(E6/F7/E7/F8)	84-FBGA	7.5x12.5mm	Lead free & Halogen free	667/800/1066	Now

## DDR SDRAM COMPONENTS

Density	Organization	Part Number	# Pins - Package	Speed (Mbps)
512Mb	128Mx4	K4H510438J-LCB3/B0	66-TSOP	266/333
		K4H510438J-BCCC/B3	60-FBGA	333/400
	64Mx8	K4H510838J-LCCC/B3	66-TSOP	333/400
		K4H510838J-BCCC/B3	60-FBGA	333/400
	32Mx16	K4H511638J-LCCC/B3	66-TSOP	333/400

NOTES: B0 = DDR266 (133MHz @ CL=2.5) A2 = DDR266 (133MHz @ CL=2) B3 = DDR333 (166MHz @ CL=2.5) CC = DDR400 (200MHz @ CL=3)



## MOBILE DRAM COMPONENTS

Density	Type	Organization	Part Number	Package	Power	Production
512Mb	MDDR	32Mx16	K4X51163PK-FGD8	60-FBGA, 200MHz	1.8V	Now
		16Mx32	K4X51323PK-8GD8	90-FBGA, 200MHz	1.8V	Now
1Gb		32Mx32	K4X1G323PF-8GD8	90-FBGA, 200MHz	1.8V	Now
2Gb		64Mx32	K4X2G323PD-8GD8	90-FBGA, 200MHz	1.8V	Now
4Gb		x32 (2CS, 2CKE)	K4X4G303PD-AGD8	168-FBGA, 12x12 PoP, DDP, 200MHz	1.8V	Now
2Gb		1CH x32	K4P2G324ED-AGC1	168-FBGA, 12x12 PoP, MONO, 800Mbps	1.2V	Now
4Gb		1CH x32	K4P4G324EB-AGC2	168-FBGA, 12x12 PoP, MONO, 1066Mbps	1.2V	Now
		2CH x32	K3PE4E400P-XGC2	216FBGA, 12x12 PoP, DDP, 1066Mbps	1.2V	Now
		2CH x32	K3PE4E400D-XGC2	220FBGA, 14x14 PoP, DDP, 1066Mbps	1.2V	Now
		2CH x32	K3PE4E400K-XGC2	240-FBGA, 14x14 PoP, DDP, 1066Mbps	1.2V	Now
	1CH x32	K4P8G304EB-FGC2	134-FBGA, 11x11.5, DDP, 1066Mbps	1.2V	Now	
8Gb	1CH x32	K4P8G304EB-AGC1	168-FBGA, 12x12 PoP, DDP, 800Mbps	1.2V	Now	
	2CH x32	K4P8G304EB-GGC2	216FBGA, 12x12 PoP, DDP, 1066Mbps	1.2V	Now	
	2CH x32	K3PE7E700M-XGC2	216-FBGA, 12x12 PoP, DDP, 1066Mbps	1.2V	Now	
	2CH x32	K3PE7E700D-XGC2	220-FBGA, 14x14 PoP, DDP, 1066Mbps	1.2V	Now	
	2CH x32	K3PE7E700A-XGC2	240-FBGA, 14x14 PoP, DDP, 1066Mbps	1.2V	Now	
16Gb	1CH x32	K4PAG304EB-FGC2	134-FBGA, 11x11.5, QDP, 1066Mbps	1.2V	Now	
	2CH x32	K3PE0E000M-XGC2	216-FBGA, 12x12 PoP, QDP, 1066Mbps	1.2V	Now	
	2CH x32	K3PE0E000A-XGC2	220-FBGA, 14x14 PoP, QDP, 1066Mbps	1.2V	Now	
	2CH x32	K3PE0E000B-XGC2	240-FBGA, 14x14 PoP, QDP, 1066Mbps	1.2V	Now	
4Gb	LPDDR2	1CH x32	K4E4E324EB-EGCE	178-FBGA, 11x11.5, MONO, 1600Mbps	1.2V	CS
8Gb		1CH x32	K4E8E304EB-EGCE	178-FBGA, 11x11.5, DDP, 1600Mbps	1.2V	CS
		2CH x32	K3QF1F100B-PGCE	253-FBGA, 11x11.5, DDP, 1600Mbps	1.2V	CS
		2CH x32	K3QF1F100G-XGCE	216-FBGA, 15x15 PoP, DDP, 1600Mbps	1.2V	CS
16Gb		1CH x32	K4E6E304EB-EGCE	178-FBGA, 11x11.5, QDP, 1600Mbps	1.2V	CS
		2CH x32	K3QF2F200A-XGCE	253-FBGA, 11x11.5, QDP, 1600Mbps	1.2V	CS
		2CH x32	K3QF2F200B-XGCE	216-FBGA, 15x15 PoP, QDP, 1600Mbps	1.2V	CS

## GRAPHICS DRAM COMPONENTS

Type	Density	Organization	Part Number	Package	VDD/VDDQ	Speed Bin (MHz)	Production
GDDR5	2Gb	64Mx32	K4G20325FD-FC(04/03/28)	170-FBGA	1.5V/1.5V	1250/1500/1750	Now
			K4G20325FD-FC(04/03)	170-FBGA	1.35V/1.35V	1000/1250	Now
	1Gb	32Mx32	K4G10325FG-HC03	170-FBGA	1.6V/1.6V	1500	Now
			K4G10325FG-HC(05/04)	170-FBGA	1.5V/1.5V	1000/1250	Now
			K4G10325FG-HC(04/03)	170-FBGA	1.35V/1.35V	900/1050	Now
GDDR3	1Gb	32Mx32	K4J10324KG-HC(14/1A)	136-FBGA	1.8V/1.8V	700/1000	Now
gDDR3	4Gb	256Mx16	K4W4G1646B-HC(12/11/1A)	96-FBGA	1.5V/1.5V	800/933/1066	Now
	2Gb	128Mx16	K4W2G1646E-BC(15/12/11/1A)	96-FBGA	1.5V/1.5V	667/800/933/1066	Now
	1Gb	64Mx16	K4W1G1646G-BC(15/12/11/1A)	96-FBGA	1.5V/1.5V	667/800/933/1066	Now

NOTES:

**Package**

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

**(1) Speeds (clock cycle - speed bin)**

03: 0.3ns (3000MHz)    08: 0.83ns (1200MHz)    14: 1.429ns (700MHz)  
04: 0.4ns (2500MHz)    1A: 1ns (1000MHz GDDR3)    20: 2.0ns (500MHz)  
05: 0.5ns (2000MHz)    1A: 1ns (1066MHz gDDR3)    25: 2.5ns (400MHz)  
5C: 0.555 (1800MHz)    11: 1.1ns (933MHz)  
12: 1.25ns (800MHz)

# COMPONENT DRAM ORDERING INFORMATION

	1	2	3	4	5	6	7	8	9	10	11
	K	4	T	XX	XX	X	X	X	X	X	XX
SAMSUNG Memory											Speed
DRAM											Temp & Power
DRAM Type											Package Type
Density											Revision
Bit Organization											Interface (VDD, VDDQ)
											Number of Internal Banks

## 1. Memory (K)

08: x8

## 2. DRAM: 4

15: x16 (2CS)

## 3. DRAM Type

B: DDR3 SDRAM  
D: GDDR SDRAM  
G: GDDR5 SDRAM

16: x16

26: x4 Stack (JEDEC Standard)

27: x8 Stack (JEDEC Standard)

30: x32 (2CS, 2CKE)

31: x32 (2CS)

32: x32

H: DDR SDRAM  
J: GDDR3 SDRAM  
M: Mobile SDRAM  
N: SDDR2 SDRAM  
S: SDRAM  
T: DDR SDRAM  
U: GDDR4 SDRAM

V: Mobile DDR SDRAM Power Efficient Address

W: SDDR3 SDRAM

X: Mobile DDR SDRAM

Y: XDR DRAM

Z: Value Added DRAM

## 6. # of Internal Banks

2: 2 Banks

3: 4 Banks

4: 8 Banks

5: 16 Banks

## 7. Interface ( VDD, VDDQ)

2: LVTTTL, 3.3V, 3.3V

4: LVTTTL, 2.5V, 2.5V

5: SSTL-2 1.8V, 1.8V

6: SSTL-15 1.5V, 1.5V

8: SSTL-2, 2.5V, 2.5V

A: SSTL, 2.5V, 1.8V

F: POD-15 (1.5V, 1.5V)

H: SSTL\_2 DLL, 3.3V, 2.5V

M: LVTTTL, 1.8V, 1.5V

N: LVTTTL, 1.5V, 1.5V

P: LVTTTL, 1.8V, 1.8V

Q: SSTL-2 1.8V, 1.8V

R: SSTL-2, 2.8V, 2.8V

U: DRSL, 1.8V, 1.2V

## 8. Revision

A: 2nd Generation

B: 3rd Generation

C: 4th Generation

D: 5th Generation

E: 6th Generation

F: 7th Generation

G: 8th Generation

H: 9th Generation

I: 10th Generation

J: 11th Generation

K: 12th Generation

M: 1st Generation

N: 14th Generation

Q: 17th Generation

## 9. Package Type

### DDR2 DRAM

L: TSOP II (Lead-free & Halogen-free)

H: FBGA (Lead-free & Halogen-free)

F: FBGA for 64Mb DDR (Lead-free & Halogen-free)

6: sTSOP II (Lead-free & Halogen-free)

T: TSOP II

N: sTSOP II

G: FBGA

U: TSOP II (Lead-free)

V: sTSOP II (Lead-free)

Z: FBGA (Lead-free)

### DDR2 SDRAM

Z: FBGA (Lead-free)

J: FBGA DDP (Lead-free)

Q: FBGA QDP (Lead-free)

H: FBGA (Lead-free & Halogen-free)

M: FBGA DDP (Lead-free & Halogen-free)

E: FBGA QDP (Lead-free & Halogen-free)

T: FBGA DSP (Lead-free & Halogen-free, Thin)

### DDR3 SDRAM

Z: FBGA (Lead-free)

H: FBGA (Halogen-free & Lead-free)

### Graphics Memory

Q: TQFP

U: TQFP (Lead Free)

G: 84/144 FBGA

V: 144 FBGA (Lead Free)

Z: 84 FBGA (Lead Free)

T: TSOP

L: TSOP (Lead Free)

A: 136 FBGA

B: 136 FBGA (Lead Free)

H: FBGA (Hologen Free & Lead Free)

E: 100 FBGA (Hologen Free & Lead Free)

### SDRAM

L TSOP II (Lead-free & Halogen-free)

N: STSOP II

T: TSOP II

U: TSOP II (Lead-free)

V: sTSOP II (Lead-free)

## 4. Density

10: 1G, 8K/32ms

16: 16M, 4K/64ms

26: 128M, 4K/32ms

28: 128M, 4K/64ms

32: 32M, 2K/32ms

50: 512M, 32K/16ms

51: 512M, 8K/64ms

52: 512M, 8K/32ms

54: 256M, 16K/16ms

55: 256M, 4K/32ms

56: 256M, 8K/64ms

62: 64M, 2K/16ms

64: 64M, 4K/64ms

68: 768M, 8K/64ms

1G: 1G, 8K/64ms

2G: 2G, 8K/64ms

4G: 4G, 8K/64ms

## 5. Bit Organization

02: x2

04: x4

06: x4 Stack (Flexframe)

07: x8 Stack (Flexframe)

# COMPONENT DRAM ORDERING INFORMATION

	1	2	3	4	5	6	7	8	9	10	11
	K	4	T	XX	XX	X	X	X	X	X	XX
SAMSUNG Memory											Speed
DRAM											Temp & Power
DRAM Type											Package Type
Density											Revision
Bit Organization											Interface (VDD, VDDQ)
											Number of Internal Banks

### XDR DRAM

J: BOC(LF) P: BOC

### Mobile DRAM

#### Leaded/Lead Free

- G/A: 52balls FBGA Mono
- R/B: 54balls FBGA Mono
- X/Z: 54balls BOC Mono
- J/V: 60(72)balls FBGA Mono 0.5pitch
- L /F: 60balls FBGA Mono 0.8pitch
- S/D: 90balls FBGA

#### Monolithic (11mm x 13mm)

- F/H: Smaller 90balls FBGA Mono
- Y/P: 54balls CSP DDP
- M/E: 90balls FBGA DDP

### DDR2 SDRAM

- CC: DDR2-400 (200MHz @ CL=3, tRCD=3, tRP=3)
- D5: DDR2-533 (266MHz @ CL=4, tRCD=4, tRP=4)
- E6: DDR2-667 (333MHz @ CL=5, tRCD=5, tRP=5)
- F7: DDR2-800 (400MHz @ CL=6, tRCD=6, tRP=6)
- E7: DDR2-800 (400MHz @ CL=5, tRCD=5, tRP=5)

### DDR3 SDRAM

- F7: DDR3-800 (400MHz @ CL=6, tRCD=6, tRP=6)
- F8: DDR3-1066 (533MHz @ CL=7, tRCD=7, tRP=7)
- G8: DDR3-1066 (533MHz @ CL=8, tRCD=8, tRP=8)
- H9: DDR3-1333 (667MHz @ CL=9, tRCD=9, tRP=9)
- K0: DDR3-1600 (800MHz @ CL=11, tRCD=11, tRP=11)
- MA: DDR3-1866 (933MHz @ CL=13, tRCD=13, tRP=13)
- NB: DDR3-2133 (1067MHz @ CL=14, tRCD=14, tRP=14)

### Graphics Memory

- 18: 1.8ns (550MHz)
- 04: 0.4ns (2500MHz)
- 20: 2.0ns (500MHz)
- 05: 0.5ns (2000MHz)
- 22: 2.2ns (450MHz)
- 5C: 0.56ns (1800MHz)
- 25: 2.5ns (400MHz)
- 06: 0.62ns (1600MHz)
- 2C: 2.66ns (375MHz)
- 6A: 0.66ns (1500MHz)
- 2A: 2.86ns (350MHz)
- 07: 0.71ns (1400MHz)
- 33: 3.3ns (300MHz)
- 7A: 0.77ns (1300MHz)
- 36: 3.6ns (275MHz)
- 08: 0.8ns (1200MHz)
- 40: 4.0ns (250MHz)

09: 0.9ns (1100MHz)

- 45: 4.5ns (222MHz)
- 1 : 1.0ns (1000MHz)
- 50/5A: 5.0ns (200MHz)
- 1 : 1.1ns (900MHz)
- 55: 5.5ns (183MHz)
- 12: 1.25ns (800MHz)
- 60: 6.0ns (166MHz)
- 14: 1.4ns (700MHz)
- 16: 1.6ns (600MHz)

### SDRAM (Default CL=3)

- 50: 5.0ns (200MHz CL=3)
- 60: 6.0ns (166MHz CL=3)
- 67: 6.7ns
- 75: 7.5ns PC133 (133MHz CL=3)

### XDR DRAM

- A2: 2.4Gbps, 36ns, 16Cycles
- B3: 3.2Gbps, 35ns, 20Cycles
- C3: 3.2Gbps, 35ns, 24Cycles
- C4: 4.0Gbps, 28ns, 24Cycles
- DS: Daisychain Sample

### Mobile-SDRAM

- 60: 166MHz, CL 3
- 75: 133MHz, CL 3
- 80: 125MHz, CL 3
- 1H: 105MHz, CL 2
- 1L: 105MHz, CL 3
- 15: 66MHz, CL 2 & 3

### Mobile-DDR

- C3: 133MHz, CL 3
- C2: 100MHz, CL 3
- C0: 66MHz, CL 3

Note: All of Lead-free or Halogen-free product are in compliance with RoHS

## 10. Temp & Power - COMMON (Temp, Power)

- C: Commercial, Normal (0°C – 95°C) & Normal Power
- C: (Mobile Only) Commercial (-25 ~ 70°C), Normal Power
- J: Commercial, Medium
- L: Commercial, Low (0°C – 95°C) & Low Power
- L: (Mobile Only) Commercial, Low, i-TCSR
- F: Commercial, Low, i-TCSR & PASR & DS
- E: Extended (-25~85°C), Normal
- N: Extended, Low, i-TCSR
- G: Extended, Low, i-TCSR & PASR & DS
- I: Industrial, Normal (-40°C – 85°C) & Normal Power
- P: Industrial, Low (-40°C – 85°C) & Low Power
- H: Industrial, Low, i-TCSR & PASR & DS

## 11. Speed (Wafer/Chip Biz/BGD: 00)

### DDR SDRAM

- CC: DDR400 (200MHz @ CL=3, tRCD=3, tRP=3)
- B3: DDR333 (166MHz @ CL=2.5, tRCD=3, tRP=3) \*1
- A2: DDR266 (133MHz @ CL=2, tRCD=3, tRP=3)
- B0: DDR266 (133MHz @ CL=2.5, tRCD=3, tRP=3)

Note 1: "B3" has compatibility with "A2" and "B0"

# MODULE DRAM ORDERING INFORMATION

	1	2	3	4	5	6	7	8	9	10	11	12	13
	M	X	XX	T	XX	X	X	X	X	X	X	XX	X
SAMSUNG Memory													AMB Vendor
DIMM													Speed
Data bits													Temp & Power
DRAM Component Type													PCB Revision
Depth													Package
Number of Banks													Component Revision
Bit Organization													

## 1. Memory Module: M

### 2. DIMM Type

- 3: DIMM
- 4: SODIMM

### 3. Data bits

- 12: x72 184pin Low Profile Registered DIMM
- 63: x63 PC100/PC133 μSODIMM with SPD for 144pin
- 64: x64 PC100/PC133 SODIMM with SPD for 144pin (Intel/JEDEC)
- 66: x64 Unbuffered DIMM with SPD for 144pin/168pin (Intel/JEDEC)
- 68: x64 184pin Unbuffered DIMM
- 70: x64 200pin Unbuffered SODIMM
- 71: x64 204pin Unbuffered SODIMM
- 74: x72/ECC Unbuffered DIMM with SPD for 168pin (Intel/JEDEC)
- 77: x72/ECC PLL + Register DIMM with SPD for 168pin (Intel PC100)
- 78: x64 240pin Unbuffered DIMM
- 81: x72 184pin ECC unbuffered DIMM
- 83: x72 184pin Registered DIMM
- 90: x72/ECC PLL + Register DIMM
- 91: x72 240pin ECC unbuffered DIMM
- 92: x72 240pin VLP Registered DIMM
- 93: x72 240pin Registered DIMM
- 95: x72 240pin Fully Buffered DIMM with SPD for 168pin (JEDEC PC133)

### 4. DRAM Component Type

- B: DDR3 SDRAM (1.5V VDD)
- L: DDR SDRAM (2.5V VDD)
- S: SDRAM
- T: DDR2 SDRAM (1.8V VDD)

## 5. Depth

- 09: 8M (for 128Mb/512Mb)
- 17: 16M (for 128Mb/512Mb)
- 16: 16M
- 28: 128M
- 29: 128M (for 128Mb/512Mb)
- 32: 32M
- 33: 32M (for 128Mb/512Mb)
- 51: 512M
- 52: 512M (for 512Mb/2Gb)
- 56: 256M
- 57: 256M (for 512Mb/2Gb)
- 59: 256M (for 128Mb/512Mb)
- 64: 64M
- 65: 64M (for 128Mb/512Mb)
- 1G: 1G
- 1K: 1G (for 2Gb)

## 6. # of Banks in Comp. & Interface

- 1: 4K/64mxRef., 4Banks & SSTL-2
- 2 : 8K/64ms Ref., 4Banks & SSTL-2
- 2: 4K/64ms Ref., 4Banks & LVTTT (SDR Only)
- 5: 8K/64ms Ref., 4Banks & LVTTT (SDR Only)
- 5: 4Banks & SSTL-1.8V
- 6: 8Banks & SSTL-1.8V

## 7. Bit Organization

- 0: x 4
- 3: x 8
- 4: x16
- 6: x 4 Stack (JEDEC Standard)
- 7: x 8 Stack (JEDEC Standard)
- 8: x 4 Stack
- 9: x 8 Stack

## 8. Component Revision

- A: 2nd Gen.
- B: 3rd Gen.
- C: 4th Gen.
- D: 5th Gen.
- E: 6th Gen.
- F: 7th Gen.
- G: 8th Gen.
- M: 1st Gen.
- Q: 17th Gen.

## 9. Package

- E: FBGA QDP (Lead-free & Halogen-free)
- G: FBGA
- H: FBGA (Lead-free & Halogen-free)
- J: FBGA DDP (Lead-free)
- M: FBGA DDP (Lead-free & Halogen-free)
- N: sTSOP
- Q: FBGA QDP (Lead-free)
- T: TSOP II (400mil)
- U: TSOP II (Lead-Free)
- V: sTSOP II (Lead-Free)
- Z: FBGA (Lead-free)

## 10. PCB Revision

- 0: Mother PCB
- 1: 1st Rev
- 2: 2nd Rev.
- 3: 3rd Rev.
- 4: 4th Rev.
- A: Parity DIMM
- S: Reduced PCB
- U: Low Profile DIMM

## 11. Temp & Power

- C: Commercial Temp. (0°C ~ 95°C) & Normal Power
- L: Commercial Temp. (0°C ~ 95°C) & Low Power

## 12. Speed

- CC: (200MHz @ CL=3, tRCD=3, tRP=3)
- D5: (266MHz @ CL=4, tRCD=4, tRP=4)
- E6: (333MHz @ CL=5, tRCD=5, tRP=5)
- F7: (400MHz @ CL=6, tRCD=6, tRP=6)
- E7: (400MHz @ CL=5, tRCD=5, tRP=5)
- F8: (533MHz @ CL=7, tRCD=7, tRP=7)
- G8: (533MHz @ CL=8, tRCD=8, tRP=8)
- H9: (667MHz @ CL=9, tRCD=9, tRP=9)
- K0: (800MHz @ CL=10, tRCD=10, tRP=10)
- 7A: (133MHz CL=3/PC100 CL2)

## 13. AMB Vendor for FBDIMM

- 0, 5: Intel
- 1, 6, 8: IDT
- 9: Montage

Note: All of Lead-free or Halogen-free product are in compliance with RoHS

## SLC FLASH

Density	Technology	Part Number	Package Type	Org.	Vol(V)	Status
0.0156 in	21nm DDR	K9WDGY8S5M-CCK*	316FBGA	x8	3.3/1.8	MP
256Gb ODP	21nm DDR	K9QFGY8S7M-CCK*	316FBGA	x8	3.3/1.8	MP
128Gb QDP	21nm DDR	K9VHGY8SCM-CCK*	316FBGA	x8	3.3/1.8	MP
16Gb QDP	42nm SDR	K9WAG08U1D-SCB0*	TSOP1	x8	3.3	MP
		K9WAG08U1D-SIB0*	TSOP1	x8	3.3	MP
8Gb DDP	42nm SDR	K9K8G08U0D-SCB0*	TSOP-LF/HF	x8	3.3	MP
		K9K8G08U0D-SIB0*	TSOP-LF/HF, i-temp	x8	3.3	MP
4Gb	42nm SDR	K9F4G08U0D-SCB0*	TSOP1 HF & LF	x8	3.3	MP
		K9F4G08U0D-SIB0*	TSOP1 HF & LF, i-temp	x8	3.3	MP
2Gb	42nm SDR	K9F2G08U0C-SCB0*	TSOP-LF/HF	x8	3.3	MP
		K9F2G08U0C-SIB0*	TSOP-LF/HF, i-temp	x8	3.3	MP
1Gb	42nm SDR	K9F1G08U0D-SCB0*	TSOP-LF/HF	x8	3.3	MP
		K9F1G08U0D-SIB0*	TSOP-LF/HF, i-temp	x8	3.3	MP

Please contact your local Samsung sales representative for latest product offerings.

Note: All parts are lead free

## MLC FLASH

Type	Density	Technology	Part Number	Package Type	Org.	Vol(V)	Status
2bit	512Gb ODP	21nm DDR	K9PHGY8S5A-HCK0000	132BGA	x8	3.3/1.8	MP
	256Gb QDP	21nm DDR	K9HFGY8S5A-HCK0000	132BGA	x8	3.3/1.8	MP
	128Gb QDP	21nm SDR	K9HDG08U1B-SCB0000	48TSOP	x8	3.3	MP
		21nm DDR	K9HDGY8U5B-HCK0000	132BGA	x8	3.3	MP
	128Gb DDP	21nm DDR	K9LDGY8S1A-HCK0000	132BGA	x8	3.3/1.8	MP
	64Gb DDP	21nm SDR	K9LCG08U0B-SCB0000	48TSOP	x8	3.3	MP
		21nm SDR	K9LCGY8U1B-HCK0000	132BGA	x8	3.3	MP
	64Gb mono	21nm DDR	K9GCGY8S0A-HCK0000	132BGA	x8	3.3/1.8	MP
			K9GCGD8U0A-MCB0000	60LGA	x8	3.3	MP
		21nm SDR	K9GBG08U0B-SCB0000	48TSOP	x8	3.3	MP
			21nm DDR	K9GBGY8U0B-HCK0000	132BGA	x8	3.3/1.8
	32Gb mono	21nm DDR	K9GBGD8U0A-MCB0000	60LGA	x8	3.3	MP
K9ABGD8U0C-SCB0000			48TSOP	x8	3.3	MP	
3bit	256Gb QDP	21nm DDR	K9CFGD8U1A-SCB0000	48TSOP	x8	3.3	MP
	128Gb DDP	21nm DDR	K9BDGD8U0A-SCB0000	48TSOP	x8	3.3	MP
	64Gb mono	21nm DDR	K9ACGD8U0A-SCB0000	48TSOP	x8	3.3	MP
	32Gb mono	21nm DDR	K9ABGD8U0C-SCB0000	48TSOP	x8	3.3	MP

Please contact your local Samsung sales representative for latest product offerings.

Note: All parts are lead-free & halogen-free

## SD and microSD FLASH CARDS

Application	Density	Part Number	Class	Ultra High Speed (UHS)
SD Cards	2GB	MMAUF02G4ACA-QMP00	CL4	
	4GB	MMBTF04G3CCH-QMM00	CL4	UHS 104
	8GB	MMCTF08G3ACH-QMM00	CL4	UHS 104
	16GB	MMCTF16GWACJ-SAC00	CL10	UHS 104
	32GB	MMCTF32GWACJ-SAC00	CL10	UHS 104
	64GB	MMCTF64GWACJ-SAC00	CL10	UHS 104
uSD Cards	2GB	MMAUR02G3ACA-QMP00	CL4	
	4GB	MMBTR04G3CCA-QMP00	CL4	UHS 104
	8GB	MMCTR08G3ACH-QMM00	CL4	UHS 104
	16GB	MMCTR16GUACJ-SAC00	CL10	UHS 104
	32GB	MMCTR32GUACJ-SAC00	CL10	UHS 104
	64GB	MMCTR64GUACJ-SAC00	CL10	UHS 104

Please contact your local Samsung sales representative for part numbers and latest product offerings.

## INDUSTRIAL CARDS

Density	Part Number	Sequential Reads	Sequential Writes
8GB	MMCAF08G3ACA-QMWCV	24 MB/s	16MB/s
16GB	MMCAF16GWACA-QMWCV	24 MB/s	21MB/s

Please contact your local Samsung sales representative for part numbers and latest product offerings.

## MAINSTREAM eMMC

Density	Flash	MMC	Class	Part Number	Seq R/W Perf (MB/s)	Random R/W IOPS	Package Size (mm)	C/S
4GB	32Gb*1	4.41	100	KLM4G1YE4C-B001	60/6	2000/100	11.5x13x1.0	MP
8GB	64Gb*1	4.41	100	KLM8G1WE4A-A001	60/6	2000/100	12x16x1.0	MP
16GB	64Gb*2	4.41	400	KLMAG2WE4A-A001	80/10	2500/260	12x16x1.0	MP
32GB	64Gb*4	4.41	400	KLMBG4WE4A-A001	80/22	2500/400	12x16x1.0	MP
64GB	64Gb*8	4.41	400	KLMCG8WE4A-A001	80/22	2500/400	12x16x1.2	MP

## eMMC-PRO (HIGH PERFORMANCE)

Density	Flash	MMC	Class	Part Number	Seq R/W Perf (MB/s)	Random R/W IOPS	Package Size (mm)	C/S
16GB	64Gb*2	4.5	1500	KLMAG2GE2A-A001	140/40	3500/1100	12x16x1.0	MP
32GB	64Gb*4	4.5	1500	KLMBG4GE2A-A001	140/50	3500/1500	12x16x1.0	MP
64GB	64Gb*8	4.5	1500	KLMCG8GE2A-A001	140/50	3500/1500	12x16x1.2	MP
128GB	64Gb*16	4.5	1500	KLMDGAGE2A-A001	140/50	3500/1500	12x16x1.6	MP

## SOLID STATE DRIVES (SSD)

Drive Type	Drive Name	Interface	Form Factor	Connector	Component	Power-loss Protection	Density	Part Number	Status
Client PC/ Embedded	PM841	SATA III - 6Gb/s	mSATA MO-300	Mini PCI-E	3-bit MLC	No	128GB	MZMTD128HAFV-00000	MP
							256GB	MZMTD256HAGM-00000	MP
							512GB	MZMTD512HAGL-00000	MP
	SM841	SATA III - 6Gb/s	mSATA MO-300	Mini PCI-E	2-bit MLC	No	128GB	MZMPD128HAFV-00000	MP
							256GB	MZMPD256HAGM-00000	MP
							512GB	MZMPD512HAGL-00000	MP
Data Center	PM843	SATA III - 6Gb/s	2.5" 7mmT	SF-8223	3-bit MLC	No	120GB	MZ7TD120HAFV-000DA	MP
							240GB	MZ7TD240HAFV-000DA	MP
							480GB	MZ7TD480HAGM-000DA	MP
	SM843	SATA III - 6Gb/s	2.5" 7mmT	SF-8223	2-bit MLC	No	120GB	MZ7PD120HAFV-000DA	MP
							240GB	MZ7PD240HAFV-000DA	MP
							480GB	MZ7PD480HAGM-000DA	MP
	SM843T	SATA III - 6Gb/s	2.5" 7mmT	SF-8223	2-bit MLC	Yes	120GB	MZ7WD120HAFV-00003	MP
							240GB	MZ7WD240HAFV-00003	MP
							480GB	MZ7WD480HAGM-00003	MP
Storage Enclosure	SM1625	SAS Gen 2.0 - 6Gb/s	2.5" 15mmT	SFF-8482	2-bit E-MLC	Yes	100GB	MZ6ER100HAFV-00003	MP
							200GB	MZ6ER200HAGM-00003	MP
							400GB	MZ6ER400HAGL-00003	MP
							800GB	MZ6ER800HAGL-00003	MP

# FLASH PRODUCTS ORDERING INFORMATION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	K	9	X	X	X	X	X	X	X	X	-	X	X	X	X	
SAMSUNG Memory																Pre-Program Version
NAND Flash																Customer Bad Block
Small Classification																Temp
Density																Package
Density																---
Organization																Generation
Organization																Mode
Vcc																

## 1. Memory (K)

## 2. NAND Flash : 9

## 3. Small Classification

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

- 7 : SLC eMMC
- 8 : MLC eMMC
- F : SLC Normal
- G : MLC Normal
- H : MLC QDP
- K : SLC DDP
- L : MLC DDP
- M : MLC DSP
- N : SLC DSP
- P : MLC 8 Die Stack
- Q : SLC 8 Die Stack
- S : SLC Single SM
- T : SLC SINGLE (S/B)
- U : 2 Stack MSP
- W : SLC 4 Die Stack

## 4~5. Density

- 12 : 512M
- 56 : 256M
- 1G : 1G
- 2G : 2G
- 4G : 4G
- 8G : 8G
- AG: 16G
- BG: 32G
- CG: 64G
- DG : 128G
- EG : 256G
- LG : 24G
- NG : 96G
- ZG : 48G
- 00 : NONE

## 6~7. Organization

- 00 : NONE
- 08 : x8
- 16 : 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
- 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
- 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

## 11. ----

## 12. Package

- A : COB
- B : FBGA (Halogen-Free, Lead-Free)
- C : CHIP BIZ D : 63-TBGA
- F : WSOP (Lead-Free) G : FBGA
- H : TBGA (Lead-Free)
- I : ULGA (Lead-Free) (12\*17)
- J : FBGA (Lead-Free)
- L : ULGA (Lead-Free) (14\*18)
- M : TLGA N : TLGA2
- P : TSOP1 (Lead-Free)
- Q : TSOP2 (Lead-Free)
- S : TSOP1 (Halogen-Free, Lead-Free)
- T : TSOP2 U : COB (MMC)
- V : WSOP W : Wafer
- Y : TSOP1 Z : WELP (Lead-Free)

## 13. Temp

- C : Commercial I : Industrial
- 0 : NONE (Containing Wafer, CHIP, BIZ, Exception handling code)

## 14. Customer Bad Block

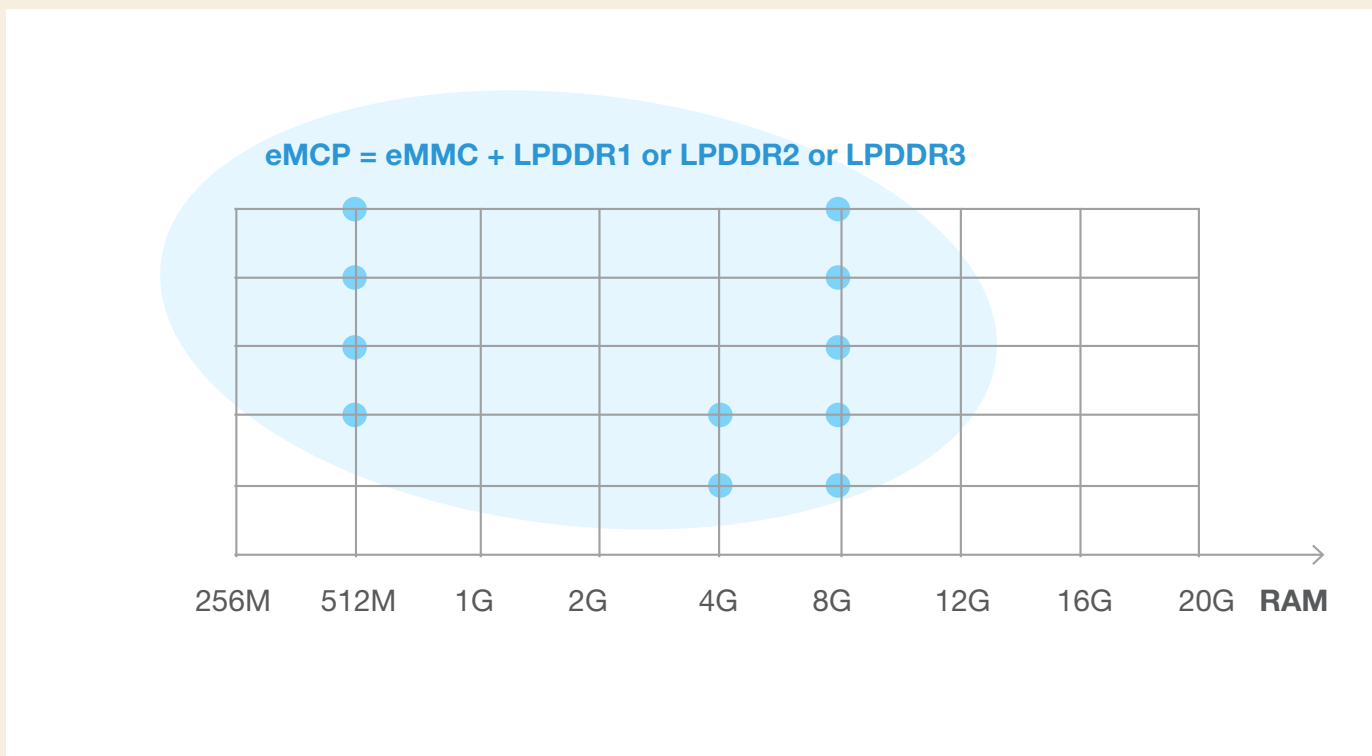
- B : Include Bad Block
- D : Daisychain Sample
- L : 1~5 Bad Block
- N : ini. 0 blk, add. 10 blk
- S : All Good Block
- 0 : NONE (Containing Wafer, CHIP, BIZ, Exception handling code)

## 15. Pre-Program Version

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

Samsung has a vast portfolio of eMCP products for a variety of solutions, such as mobile phones, PMPs, and tablet computers. The following illustration shows Samsung's lineup of eMCP memory solutions, which can be deployed in almost any application.

### Samsung eMCP product suite with different densities and types of Mobile DRAM and eMMC





## eMCP: eMMC + LPDDR3

Memory	eMMC Density	DRAM Density/Organization	Voltage (eMMC-DRAM)	Package
eMMC & MDRAM	4GB	4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	221FBGA 11.5x13mm
	8GB	4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	221FBGA 11.5x13mm
	16GB	4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	221FBGA 11.5x13mm

## eMCP: eMMC + LPDDR2

Memory	eMMC Density	DRAM Density/Organization	Voltage (eMMC-DRAM)	Package
eMMC & MDRAM	4GB	4Gb	3.3V/1.8V - 1.8V/1.2V	162FBGA 11.5x13mm
		4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	162FBGA 11.5x13mm
	8GB	4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	162FBGA 11.5x13mm
	16GB	4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	162FBGA 11.5x13mm
	32GB	4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	162FBGA 11.5x13mm
	64GB	4Gb*2 (x32, 1ch, 2CS)	3.3V/1.8V - 1.8V/1.2V	186FBGA 12x16mm

## eMCP: eMMC + MDDR

Memory	eMMC Density	DRAM Density/Organization	Voltage (eMMC-DRAM)	Package
eMMC & MDRAM	4GB	2Gb*2 (x32, 2CS/CKE)	3.3V/1.8V - 1.8V	153FBGA 11.5x13mm
	8GB	512Mb (x16)	3.3V/1.8V - 1.8V	153FBGA 11.5x13mm
	16GB	512Mb (x16)	3.3V/1.8V - 1.8V	153FBGA 11.5x13mm
	32GB	512Mb (x16)	3.3V/1.8V - 1.8V	153FBGA 11.5x13mm
	64GB	512Mb (x16)	3.3V/1.8V - 1.8V	169FBGA 12x16mm

# SAMSUNG SOLID STATE DRIVES

	STANDARD DATA CENTER SERIES Read-Intensive Environments	PRO DATA CENTER SERIES High-Read and Write Environments	DELUXE ENTERPRISE SERIES High-Write Environments
	Samsung PM843	Samsung SM843	Samsung SM1625
<b>Form Factor</b>	2.5 inches	2.5 inches	2.5 inches
<b>Capacity (GB)</b>	120/240/480	120/240/480	100/200/400/800
<b>Host Interface</b>	Serial ATA 3 (6 Gb/s)	Serial ATA 3 (6 Gb/s)	SAS (6 Gb/s)
<b>MTBF</b>	1.5 Million Hours	2,000,000 hours	2,000,000 hours
<b>Uncorrectable Bit Error Rate (UBER)</b>	1x10 <sup>16</sup>	1x10 <sup>17</sup>	1x10 <sup>17</sup>
<b>Power Consumption (Active)</b>	4.2W	3.4W	9W
<b>Power Consumption (Idle)</b>	300 mW	300 mW	4W
<b>Random Read</b>	Up to 60,000 IOPS	Up to 70,000 IOPS	Up to 101,000 IOPS
<b>Random Write</b>	Up to 2,500 IOPS	Up to 11,500 IOPS	Up to 38,000 IOPS
<b>Random Terabytes Written (TBW)</b>	Up to 320 TBW	Up to 1,060 TBW Up to 1 WPD*	Up to 10,200 TBW Up to 10 WPD*
<b>Sequential Read</b>	Up to 520 MB/s	Up to 530 MB/s	Up to 925 MB/s
<b>Sequential Writes</b>	Up to 330 MB/s	Up to 420 MB/s	Up to 595 MB/s
<b>Sequential Terabytes Written (TBW)</b>	Up to 1,280 TBW	Up to 4,200 TBW Up to 5 WPD*	Up to 26,500 TBW Up to 18 WPD*
<b>Physical Dimensions</b>	100 x 70 x 7mm	100 x 70 x 7mm	100 x 70 x 15mm
<b>Weight</b>	60g	56g	169g

\*WPD = Drive Writes Per Day for 5 Years

Which SSD is right for you?

For more information, email: [SSD@ssi.samsung.com](mailto:SSD@ssi.samsung.com)

## SOLID STATE DRIVES (SSD)

Drive Type	Drive Name	Interface	Form Factor	Connector	Component	Power-loss Protection	Density	Part Number	Status
Client PC/ Embedded	PM841	SATA III - 6Gb/s	mSATA MO-300	Mini PCI-E	3-bit MLC	No	128GB	MZMTD128HAFV-00000	MP
							256GB	MZMTD256HAGM-00000	MP
							512GB	MZMTD512HAGL-00000	MP
	SM841	SATA III - 6Gb/s	mSATA MO-300	Mini PCI-E	2-bit MLC	No	128GB	MZMPD128HAFV-00000	MP
							256GB	MZMPD256HAGM-00000	MP
							512GB	MZMPD512HAGL-00000	MP
Data Center	PM843	SATA III - 6Gb/s	2.5" 7mmT	SF-8223	3-bit MLC	No	120GB	MZ7TD120HAFV-000DA	MP
							240GB	MZ7TD240HAFV-000DA	MP
							480GB	MZ7TD480HAGM-000DA	MP
	SM843	SATA III - 6Gb/s	2.5" 7mmT	SF-8223	2-bit MLC	No	120GB	MZ7PD120HAFV-000DA	MP
							240GB	MZ7PD240HAFV-000DA	MP
							480GB	MZ7PD480HAGM-000DA	MP
	SM843T	SATA III - 6Gb/s	2.5" 7mmT	SF-8223	2-bit MLC	Yes	120GB	MZ7WD120HAFV-00003	MP
							240GB	MZ7WD240HAFV-00003	MP
							480GB	MZ7WD480HAGM-00003	MP
960GB							MZ7WD960HAGP-00003	MP	
Storage Enclosure	SM1625	SAS Gen 2.0 - 6Gb/s	2.5" 15mmT	SFF-8482	2-bit E-MLC	Yes	100GB	MZ6ER100HADD-00003	MP
							200GB	MZ6ER200HAFV-00003	MP
							400GB	MZ6ER400HAGL-00003	MP
							800GB	MZ6ER800HAGL-00003	MP

## BLU-RAY SLIM

Interface	Speed	Type	Loading	Lightscribe	Model
SATA	BD Combo 6X	Slim	Tray	X	SN-406AB
	BD Writer 6X	Slim	Tray	X	SN-506BB

## BLU-RAY WRITER SLIM EXTERNAL

Interface	Speed	Type	Loading	Lightscribe	Model
USB 2.0	BD Writer 6X	Slim	Tray	X	SE-506AB
					SE-506BB

## DVD-W H/H

Interface	Speed	Type	Loading	Lightscribe	Model
SATA	DVD Write 24X	H/H	Tray	X	SH-224BB

## DVD-W SLIM

Interface	Speed	Type	Loading	Lightscribe	Model
SATA	DVD Write 8X	Slim	Tray	X	SN-208BB
					SN-208DB

## DVD-W SLIM EXTERNAL

Interface	Speed	Type	Loading	Lightscribe	Model
USB 2.0	DVD Write 8X	Ultra Slim	Tray	X	SE-218BB
		Slim	Tray	X	SE-208DB

# DID Product Classification

<b>E-DID: Exclusive DID</b>	SUPER NARROW	OUTDOOR: HIGH LUMINANCE » 1500 – 2000nit
<b>P-DID: Performance DID</b>	NARROW » Narrow » Black Bezel	WALL-MOUNTED » Thin/Light » (Edge LED)  LARGE FORMAT DISPLAY » 70"/82"
<b>B-DID: Basic DID</b>	LANDSCAPE/PORTRAIT CONVERTIBLE	

## Why DID Instead of TV?

	Commercial (DID)	Consumer (TV)
<b>Warranty</b>	18 months to 2 years	90 days to 1 year
<b>Reliability</b>	Designed for continuous use in different environments Turned on for 20 hours + Variety of temperatures & location	Designed for in-home use in controlled environment Turned on for 6-8 hours In-home living room
<b>Picture Quality</b>	Designed for PC signals LCD backlight covers a wider color spectrum necessary for PC source integration giving better picture quality	Designed for TV signals
<b>Location</b>	Can be oriented in either portrait or landscape mode	Can only be oriented in landscape mode

# Product Segmentation

**HEAVY USE**

↑

**E-DID: Exclusive**

- » All features of P-DID plus
- » Specialty: SNB, High Brightness
- » Robust design

**P-DID: Performance**

- » All features of B-DID plus
- » Narrow & Black Bezel
- » Typ. Brightness: 700 (cd/m2)

**B-DID: Basic**

- » Landscape/Portrait
- » High reliability
- » Pol. (Haze 44%)
- » Long lifetime: more than 2 years

↓

**LIGHT USE**

<b>Professional</b>	<b>Outdoor Events</b>	<b>Billboard</b>	
<ul style="list-style-type: none"> <li>• Control Room</li> <li>• Simulation</li> </ul>	<ul style="list-style-type: none"> <li>• Scoreboard</li> <li>• Sports Broadcasting</li> </ul>	<ul style="list-style-type: none"> <li>• Billboard</li> </ul>	
<b>Entertainment</b>	<b>Transportation</b>	<b>Communication</b>	<b>Rental</b>
<ul style="list-style-type: none"> <li>• Casino</li> <li>• Theatre</li> <li>• Poster</li> <li>• Menu</li> </ul>	<ul style="list-style-type: none"> <li>• Airport</li> <li>• Train/Bus Station</li> </ul>	<ul style="list-style-type: none"> <li>• Conference Room</li> </ul>	<ul style="list-style-type: none"> <li>• Rental</li> <li>• Staging</li> </ul>
<b>Commercial</b>	<b>Education</b>		
<ul style="list-style-type: none"> <li>• Kiosk</li> <li>• Mart Board</li> </ul>	<ul style="list-style-type: none"> <li>• E-Board</li> </ul>		

## Product Segmentation

Type	Abbr	Warranty	Bezel	Suggested Run Time	Brightness	Usage	Applications	Pricing
E-DID	Exclusive	2 years	Narrow and Super Narrow	20 hours +	450 to 1500 nits	Heavy	Outdoor, Video Walls	High-value commercial range
P-DID	Performance	2 years	Narrow	20 hours +	600/700 nits	Medium	Semi-Outdoor	Mid-price range
B-DID	Basic	18 months	Normal	12 hours	450 nits	Light	Indoor, e-Board	High-value commercial range

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## SAMSUNG DIGITAL INFORMATION DISPLAY (DID) PANEL LINEUP

Type	Current Model	Size	Model resolution	Bezel	Backlight	Brightness (typical)	Contrast Ratio	Response Time	Frequency	MP*	Comment	High TNi 85°C
E-DID	LT1216XM01	21.6"	960x960	Super narrow	D-LED	450 nits	4,000:1	8ms	60Hz	Now	Square panel	Yes
	LT1460HN03	46"	FHD	Narrow + Black	CCFL	1500 nits	3,000:1	8ms	60Hz	Ltd Avail.	High Bright, Hi Temp LC, 1/4λ Pol.	Yes
	LT1460HN01	46"	FHD	Super narrow	D-LED	700 nits	3,000:1	8ms	60Hz	Now	5.7mm Active to Active, LED	Yes
	LT1460HN07	46"	FHD	Super narrow	D-LED	450 nits	3,000:1	8ms	60Hz	Now	5.7mm Active to Active, LED	Yes
	LT1460AA05	46"	HD	Super narrow	CCFL	450 nits	4,000:1	8ms	60Hz	Ltd Avail.	7.3mm Active to Active	
	LT1550HN01	55"	FHD	Super narrow	D-LED	700 nits	3,000:1	8ms	60Hz	Now	5.7mm Active to Active, LED	Yes
	LT1550HN05	55"	FHD	Super narrow	D-LED	450 nits	3,000:1	8ms	60Hz	Now	5.7mm Active to Active, LED	Yes
P-DID	LT1400HA08	40"	FHD	Narrow + Black	CCFL	700 nits	3,000:1	8ms	60Hz	Now		Yes
	LT1400HA10	40"	FHD	Narrow	E-LED	700 nits	3,000:1	8ms	60Hz	Now	LED	Yes
	LT1460HN05	46"	FHD	Narrow + Black	CCFL	700 nits	3,500:1	8ms	60Hz	Now		Yes
	LT1460HN08	46"	FHD	Narrow	E-LED	700 nits	4,000:1	8ms	60Hz	Feb. '13	LED	Yes
	LT1550HN03	55"	FHD	Narrow	CCFL	700 nits	4,000:1	8ms	60Hz	Now		Yes
	LT1550HN06	55"	FHD	Narrow	E-LED	700 nits	4,000:1	8ms	60Hz	Now		Yes
	LT1700HD01	70"	FHD	Normal	CCFL	600 nits	2,000:1	8ms	60Hz	Ltd Avail.		
LT1820HT-L01	82"	FHD	Normal	CCFL	600 nits	2,000:1	8ms	60Hz	Ltd Avail.			
B-DID	LT1460HN04-N	46"	FHD	Normal	CCFL	450 nits	3,000:1	8ms	60Hz	Ltd Avail.		Yes
	LT1550HN02	55"	FHD	Normal	CCFL	450 nits	3,500:1	8ms	60Hz	Now		Yes
	LT1700HA02	70"	FHD	Normal	E-LED	400 nits	4,000:1	8ms	60Hz	Now	E-Board; Landscape mode only	
	LT1820HD03	82"	FHD	Normal	CCFL	450 nits	2,000:1	8ms	60Hz	Now	E-Board; Landscape mode only	
Transparent	LT1460AP01	46"	HD	Narrow	Transparent/ No BLU		4,500:1	8ms	60Hz	Now		
	LT1220MT02	46"	WSXGA+	Narrow	Transparent/ No BLU		5,000:1	5ms	60Hz	Now	LVDS Input	

## TABLETS

Size	PN	Mode	Resolution	H(RGB)	V	Aspect Ratio	PPI	Brightness (nits)	MP
7"	LTN070AL01	PLS	WXGA	1280	800	16:10	216	400	Now
10.1"	LTL101AL02	PLS	WXGA	1280	800	16:10	149	400	Now

## MONITORS

Size	PN	Mode	Resolution	H(RGB)	V	Aspect Ratio	PPI	Brightness (nits)	MP
23"	LTM230HT10	TN	FHD	1920	1080	16:9	96	300	Now
	LTM230HL01	PLS	FHD	1920	1080	16:9	96	300	Now
27"	LTM270HT03	TN	FHD	1920	1080	16:09	82	300	Now
	LTM270DL02	PLS	QHD	2560	1440	16:09	109	300	Now
	LTM270DL03	PLS	FHD	1920	1080	16:09	82	350	Apr. '13

## CONTACTS

Feel free to contact your local distributor or sales representative with any Samsung sales inquiries.

### Representatives

Name	Location	Phone
Adelsa	Ciudad Juarez	52-656-613-3517
Adelsa	Monterrey	52-818-214-0011
Adelsa	Mexico City (HQ)	52-555-560-5002
Adelsa	Guadalajara	52-333-122-3054
ATMI	Washington	425-869-7636
ATMI	Oregon	503-643-8307
Bear/VAI	Ohio	440-526-1991
Bear/VAI	Western PA	440-526-1991
Bear/VAI	Indiana/Kentucky	440-832-7637
Bear/VAI	Michigan	440-526-1991
Bestronics	Vista	760-598-8500
Core	Illinois	847-843-8888
Core	Wisconsin	414-791-1666
Crestone	Colorado	303-280-7202
Crestone	Utah	303-280-7202
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Customer 1st	Kansas	913-390-9119
Customer 1st	Minnesota	952-851-7909
Digit-Tech Sales	Sao Paulo, Brazil	5511-3165-2218
Digit-Tech Sales	Puerto Rico	787-892-4260
Digit-Tech Sales	Miami (export)	305-591-2400

Name	Location	Phone
Infinity Sales	Los Angeles	818-880-6480
Infinity Sales	Orange County	714-669-8520
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InTELaTECH	Montreal	905-629-0082
InTELaTECH	Ottawa	905-629-0082
InTELaTECH	Toronto	905-629-0082
I-Squared	San Jose	408-988-3400
I-Squared	Petaluma	707-773-3108
Neptune Electr. (NECCO)	NY, PA, MD	631-234-2525
New Elpis (LCD)	Ontario	905-275-3516
New Tech Solutions	Massachusetts	781-229-8888
New Tech Solutions	CT/NY	585-204-2183
Rep One Associates	Alabama	256-539-7371
Rep One Associates	Charlotte, NC	704-846-5744
Rep One Associates	Georgia	770-209-9242
Rep One Associates	Raleigh, NC	919-424-3804
Rep One Associates	Florida	256-539-7371
Summit Sales	Phoenix/El Paso	480-998-4850
West Associates	Dallas	972-680-2800
West Associates	Austin	512-343-1199
West Associates	Houston	512-538-2810

### Distributors

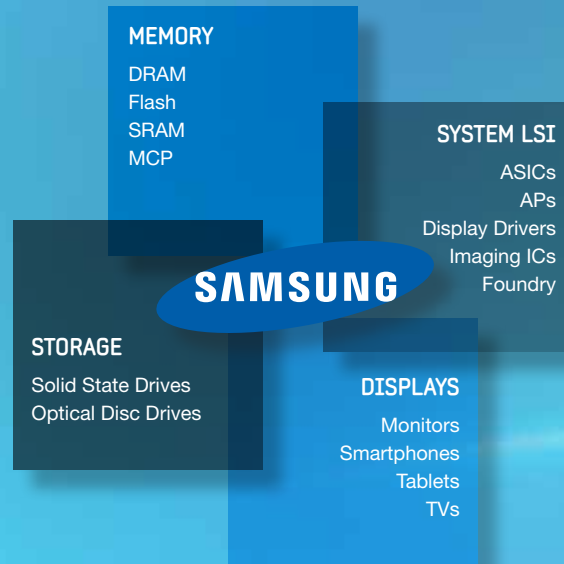
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