

Consumer Memory

Product Guide

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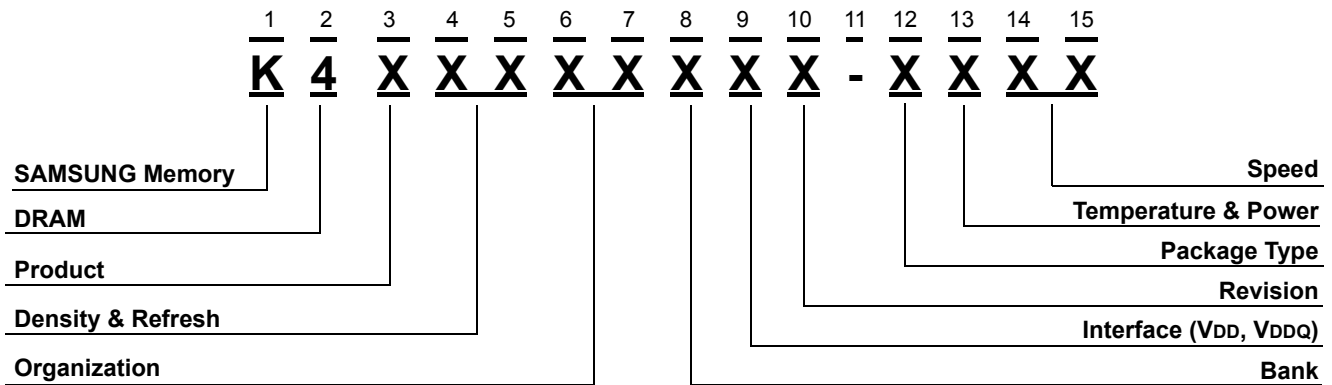
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1. CONSUMER MEMORY ORDERING INFORMATION



1. SAMSUNG Memory : K

2. DRAM : 4

3. Product

H : DDR SDRAM
T : DDR2 SDRAM
B : DDR3 SDRAM

4~5. Density & Refresh

64 : 64Mb, 4K/64ms
28 : 128Mb, 4K/64ms
56 : 256Mb, 8K/64ms
51 : 512Mb, 8K/64ms
1G : 1Gb, 8K/64ms
2G : 2Gb, 8K/64ms
4G : 4Gb, 8K/64ms

6~7. Organization

04 : x4
08 : x8
16 : x16
32 : x32
31 : x32 (2CS)

8. Bank

3 : 4 Banks
4 : 8 Banks

9. Interface (VDD, VDDQ)

8 : SSTL_2 (2.5V, 2.5V)
Q : SSTL_18 (1.8V, 1.8V)
6 : SSTL_15 (1.5V, 1.5V)

10. Revision

M : 1st Gen.	H : 9th Gen.
A : 2nd Gen.	I : 10th Gen.
B : 3rd Gen.	J : 11th Gen.
C : 4th Gen.	K : 12th Gen.
D : 5th Gen.	L : 13th Gen.
E : 6th Gen.	N : 14th Gen.
F : 7th Gen.	O : 15th Gen.
G : 8th Gen.	P : 16th Gen.

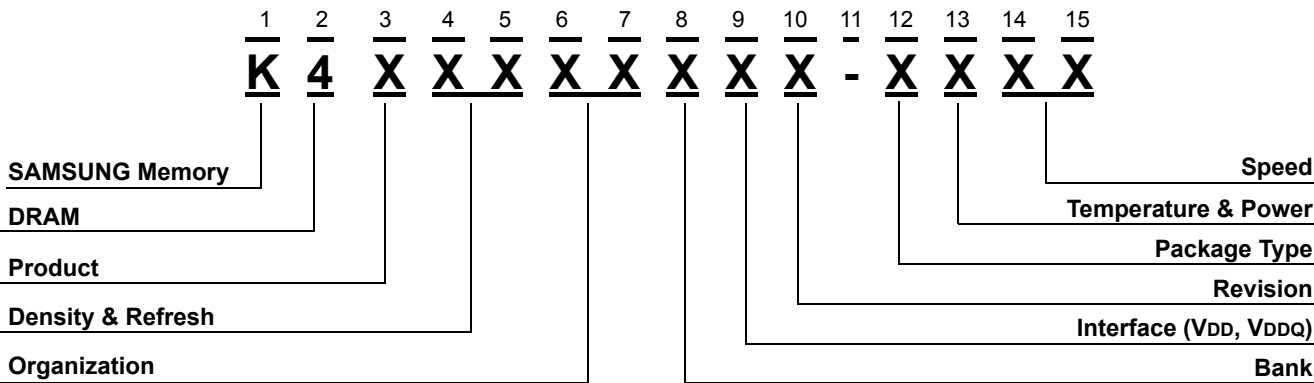
11. "-"

12. Package Type

U : TSOPII (Lead-free)
Z : FBGA (Lead-free)
L : TSOPII (Lead-free & Halogen-free)
H : FBGA (Lead-free & Halogen-free)
M : FBGA DDP (Lead-free & Halogen-free)
B : FBGA FLIP-CHIP (Lead-free & Halogen-free)

13. Temperature & Power

C : Commercial Temp. & Normal Power
L : Commercial Temp. & Low Power
I : Industrial Temp. & Normal Power
P : Industrial Temp. & Low Power



14~15. Speed

- B0 : DDR266 (133MHz @ CL=2.5, tRCD=3, tRP=3)
- B3 : DDR333 (166MHz @ CL=2.5, tRCD=3, tRP=3)
- CC : DDR400 (200MHz @ CL=3, tRCD=3, tRP=3)
- E6 : DDR2-667 (333MHz @ CL=5, tRCD=5, tRP=5)
- E7 : DDR2-800 (400MHz @ CL=5, tRCD=5, tRP=5)
- F7 : DDR2/3-800 (400MHz @ CL=6, tRCD=6, tRP=6)
- F8 : DDR2/3-1066 (533MHz @ CL=7, tRCD=7, tRP=7)
- 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 (1066MHz @ CL=14, tRCD=14, tRP=14)



2. Commercial Temperature Consumer DRAM Component Product Guide

2.1 DDR SDRAM

Density	Bank	Part Number	Package & Power, Temp. (-C/-L) & Speed	Org.	Interface	Refresh	Power (V)	Package	Avail.
64Mb Q-die	4Banks	K4H641638Q	LC(L)CC	4M x 16	SSTL_2	4K/64m	2.5±0.2V	66pinTSOPII	Now
128Mb O-die	4Banks	K4H281638O	LC(L)CC/C(L)B3	8M x 16	SSTL_2	4K/64m	2.5±0.2V ^{*1}	66pinTSOPII	Now
256Mb N-die	4Banks	K4H560438N	LC(L)B3/C(L)B0	64M x 4	SSTL_2	8K/64m	2.5±0.2V ^{*1}	66pinTSOPII	Now
		K4H560838N	LC(L)CC/C(L)B3	32M x 8					
		K4H561638N	LC(L)CC/C(L)B3	16M x 16					
512Mb J-die	4Banks	K4H510438J	LC(L)B3/C(L)B0	128M x 4	SSTL_2	8K/64m	2.5±0.2V ^{*1}	66pinTSOPII	Now
			BC(L)CC/C(L)B3					60ball FBGA	
		K4H510838J	LC(L)CC/C(L)B3	64M x 8				66pinTSOPII	
			BC(L)CC/C(L)B3					60ball FBGA	
		K4H511638J	LC(L)CC/C(L)B3	32M x 16				66pinTSOPII	
			BC(L)CC/C(L)B3					60ball FBGA	

NOTE : 1. V_{DD}/V_{DDQ} SPEC for 256/512Mb DDR

	DDR400	DDR333/266
V _{DD} /V _{DDQ}	2.6V ± 0.1V	2.5V ± 0.2V

2.2 DDR2 SDRAM

Density	Banks	Part Number	Package & Power, Temp. (-C/-L) & Speed	Org.	Interface	Refresh	Power (V)	Package	Avail.
128Mb P-die	4Banks	K4T28163QP	BCF8/E7/F7/E6	8M x 16	SSTL_18	4K/64m	1.8V±0.1V	84ball FBGA	Now
256Mb O-die	4Banks	K4T56163QO	BCF8/E7/F7/E6	16M x 16	SSTL_18	8K/64m	1.8V±0.1V	84ball FBGA	Now
512Mb J-die	4Banks	K4T51043QJ	BC(L)E7/F7/E6	128M x 4	SSTL_18	8K/64m	1.8V±0.1V	60ball FBGA	Now
		K4T51083QJ	BC(L)E7/F7/E6	64M x 8				84ball FBGA	
		K4T51163QJ	BC(L)F8/E7/F7/E6	32M x 16					
1Gb F-die	8Banks	K4T1G084QF	BC(L)F8/E7/F7/E6	128M x 8	SSTL_18	8K/64m	1.8V±0.1V	60ball FBGA	Now
		K4T1G164QF	BC(L)F8/E7/F7/E6	64M x 16				84ball FBGA	

2.3 DDR3 SDRAM

Density	Banks	Part Number	Package & Power, Temp. (-C/-L) & Speed	Org.	Interface	Refresh	Power (V)	PKG	Avail.
1Gb G-die	8Banks	K4B1G0846G	BC(L)F8/H9/K0/MA ¹	128M x 8	SSTL_15	8K/64m	1.5V±0.075V	78ball FBGA	Now
		K4B1G1646G	BC(L)F8/H9/K0/MA/NB	64M x 16				96ball FBGA	
2Gb C-die	8Banks	K4B2G1646C	HC(L)F8/H9/K0/MA/NB	128M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now
2Gb D-die	8Banks	K4B2G0846D	HC(L)F8/H9/K0/MA ¹	256M x 8	SSTL_15	8K/64m	1.5V±0.075V	78ball FBGA	Now
2Gb E-die	8Banks	K4B2G1646E	BC(L)F8/H9/K0/MA/NB ¹	128M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now
4Gb B-die	8Banks	K4B4G0846B	HCF8/H9/K0/MA	512M x 8	SSTL_15	8K/64m	1.5V±0.075V	78ball FBGA	Now
	8Banks	K4B4G1646B	HCF8/H9/K0/MA/NB ¹	256M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	

NOTE : 1. ES now

2.4 DDR3+ SDRAM

Density	Banks	Part Number	Package & Power, Temp. (-C/-L) & Speed	Org.	Interface	Refresh	Power (V)	PKG	Avail.
1Gb G-die	8Banks	K4B1G1646G	BQH9	64M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now
2Gb C-die	8Banks	K4B2G1646C	HQH9	128M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now
2Gb E-de	8Banks	K4B2G1646E	BQH9/K0	128M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now

NOTE : For more details about product specifications or technical files, please contact us "semiconductor@samsung.com"

3. Industrial Temperature Consumer DRAM Component Product Guide

3.1 DDR SDRAM

Density	Bank	Part Number	Package & Power, Temp. & Speed	Org.	Interface	Refresh	Power (V)	Package	Avail.
512Mb J-die	4Banks	K4H511638J	LI(P)CC/B3	32M x 16	SSTL_2	8K/64m	2.5±0.2V ^{*1}	66pinTSOPII	Now
			BI(P)CC/B3					60ball FBGA	

NOTE : 1. V_{DD}/V_{DDQ} SPEC for 256/512Mb DDR

	DDR400	DDR333/266
V _{DD} /V _{DDQ}	2.6V ± 0.1V	2.5V ± 0.2V

3.2 DDR2 SDRAM

Density	Bank	Part Number	Package & Power, Temp. & Speed	Org.	Interface	Refresh	Power (V)	Package	Avail.
512Mb J-die	4Banks	K4T51163QJ	BI(P)E7/I(P)F7/I(P)E6	32M x 16	SSTL_18	8K/64m	1.8V±0.1V	84ball FBGA	Now
1Gb F-die	8Banks	K4T1G084QF	BI(P)F7/I(P)E6	128M x 8	SSTL_18	8K/64m	1.8V ± 0.1V	60ball FBGA	Now
		K4T1G164QF	BI(P)F7/I(P)E6	64M x 16				84ball FBGA	

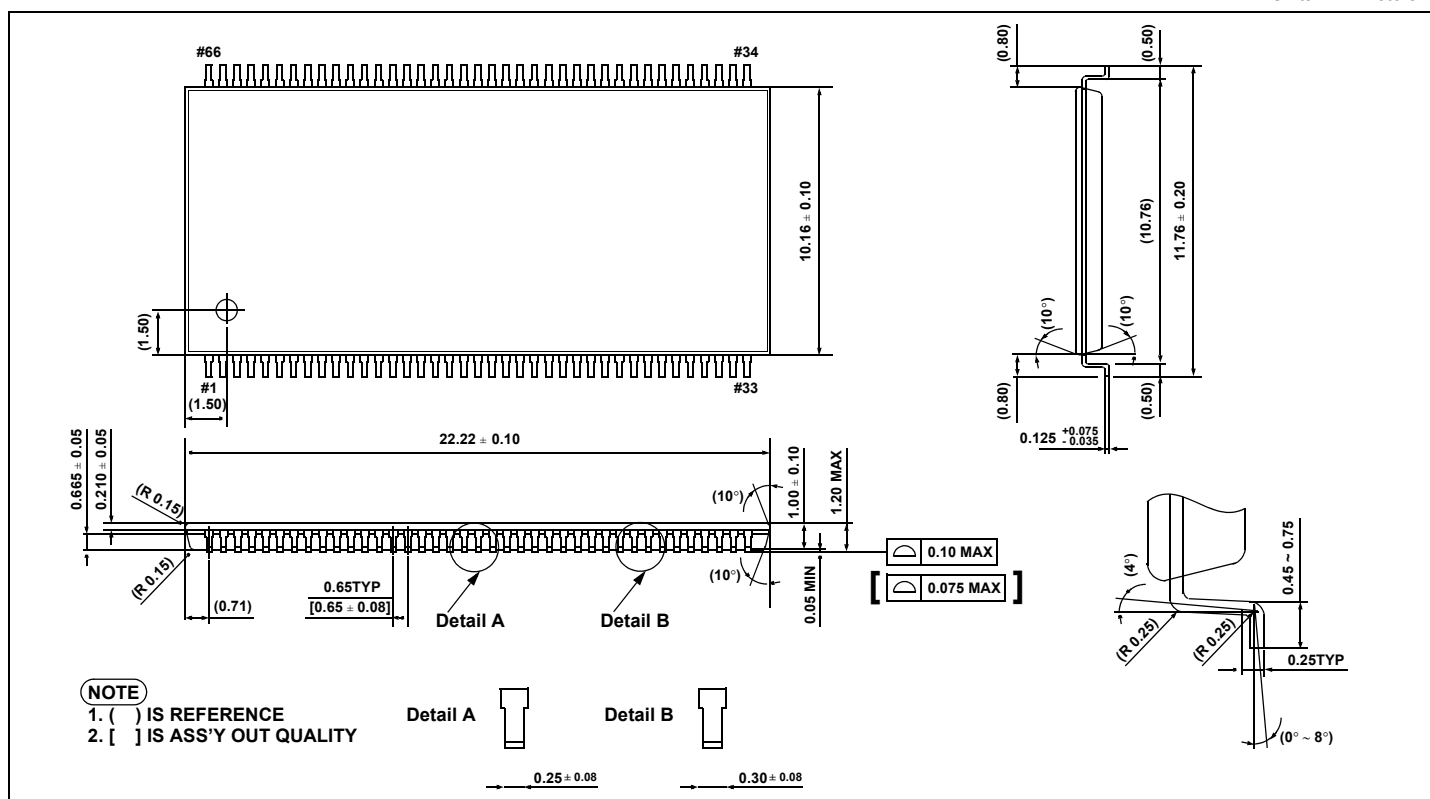
3.3 DDR3 SDRAM

Density	Bank	Part Number	Package & Power, Temp. & Speed	Org.	Interface	Refresh	Power (V)	Package	Avail.
1Gb G-die	8Banks	K4B1G1646G	BI(P)H9	64M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now
2Gb C-die	8Banks	K4B2G1646C	HI(P)H9	128M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now
2Gb E-die	8Banks	K4B2G1646E	BI(P)H9 / I(P)K0	128M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now
4Gb B-die	8Banks	K4B4G1646B	HI(P)H9 / I(P)K0	256M x 16	SSTL_15	8K/64m	1.5V±0.075V	96ball FBGA	Now

4. Package Dimension

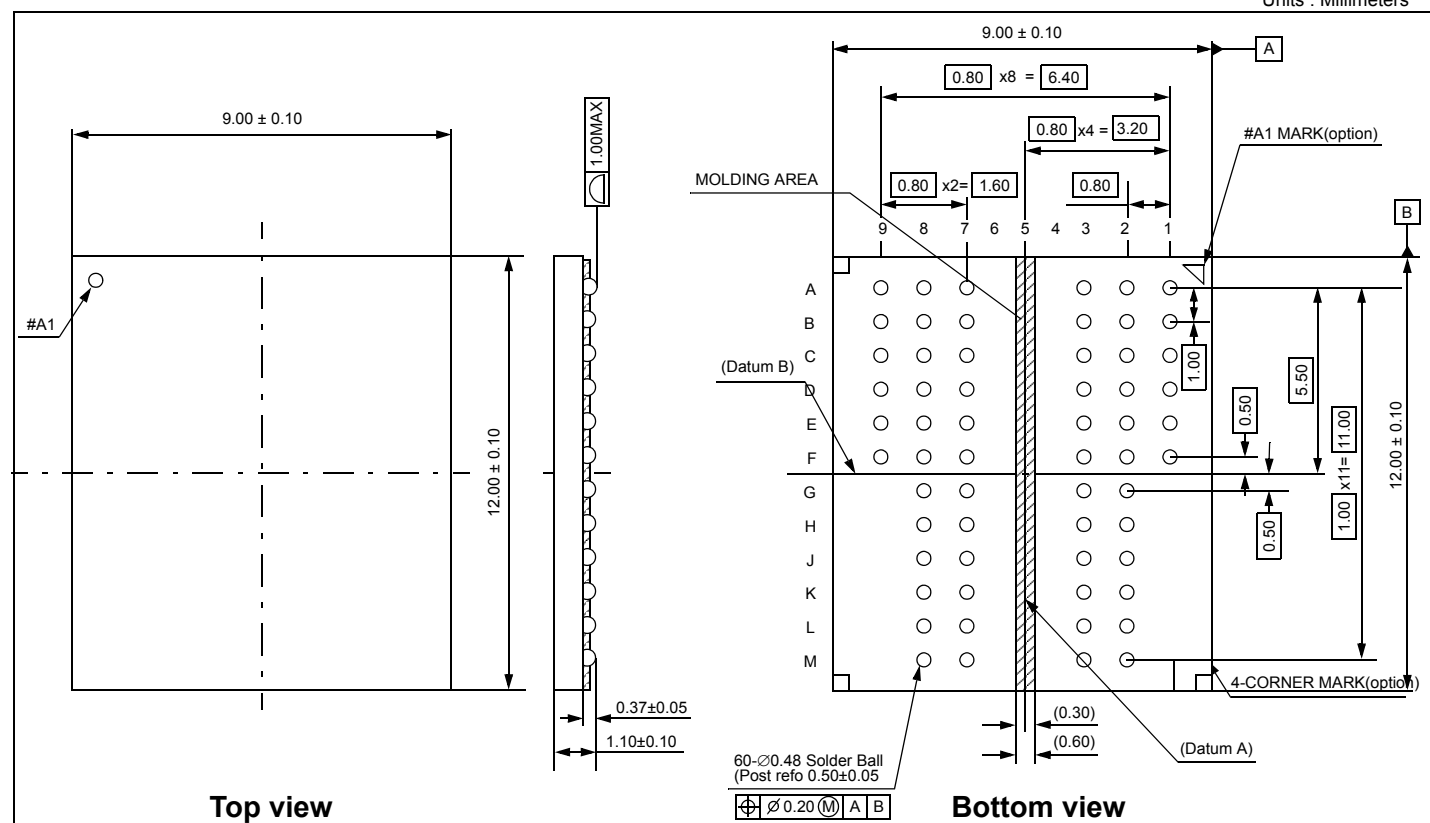
66Pin TSOP(II) (for DDR)

Units : Millimeters



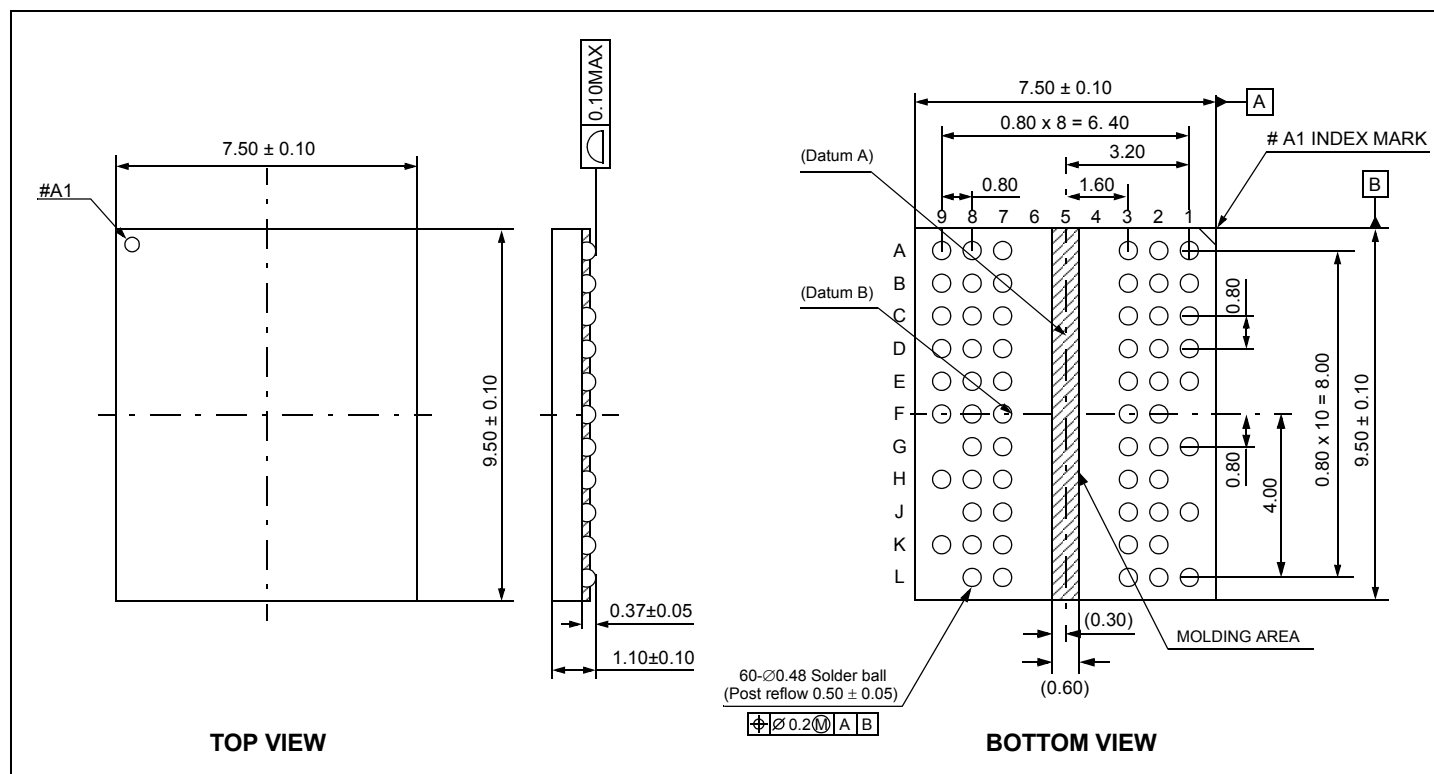
60Ball FBGA (For DDR 512Mb J-die)

Units : Millimeters



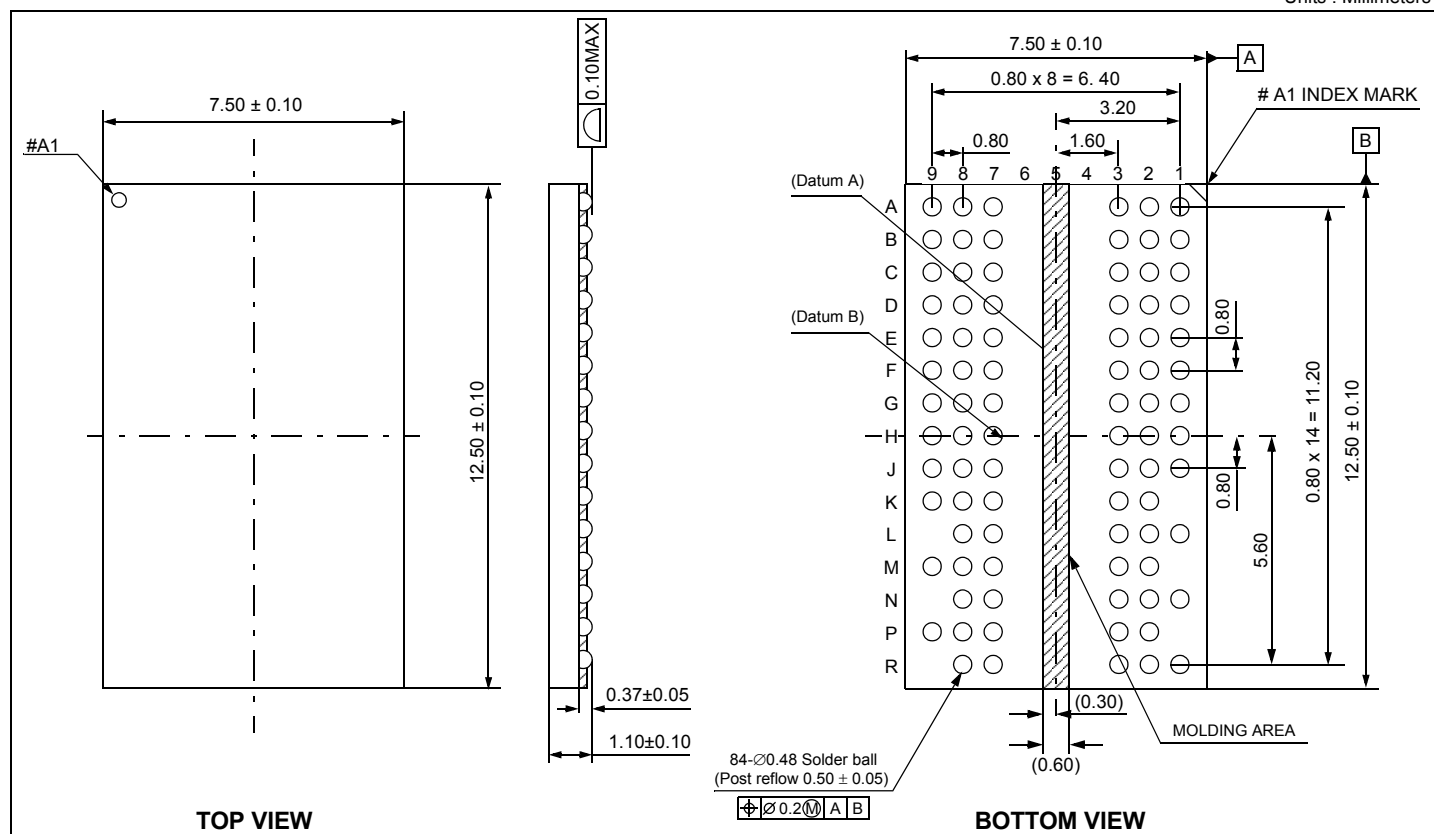
60Ball FBGA Flip chip (for DDR2 512Mb J-die / 1Gb F-die x8)

Units : Millimeters



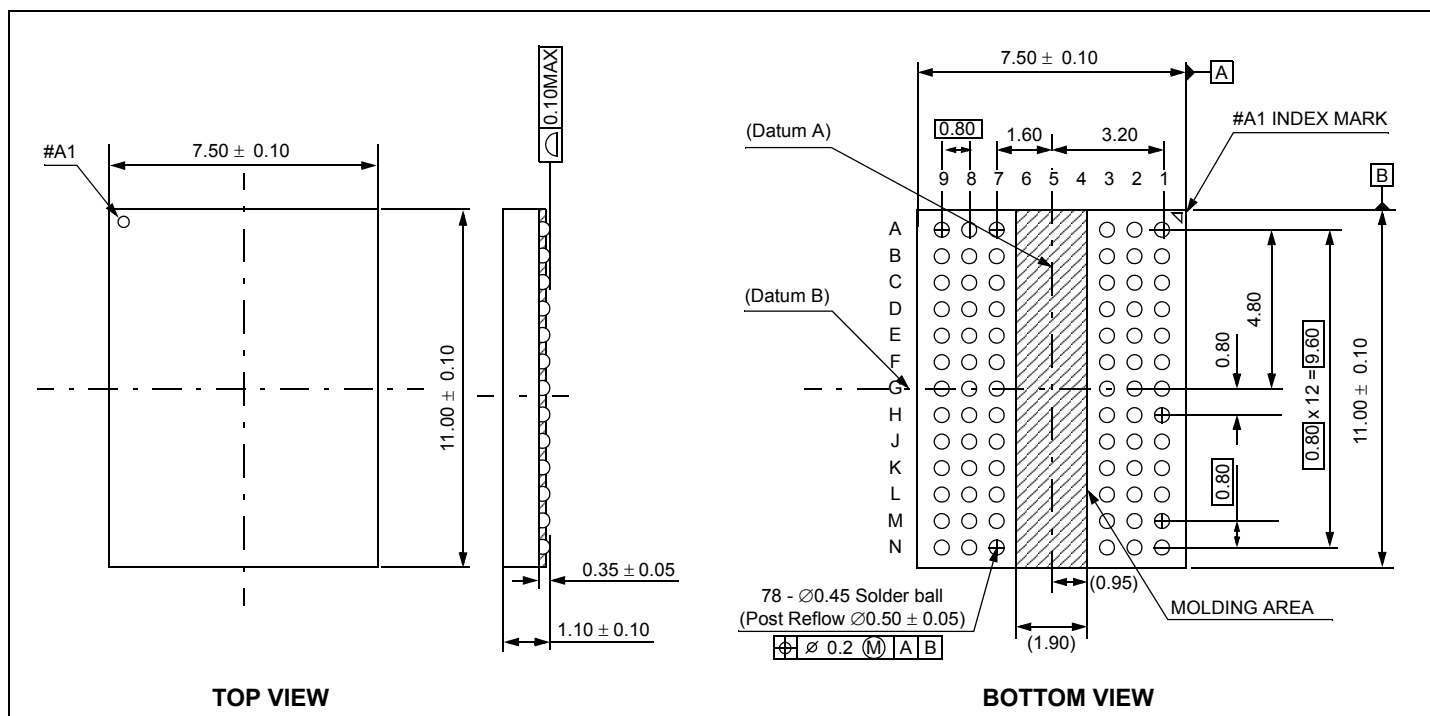
84Ball FBGA Flip chip (for DDR2 128Mb P-die / 256Mb O-die / 512Mb J-die / 1Gb F-die x16)

Units : Millimeters



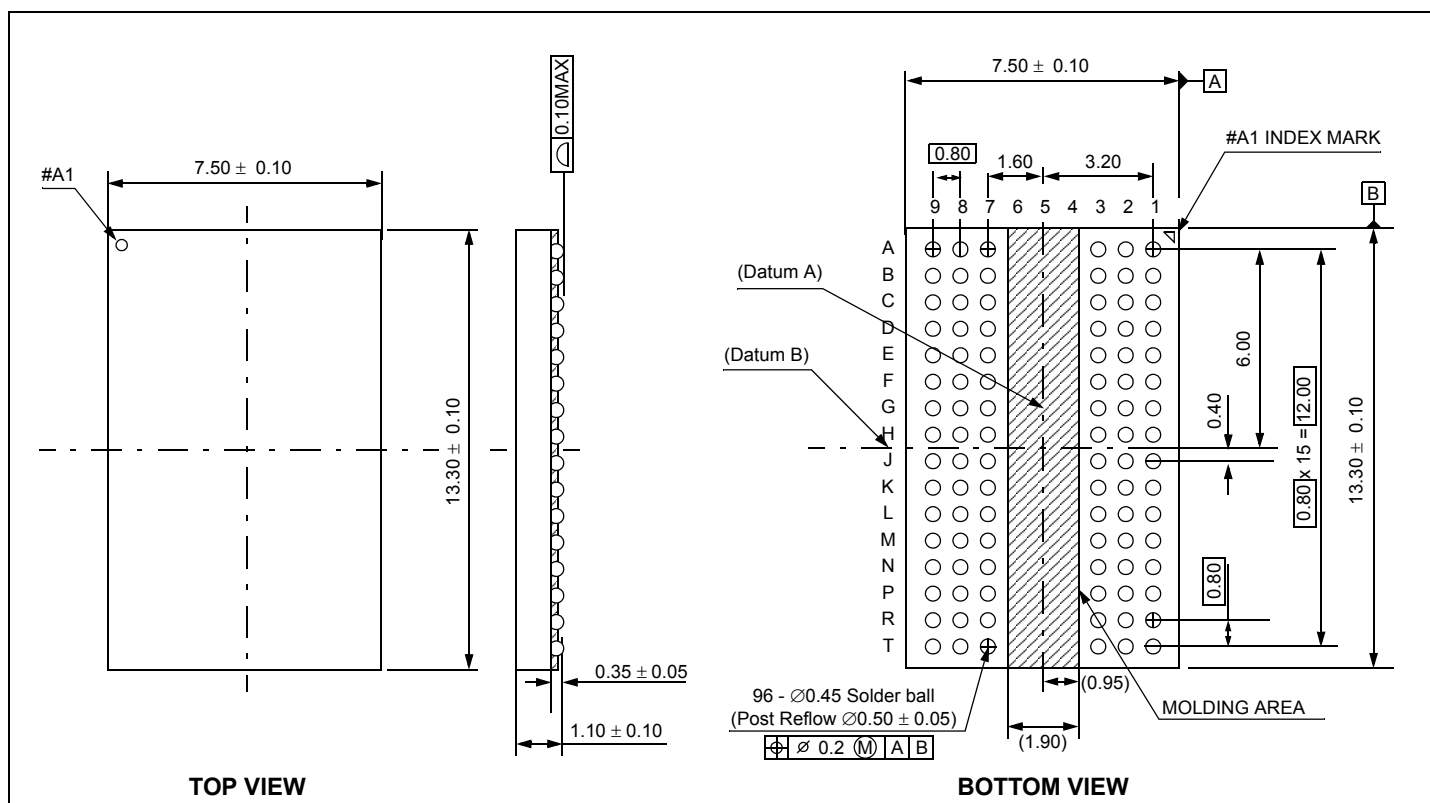
78Ball FBGA (for DDR3 2Gb D-die x8)

Units : Millimeters



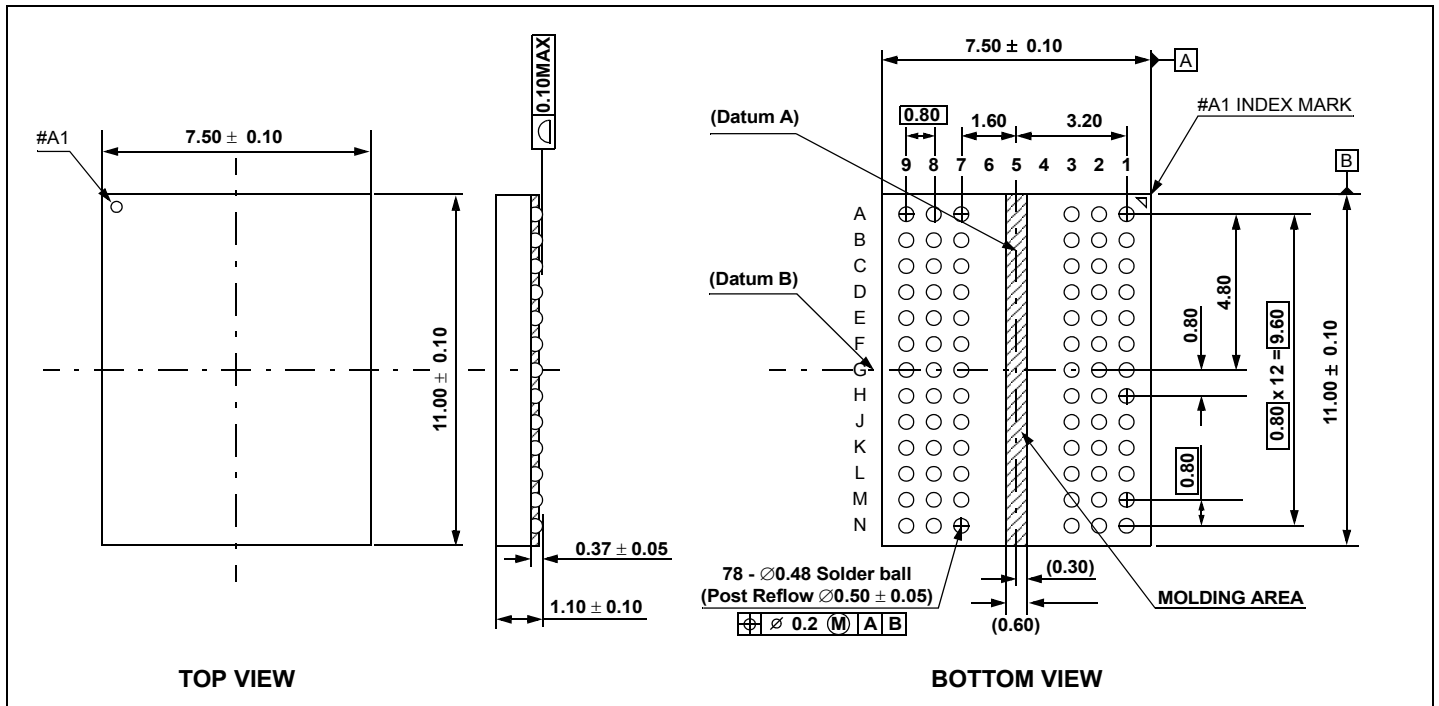
96all FBGA (for DDR3 2Gb C-die x16)

Units : Millimeters



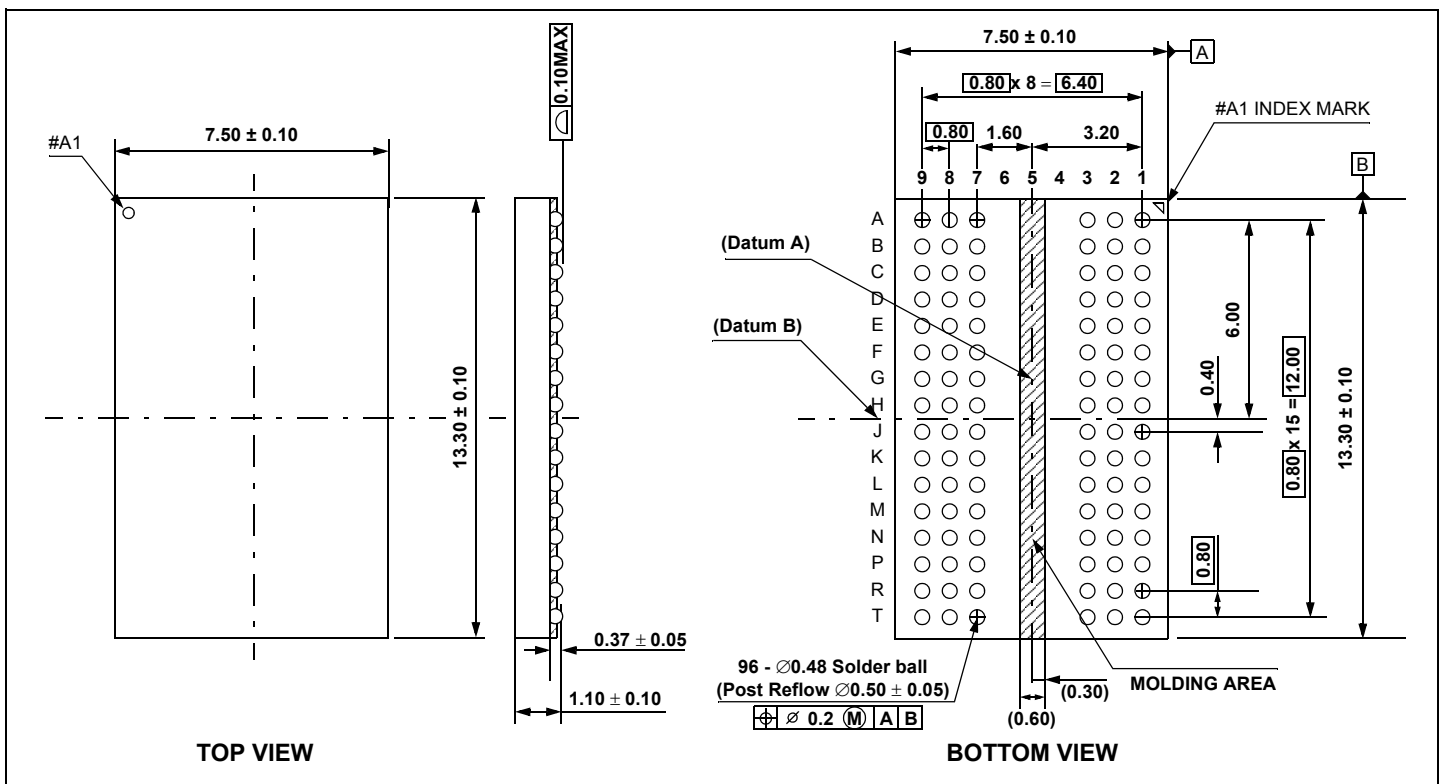
78Ball FBGA Flip chip (for DDR3 1Gb G-die x8)

Units : Millimeters



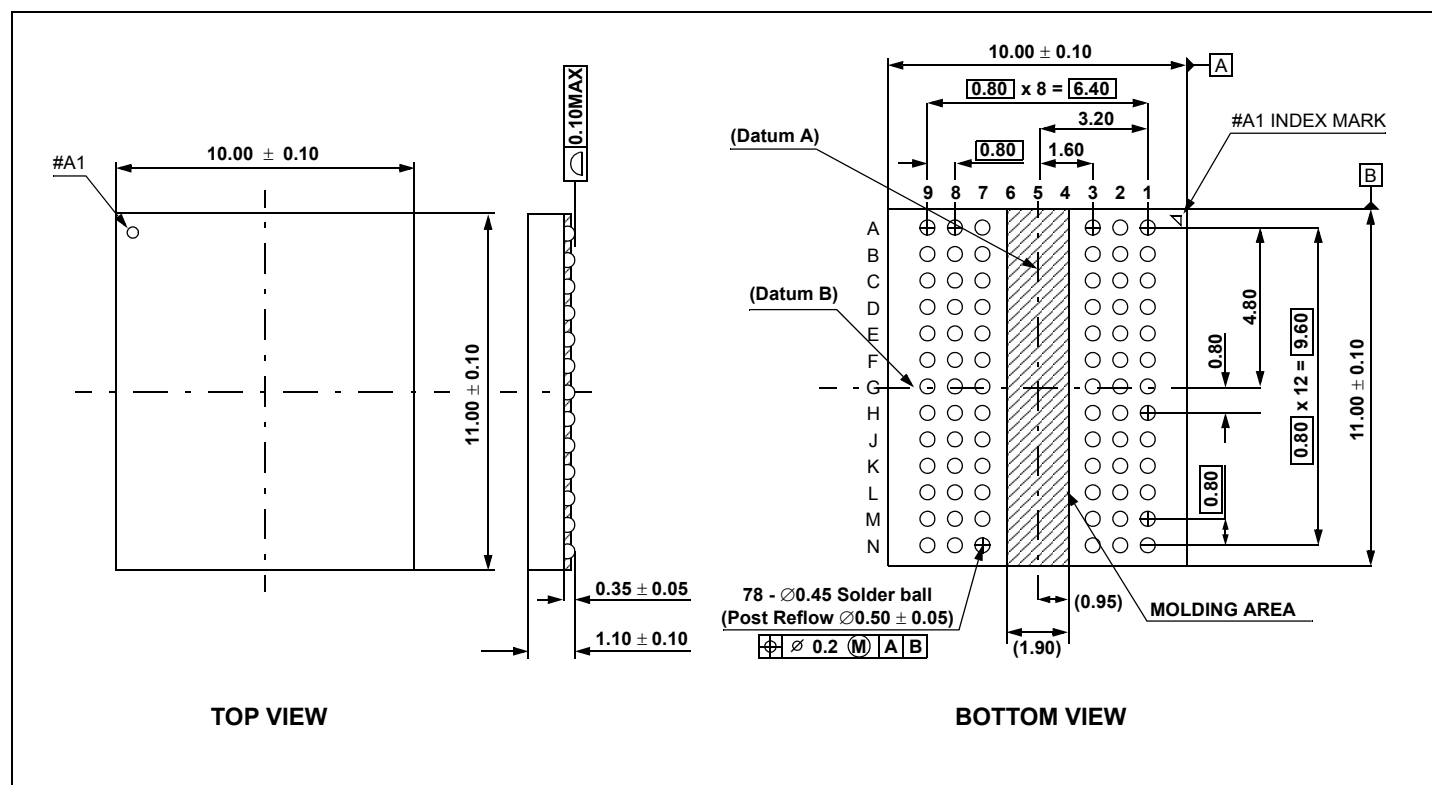
96Ball FBGA Flip chip (for DDR3 1Gb G-die x16 / DDR3 2Gb E-die x16)

Units : Millimeters



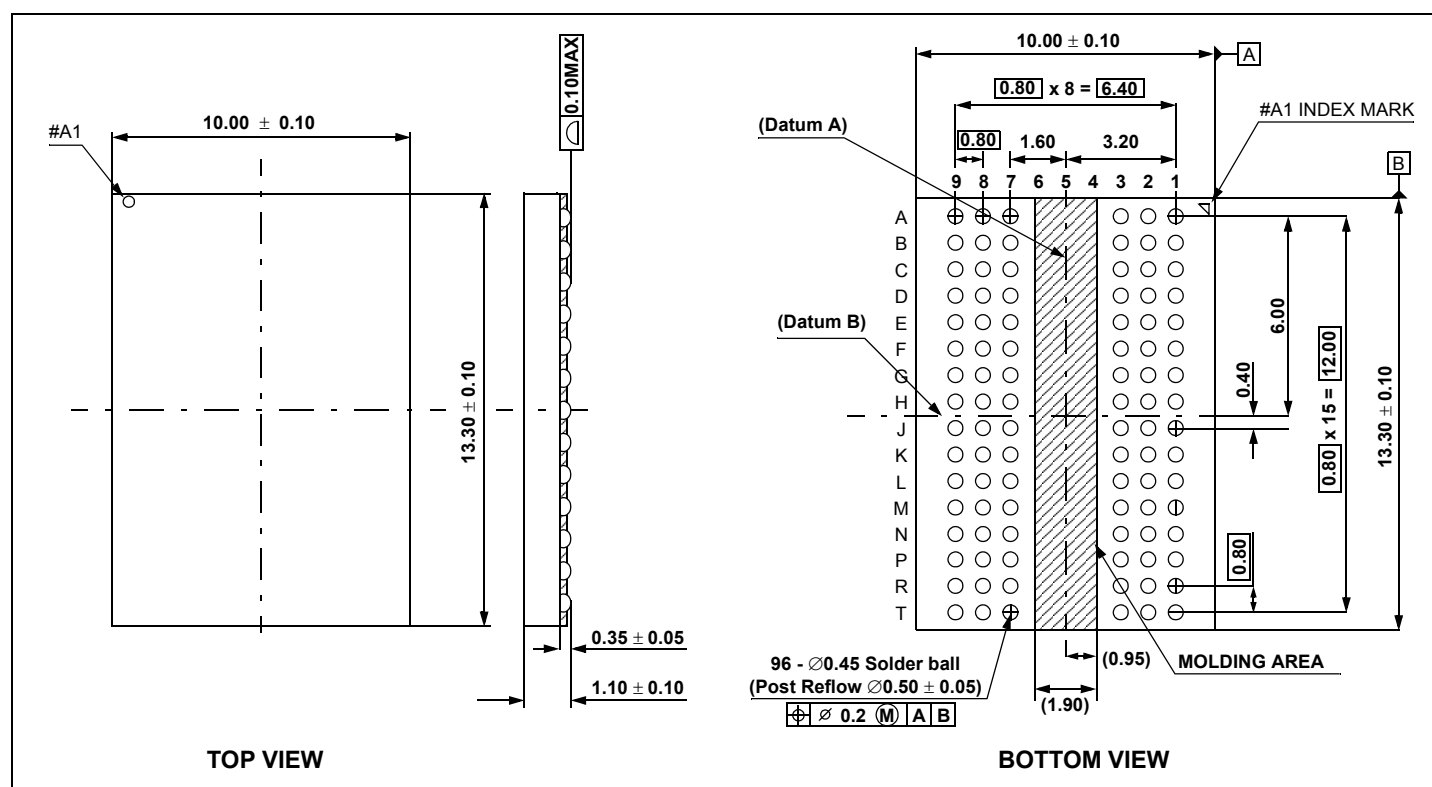
78Ball FBGA Flip chip (for DDR3 4Gb B-die x8)

Units : Millimeters



96Ball FBGA Flip chip (for DDR3 4Gb B-die x16)

Units : Millimeters



For further information,

semiconductor@samsung.com