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Samsung Semiconductor, Inc.
Product Selection Guide

Memory and Storage
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MEMORY AND STORAGE

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DDR3 SDRAM UNBUFFERED MODULES

Density	Org	Speed (Mbps)	Part Number	Rank	Composition	Package
256MB	32Mx64	800/1066/1333	M378B3374EZD-Q(E7/FB/G9)	1	512Mb(32M x16) * 4	RbHS
512MB	64Mx64	800/1066/1333	M378B6573EZD-Q(E7/FB/G9)	1	512Mb(64M x8) * 8	RbHS
512MB	64Mx64	800/1066/1333	M378B6474CZD-Q(E7/FB/G9)	1	1Gb(64M x16) * 4	RbHS
1GB	128Mx64	800/1066/1333	M378B2973EZD-Q(E7/FB/G9)	2	512Mb(64M x8) * 16	RbHS
1GB	128Mx64	800/1066/1333	M378B2873CZD-Q(E7/FB/G9)	1	1Gb(128M x8) * 8	RbHS
2GB	256Mx64	800/1066/1333	M378B6673CZD-Q(E7/FB/G9)	2	1Gb(128M x8) * 16	RbHS

NOTES E7=DDR3-800 (5-5-5)

FB = DDR3-1066 (7-7-7)

G9=DDR3-1333 (8-8-8)

Voltage: 1.5V

DDR3 SDRAM COMPONENTS

Density	Org	Speed (Mbps)	Part Number	Package	Package Dimension
512Mb	128M x4	800/1066/1333	K4B510446E-ZQ(E7/FB/G9)	82ball FBGA	10x11.5mm
512Mb	64M x8	800/1066/1333	K4B510846E-ZQ(E7/FB/G9)	82ball FBGA	10x11.5mm
512Mb	32M x16	800/1066/1333	K4B511646E-ZQ(E7/FB/G9)	100ball FBGA	10x11.5mm
1Gb	256M x4	800/1066/1333	K4B1G0446C-ZQ(E7/FB/G9)	94ball FBGA	11x18mm
1Gb	128M x8	800/1066/1333	K4B1G0846C-ZQ(E7/FB/G9)	94ball FBGA	11x18mm
1Gb	64M x16	800/1066/1333	K4B1G1646C-ZQ(E7/FB/G9)	112ball FBGA	11x18mm

NOTES E7=DDR3-800 (5-5-5)

FB = DDR3-1066 (7-7-7)

G9=DDR3-1333 (8-8-8)

Voltage: 1.5V

DDR2 SDRAM REGISTERED MODULES

Density	Org	Speed (Mbps)	Part Number	Parity			Package
				Register	Rank	Composition	
512MB	64Mx72	400/533	M393T6553CZ3-Q(CC/D5)	N	1	(64M x8)*9	Lead-free
512MB	64Mx72	400/533/667	M393T6553CZA-Q(CC/D5/EB)	Y	1	(64M x8)*9	Lead-free
1GB	128Mx72	400/533	M393T2950CZ3-Q(CC/D5)	N	1	(128M x4)*18	Lead-free
1GB	128Mx72	400/533	M393T2953CZ3-Q(CC/D5)	N	2	(64M x8)*18	Lead-free
1GB	128Mx72	400/533/667	M393T2950CZA-Q(CC/D5/EB)	Y	1	(128M x4)*18	Lead-free
1GB	128Mx72	400/533/667	M393T2953CZA-Q(CC/D5/EB)	Y	2	(64M x8)*18	Lead-free
2GB	256Mx72	400/533	M393T5750CZ3-Q(CC/D5)	N	2	(128M x4)*36	Lead-free
2GB	256Mx72	400/533	M393T5660AZ3-Q(CC/D5)	N	1	(256M x4)*18	Lead-free
2GB	256Mx72	400/533	M393T5663AZ3-Q(CC/D5)	N	2	(128M x8)*18	Lead-free
2GB	256Mx72	400/533/667	M393T5750CZA-Q(CC/D5/EB)	Y	2	(128M x4)*36	Lead-free
2GB	256Mx72	400/533/667	M393T5660AZA-Q(CC/D5/EB)	Y	1	(256M x4)*18	Lead-free
2GB	256Mx72	400/533/667	M393T5663AZA-Q(CC/D5/EB)	Y	2	(128M x8)*18	Lead-free
4GB	512Mx72	400/533	M393T5168AZD-Q(CC/D5)	N	2	st. (512M x4)*18	Lead-free
4GB	512Mx72	400/533/667	M393T5166AZA-Q(CC/D5/EB)	Y	2	st. (512M x4)*18	Lead-free

NOTES 00=Intel AMB

01=IDT AMB

Voltage for AMB:1.5V

Voltage for DRAM:1.8V

Module Height=1.2"

DDR2 SDRAM FULLY BUFFERED MODULES

Density	Org	Speed (Mbps)	Part Number	Rank	Composition	Package
512MB	64Mx72	533	M395T6553CZ4-CD5(00/10)	1	(64M x8)*9	Lead-free
512MB	64Mx72	667	M395T6553CZ4-CEB(00/10)	1	(64M x8)*9	Lead-free
1GB	128Mx72	533	M395T2953CZ4-CD5(00/10)	2	(64M x8)*18	Lead-free
1GB	128Mx72	667	M395T2953CZ4-CEB(00/10)	2	(64M x8)*18	Lead-free
2GB	256Mx72	533	M395T5750CZ4-CD5(00/10)	2	(128M x4)*36	Lead-free
2GB	256Mx72	667	M395T5750CZ4-CEB(00/10)	2	(128M x4)*36	Lead-free
4GB	512Mx72	533	M395T5166AZ4-CD5(00/10)	2	st. (512M x4)*18	Lead-free
4GB	512Mx72	533	M395T5166AZ4-CEB(00/10)	2	st. (512M x4)*18	Lead-free

NOTES 00=Intel AMB

01=IDT AMB

Voltage for AMB:1.5V

Voltage for DRAM:1.8V Module Height=1.2"

DDR2 DRAM SODIMM MODULES

Density	Org	Speed (Mbps)	Part Number	Rank	Composition	Package
256MB	32Mx64	400/533/667	M470T3354CZ3-C(CC/D5/EB)	1	(32M x16)* 4	Lead-free
512MB	64Mx64	400/533/667	M470T6554CZ3-C(CC/D5/EB)	2	(32M x16)* 8	Lead-free
1GB	128Mx64	400/533/667	M470T2953CZ3-C(CC/D5/EB)	2	(64M x8)* 16	Lead-free
1GB	128Mx64	400/533/667	M470T2864AZ3-C(CC/D5/EB)	2	(64M x16)* 8	Lead-free
2GB	256Mx64	400/533/667	M470T5669AZ0-C(CC/D5/EB)	2	st.(256M x8)* 8	Lead-free

NOTES CC=PC2-3200 (DDR2-400 @CL=3) D5 =PC2-4200 (DDR2-533 @CL=4) EB=PC2-5300 (DDR2-667 @CL=5) Voltage: 1.8V Module Height=1.2'

DDR2 SDRAM UNBUFFERED MODULES

Density	Org	Speed (Mbps)	Part Number	Rank	Composition	Package
256MB	32Mx64	400/533/667/800	M378T3354CZ3-C(CC/D5/EB/E7)	1	(32M x16)* 4	Lead-free
512MB	64Mx64	400/533/667/800	M378T6553CZ3-C(CC/D5/EB/E7)	1	(64M x8)* 8	Lead-free
1GB	128Mx64	400/533/667/800	M378T2953CZ3-C(CC/D5/EB/E7)	2	(64M x8)* 16	Lead-free
2GB	256Mx64	400/533/667	M378T5663AZ3-C(CC/D5/EB)	2	(128M x8)* 16	Lead-free

NOTES CC=PC2-3200 (DDR2-400 @CL=3) D5 = PC2-4200 (DDR2-533 @CL=4) EB=PC2-5300 (DDR2-667 @CL=5) E7=PC2-6400 (DDR2-800 @CL=5) Voltage: 1.8V Module Height =1.2'

DDR2 SDRAM COMPONENTS

Density	Org	Speed (Mbps)	Part Number	Package	Dimension
512Mb	128M x4	400/533/667	K4T51043QC-ZC(CC/D5/EB)	60ball FBGA	10x11mm
512Mb	64M x8	400/533/667/800	K4T51083QC-ZC(CC/D5/EB/E7)	60ball FBGA	10x11mm
512Mb	32M x16	400/533/667	K4T51163QC-ZC(CC/D5/EB)	84ball FBGA	11x13mm
1Gb	256M x4	400/533/667	K4T1G044QA-ZC(CC/D5/EB)	68ball FBGA	11x18mm
1Gb	128M x8	400/533/667	K4T1G084QA-ZC(CC/D5/EB)	68ball FBGA	11x18mm
1Gb	64M x16	400/533/667	K4T1G164QA-ZC(CC/D5/EB)	84ball FBGA	11x18mm

NOTES CC=DDR2-400 (3-3-3) D5 = DDR2-533 (4-4-4) EB=DDR2-667 (5-5-5) E7=DDR2-800 (5-5-5) Voltage: 1.8V

DDR SDRAM 1U DIMM MODULES: REGISTERED

Density	Org	Speed (Mbps)	Composition	Part Number	Component Package	# Banks Module	Notes
512MB	64Mx72	333/400	(64Mx8)* 9	M312L6523DZ3 - CB3/CC	FBGA	1	Pb-free
512MB	64Mx72	333/400	(64Mx8)* 9	M312L6523CZ3 - CB3/CC	FBGA	1	Pb-free
1GB	128Mx72	333/400	(128Mx4)* 18	M312L2920CZ3 - CB3/CC	FBGA	1	Pb-free
2GB	256Mx72	266	(St. 256Mx4)* 18	M312L5628CU0 - CB0	TSOP	2	Pb-free
2GB	256Mx72	333/400	(128Mx4)* 36	M312L5720CZ3-CB3/CC	FBGA	2	Pb-free
4GB	512Mx72	266/333	(St. 512Mx4)* 18	M312L5128AUD-CB0/CB3	TSOP	2	Pb-free
4GB	512Mx72	400	(St. 512Mx4)* 18	M312L5128AU1-CC	TSOP	2	Pb-free

NOTES B0 = DDR266 (133MHz @CL=2.5) Type: 184-pin A2 = DDR266 (133MHz @CL=2) B3 = DDR333 (166MHz @CL=2.5) CC = DDR400 (200MHz @CL=3)

DDR DRAM SODIMM MODULES

Density	Org	Speed (Mbps)	Composition	Part Number	Notes
512MB	64Mx64	333	(32M x 16)* 4	M470L3224CJ0 -C(L)B3	Fb-free
512MB	64Mx64	333	(32M x 16)* 4	M470L6524DJ0-CB300	Fb-free
1GB	128Mx64	333	(64M x 8)* 16	M470L2923EN0 - C(L)B3	
1GB	128Mx64	333	(64M x 8)* 16	M470L2923DVO-CB300	Fb-free

NOTES B0 = DDR266 (133MHz @CL=2.5)
Type: 200-pin, Double Sided

A2 = DDR266 (133MHz @CL=2)
Height(in): 1.25

B3 = DDR333 (166MHz @CL=2.5)

CC = DDR400 (200MHz @CL=3)

DDR SDRAM DIMM MODULES: UNBUFFERED

Density	Org	Speed (Mbps)	Composition	Part Number	Notes
512MB	64Mx64	333/400	(64M x 8) * 8	M368L6523CJ5-CB3/CC	Fb-free
512MB	64Mx64	333/400	(64M x 8) * 8	M368L6523DJ5-CB3/CC	Fb-free
512MB	64Mx72	333/400	(64M x 8) * 9	M381L6523CJM-CB3/CC	Fb-free
512MB	64Mx72	333/400	(64M x 8) * 9	M381L6523DJM-CB3/CC	Fb-free
1GB	128Mx64	333/400	(64M x 8) * 16	M368L2923CJN-B3/CC	Fb-free
1GB	128Mx64	333/400	(64M x 8) * 16	M368L2923DJN-CB3/CC	Fb-free
1GB	128Mx72	333/400	(64M x 8) * 18	M381L2923CJM-CB3/CC	Fb-free
1GB	128Mx72	333/400	(64M x 8) * 18	M381L2923DJM-CB3/CC	Fb-free

NOTES B0 = DDR266 (133MHz @CL=2.5)
Type: 184-pin

A2 = DDR266 (133MHz @CL=2)
Package: TSOP components

B3 = DDR333 (166MHz @CL=2.5)
Voltage: 2.5V

CC = DDR400 (200MHz @CL=3)

DDR SDRAM COMPONENTS

Density	Org	Speed (Mbps)	Part Number	Package	Notes
256M	64Mx4	266	K4H560438H-UQ(L)B0	66 pin TSOP	Fb-free
256M	64Mx4	333/400	K4H560438H-ZQ(L)CC/B3	60 ball FBGA	Fb-free
256M	32Mx8	333/400	K4H560838H-UQ(L)B3/CC	66 pin TSOP	Fb-free
256M	32Mx8	333/400	K4H560838H-ZQ(L)B3/CC	60 ball FBGA	Fb-free
256M	16Mx16	333/400	K4H561638H-UQ(L)B3/CC	66 pin TSOP	Fb-free
256M	16Mx16	333/400	K4H561638H-ZQ(L)B3/CC	60 ball FBGA	Fb-free
512M	128Mx4	266	K4H510438C-UQ(L)B0	66 pin TSOP	Fb-free
512M	128Mx4	266	K4H510438D-UQ(L)B0	66 pin TSOP	Fb-free
512M	128Mx4	333/400	K4H510438C-ZQ(L)B3/CC	60 ball FBGA	Fb-free
512M	128Mx4	333/400	K4H510438D-ZQ(L)B3/CC	60 ball FBGA	Fb-free
512M	64Mx8	266/333/400	K4H510838C-UQ(L)B0/B3/CC	66 pin TSOP	Fb-free
512M	64Mx8	333/400	K4H510838C-ZQ(L)B3/CC	60 ball FBGA	Fb-free
512M	64Mx8	333/400	K4H510838D-UQ(L)B3/CC	66 pin TSOP	Fb-free
512M	32Mx16	333/400	K4H511638C-UQ(L)B3/CC	66 pin TSOP	Fb-free
512M	32Mx16	333/400	K4H511638C-ZQ(L)B3/CC	60 ball FBGA	Fb-free
512M	32Mx16	333/400	K4H511638D-UQ(L)B3/CC	66 pin TSOP	Fb-free
1Gb	256Mx4	266/333/400	K4H1G0438A-UCB0/B3/CC	66 pin TSOP	Fb-free
1Gb	128Mx8	266/333/400	K4H1G0838A-UCB0/B3/CC	66 pin TSOP	Fb-free
2Gb	25Mx4 * 2	333	K4H2G0638A-UCB3000	66 pin TSOP	Fb-free

NOTES B0 = DDR266 (133MHz @CL=2.5)

A2 = DDR266 (133MHz @CL=2)

B3 = DDR333 (166MHz @CL=2.5)

CC = DDR400 (200MHz @CL=3)

1U SDRAM DIMM MODULES, PC133 / PC100 COMPLIANT: REGISTERED

LOW-PROFILE DIMMs (1.2-INCH HEIGHT)

Density	Org	Speed	Composition	Part Number	# Banks		Comments
					Module	Refresh	
128MB*	16Mx72	PC133	(16x8)*9	M390SI723ITU - C7A00	1	8K	
256MB	32Mx72	PC133	(32Mx8)*9	M390S3253HUU - C7A00	1	8K	
512MB	64Mx72	PC133	(64Mx4)*18	M390S6450HUU - C7A00	2	8K	stacked
1GB	128Mx72	PC133	(St. 128Mx4)*18	M390S2858ETU - C7A00	2	8K	
1GB	128Mx72	PC133	(128Mx4)*18	M390S2950DUU - C7A00	2	8K	
2GB	256Mx72	PC133	(St. 128Mx4)*18	M390S658DUU - C7A00	2		

NOTES St. = Stacked components

Type: 168 pin, Double sided

Package: TSOP Components

Voltage: 3.3V

** Die rev. change - 128Mb component F-die to I-die

stacked, avail Q204

SDRAM SODIMM MODULES

Density	Org	Speed	Composition	Part Number	Height	# Banks
					(in)	Module
128MB*	16Mx64	PC133	(8Mx16)*8	M464SI724ITS-L7A00	1.15	1
256MB	32Mx64	PC133	(16Mx16)*8	M464S3254HUS-L7A00	1.25	1
256MB	32Mx64	PC133	(32Mx16)*4	M464S3354DUS-Q(L)7A	1.25	1
512MB	64Mx64	PC133	(32Mx16)*8	M464S6554DUS-Q(L)7A	1.18	1
512MB	64Mx64	PC133	(64Mx8)*16	M464S6453HM0-C75/L7500	1.25	2

NOTES DS= Double-Sided

L= Commercial Temp., Low Power

Interface: SSTL-2

Banks: 4

Latency: CL6

Refresh: 8K/32ms

** Die rev. change - 128Mb component F-die to I-die

SDRAM DIMM MODULES, PC133 COMPLIANT: UNBUFFERED

Density	Org	Speed (Mbps)	Composition	Part Number	# Banks
					Module
128MB*	16Mx64	PC133	128M: (16Mx8)*8	M366SI723ITS-C7A00	1
128MB	16Mx64	PC133	256M: (16Mx16)*4	M366SI654HUS-C7A00	1
128MB*	16Mx72	PC133	128M: (16Mx8)*9	M374SI723ITS-C7A00	1
128MB	16Mx72	PC133	256M: (16Mx16)*5	M374SI654ETS-C7A00	1
128MB*	32Mx64	PC133	128M: (16Mx8)*16	M366S323ITS-C7A00	2
128MB*	32Mx72	PC133	128M: (16Mx8)*18	M374S323ITS-C7A00	2
256MB	32Mx64	PC133	256M: (32Mx8)*8	M366S3253HUS-C7A00	1
256MB	32Mx64	PC133	256M: (16Mx16)*8	M366S3254HUS-C7A00	1
256MB	32Mx64	PC133	256M: (32Mx8)*8	M366S3253US-C7A00	1
512MB	64Mx64	PC133	256M: (32Mx8)*16	M366S6453HUS-C7A00	2
1GB	128Mx64	PC133	512M: (64Mx8)*16	M366S2953DUS-C7A00	2

NOTES Type: 168 pin

Package: TSOP components

Voltage: 3.3V

** Die rev. change - 128Mb component F-die to I-die

SDRAM COMPONENTS

Density	Org	Speed (Mbps)	Part Number	Refresh	Pkg TSOP	Comments
64Mb**	8Mx8	133	K4S640832K-UQ(75)000	4K	54	
64Mb**	4Mx16	133/143/166	K4S641632K-UQ(L)(75/70/60)000	4K	54	
64Mb**	2Mx32	143/166/200	K4S643232H-UQ(70/60/50)000	4K	86	
128Mb**	16Mx8	133	K4S280832I-UQ(L)(75)000	4K	54	
128Mb**	8Mx16	133/166	K4S281632I-UQ(L)(75/60)000	4K	54	
256Mb	64Mx4	133	K4S560432H-UQ(L)(75)000	8K	54	
256Mb	32Mx8	133	K4S560832H-UQ(L)(75)000	8K	54	
256Mb	16Mx16	133/166	K4S561632H-UQ(L)(75/60)000	8K	54	
512Mb	128Mx4	133	K4S510632D-UQ(L)(75)000	8K	54	stacked
512Mb	64Mx8	133	K4S510732D-UQ(L)(75)000	8K	54	stacked
512Mb	128Mx4	133	K4S510432D-UQ(L)(75)000	8K	54	
512Mb	64Mx8	133	K4S510832D-UQ(L)(75)000	8K	54	
512Mb	32Mx16	133	K4S511632D-UQ(L)(75)000	8K	54	
1Gb	256Mx4	133	K4S1G0632D-UQ(L)(75)000	8K	54	stacked

NOTES

- 1 L = Commercial Temp., Low Power
 2 # Banks: 4
 3 Package: TC = TSOP, UC = Lead Free

- 4 Voltage: 3.3V
 5 Speed: PC133 (133MHz CL=3/PC100 CL2)
 6 For Ind. Temp., check with SS Marketing

- * In EOL process
 ** Die rev. change - 64Mb H-die to K-die, 128Mb F-die to I-die

RDRAM COMPONENTS

Density	Org	Speed (Mbps)	Part Number	Refresh	Package	Notes
128M	x16	800/1066	K4R271669F-SCK8/S8	16K/32ms	54ball FBGA	
288M	x18	800/1066	K4R881869E-GOM8/T9	16K/32ms	92ball FBGA	lead-free only
576M*	x18	1066	K4R761869A-GCT9	32K/32ms	92ball FBGA	lead-free only

NOTES Voltage: 2.5 v

- * In EOL Process

RIMM™ MODULES

Density	Org	Speed (Mbps)	# of Devices	Part Number	Component	Comments
128MB ECC	x18	800/1066Mbps	4	MR18R1624EG0-CM8/T9	288Mb	lead-free only
256MB ECC	x18	800/1066Mbps	8	MR18R1628EG0-CM8/T9	288Mb	lead-free only
512MB ECC	x18	800/1066Mbps	16	MR18R162GEG0-CM8/T9	288Mb	lead-free only
128MB NON-ECC	x16	800/1066Mbps	4	MR16R1624EG0-CM8/T9	256Mb	lead-free only
256MB NON-ECC	x16	800/1066Mbps	8	MR16R1628EG0-CM8/T9	256Mb	lead-free only
512MB NON-ECC	x16	800/1066Mbps	16	MR16R162GEG0-CM8/T9	512Mb	lead-free only
144MB NextMod	x18	800/1066Mbps	4	MN18R1624EF0-CT9	288Mb	lead-free only
288MB NextMod	x18	800/1066Mbps	8	MN18R1628EF0-CT9	288Mb	lead-free only
576MB NextMod *	x18	800/1066Mbps	8	MN18R3268AEF0-CT9	576Mb	lead-free only

NOTES * In EOL Process

MOBILE SDRAM COMPONENTS

Density	Org	Part Number	Refresh	Power	# Pins TSOP/BGA
64Mb	4Mx16	K4M641633K-(1)(2)(3)(4)	4K	3.0V	FBGA-54balls
64Mb	4Mx16	K4M641633LK-(1)(2)(3)(4)	4K	2.5V	FBGA-54balls
64Mb	4Mx16	K4M641633FK-(1)(2)(3)(4)	4K	1.8V	FBGA-54balls
64Mb	2Mx32	K4S643233H-(1)(2)(3)(4)	4K	3.0V	FBGA-90balls
64Mb	2Mx32	K4S643233LH-(1)(2)(3)(4)	4K	2.5V	FBGA-90balls
128Mb	8Mx16	K4M281633H-(1)(2)(3)(4)	4K	3.0V	FBGA-54balls
128Mb	8Mx16	K4M281633LH-(1)(2)(3)(4)	4K	2.5V	FBGA-54balls
128Mb	8Mx16	K4M281633FH-(1)(2)(3)(4)	4K	1.8V	FBGA-54balls
128Mb	4Mx32	K4M283233H-(1)(2)(3)(4)	4K	3.0V	FBGA-90balls
128Mb	4Mx32	K4M283233LH-(1)(2)(3)(4)	4K	2.5V	FBGA-90balls
128Mb	4Mx32	K4M283233FH-(1)(2)(3)(4)	4K	1.8V	FBGA-90balls
256Mb	16Mx16	K4M561633G-(1)(2)(3)(4)	8K	3.0V	FBGA-54balls
256Mb	16Mx16	K4M561633LG-(1)(2)(3)(4)	8K	2.5V	FBGA-54balls
256Mb	16Mx16	K4M561633FG-(1)(2)(3)(4)	8K	1.8V	FBGA-54balls
256Mb	16Mx16	K4X561633FG-(1)(2)(3)(4)	8K	1.8V	FBGA-60balls
256Mb	8Mx32	K4M563233G-(1)(2)(3)(4)	8K	3.0V	FBGA-90balls
256Mb	8Mx32	K4M563233LG-(1)(2)(3)(4)	8K	2.5V	FBGA-90balls
256Mb	8Mx32	K4M563233FG-(1)(2)(3)(4)	8K	1.8V	FBGA-90balls
256Mb	8Mx32	K4X563233FG-(1)(2)(3)(4)	8K	1.8V	FBGA-90balls
512Mb	32Mx16	K4M511633C-(1)(2)(3)(4)	8K	3.0V	FBGA-54balls
512Mb	32Mx16	K4M511633LC-(1)(2)(3)(4)	8K	2.5V	FBGA-54balls
512Mb	32Mx16	K4M511633FC-(1)(2)(3)(4)	8K	1.8V	FBGA-54balls
512Mb	32Mx16	K4X511633FC-(1)(2)(3)(4)	8K	1.8V	FBGA-60balls
512Mb	16Mx32	K4M513233C-(1)(2)(3)(4)	8K	3.0V	FBGA-90balls
512Mb	16Mx32	K4M513233LC-(1)(2)(3)(4)	8K	2.5V	FBGA-90balls
512Mb	16Mx32	K4M513233FC-(1)(2)(3)(4)	8K	1.8V	FBGA-54balls
512Mb	16Mx32	K4X513233FC-(1)(2)(3)(4)	8K	1.8V	FBGA-54balls

NOTES

(1) Package: 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

Mondithic (11mm x 13mm)

F/H: Smaller 90balls FBGA Mono

Y/P: 54balls CSP DDP

M/E: 90balls FBGA DDP

(2) Temp & Power:

C: Commercial (-25 ~ 70°C), Normal

L: 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 (-40~85°C), Normal

P: Industrial, Low

H: Industrial, Low, i-TCSR & PASR & DS

(3)~(4) Speed:

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

GRAPHICS DDR SDRAM COMPONENTS

Type	Density	Org	Die	Part Number	Package	VDD/VDDQ	Speed Bin (MHz)	Remarks
GDDR4	512Mb	16Mx32	E	K4U52324Q	136 FBGA	1.8/1.8V	1100/1200/1400	CSnow
GDDR3	512Mb	16Mx32	C	K4J52324Q	136 FBGA	1.8/1.8V	500/600/700	EOL'd
					136 FBGA	2.0/2.0V	800/900/1000	EOL'd
	512Mb	16Mx32	E	K4J52324Q	136 FBGA	1.8/1.8V	700/800	CSnow
					136 FBGA	1.9/1.9V	900/1000	CSnow
	256Mb	8Mx32	G	K4J55323Q	136 FBGA	1.8/1.8V	700/800	
					136 FBGA	2.0/2.0V	900/1000	
GDDR2	512Mb	32Mx16	C	K4N51163Q	84 FBGA	1.8/1.8V	300/350/400	
	256Mb	16Mx16	G	K4N56163Q	84 FBGA	1.8/1.8V	350/400	
					84 FBGA	2.0/2.0V	450/500	
GDDR1	256Mb	16Mx16	H	K4D551638	66 TSOPII	2.35~2.7V	200/250	
	128Mb	4Mx32	G	K4D26323Q	144 FBGA	1.8/1.8V	300/350	EOL'd
				K4D263238	144 FBGA	2.5/2.5V	300/350	EOL'd
			I	K4D263238	144 FBGA	2.5/2.5V	200/250	
				K4D263238	100 TQFP	2.5/2.5V	200/250	
	8Mx16	I		K4D261638	66 TSOPII	2.5/2.5V	200/250	CL-tRCD-tRP 3-3-3 for 200MHz

NOTES * dock cycle time

** all products are 4 banks

Part No. Suffix	07	08	09	1A	11	12	14	16	20	22	25	2A	33	40	50
Description	0.71ns	0.83ns	0.90ns	1ns	1.11ns	1.25ns	1.429ns	1.667ns	2.0 ns	2.2 ns	2.5 ns	2.86 NS	3.3 ns	4.0 ns	5.0 ns
	(1400MHz)	(1200MHz)	(1100MHz)	(1000MHz)	(900MHz)	(800MHz)	(700MHz)	(600MHz)	(500MHz)	(450MHz)	(400MHz)	(350MHz)	(300MHz)	(250MHz)	(200MHz)

DRAM ORDERING INFORMATION

K	4	X	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	

- 1. Memory (K)

- 2. DRAM:4

- 3. Small Classification

 - A: Advanced Dram Technology
 - B: DDR3 SDRAM
 - D: DDR SGRAM
 - E: EDO
 - F: FP
 - H: DDR SDRAM
 - J: GDDR3 SDRAM
 - K: Mobile SDRAM FEA
 - L: Mobile L2RAM
 - M: Mobile SDRAM
 - N: DDR SGRAM II
 - R: Direct RDRAM
 - S: SDRAM
 - T: DDR SDRAM II'
 - U: GDDR4 SDRAM
 - V: Mobile DDR SDRAM FEA
 - X: Mobile DDR SDRAM
 - Y: XDR DRAM
 - Z: Value Added DRAM

∞ FEA: Power Efficient Address

- 4~5. Density, Refresh
- 111: 1G, 64K/16ms
 - 15: 16M, 1K/16ms
 - 16: 16M, 2K/32ms
 - 17: 16M, 4K/64ms
 - 26: 128M, 4K/32ms
 - 27: 128M, 16K/32ms
 - 28: 128M, 4K/64ms
 - 32: 32M, 2K/32ms
 - 40: 4M, 512/8ms
 - 41: 4M, 1K/16ms
 - 44: 144M, 16K/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
 - 57: 256M, 16K/32ms
 - 58: 256M, 8K/32ms
 - 62: 64M, 2K/16ms
 - 64: 64M, 4K/64ms

- 66: 64M, 8K/64ms
- 68: 768M, 8K/64ms
- 72: 72M, 8K/32ms
- 76: 576M, 32K/32ms
- 80: 8M, 2K/32ms
- 88: 288M, 16K/32ms
- 89: 288M, 8K/32ms
- 1G: 1G, 8K/64ms
- 2G: 2G, 8K/64ms
- 4G: 4G, 8K/64ms
- 2A: 128M, 4K/64ms with TCSR
- 5A: 256M, 8K/64ms with TCSR
- 6A: 64M, 4K/64ms with TCSR

- 6~7. Organization
- 01: x1 02: x2 03: x2 (Including x1)
 - 04: x4 05: x4 (2CS)
 - 06: x4 Stack (Flexframe)
 - 07: x8 Stack (Flexframe)
 - 08: x8 09: x9 15: x16 (2CS)
 - 16: x16 17: x16 (Including x8/ x4)
 - 18: x18 30: x32 (2CS, 2CKE)
 - 31: x32 (2CS) 32: x32 36: x36
 - A8: x8 Stack (70-mono)

8. Bank
- 1: 1Bank 2: 2Bank 3: 4Bank
 - 4: 8Bank 5: 16Bank 6: 32Bank

9. Interface, VDD, VDDQ
- 0: NONE, NONE, NONE
 - 1: TTL, 5.0V, 5.0V
 - 2: LV/TTL, 3.3V, 3.3V
 - 3: LV/TTL, 3.0V, 3.0V
 - 4: LV/TTL, 2.5V, 2.5V
 - 5: SSTL(LP), 1.8V, 1.8V
 - 6: SSTL, 1.5V, 1.5V
 - 7: SSTL-2, 3.3V, 2.5V
 - 8: SSTL-2, 2.5V, 2.5V
 - 9: FSL, 2.5V, 2.5V
 - A: SSTL, 2.5V, 1.8V
 - H: SSTL-2 DLL, 3.3V, 2.5V
 - J: LV/TTL, 3.0V, 1.8V
 - L: LV/TTL, 2.5V, 1.8V
 - M: LV/TTL, 1.8V, 1.5V
 - N: LV/TTL, 1.5V, 1.5V
 - P: LV/TTL, 1.8V, 1.8V
 - Q: SSTL, 1.8V, 1.8V
 - R: SSTL-2, 2.8V, 2.8V

- S: SSTL-2, 2.2V, 1.8V
- U: DRSL, 1.8V, 1.2V
- Y: SSTL(LP), 2.5V, 2.5V

10. Generation
- M: 1st Generation
 - 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
 - Y: Partial DRAM(2nd)
 - Z: Partial DRAM (for RAMCOSTAK Product)

11. " —"

12. Package
- Advanced DRAM Technology
 - G: WBGGA L: TSOP2-400F(LF)
 - T: TSOP2 Z: BOC(LF)
 - DDR SDRAM
 - J: TSOP2-400(LF, DDP) T: TSOP2-400
 - K: TSOP2-400(DDP) U: TSOP2-400(LF)
 - G: BOC, WBGGA Z: BOC(LF)
 - P: BOC(DDP) Q: ISM
 - N: STSOP2 V: STSOP2(LF)
 - S: FOR(DDP) X: FOR(LF, DDP)
 - DDR SDRAM II
 - G: BOC Z: BOC(LF)
 - S: BOC(Shallower) Y: BOC(Shallower, LF)
 - R: WLP
 - DDR3 SDRAM
 - G: BOC Z: BOC(LF)
 - E: FBGA(LF, DDP) G: FBGA
 - J: FBGA(DDP) V: FBGA(LF)
 - P: FBGA(LLDDP) M: FBGA(1DQS)
 - N: FBGA(1DQSLF) H: BOC
 - L: TSOP2-400(LF) T: TSOP2-400
 - Q: TQFP U: TQFP(LF)

NAND FLASH DISCRETE COMPONENTS

Density	TSOP	BGA/LGA	Organization	Voltage(V)	Package	Comments
	Part Number	Part Number				
SLC						
256Mb	K9F5608U0D-PCB	K9F5608U0D-JIB	x8	3.3V	48TSOP, 63FBGA	
512Mb	K9F1208U0B-PCB	K9F1208U0B-JIB	x8	3.3V	48TSOP, 63FBGA	Best case for S/B long-term support
1Gb	K9F1G08U0A-PCB	K9F1G08U0A-JIB	x8	3.3V	48TSOP, 63FBGA	Moving to B-die in Q4'06
2Gb	K9F2G08U0A-PCB	K9F2G08U0A-IIB	x8	3.3V	48TSOP, 52ULGA	
4Gb	K9F4G08U0A-PCB	K9F4G08U0A-IIB	x8	3.3V	48TSOP, 52ULGA	
8Gb	K9K8G08U0A-PCB	K9K8G08U0A-IIB	x8	3.3V	48TSOP, 52ULGA	
16Gb	K9VAG08U1A-PCB	K9VAG08U1A-IIB	x8	3.3V	48TSOP, 52TLGA	
32Gb	K9N8G08U5A-PCB	N/A	x8	3.3V	DSP 48TSOP	
MLC						
8Gb	K9G8G08U0M-PCB	N/A	x8	3.3V	48TSOP	
16Gb	K9LAG08U0M-PCB	N/A	x8	3.3V	48TSOP	
32Gb	K9H8G08U1M-PCB	N/A	x8	3.3V	48TSOP	

NOTE All parts lead free

OneNAND™ FLASH

Density	Part Number	Organization	Package	Voltage(V)	Temperature	Comments
128Mb	KFG2816U1M-FIB0000	x16	48TSOP (12x20)	3.3V	Industrial	
	KFG2816Q1M-DEB0000	x16	67 FBGA	1.8V	Extended	
	KFG2816U1M-DIB0000	x16	(7x9)	3.3V	Industrial	
256Mb	KFG5616Q1M-FEB0000	x16	48 TSOP	1.8V	Extended	No New Design
256Mb	KFG5616U1A-FIB5000	x16	48TSOP (12x20)	3.3V	Industrial	
	KFG5616Q1A-DEB5000	x16	67 FBGA	1.8V	Extended	
	KFG5616U1A-DIB5000	x16	(7x9)	3.3V	Industrial	
512Mb	KFG1216Q2A-DEB5000	x16	63 FBGA	1.8V	Extended	
	KFG1216U2A-DIB5000	x16	(9.5x12)	3.3V	Industrial	
1Gb	KFG1G16Q2M-DEB5000	x16	63 FBGA(10x13)	1.8V	Extended	No New Design
	KFG1G16Q2A-DEB5000	x16	63 FBGA(10x13)	1.8V	Extended	
2Gb DDP	KFN2G16Q2M-DEB5000	x16	63 FBGA (11x13)	1.8V	Extended	No New Design
2Gb mono	KFG2G16Q2M-DEB5000	x16	63 FBGA (11x13)	1.8V	Extended	
4Gb QDP	KFN4G16Q2M-DEB5000	x16	63 FBGA (11x13)	1.8V	Extended	No New Design
4Gb DDP	KFN4G16Q2M-DEB5000	x16	63 FBGA (11x13)	1.8V	Extended	

NOTE All parts lead free

NOR FLASH

Density	TSOP	FBGA	Block	Voltage	Temperature	Comments
	Part Number	Part Number	Architecture			
16Mb	K8D1716UTC-FI07	K8D1716UTC-FI07	Top	3.3V	Industrial	Dual Bank, Async
	K8D1716UBC-FI07	K8D1716UBC-FI07	Bottom	3.3V	Industrial	Dual Bank, Async
32Mb	K8D3216UTC-FI07	N/A	Top	3.3V	Industrial	Dual Bank, Async
	K8D3216UBC-FI07	N/A	Bottom	3.3V	Industrial	Dual Bank, Async
	N/A	K8S3215ETE-SE7C	Top	1.8V	Industrial	Mux'd Burst
64Mb	K8D6316UTM-FI07	K8D6316UTM-DI07	Top	3.3V	Industrial	Dual Bank, Async
	K8D6316UBM-FI07	K8D6316UBM-DI07	Bottom	3.3V	Industrial	Dual Bank, Async
	N/A	K8S6415ETB-DE7C	Top	1.8V	Extended	Mux'd Burst
128Mb	N/A	K8S2815ETB-SE7C	Top	1.8V	Extended	Mux'd Burst
256Mb	N/A	K8S5615ETA-SE7C	Top	1.8V	Extended	Mux'd Burst

NOTE All parts lead free

NAND FLASH ORDERING INFORMATION

K	9	X	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	

1. Memory (K)

2. NAND Flash: 9

3. Small Classification (SLC: Single Level Cell, MLC: Multi Level Cell, SM: SmartMedia, SB: Small Block)

- A: SLC+ Muxed I/F Chip
- B: Muxed I/F Chip
- S: SLC Single SM
- D: SLC Dual SM
- Q: 4CHIP SM
- T: SLC SINGLE (SB)
- E: SLC DUAL (SB)
- R: SLC 4DIE STACK (SB)
- F: SLC Normal
- G: MLC Normal
- K: SLC 2-Die Stack
- W: SLC 4-Die Stack
- J: Non-Muxed OneNAND
- U: 2 STACK MSP
- V: 4 STACK MSP

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
- 00: NONE

6~7. Organization

- 00: NONE
- 08: x8
- 16: x16

8. Vcc

- C: 5.0V(4.5V~5.5V)
- D: 2.65V(2.4V~2.9V)
- E: 2.3V~3.6V
- 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 RnB
- 4: Quad nCE & Single RnB
- A: Mask Option 1

10. Generation

- M: 1st Generation
- A: 2nd Generation
- B: 3rd Generation
- C: 4th Generation
- D: 5th Generation
- Y: Partial NAND(2nd)
- Z: Partial NAND(1st)
- M: 1st Generation
- A: 2nd Generation
- B: 3rd Generation
- C: 4th Generation
- D: 5th Generation
- Y: Partial NAND(2nd)
- Z: Partial NAND(1st)

11. " -"

12. Package

- A: COB
- B: TBGA
- C: CHIP BIZ
- D: 63-TBGA
- E: TSOP1(LF;1217)
- F: WSOP1(LF)
- G: FBGA
- H: TBGA(LF)
- J: FBGA(LF)
- K: TSOP1(1217)
- L: LGA
- M: tLGA
- P: TSOP1(LF)
- Q: TSOP2(LF)
- R: TSOP2-R
- S: SMARTMEDIA
- T: TSOP2
- V: WSOP
- W: WAFER
- Y: TSOP1

13. Temp

- C: Commercial
- I: Industrial
- 0: NONE

14. Bad Block

- B: Include Bad Block
- D: Daisychain Sample
- L: 1~5 Bad Block
- N: Ini. All Good, Add. 10 Blocks
- S: All Good Block
- 0: NONE

15. NAND-Reserved

- 0: Reserved

16. Packing Type (16 digit)

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

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

LOW-POWER (5V) SRAM

Density	Part Number	Organization	Vcc (V)	Speed (ns)	Operating Temp	Operating Current (mA)	Standby Current (uA)	Package	Production Status
8Mbit	K6X8008C2B	1Mx8	4.5 - 5.5	55,70	Cl	50	50	TSOP2(44)	EOL
	K6X8016C3B	512x16	4.5 - 5.5	55,70	Cl	60	50	TSOP2(44)	EOL
4Mbit	K6X4016C3F	256x16	4.5 - 5.5	55,70	I,A	50	20,30	TSOP2(44)	EOL
	K6X4008C1F	512x8	4.5 - 5.5	55,70	I,A	40	20,30	32SOP,TSOP	EOL
1Mbit	K6T1008C2E	128x8	4.5 - 5.5	55,70	Cl	50	10	32DIP,32SOP,TSOP1(32)	EOL
	K6X1008C2D	128x8	4.5 - 5.5	55,70	I,A	35	15,25	32SOP,TSOP1(32)	EOL
256Kbit	K6T0808C1D	32x8	4.5 - 5.5	55,70	Cl	60	5	28SOP,TSOP1(28)	EOL
	K6X0808C1D	32x8	4.5 - 5.5	55,70	Cl	35	25	28SOP	EOL

NOTE Lead-free available upon request

LOW-VOLTAGE & LOW-POWER SRAM

Density	Part Number	Organization	Vcc (V)	Speed (ns)	Operating Temp	Operating Current (mA)	Standby Current (uA)	Package	Production Status
8Mbit	K6X8008T2B	1024Kx8	2.7 - 3.6	55,70	Cl	40	40	TSOP2(44)	EOL
	K6X8016T3B	512Kx16	2.7 - 3.6	55,70	Cl	45	40	TSOP2(44)	EOL
4Mbit	K6X4008T1F	512x8	2.7 - 3.6	70,85	I,A	30	20,30	32SOP,TSOP2(32)	EOL
	K6X4016T3F	256x16	2.7 - 3.6	70,85	I,A	40	20,30	TSOP2(44)	EOL
1Mbit	K6F1008U2C	128x8	2.7 - 3.3	55,70	I	2	0.5	32TSOP1	EOL
	K6X1008T2D	128x8	2.7 - 3.6	70,85	I,A	25	10,20	32SOP,TSOP2(32)	EOL
	K6F1008V2C	128x8	3.0 - 3.6	55,70	I	3	0.5	25SOP1	EOL

MICRO-POWER & LOW-VOLTAGE SRAM

Density	Part Number	Organization	Vcc (V)	Speed (ns)	Operating Temp	Operating Current (mA)	Standby Current (uA)	Package	Production Status
16Mbit	K6F1616U6C	1x16	2.7 - 3.3	55,70	I	3	1	48-FBGA	EOL, LTB due no later than 12/31/06
	K6F1616F6C	1x16	1.65 - 2.2	70	I	3	1	48-FBGA	EOL, LTB due no later than 12/31/06
8Mbit	K6F8016F6B	512x16	1.65 - 2.2	70,85	I	3	1	48-TBGA	EOL
	K6F8016U6B	512x16	2.7 - 3.3	55,70	I	4	1	48-TBGA	EOL
4Mbit	K6F4008F2G	512Kx8	1.65 - 2.20	70,85	I	2	0.5	36TBGA	EOL, LTB due no later than 12/31/06
	K6F4008U2G	512Kx8	2.7 - 3.3	45,55,70	I	2	0.5	36TBGA	EOL, LTB due no later than 12/31/06
	K6F4016R4E	256Kx16	1.65 - 2.20	70,85	I	2	0.5	48TBGA	EOL, LTB due no later than 12/31/06
	K6F4016F6G	256Kx16	1.65 - 2.20	70,85	I	2	0.5	48TBGA	EOL, LTB due no later than 12/31/06
	K6F4016U4G	256Kx16	2.7 - 3.3	55,70	I	2	0.5	48TBGA	EOL, LTB due no later than 12/31/06
	K6F4016U6G	256Kx16	2.7 - 3.3	55,70	I	2	0.5	48TBGA	EOL, LTB due no later than 12/31/06
2Mbit	K6F2016U4E	128x16	2.7 - 3.3	55,70	I	2	0.5	48-TBGA	EOL
	K6F2016R4E	128x16	1.65 - 2.2	70,85	I	2	0.5	48-FBGA	EOL
	K6F2008U2E	256x8	2.7 - 3.3	55,70	I	2	0.5	32TSOP1	EOL
	K6F2008V2E	256x8	3.0 - 3.6	55,70	I	3	0.5	32TSOP1	EOL
1Mbit	K6F1016U4C	64x16	2.7 - 3.3	55,70	I	2	0.5	48-FBGA	EOL

UtRAM (High Density & Low Power)

Density	Part Number	Organization	Vcc (V)	Speed (ns)	Operating Temp	Operating Current (mA)	Standby Current (uA)	Package	Production Status
32Mbit	K1S321615M	2Mx16	3	100	E	20	150	48-TBGA	EOL
	K1S321611C	2Mx16	3	70	I	35	100	48-FBGA	Mass Production
	K1S32161CD	2Mx16	3	70	I	35	100	48-FBGA	Mass Production
	K1S32161BCD	2Mx16	1.8	70	I	35	100	48-FBGA	Mass Production
	K1S32161CD	2Mx16	3	70	E	35	100	48-TBGA	Mass Production
16Mbit	K1S161615M	1Mx16	3	70	I	20	70	48-TBGA	EOL
	K1S1616B1M	1Mx16	1.8	70	I	35	60	48-TBGA	EOL

HIGH-SPEED (4Mbit) ASYNCHRONOUS FAST SRAM

Density	Part Number	Organization	Vcc (V)	Speed (ns)	Operating Temp	Operating Current (mA)	Standby Current (uA)	Package	Production Status
4Mbit	K6R4016C1D	256Kx16	5	10	I	65, 55	20, 5	44SQJ 44TSOP2, 48TBGA	Mass Production
	K6R4016V1D	256Kx16	3.3	10	I	80, 65	20, 5(1.2)	44SQJ 44TSOP2, 48TBGA	Mass Production
	K6R4004C1D	1Mx4	5	10, 12	I	65, 55	20, 5	32 SQJ	EOL
	K6R4004V1D	1Mx4	3.3	8, 10	I	80, 65	20, 5	32 SQJ	EOL
	K6R4008C1D	512Kx8	5	10	I	65, 55	20, 5	36 SQJ 44 TSOP2	Mass Production
	K6R4008V1D	512Kx8	3.3	10	I	80, 65	20, 5	36 SQJ 44 TSOP2	Mass Production
3Mbit	K6R3024V1D	128x24	3.3	9, 10, 12	CI	170,150,130	40,15	119FBGA	EOL
1Mbit	K6R1008V1D	128x8	3.3	8, 10, 12	CI	170,150,130	20,5	32SQJ32TSOP2	EOL
	K6R1008C1D	128x8	5	10, 12, 15	CI	170,150,130	20,5	32SQJ32TSOP2	EOL
	K6R1004V1D	256x4	3.3	8, 10, 12	CI	170,150,130	20,5	32SQJ	EOL
	K6R1004C1D	256x4	5	10, 12, 15	CI	170,150,130	20,5	32SQJ	EOL
	K6R1016V1D	64x16	3.3	8, 10, 12	CI	170,150,130	20,5	44SQJ44TSOP2,48TBGA	EOL
	K6R1016C1D	64x16	5	10, 12, 15	CI	170,150,130	20,5	44SQJ44TSOP2,48TBGA	EOL

NOTE Ordering Information: http://www.samsung.com/Products/Semiconductor/Support/Label_CodeInfo/Async_SRAM.pdf

ASYNCHRONOUS SRAM ORDERING INFORMATION

K	6	X	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	
1. Memory (K)			10. Generation									14~15. Speed (tAA)						
2. Async SRAM: 6			M: 1st Generation A: 2nd Generation B: 3rd Generation C: 4th Generation D: 5th Generation E: 6th Generation F: 7th Generation G: 8th Generation H: 9th Generation									- fCMOS Cell + LPSRAM & Poly Load Cell + LPSRAM & TFT Cell + LPSRAM 10: 100ns 12: 120ns 15: 150ns 25: 25ns(only fCMOS Cell) 30: 300ns 35: 35ns(except Poly Load Cell) 45: 45ns(except fCMOS Cell) 55: 55ns 60: 60ns(only fCMOS Cell) 70: 70ns 85: 85ns 90: 90ns(only fCMOS Cell) DS Daisychain Sample - High Speed (LPSRAM) 20: 20ns - High Voltage (LPSRAM) 55: 55ns 70: 70ns 85: 85ns - Corner Vcc/Vss + Fast SRAM 10: 10ns 12: 12ns 13: 13ns 15: 15ns 17: 17ns 20: 20ns 25: 25ns 30: 30ns 35: 35ns 45: 45ns - BICMOS & Center Vcc/Vss + Fast SRAM 06: 6ns 08: 8ns 09: 9ns 10: 10ns 12: 12ns 13: 13ns 15: 15ns 17: 17ns 20: 20ns 25: 25ns 30: 30ns(only Center Vcc/Vss + Fast SRAM) 35: 35ns(only Center Vcc/Vss + Fast SRAM) 7A: 7.2ns(only BICMOS) 8A: 8.6ns(only BICMOS) DS Daisychain Sample - Async SRAM COMMON 00: NONE (Containing Wafer, CHIP BIZ, Exception code)						
3. Small Classification			11. " —"															
E: Corner Vcc/Vss + Fast SRAM F: fCMOS Cell + LPSRAM H: High Speed(LPSRAM) X: High Voltage(LPSRAM) J: BICMOS L: Poly Load Cell + LPSRAM R: Center Vcc/Vss + Fast SRAM T: TFT Cell + LPSRAM			12. Package															
4~5. Density			A: TBGA(LF) B: SOP(LF) C: CHIP BIZ D: DIP E: TBGA F: FBGA G: SOP H: BGA J: SOJ K: SOJ(LF) L: TSCP1-0813.4F(LF) P: TSCP1-0820F(LF) Q: TSCP2-400R(LF) R: TSCP-R T: TSCP U: TSCP2-400(LF) W: WAFER Z: UBGA															
06: 64K 08: 256K 09: 512K 10: 1M 16: 16M 20: 2M 30: 3M 32: 32M 40: 4M 60: 6M 64: 64M 80: 8M			* Exception - 1MFSRAM B-ver 32-SOJ-300 > S 28-SOJ-300 > S - 512K/1M/2M/4M LPSRAM 32-TSCP1-0813.4F > Y 32-TSCP1-0813.4 > Y 32-TSCP1-0813.4R > N - 4M LPSRAM 32-TSCP2-400F > V 32-TSCP2-400R > M															
6~7. Organization			13. 1st Chip Speed									16. Packing Type (16 digit)						
01: x1 04: x4 08: x8 16: x16 18: x18 24: x24 32: x32			- COMMON (Temp, Power) A: Automotive, Normal B: Commercial, Low Low C: Commercial, Normal D: Extended, Low Low E: Extended, Normal F: Industrial, Low Low I: Industrial, Normal L: Commercial, Low M: Military, Normal N: Extended, Low P: Industrial, Low Q: Automotive, Low R: Industrial, Super Low T: Extended, Super Low U: Commercial, Ultra Super Low 0: NONE/NONE - WAFER, CHIP BIZ Level Division 0: NONE/NONE 1: Hot DC sort 2: Hot DC, selected AC sort 3: Cold/Hot DC, selected AC sort									- Common to all products, except of Mask ROM - Divided into TAPE & REEL (In Mask ROM, divided into TRAY, AMMO Packing Separately)						
8. Vcc			5: 1.5V C: 5.0V Q: VDD 3.0V/VDDQ 1.8V R: 1.65V~2.2V S: 2.5V T: 2.7V~3.6V U: 3.0V V: 3.3V W: 2.2V~3.3V															
9. Mode			16. Packing Type (16 digit)															
1: CS Low Active 2: CS1, CS2 - Dual Chip Select Signal 3: Single Chip Select with /LB,/UB(tOE) 4: Single Chip Select with /LB,/UB(tCS) 5: Dual Chip Select with /LB,/UB(tOE) 6: Dual Chip Select with /LB,/UB(tCS) 7: I/Os Control with /BYTE 8: CDMA Function 9: Multiplexed Address A: Mirror Chip Option			Type Packing Type New Marking															
			Component TAPE & REEL T															
			Other (Tray, Tube, Jar) 0 (Number)															
			Stack S															
			Component TRAY Y															
			(Mask ROM) AMMO PACKING A															
			Module MODULE TAPE & REEL P															
			MODULE Other Packing M															

SPB & FT (36Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	V _{dd} (V)	t _{CD} (ns)	t _{CD} (ns)	t _{CYC} (MHz)	t _{CYC} (MHz)	Voltage (V)	Package	Status	Comments
K7A323600M	1Mx36	SPB	3.3	2.6, 3.1, 4.0	250, 200, 138	3.3, 2.5	100TQFP (L/ LF)	ECL in Q1'07	2E1D		
K7A321800M	2Mx18	SPB	3.3	2.6, 3.1, 4.0	250, 200, 138	3.3, 2.5	100TQFP (L/ LF)	ECL in Q1'07	2E1D		
K7B323625M	1Mx36	SB	3.3	6.5, 7.5	133, 118	3.3, 2.5	100TQFP (L/ LF)	ECL in Q1'07	-		
K7B321825M	2Mx18	SB	3.3	6.5, 7.5	133, 118	3.3, 2.5	100TQFP (L/ LF)	ECL in Q1'07	-		
K7A323630C	1Mx36	SPB	3.3, 2.5	3.1	200	3.3, 2.5	100TQFP (Lead Free) only	Q3'06 (E/S)	2E1D		
K7A321830C	2Mx18	SPB	3.3, 2.5	3.1	200	3.3, 2.5	100TQFP (Lead Free) only	Q3'06 (E/S)	2E1D		
K7B323635C	1Mx36	SB	3.3, 2.5	7.5	118	3.3, 2.5	100TQFP (Lead Free) only	Q3'06 (E/S)	-		
K7B321835C	2Mx18	SB	3.3, 2.5	7.5	118	3.3, 2.5	100TQFP (Lead Free) only	Q3'06 (E/S)	-		

NOTES 2E1D = 2-cycle Enable and 1-cycle Disable

NOTES 200MHz could cover 167MHz, 133MHz speed option

SPB & FT (18Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	V _{dd} (V)	t _{CD} (ns)	t _{CD} (ns)	t _{CYC} (MHz)	t _{CYC} (MHz)	Voltage (V)	Package	Status	Comments
K7A163630B	512Kx36	SPB	3.3, 2.5	2.6, 3.5	250, 167	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A163631B	512Kx36	SPB	3.3, 2.5	3.1	200	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E2D		
K7A161830B	1Mx18	SPB	3.3, 2.5	2.6, 3.5	250, 167	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A161831B	1Mx18	SPB	3.3, 2.5	3.1	200	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E2D		
K7B163635B	512Kx36	SB	3.3, 2.5	7.5	117	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	-		
K7B161835B	1Mx18	SB	3.3, 2.5	7.5	117	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	-		

NOTES 2E1D = 2-cycle Enable and 1-cycle Disable 2E2D = 2-cycle Enable and 2-cycle Disable

NOTES 250MHz could cover 200MHz speed option / 167MHz could cover 133MHz speed option

SPB & FT (8Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	V _{dd} (V)	t _{CD} (ns)	t _{CD} (ns)	t _{CYC} (MHz)	t _{CYC} (MHz)	Voltage (V)	Package	Status	Comments
K7A803600B	256Kx36	SPB	3.3	3.5, 3.8	167, 138	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A803609B	256Kx36	SPB	3.3	2.6	250	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A801800B	512Kx18	SPB	3.3	3.5, 3.8	167, 138	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A801809B	512Kx18	SPB	3.3	2.6	250	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7B803625B	256Kx36	SB	3.3	6.5, 7.5	133, 117	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	-		
K7B801825B	512Kx18	SB	3.3	6.5, 7.5	133, 117	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	-		

NOTES 2E1D = 2-cycle Enable and 1-cycle Disable
2E2D = 2-cycle Enable and 2-cycle Disable

Recommended speed options for SPB are 250MHz and 167MHz
Recommended access speed option for SB is 6.5ns

SPB & FT (4Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	V _{dd} (V)	t _{CD} (ns)	t _{CD} (ns)	t _{CYC} (MHz)	t _{CYC} (MHz)	Voltage (V)	Package	Status	Comments
K7A403600B	128Kx36	SPB	3.3	3.5, 4.0	167, 138	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A401800B	256Kx18	SPB	3.3	3.5, 4.0	167, 138	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A403609B	128Kx36	SPB	3.3	2.4, 2.8	250, 200	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A401809B	256Kx18	SPB	3.3	2.4, 2.8	250, 200	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7A403200B	128Kx32	SPB	3.3	3.5, 4.0	167, 138	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	2E1D		
K7B403625B	128Kx36	SB	3.3	6.5, 7.5	133, 118	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	-		
K7B401825B	256Kx18	SB	3.3	6.5, 7.5	133, 118	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production	-		

NOTES 2E1D = 2-cycle Enable and 1-cycle Disable 2E2D = 2-cycle Enable and 2-cycle Disable

NOTES 250MHz could cover 200MHz speed option / 167MHz could cover 133MHz speed option

SPB & FT (2Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status	Comments		
K7A203600B	64Kx36	SPB	3.3	4	138	2.5, 3.3	100 TQFP	Will be EOL'd in Q1'07	2E1D		
K7A203200B	64Kx32	SPB	3.3	4	138	2.5, 3.3	100 TQFP	Will be EOL'd in Q1'07	2E1D		

NOTES 2E1D = 2-cycle Enable and 1-cycle Disable

2E2D = 2-cycle Enable and 2-cycle Disable

NtRAM (72Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status			
K7N643645M	2Mx36	SPB	2.5	2.6, 3.5	250, 167	2.5	100TQFP(LF Only), 165FBGA	Mass Production			
K7N641845M	4Mx18	SPB	2.5	2.6, 3.5	250, 167	2.5	100TQFP(LF Only), 165FBGA	Mass Production			

NOTES 250MHz could cover 200MHz speed option / 167MHz could cover 133MHz speed option

NtRAM (36Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status			
K7N323645M	1Mx36	SPB	2.5	2.6, 3.2, 3.5, 4.2	250, 200, 167, 133	2.5	100TQFP, 165FBGA	EOL in Q1'07			
K7N321845M	2Mx18	SPB	2.5	2.6, 3.2, 3.5, 4.2	250, 200, 167, 133	2.5	100TQFP, 165FBGA	EOL in Q1'07			
K7N323601M	1Mx36	SPB	3.3	2.6, 3.2, 3.5, 4.2	250, 200, 167, 133	3.3, 2.5	100TQFP, 165FBGA	EOL in Q1'07			
K7N321801M	2Mx18	SPB	3.3	2.6, 3.2, 3.5, 4.2	250, 200, 167, 133	3.3, 2.5	100TQFP, 165FBGA	EOL in Q1'07			
K7M323625M	1Mx36	FT	3.3	7.5	118	3.3, 2.5	100TQFP	EOL in Q1'07			
K7M321825M	2Mx18	FT	3.3	7.5	118	3.3, 2.5	100TQFP	EOL in Q1'07			
K7N32363SC	1Mx36	SPB	3.3, 2.5	2.6, 3.5	250, 167	3.3, 2.5	100TQFP(LF only), 165FBGA	Q3'06 (ES)			
K7N32183SC	2Mx18	SPB	3.3, 2.5	2.6, 3.5	250, 167	3.3, 2.5	100TQFP(LF only), 165FBGA	Q3'06 (ES)			
K7M323635C	1Mx36	FT	3.3, 2.5	7.5	118	3.3, 2.5	100TQFP (LF only)	Q3'06 (ES)			
K7M321835C	2Mx18	FT	3.3, 2.5	7.5	118	3.3, 2.5	100TQFP (LF only)	Q3'06 (ES)			

NOTES Recommended speed options for SPB are 250MHz and 167MHz

Recommended access speed option for SB is 7.5ns

NOTES 250MHz could cover 200MHz speed option / 167MHz could cover 133MHz speed option

NtRAM (18Mbit) SRAM

Part		Operating		Access Time		Speed		I/O		Production	
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status			
K7N161831B	1Mx18	SPB	3.3, 2.5	2.6, 3.5	250, 167	3.3, 2.5	100TQFP(LF only from 2H07), 165FBGA	Mass Production			
K7N163631B	512Kx36	SPB	3.3, 2.5	2.6, 3.5	250, 167	3.3, 2.5	100TQFP(LF only from 2H07), 165FBGA	Mass Production			
K7M161835B	1Mx18	FT(SB)	3.3	6.5	133	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production			
K7M163635B	512Kx36	FT(SB)	3.3	6.5	133	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production			

NOTES 250MHz could cover 200MHz speed option / 167MHz could cover 133MHz speed option / 6.5ns could cover 7.5ns speed option

NtRAM (8Mbit) SRAM

Part		Operating		Access Time	Speed	I/O		Production
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status
K7N803601B	256Kx36	SPB	3.3	3.5, 4.2	167,133	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production
K7N801801B	512Kx18	SPB	3.3	3.5, 4.2	167,133	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production
K7N803609B	256Kx36	SPB	3.3	2.6	250	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production
K7N801809B	512Kx18	SPB	3.3	2.6	250	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production
K7N803645B	256Kx36	SPB	2.5	3.5, 4.2	167,133	2.5	100TQFP (LF only from 2H07)	Mass Production
K7N801845B	512Kx18	SPB	2.5	3.5, 4.2	167,133	2.5	100TQFP (LF only from 2H07)	Mass Production
K7N803649B	256Kx36	SPB	2.5	2.6	250	2.5	100TQFP (LF only from 2H07)	Mass Production
K7N801849B	512Kx18	SPB	2.5	2.6	250	2.5	100TQFP (LF only from 2H07)	Mass Production
K7M801825B	512Kx18	FT	3.3	6.5,7.5	133,117	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production
K7M803625B	256Kx36	FT	3.3	6.5,7.5	133,117	3.3, 2.5	100TQFP (LF only from 2H07)	Mass Production

NtRAM (4Mbit) SRAM

Part		Operating		Access Time	Speed	I/O		Production
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status
K7N403601B	128Kx36	SPB	3.3	3.5, 4.2	167,133	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production
K7N401801B	256Kx18	SPB	3.3	3.5, 4.2	167,133	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production
K7N403609B	128Kx36	SPB	3.3	2.6, 3.0	250,200	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production
K7N401809B	256Kx18	SPB	3.3	2.6, 3.0	250,200	3.3,2.5	100TQFP (LF only from 2H07)	Mass Production

LATE-WRITE R-R (32Mbit) SRAM

Part		Operating		Access Time	Speed	I/O		Production
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status
K7P321888M	2Mx18	SP	1.8	1.7, 2.0	300,250	1.5 (Max 1.8)	119BGA	EOL in Q2'07
K7P323688M	1Mx36	SP	1.8	1.7, 2.0	300,250	1.5 (Max 1.8)	119BGA	EOL in Q2'07
K7P321866M	2Mx18	SP	2.5	1.6, 2.0	300,250	1.5 (Max 1.8)	119BGA	EOL in Q2'07
K7P323666M	1Mx36	SP	2.5	1.6, 2.0	300,250	1.5 (Max 1.8)	119BGA	EOL in Q2'07
K7P321874C	2Mx18	SP	1.8 / 2.5V	1.6, 2.0	300,250	1.5 (Max 1.8)	119BGA	Q3'06 (C/S)
K7P323674C	1Mx36	SP	1.8 / 2.5V	1.6, 2.0	300,250	1.5 (Max 1.8)	119BGA	Q3'06 (C/S)

LATE-WRITE R-R (16Mbit) SRAM

Part		Operating		Access Time	Speed	I/O		Production
Number	Organization	Mode	Vdd (V)	t _{CD} (ns)	t _{CYC} (MHz)	Voltage (V)	Package	Status
K7P161866A	1Mx18	SP	2.5	2	250	1.5 (Max 1.9)	119BGA	Mass Production
K7P163666A	512Kx36	SP	2.5	1.6	300,250	1.5 (Max 1.9)	119BGA	Mass Production

LATE-WRITE R-R (8Mbit) SRAM

Part	Organization	Operating Mode	Vdd (V)	Access Time t _{CD} (ns)	Speed t _{CYC} (MHz)	I/O Voltage (V)	Package	Production Status
K7F801811B	512Kx18	SP	3.3	1.5,1.6,2.0	333,300,250	1.5 (Max.2.0)	119BGA	Mass Production
K7F803611B	256Kx36	SP	3.3	1.5,1.6,2.0	333,300,250	1.5 (Max.2.0)	119BGA	Mass Production
K7F801866B	512Kx18	SP	2.5	1.5,1.6,2.0	333,300,250	1.5 (Max.2.0)	119BGA	Mass Production
K7F803666B	256Kx36	SP	2.5	1.5, 1.6, 2.0	333, 300,250	1.5 (Max.2.0)	119BGA	Mass Production
K7F801822B	512Kx18	SP	3.3	1.5, 1.6, 2.0	333, 300,250	2.5/3.3	119BGA	Mass Production
K7F803622B	256Kx36	SP	3.3	3.3,2.5,2.0	250,200,166	2.5/3.3	119BGA	Mass Production

LATE-WRITE R-R & R-L (4Mbit) SRAM

Part	Organization	Operating Mode	Vdd (V)	Access Time t _{CD} (ns)	Speed t _{CYC} (MHz)	I/O Voltage (V)	Package	Production Status
K7F401822B	256Kx18	SP	3.3	2.5,2.7,3.0	250,200,167	2.5/3.3	119BGA	Mass Production
K7F401823B	256Kx18	SP	3.3	6.5	167	2.5/3.3	119BGA	Mass Production
K7F403622B	128Kx36	SP	3.3	2.5,2.7,3.0	250,200,167	2.5/3.3	119BGA	Mass Production

DDR (8Mbit) SRAM

Part	Organization	Vdd (V)	Access Time t _{CD} (ns)	Cycle Time (MHz)	I/O Voltage (V)	Package	Production Status
K7D803671B	256Kx36	2.5	1.7/1.9/2.1	333, 330, 250	1.5(Max.2.0)	153BGA	Mass Production
K7D801871B	512Kx18	2.5	1.7/1.9/2.1	333, 330, 250	1.5(Max.2.0)	153BGA	Mass Production

DDR (16Mbit) SRAM

Part	Organization	Vdd (V)	Access Time t _{CD} (ns)	Cycle Time (MHz)	I/O Voltage (V)	Package	Production Status
K7D161874B	1Mx18	1.8~2.5	2.3	330, 300	1.5~1.9	153BGA	Mass Production
K7D163674B	512Kx36	1.8~2.5	2.3	330, 300	1.5~1.9	153BGA	Mass Production

DDR (32Mbit) SRAM

Part			Access Time	Cycle Time	I/O	Production	
Number	Organization	Vdd (V)	t _{CD} (ns)	(MHz)	Voltage (V)	Package	Status
K7D321874A	2Mx18	1.8~2.5	2.0	400, 375, 333	1.5~1.8	153BGA	EOL in Q4'06
K7D323674A	1Mx36	1.8~2.5	2.0	400, 375, 333	1.5~1.8	153BGA	EOL in Q4'06
K7D321874C	2Mx18	1.8~2.5	2.0	400, 375, 333	1.5~1.8	153BGA	Q3'06 (C/S)
K7D323674C	1Mx36	1.8~2.5	2.0	400, 375, 333	1.5~1.8	153BGA	Q3'06 (C/S)

DDR II CIO/SIO (18Mbit) SRAM

Part			Access Time	Cycle Time	I/O	Production		
Number	Organization	Vdd (V)	t _{CD} (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7I161882B	1Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-2B
K7I161884B	1Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-4B
K7J161882B	1Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	SO-2B
K7J163682B	512Kx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	SO-2B
K7I163682B	512Kx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-2B
K7I163684B	512Kx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-4B

NOTES 2B = Burst of 2

4B = Burst of 4

SIO = Separate I/O

CIO = Common I/O

DDR II CIO/SIO (36Mbit) SRAM

Part			Access Time	Cycle Time	I/O	Production		
Number	Organization	Vdd (V)	t _{CD} (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7I321882M	2Mx18	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	CIO-2B
K7I321884M	2Mx18	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	CIO-4B
K7.B21882M	2Mx18	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	SO-2B
K7I323682M	1Mx36	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	CIO-2B
K7I323684M	1Mx36	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	CIO-4B
K7.B23682M	1Mx36	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	SO-2B
K7I321882C	2Mx18	1.8	0.45	330,300,250	1.5,1.8	165FBGA	Q3'06 (C/S)	CIO-2B
K7I321884C	2Mx18	1.8	0.45	330,300,250	1.5,1.8	165FBGA	Q3'06 (C/S)	CIO-4B
K7.B21882C	2Mx18	1.8	0.45	330,300,250	1.5,1.8	165FBGA	Q3'06 (C/S)	SO-2B
K7I323682C	1Mx36	1.8	0.45	330,300,250	1.5,1.8	165FBGA	Q3'06 (C/S)	CIO-2B
K7I323684C	1Mx36	1.8	0.45	330,300,250	1.5,1.8	165FBGA	Q3'06 (C/S)	CIO-4B
K7.B23682C	1Mx36	1.8	0.45	330,300,250	1.5,1.8	165FBGA	Q3'06 (C/S)	SO-2B

NOTES 2B = Burst of 2

4B = Burst of 4

SIO = Separate I/O

CIO = Common I/O

C-die will support high-speed bins only 330, 300, 250MHz, which can cover slow-speed bins (200MHz, 167MHz) using stable DLL circuit.

DDR II CIO/SIO (72Mbit) SRAM

Part		Access Time		Cycle Time	I/O	Production		
Number	Organization	Vdd (V)	tCD (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7I641882M	4Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-2B
K7I641884M	4Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-4B
K7J641882M	4Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	SIO-2B
K7I643682M	2Mx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-2B
K7I643684M	2Mx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	CIO-4B
K7J643682M	2Mx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	SIO-2B

NOTES 2B = Burst of 2

4B = Burst of 4

SIO = Separate I/O

CIO = Common I/O

DDR II+ CIO/SIO (18Mbit) SRAM

Part		Access Time		Cycle Time	I/O	Production		
Number	Organization	Vdd (V)	tCD (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7K1618T2C	1Mx18	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (ES)	DDR II+ CIO-2B
K7K1636T2C	512Kx36	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (ES)	DDR II+ CIO-2B

NOTES Offer 2-clock latency now, we can also support 2.5-clock latency with 500MHz speed based on demand.

DDR II+ CIO/SIO (36Mbit) SRAM

Part		Access Time		Cycle Time	I/O	Production		
Number	Organization	Vdd (V)	tCD (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7K3218T2C	2Mx18	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (ES)	DDR II+ CIO-2B
K7K3236T2C	1Mx36	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (ES)	DDR II+ CIO-2B

NOTES Offer 2-clock latency now, we can also support 2.5-clock latency with 500MHz speed based on demand.

QDR I, II (18Mbit) SRAM

Part		Access Time		Cycle Time	I/O	Production		
Number	Organization	Vdd (V)	tCD (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7R160982B	2Mx9	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II - 2B
K7R161882B	1Mx18	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II - 2B
K7R161884B	1Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II - 4B
K7Q161862B	1Mx18	1.8v / 2.5v	2.5	167	1.5,1.8	165FBGA	Mass Production	QDR I - 2B
K7Q161864B	1Mx18	1.8v / 2.5v	2.5	167	1.5,1.8	165FBGA	Mass Production	QDR I - 4B
K7R163682B	512Kx36	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II - 2B
K7R163684B	512Kx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II - 4B
K7Q163662B	512Kx36	1.8v / 2.5v	2.5	167	1.5,1.8	165FBGA	Mass Production	QDR I - 2B
K7Q163664B	512Kx36	1.8v / 2.5v	2.5	167	1.5,1.8	165FBGA	Mass Production	QDR I - 4B

NOTES 2B = Burst of 2

4B = Burst of 4

QDR II (36Mbit) SRAM

Part		Vdd (V)	Access Time	Cycle Time	I/O	Production		
Number	Organization		t _{CD} (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7R320982M	4Mx9	1.8	0.45,0.50	200,167	1.5,1.8	165FBGA	EOL in Q4'06	QDR II-2B
K7R321882M	2Mx18	1.8	0.45,0.50	200,167	1.5,1.8	165FBGA	EOL in Q4'06	QDR II-2B
K7R321884M	2Mx18	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	QDR II-4B
K7R323682M	1Mx36	1.8	0.45,0.50	200,167	1.5,1.8	165FBGA	EOL in Q4'06	QDR II-2B
K7R323684M	1Mx36	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	EOL in Q4'06	QDR II-4B
K7R320982C	4Mx9	1.8	0.45	300, 250, 200	1.5,1.8	165FBGA	Q3'06 (C/S)	QDR II-2B
K7R321882C	2Mx18	1.8	0.45	300, 250, 200	1.5,1.8	165FBGA	Q3'06 (C/S)	QDR II-2B
K7R321884C	2Mx18	1.8	0.45	333, 300, 250	1.5,1.8	165FBGA	Q3'06 (C/S)	QDR II-4B
K7R323682C	1Mx36	1.8	0.45	300, 250, 200	1.5,1.8	165FBGA	Q3'06 (C/S)	QDR II-2B
K7R323684C	1Mx36	1.8	0.45	333, 300, 250	1.5,1.8	165FBGA	Q3'06 (C/S)	QDR II-4B

NOTES 2B = Burst of 2

4B = Burst of 4

Cdie will support high-speed bins only 300, 250, 200MHz, which can cover slow-speed bin (167MHz) using stable DLL circuit.

QDR II (72Mbit) SRAM

Part		Vdd (V)	Access Time	Cycle Time	I/O	Production		
Number	Organization		t _{CD} (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7R640982M	8Mx9	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II-2B
K7R641882M	4Mx18	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II-2B
K7R641884M	4Mx18	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II-4B
K7R643682M	2Mx36	1.8	0.45,0.45,0.50	250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II-2B
K7R643684M	2Mx36	1.8	0.45,0.45,0.45,0.50	300,250,200,167	1.5,1.8	165FBGA	Mass Production	QDR II-4B

NOTES 2B = Burst of 2

4B = Burst of 4

The recommended speed bins are 250MHz, 200MHz for 2B part, 300MHz, 250MHz for 4B part.

QDR II+ (18Mbit) SRAM

Part		Vdd (V)	Access Time	Cycle Time	I/O	Production		
Number	Organization		t _{CD} (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7S1618T4C	1Mx18	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (E/S)	QDR II + 4B
K7S1636T4C	512Kx36	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (E/S)	QDR II + 4B

NOTES Offer 2-clock latency now; we can also support 2.5-clock latency with 500MHz speed based on demand.

QDR II+ (36Mbit) SRAM

Part		Vdd (V)	Access Time	Cycle Time	I/O	Production		
Number	Organization		t _{CD} (ns)	(MHz)	Voltage (V)	Package	Status	Comments
K7S3218T4C	1Mx36	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (E/S)	QDR II + 4B
K7S3236T4C	2Mx18	1.8	0.45	400, 333	1.5	165FBGA	Q3'06 (E/S)	QDR II + 4B

NOTES Offer 2-clock latency now; we can also support 2.5-clock latency with 500MHz speed based on demand.

SYNCHRONOUS SRAM ORDERING INFORMATION

K	7	X	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		
1. Memory (K)										62: 2.5V/1.8V/HSTL,Burst2									
2. Sync SRAM: 7										64: 2.5V/1.8V/HSTL,Burst4									
3. Small Classification										66: 2.5V/HSTL,R,R									
A: Sync Pipelined Burst										70: 2.5V/HSTL,4-1-1-1									
B: Sync Burst										71: 2.5V/HSTL,3-1-1-1									
C: Custom Product										73: 1.5V/1.8V/HSTL,All									
D: Double Data Rate										74: 1.8V/2.5V/HSTL,All									
I: Double Data Rate II, Common I/O										80: 1.8V/LVCMOS2E1D									
J: Double Data Rate, Separate I/O										82: 1.8V/HSTL,Burst2									
K: Double Data II+, Common I/O										84: 1.8V/HSTL,Burst4									
L: Late Select										85: 1.8V/LVCMOS2E2D,H SPEED									
M: Sync Burst + NtRAM										88: 1.8V/HSTL,R,R									
N: Sync Pipelined Burst + NtRAM										91: 1.5V/HSTL,All									
P: Sync Pipe										95: 1.0V/HSTL,All									
Q: Quad Data Rate I										T2: 1.8V,2Clock Latency,Burst2									
R: Quad Data Rate II										T4: 1.8V,2Clock Latency,Burst4									
S: Quad Data Rate II+										U2: 1.8V,2.5Clock Latency,Burst2									
4~5. Density										U4: 1.8V,2.5Clock Latency,Burst4									
10: 1M										80: 8M									
20: 2M										16: 18M									
40: 4M										32: 36M									
64: 72M										44: 144M									
6~7. Organization										10. Generation									
08: x8										M: 1st Generation									
18: x18										A: 2nd Generation									
36: x36										B: 3rd Generation									
72: x72										C: 4th Generation									
										D: 5th Generation									
										Z: TEMPORARY CODE									
8~9. Vcc, Interface, Mode										11. "-"									
00: 3.3V/LVTTL,2E1D,WIDE										12. Package									
01: 3.3V/LVTTL,2E2D,WIDE										H: BGA,FCBGA,FBGA									
08: 3.3V/LVTTL,2E2D,H SPEED										G: BGA,FCBGA,FBGA(LF)									
09: 3.3V/LVTTL,H SPEED										F: FBGA									
11: 3.3V/HSTL,R,R										E: FBGA(LF)									
12: 3.3V/HSTL,R,L										Q: (L)QFF									
14: 3.3V/HSTL,R,R Fixed ZQ										P: (L)QFR(LF)									
22: 3.3V/LVTTL,R,R										C: CHIP BIZ									
23: 3.3V/LVTTL,R,L										W: WAFER									
25: 3.3V/LVTTL,SB-FT,WIDE										13. Temp. Power									
30: 1.8/2.5/3.3V/LVTTL,2E1D										- COMMON (Temp,Power)									
31: 1.8/2.5/3.3V/LVTTL,2E2D										0: NONE,NONE (Containing of Error handling code)									
35: 1.8/2.5/3.3V/LVTTL,SB-FT										A: Automotive,Normal									
44: 2.5V/LVTTL,2E1D										B: Commercial,Low Low									
45: 2.5V/LVTTL,2E2D										C: Commercial,Normal									
49: 2.5V/LVTTL,H SPEED										E: Extended,Normal									
52: 2.5V/1.5/1.8V/HSTL,Burst2										I: Industrial,Normal									
54: 2.5V/1.5/1.8V/HSTL,Burst4										- WAFER,CHIP BIZ Level Division									
										0: NONE,NONE									
										1: Hot DC sort									
										2: Hot DC, selected AC sort									
										14~15. Speed									
										- Sync Burst, Sync Burst + NtRAM									
										& < Mode is R-L > (Clock Accesss Time)									
										10: 10ns(Sync Burst, Sync Burst + NtRAM)									
										38: 3.8ns									
										43: 4.3ns									
										48: 4.8ns									
										50: 5ns(Only Sync Pipe)									
										55: 5.5ns									
										60: 6ns									
										65: 6.5ns									
										67: 6.7ns									
										70: 7ns									
										75: 7.5ns									
										80: 8ns									
										85: 8.5ns									
										90: 9ns									
										- Other Small Classification (Clock Cycle Time)									
										10: 100MHz									
										11: 117MHz									
										13: 133MHz									
										14: 138MHz									
										15: 150MHz									
										16: 166MHz									
										17: 175MHz									
										18: 183MHz									
										19: 143MHz									
										20: 200MHz									
										21: 200MHz(2.0ns)									
										22: 225MHz									
										25: 250MHz									
										26: 250MHz(1.75ns)									
										27: 275MHz									
										30: 300MHz									
										33: 333MHz									
										35: 350MHz									
										36: 366MHz(t-CYCLE)									
										37: 375MHz									
										40: 400MHz(t-CYCLE)									
										42: 425MHz									
										45: 450MHz									
										50: 500MHz(except Sync Pipe)									
										6A: 600MHz 6F: 650MHz(Only CSRAM)									
										7F: 750MHz									
										16. Packing Type (16 digit)									
										- Common to all products, except of Mask ROM									
										- Divided into TAFE & REEL(In Mask ROM, divided into TRAY, AMMO Packing Separately)									
										Type									
										Packing Type									
										New Marking									
										Component									
										TAFE & REEL									
										T									
										Other (Tray, Tube, Jar)									
										0 (Number)									
										Stack									
										S									
										Component									
										TRAY									
										Y									
										(Mask ROM) AMMO PACKING									
										A									
										Module									
										MODULE TAFE & REEL									
										P									
										MODULE Other Packing									
										M									

MCP: NAND/DRAM

DENSITY		Memory Combination	VCC (V)		ORGANIZATION		Part No.	PACKAGE INFORMATION			
FLASH	DRAM		FLASH	DRAM	FLASH	DRAM		Size	Type		
256Mb	128Mb	ND256128	1.8V	1.8V	x8	x16	K5D5629ACC-D0900000	10.5x13x1.4	107FBGA		
256Mb	256Mb	ND256256	1.8V	1.8V	x8	x16	K5D5657ACB-D0900000	10.5x13x1.4	107FBGA		
			2.65V	1.8V	x8	x16	K5D5657DCB-D0900000	10.5x13x1.4	107FBGA		
256Mb	512Mb	ND256512	3.0V	2.5V	x8	x32	K5D5613HCA-D0900000	10.5x13x1.2	137FBGA		
			3.3V	3.3V	x8	x32	K5D5613VCM-D0900000	10.5x13x1.2	137FBGA		
256Mb	1Gb	NDD256512512	3.0V	2.5V	x8	x16	KAL005005M-DGYY000	10.5x13x1.4	137FBGA		
			1.8V	1.8V	x8	x16	K5D5629ACC-D0900000	10.5x13x1.2	107FBGA		
	128Mb	ND256128	1.8V	1.8V	x8	x16	K5D5657ACB-D0900000	10.5x13x1.2	107FBGA		
			2.65V	1.8V	x8	x16	K5D5657DCB-D0900000	10.5x13x1.2	107FBGA		
512Mb	256Mb	ND512256	1.8V	1.8V	x8	x16	K5D1257ACB-D0900000	10.5x13x1.2	107FBGA		
			2.65V	1.8V	x8	x16	K5D1257DCA-D0900000	10.5x13x1.4	107FBGA		
	256Mb	ND512256	1.8V	1.8V	x8	x32	K5D1258ACM-D0900000	11.5x13x1.2	137FBGA		
			2.65V	1.8V	x8	x32	K5D1258DCM-D0900000	10.5x13x1.4	137FBGA		
512Mb	512Mb	NDD512256256	2.65V	1.8V	x8	x32	KAL003004M-DG55000	10.5x13x1.4	137FBGA		
			ND512512	2.65V	1.8V	x8	x16	K5D1212DCA-D0900000	10.5x13x1.2	107FBGA	
	256Mb	ND512512	1.8V	1.8V	x8	x32	K5D1213ACM-D0900000	10.5x13x1.2	137FBGA		
			1.8V	1.8V	x8	x16(D)	K5E1212ACB-D075000	11.5x13x1.4	202FBGA		
1Gb	256Mb	NND512512256	2.65V	1.8V	x8	x16	KAG00K007A-DGG5000	10.5x13x1.4	107FBGA		
1Gb	512Mb	NNDD512512256256	2.65V	1.8V	x8	x16	KBED0F003A-D411000	10.5x13x1.4	107FBGA		
			1.8V	1.8V	x8	x16	KBED0G003M-D429000	10.5x13x1.4	107FBGA		
			3.0V	3.0V	x8	x16	KBED0J006A-D411000	10.5x13x1.4	107FBGA		
			2.65V	1.8V	x8	x32	KBED0F005A-D411000	10.5x13x1.4	137FBGA		
			1.8V	1.8V	x8	x32	KBED0G005A-D411000	10.5x13x1.4	137FBGA		
			256Mb	NND512512512	1.8V	1.8V	x8	x16	KAG004003M-DDD5000	10.5x13x1.4	107FBGA
					2.65V	1.8V	x8	x16	KAG00K003M-DGG5000	10.5x13x1.4	107FBGA
			256Mb	NDD1G256256	1.8V(L)	1.8V	x8	x32	KAL00T00KM-DG55000	11.5x13x1.2	137FBGA
					3.0V	2.65V	x8	x32	KAL00Z00LM-DA55000	11.5x13x1.4	137FBGA
			256Mb	ND1G512	2.65V	1.8V	x8	x16	K5D1G12DCM-D0900000	10.5x13x1.4	107FBGA
					2.65V	1.8V	x8	x32	K5D1G13DCM-D0900000	10.5x13x1.4	137FBGA
					1.8V	1.8V	x8	x32	K5D1G13ACD-D075000	10.5x13x1.2	137FBGA
					1.8V(L)	1.8V	x8	x16	K5D1G12ACM-D0900000	12.0x14x1.4	107FBGA
					1.8V(L)	1.8V	x8	x32	K5E1G13ACM-D075000	11.5x13x1.2	137FBGA
1.8V(L)	1.8V	x8			x16	KAL00X00VM-D1YY000	10.5x13x1.4	137FBGA			
2Gb	512Mb	NNDD1G1G256256	2.65V(L)	1.8V	x8	x32	KBED0S005M-D411000	12x14x1.4	137FBGA		
			3.3V(L)	3.0V	x8	x16	KBED0U006M-D411000	12x14x1.4	107FBGA		
			1.8V(L)	1.8V	x8	x32	KBED0H005M-D411000	11.5x13x1.4	137FBGA		
			1.8V(L)	2.8V	x8	x32	KBED0H006M-D413000	11.5x13x1.4	137FBGA		
			256Mb	NND1G1G512	2.65V	1.8V	x8	x16	KAG006003M-DGG5000	12.0x14x1.4	107FBGA
					2.65V	1.8V	x8	x32	KAG006003M-DGG5000	12.0x14x1.4	137FBGA
			256Mb	NND1G1G512	1.8V(L)	1.8V	x8	x32(D)	KAG001002M-DGGY000	11.5x13x1.4	137FBGA
					2.65V	1.8V	x8	x16	KAG006003A-D115000	10.5x13x1.4	107FBGA
					2.65V	1.8V	x8	x32	KAG00600SA-D115000	10.5x13x1.4	137FBGA
					2.65V(L)	3.0V	x8	x32	KBED0500AM-D437000	10.5x13x1.4	137FBGA
2Gb	1Gb	NNDD1G1G512512	1.8V	1.8V	x8	x32	KBED0S00AA-D435000	10.5x13x1.4	137FBGA		
			2.65V	1.8V	x8	x32	KBED0S00AA-D435000	10.5x13x1.4	137FBGA		
			2.65V(L)	3.0V	x8	x32	KBED0100GM-431000	11.5x13x1.4	137FBGA		

NOTES

1. N = NAND, D = DRAM memory combination indicates the type, density, and number of die stacks in the MCP. (Ex. NDD256256256 = 256Mb NAND + 256Mb DRAM + 256Mb DRAM).
2. When ordering Tape and Reel, please indicate by the letter "T" on the 3rd to last field in the part number. (Ex. K5D5629ACC-D090T00)
3. (D) Denotes DDR SDRAM packaged in MCP
4. (L) Denotes Large Block NAND packaged in MCP

MCP: NOR/ SRAM AND NOR/ U_tRAM

DENSITY		Memory	VCC (V)				ORGANIZATION			PACKAGE INFORMATION	
FLASH	SRAM	Combination	FLASH	SRAM	FLASH	SRAM	BOOT	NOR OPR	Part No.	Size	Type
32Mb	4Mb	RS3204	3.0V	3.0V	x8/x16	x8/x16	BOTTOM	Async. No Page	K5A3240CEM-F755000	8x11x1.2	69FBGA
		RS3208	3.0V	3.0V	x8/x16	x8/x16	TOP	Async. No Page	K5A3281CTM-D755000	8x11x1.2	69FBGA
		3.0V	3.0V	x8/x16	x8/x16	BOTTOM	Async. No Page	K5A3281CEM-D755000	8x11x1.2	69FBGA	
32Mb	8Mb	RS3208	3.0V	3.0V	x8/x16	x8/x16	TOP	Async. No Page	K5A3281CTM-D755000	8x11x1.2	69FBGA
			3.0V	3.0V	x8/x16	x8/x16	BOTTOM	Async. No Page	K5A3281CEM-D755000	8x11x1.2	69FBGA
64Mb	32Mb	RU6432	3.0V	3.0V	x16	x16	TOP	Async. No Page	K5L6332CTM-D770000	8x11.6x1.4	69FBGA
			3.0V	3.0V	x16	x16	BOTTOM	Async. No Page	K5L6332CEM-D770000	8x11.6x1.4	69FBGA
128Mb	32Mb	RU12832	3.0V	3.0V	x16	x16	TOP/BOT	Async. Page Mode	K5L2931CAM-D770000	8x11.6x1.2	64FBGA
			1.8V	1.8V	x16	x16	TOP	Sync Mux	K5N2828ATM-S866000	8.0x9.2x1.2	56FBGA
128Mb	64Mb	RU12864	3.0V	3.0V	x16	x16	TOP/BOT	Async. Page Mode	K5L2963CAM-D770000	8x11.6x1.2	64FBGA
			1.8V	1.8V	x16	x16	TOP	Sync	K5L2864ATM-DF66000	8x12x1.4	115FBGA
256Mb	64Mb	RU25664	3.0V	3.0V	x16	x16	TOP/BOT	Async. Page Mode	K5L5563CAM-D770000	8x11.6x1.2	84FBGA
256Mb	128Mb	RU256128	1.8V	2.6/1.8V	x16	x16	TOP/BOT	Async. Page Mode	K5L5527CAM-D770000	8x11.6x1.2	84FBGA

NOTES

1. F= NOR, S= SRAM, U= U_tRAM Memory combination indicates the type, density, and number of die stacks in the MCP. (Ex. FRU646432 = 64Mb NOR + 64Mb NOR + 32Mb U_tRAM).
2. When ordering Tape and Reel, please indicate by the letter "T" on the 3rd to last field in the part number. (Ex. K5D5629ACC-D090T00)
3. All NOR Flash have demuxed Add/Data lines unless otherwise indicated in NOR OPR column.
4. All packages are pin compatible to Sansion's MCP pin out.

MCP: OneNAND™ / DRAM

DENSITY		Memory Combination	VCC (V)		ORGANIZATION		Part No.	PACKAGE INFORMATION	
FLASH	DRAM		FLASH	DRAM	FLASH	DRAM		Size	Type
256Mb	256Mb	OD1256256	3.3V	3.3V	x16	x32	K5F5658VOM-DR75000	8x13x1.4	188FBGA
			3.3V	1.8V	x16	x32	K5F5658LOM-DR75000	8x13x1.4	188FBGA
512Mb	512Mb	OD512512	1.8V	1.8V	x16	x16(D)	K5W1212ACM-DK75000	11.5x13x1.4	167FBGA
			1.8V	1.8V	x16	x32	K5R1213ACA-DK75000	11.5x13x1.0	202FBGA
1Gb	512Mb	OD1G512	1.8V	1.8V	x16	x16	K5R1G12ACM-DK90000	11.5x13x1.4	167FBGA
			1.8V	1.8V	x16	x32	K5R1G13ACA-DK75000	11.5x13x1.0	202FBGA
3Gb	512Mb	OOOD1G1G1G512	1.8V	1.8V	x16	x32	KBR0Y00EA-D434000	11.5x13x1.4	167FBGA

NOTES

1. O= OneNAND, D= DRAM Memory combination indicates the type, density, and number of die stacks in the MCP. (Ex. OD1G512 = 1Gb OneNAND + 512Mb SDRAM).
2. When ordering Tape and Reel, please indicate by the letter "T" on the 3rd to last field in the part number. (Ex. K5F5658VOM-DR75T00)
3. (D) Denotes DDR SDRAM packaged in MCP.
4. All OneNAND Flash have demuxed Add/Data lines

MCP: NOR/ DRAM

DENSITY		Memory	VCC (V)				ORGANIZATION			PACKAGE INFORMATION	
FLASH	SRAM	Combination	FLASH	SRAM	FLASH	SRAM	BOOT	NOR OPR	Part No.	Size	Type
64Mb	256Mb	RD64256	3.0V	2.6V	x16	x32	TOP	Async. No Page	K5H6358ETA-D775000	10x11x0.8	145FBGA
64Mb	512Mb	RD64512	3.0V	1.8V	x16	x32(D)	TOP	Async. No Page	K5Y6313LTM-D790000	10.5x12x1.4	151FBGA
512Mb	256Mb	RRD512256	1.8V	1.8V	x16	x16(D)	TOP	Sync MLC	KAS35000AM-S44Y000	11x10x1.3	133FBGA
512Mb	512Mb	RRD56256512	1.8V	1.8V	x16	x16	T+B	Sync	KAS280003M-DJL5000	11.5x13x1.4	167FBGA

NOTES

1. F= NOR, D= DRAM Memory combination indicates the type, density, and number of die stacks in the MCP. (Ex. RRD32128128 = 32Mb NOR + 128Mb DRAM + 128Mb DRAM).
2. When ordering Tape and Reel, please indicate by the letter "T" on the 3rd to last field in the part number. (Ex. K5H6358ETA-D775T00)
3. All NOR Flash have demuxed Add/Data lines

3.5" HARD DISK DRIVES (HDD)

		Capacity	RFMs	Model	# of Heads	# of Disks	Interface	Buffer Size	Seek Time	MTBF
SpinPoint V Series	V80 Series PATA/2MB	120GB	5400 rpm	S/1203N	3	2	ATA-133	2MB	8.9ms	500K hrs
		160GB	5400 rpm	S/1604N	4	2	ATA-133	2MB	8.9ms	500K hrs
	V120 CE Series	250GB	5400 rpm	HA250JC	4	2	ATA-133	2MB	8.9ms	500K hrs
SpinPoint P Series	P40 Series PATA/2MB	40GB	7200 rpm	SF0411N	1	1	ATA-133	2MB	10ms	500K hrs
		40GB	7200 rpm	SF0401N	1	1	ATA-133	2MB	10ms	500K hrs
	SATA 1.5Gb/s	40GB	7200 rpm	SF0411C	1	1	SATA 1.5G	2MB	10ms	500K hrs
		80GB	7200 rpm	SF0802N	2	1	ATA-133	2MB	8.9ms	500K hrs
	P80 Series PATA/2MB	80GB	7200 rpm	SF0822N	2	1	ATA-133	2MB	8.9ms	500K hrs
		120GB	7200 rpm	SP1203N	3	2	ATA-133	2MB	8.9ms	500K hrs
		160GB	7200 rpm	SP1604N	4	2	ATA-133	2MB	8.9ms	500K hrs
		160GB	7200 rpm	SP1624N	4	2	ATA-133	2MB	8.9ms	500K hrs
		PATA/8MB	80GB	7200 rpm	SF0812N	2	1	ATA-133	8MB	8.9ms
	80GB		7200 rpm	SF0842N	2	1	ATA-133	8MB	8.9ms	500K hrs
	120GB		7200 rpm	SP1213N	3	2	ATA-133	8MB	8.9ms	500K hrs
	160GB		7200 rpm	SP1614N	4	2	ATA-133	8MB	8.9ms	500K hrs
	160GB		7200 rpm	SP1644N	4	2	ATA-133	8MB	8.9ms	500K hrs
	SATA 1.5Gb/s	80GB	7200 rpm	SF0812C	2	1	SATA 1.5G	8MB	8.9ms	500K hrs
		120GB	7200 rpm	SP1213C	3	2	SATA 1.5G	8MB	8.9ms	500K hrs
		160GB	7200 rpm	SP1614C	4	2	SATA 1.5G	8MB	8.9ms	500K hrs
	P80 SD Series SATA 3.0Gb/s	40GB	7200 rpm	HD040GJ	1	1	SATA 3G	8MB	8.9ms	500K hrs
		80GB	7200 rpm	HD080HU	2	1	SATA 3G	8MB	8.9ms	500K hrs
		120GB	7200 rpm	HD120IJ	3	2	SATA 3G	8MB	8.9ms	500K hrs
		160GB	7200 rpm	HD160JJ	4	2	SATA 3G	8MB	8.9ms	500K hrs
	P120 Series PATA/8MB	200GB	7200 rpm	SP2014N	4	2	ATA-133	8MB	8.9ms	500K hrs
		250GB	7200 rpm	SP2514N	4	2	ATA-133	8MB	8.9ms	500K hrs
	SATA 3.0Gb/s	200GB	7200 rpm	SP2004C	4	2	SATA 3G	8MB	8.9ms	600K hrs
250GB		7200 rpm	SP2504C	4	2	SATA 3G	8MB	8.9ms	600K hrs	
SpinPoint T Series	T133 Series PATA/8MB	300GB	7200 rpm	HD300LD	6	3	ATA-133	8MB	8.9ms	600K hrs
		400GB	7200 rpm	HD400LD	6	3	ATA-133	8MB	8.9ms	600K hrs
	SATA 3.0Gb/s	300GB	7200 rpm	HD300LJ	6	3	SATA 3G	8MB	8.9ms	600K hrs
		400GB	7200 rpm	HD400LJ	6	3	SATA 3G	8MB	8.9ms	600K hrs

2.5" HARD DISK DRIVES (HDD)

		Capacity	RFMs	Model	# of Heads	# of Disks	Interface	Buffer Size	Seek Time	MTBF
SpinPoint M Series	M40 Series	40GB	5400 rpm	MF0402H	2	1	ATA-6	8MB	12ms	330K hrs
		60GB	5400 rpm	MF0603H	3	2	ATA-6	8MB	12ms	330K hrs
		80GB	5400 rpm	MF0804H	4	2	ATA-6	8MB	12ms	330K hrs
	M40S Series SATA 1.5Gb/s	40GB	5400 rpm	HM040HI	2	1	SATA	8MB	12ms	330K hrs
		60GB	5400 rpm	HM060II	3	2	SATA	8MB	12ms	330K hrs
		80GB	5400 rpm	HM080J	4	2	SATA	8MB	12ms	330K hrs
	M60 Series	40GB	5400 rpm	HM040HC	2	1	ATA-6	8MB	12ms	330K hrs
		60GB	5400 rpm	HM060HC	2	1	ATA-6	8MB	12ms	330K hrs
		80GB	5400 rpm	HM080IC	3	2	ATA-6	8MB	12ms	330K hrs
		100GB	5400 rpm	HM100JC	4	2	ATA-6	8MB	12ms	330K hrs
		120GB	5400 rpm	HM120JC	4	2	ATA-6	8MB	12ms	330K hrs
	SATA 1.5Gb/s (3.0Gb/s)	40GB	5400 rpm	HM041HI	2	1	SATA	8MB	12ms	330K hrs
		60GB	5400 rpm	HM060HI	2	1	SATA	8MB	12ms	330K hrs
		80GB	5400 rpm	HM080II	3	2	SATA	8MB	12ms	330K hrs
		100GB	5400 rpm	HM100J	4	2	SATA	8MB	12ms	330K hrs
		120GB	5400 rpm	HM120J	4	2	SATA	8MB	12ms	330K hrs

SN-M242D

Basic Specs	Seek Time (Average)	Drive Speed	Supported Disc	Media Capacity
Horizontal/vertical drive mounting	ROM/RW/120ms	Read	CD CD-DA; CD-ROM; CD-ROM XA; CD-I; CD-Extra/CD-Plus; Video-CD; CD-R; CD-RW & HSRW Super Audio CD; US & US+ RW	CD 650 MB CD-ROM (read only) 80mm CD (horizontal mount only) 800/700/650/ CD-Recordable (read & write) 700/650MB CD-Rewritable (read & write) 700/650MB High-Speed CD-Rewritable (read & write) 700/650MB Ultra & Ultra+ Speed CD-Rewritable (read & write)
Solenoid tray loading	DVD-Single 130ms	Speed		
Dimensions (WxHxD in mm):	DVD-Dual: 140ms	Write	DVD DVD-ROM; DVD-Dual; DVD-Video; DVD-R; DVD+R; DVD+RW; DVD-RW	DVD 5/9/10/18 G DVD-Single/Dual (PIT, OIP) (read only) 3.9/4.7 G DVD-R (read only) 4.7G DVD+R (read only) DVD±RW (read only) 80mm DVD
Interface: PATA	DVD-DL(±R): 140ms			
2MB buffer memory	DVD±RW/140ms	CD-R Max 24X (3,600KB/sec) CD-RW Max 10X (1,500KB/sec) US RW Max 24X (3,600KB/sec) US+ CD-RW Max 24X (3,600KB/sec)		

SN-S082D

Basic Specs	Seek Time (Average)	Drive Speed	Supported Disc	Media Capacity
Horizontal/vertical drive mounting	CD-ROM 130ms	Read	CD CD-DA; CD-ROM; CD-ROM XA; CD-I/RM; CD-Extra/CD-Plus; Video-CD; CD-R; CD-RW & HSRW US & US+ RW; Super Audio CD	CD 650MB CD-ROM (read only) 120mm/80mm CD 800/700/650MB CD-Recordable (read & write) 700/650MB CD-Rewritable (read & write) 700/650MB High-Speed CD-Rewritable (read & write) 700/650MB Ultra & Ultra+ Speed CD-Rewritable (read & write)
Solenoid tray loading	NS CD-RW 130ms	Speed		
Dimensions (WxHxD in mm):	HSUS CD-RW 130ms	Write	DVD DVD-ROM; DVD-Video; DVD-R; DVD+R; DVD±RW; DVD+RDL; DVD-RDL; support DVD-R/RW/CFRM (read/write); DVD-RM (read only)	DVD 5/9/10/18 G DVD-Single/Dual (PIT, OIP) (read only) 3.9/4.7 G DVD-R (read only) 4.7G DVD+R (read only) DVD±RW (read only) 80mm DVD
128 x 127 x 127	DVD-Single 130ms			
Interface: PATA	DVD-Dual: 150ms	NS CD-RW Max 24x HSUS CD-RW Max 24x DVD-Single Max 8x DVD-Double Max 6x DVD-R Max 8x DVD-RW+RW Max 6x DVD-RM 5x		
2MB buffer memory	DVD-R+R 150ms DVD-RW+RW 150ms	CD-R Max 24X (3,600KB/sec) NS CD-RW 4X (600KB/sec) HS CD-RW Max 10X (1,500KB/sec) US US+ RW Max 24X DVD+R Max 8X DVD+RW Max 8X (8x media) Max 4x (4x media) DVD+RDL Max 6x DVD-R Max 8X DVD-RDL Max 6x DVD-RW Max 6X (6x media), Max 4x (4x media)		

SH-S182D

Basic Specs	Seek Time (Average)	Drive Speed	Supported Disc	Media Capacity
Horizontal/vertical drive mounting Solenoid tray loading Dimensions (WxHxD in mm): 148.2 x 42 x 170 Interface: PATA 2MB buffer memory	CD-ROM/RRW: 110ms DVD Single: 130ms DVD Dual: 140ms DVD±RRW: 140ms	Read Speed DVD-ROM Max 16X (21,600KB/sec) DVD-RAM Max 12X (16,200KB/sec) DVD Dual DVD±RRW Max 8X (10,800KB/sec) DVD±RM Max 12X (16,200KB/sec) DVD±RDL Max 8X (10,800KB/sec) CD-ROM Max 48X (7,200 KB/sec) CD-R/CD-RW Max 40X (6,000 KB/sec)	CD CD-DA, CD-ROM, CD-ROM XA, CD-I, CD-Extra/CD-Plus, Video-CD, CD-R, CD-RW	CD 120mm CD-ROM (read only) 80mm CD (horizontal mount only) 800/700/650MB CD-Recordable (read & write) 700/650MB Low/High/Ultra-Speed CD Rewritable (read & write)
		Write Speed DVD-RAM Max 12X (16,200 KB/sec) DVD+R Max 18X (24,300KB/sec) DVD-R Max 18X (24,300KB/sec) DVD±RRW Max 8X (10,800KB/sec), 6X (8,100KB/sec) DVD±R Double L Max 8X (10,800/sec) CD-R Max 48X (7,200KB/sec) HSRW Max 10X (1,500KB/sec) USRW Max 32X (4,800KB/sec)	DVD DVD-ROM, DVD-Video, DVD-R, DVD+R, DVD_RDL, DVD±RW, DVD-RAM	DVD 5/9/10/18G DVD Single/Dual (PIP, OIP) (read only) 3.9/4.7G DVD-ROM (read only) DVD±RW, DVD±R, DVD±RDL (read & write) 80mm DVD (horizontal mount only)

SH-S182M

Basic Specs	Seek Time (Average)	Drive Speed	Supported Disc	Media Capacity
Horizontal/vertical drive mounting Solenoid tray loading Dimensions (WxHxD in mm): 148.2 x 42 x 170 Interface: PATA (Light Scribe) 2MB buffer memory	CD-ROM/RRW: 110ms DVD Single: 130ms DVD Dual: 140ms DVD±RRW: 140ms	Read Speed DVD-ROM Max 16X (21,600KB/sec) DVD-RAM Max 12X (16,200KB/sec) DVD Dual DVD±RRW Max 8X (10,800KB/sec) DVD±RM Max 12X (16,200KB/sec) DVD±RDL Max 8X (10,800KB/sec) CD-ROM Max 48X (7,200 KB/sec) CD-R/CD-RW Max 40X (6,000 KB/sec)	CD CD-DA, CD-ROM, CD-ROM XA, CD-I, CD-Extra/CD-Plus, Video-CD, CD-R, CD-RW	CD 120mm CD-ROM (read only) 80mm CD (horizontal mount only) 800/700/650MB CD-Recordable (read & write) 700/650MB Low/High/Ultra-Speed CD Rewritable (read & write)
		Write Speed DVD-RAM Max 12X (16,200 KB/sec) DVD+R Max 18X (24,300KB/sec) DVD-R Max 18X (24,300KB/sec) DVD±RRW Max 8X (10,800KB/sec), 6X (8,100KB/sec) DVD±R Double L Max 8X (10,800/sec) CD-R Max 48X (7,200KB/sec) HSRW Max 10X (1,500KB/sec) USRW Max 32X (4,800KB/sec)	DVD DVD-ROM, DVD-Video, DVD-R, DVD+R, DVD_RDL, DVD±RW, DVD-RAM	DVD 5/9/10/18G DVD Single/Dual (PIP, OIP) (read only) 3.9/4.7G DVD-ROM (read only) DVD±RW, DVD±R, DVD±RDL (read & write) 80mm DVD (horizontal mount only)

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