

# DDR3 SDRAM Memory

---

## Product Guide

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

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

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

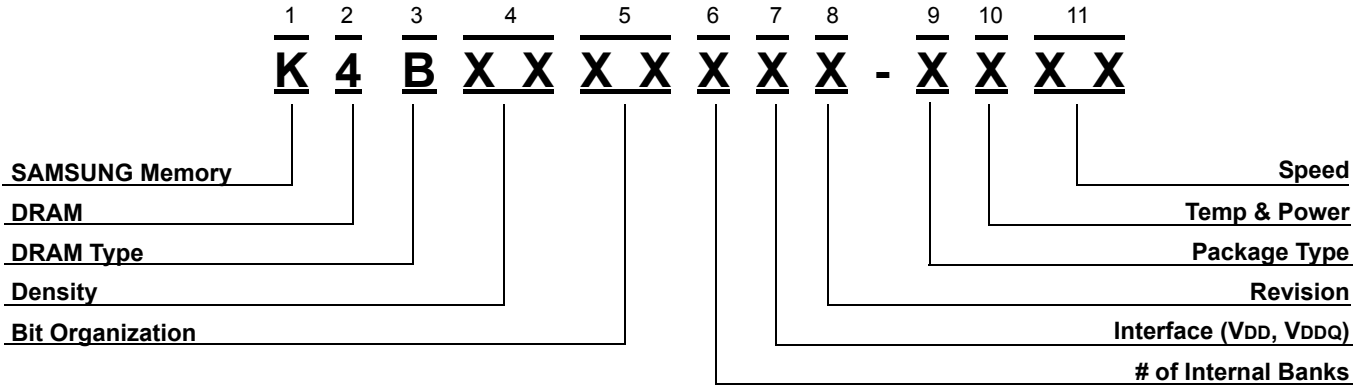
Samsung products are not intended for use in life support, critical care, medical, safety equipment, or similar applications where product failure could result in loss of life or personal or physical harm, or any military or defense application, or any governmental procurement to which special terms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

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

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

© 2012 Samsung Electronics Co., Ltd. All rights reserved.

## 1. DDR3 SDRAM MEMORY ORDERING INFORMATION



**1. SAMSUNG Memory : K**

**2. DRAM : 4**

**3. DRAM Type**

B : DDR3 SDRAM

**4. Density**

51 : 512Mb  
1G : 1Gb  
2G : 2Gb  
4G : 4Gb

**5. Bit Organization**

04 : x 4  
08 : x 8  
16 : x16

**6. # of Internal Banks**

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

**7. Interface ( V<sub>DD</sub>, V<sub>DDQ</sub>)**

6 : SSTL (1.5V, 1.5V)

**8. Revision**

M : 1st Gen.  
A : 2nd Gen.  
B : 3rd Gen.  
C : 4th Gen.  
D : 5th Gen.  
E : 6th Gen.  
F : 7th Gen.  
G : 8th Gen.  
H : 9th Gen.

**9. Package Type**

Z : FBGA (Lead-free)  
H : FBGA (Halogen-free & Lead-free)  
J : FBGA (Lead-free, DDP)  
M : FBGA (Halogen-free & Lead-free, DDP)  
B : FBGA (Halogen-free & Lead-free, Flip Chip)

**10. Temp & Power**

C : Commercial Temp.( 0°C ~ 85°C) & Normal Power(1.5V)  
Y : Commercial Temp.( 0°C ~ 85°C) & Low VDD(1.35V)

**11. Speed**

F7 : DDR3-800 (400MHz @ CL=6, tRCD=6, tRP=6)  
F8 : DDR3-1066 (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)

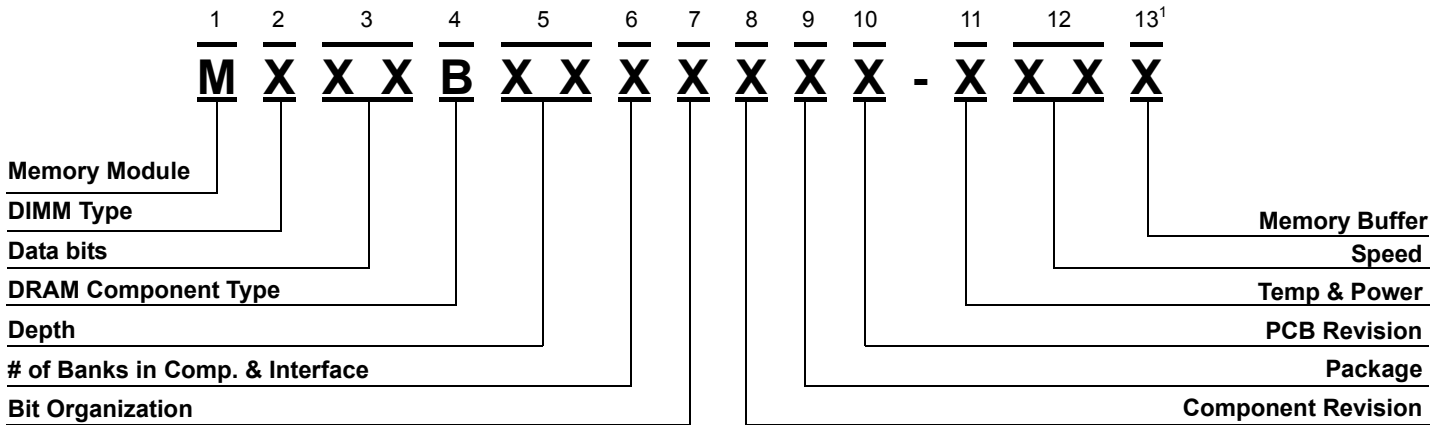
## 2. DDR3 SDRAM Component Product Guide

Density	Banks	Part Number	Package & Power, Temp. & Speed	Org.	VDD Voltage <sup>1</sup>	PKG	Avail.	NOTE
1Gb G-die	8Banks	K4B1G0446G	BCF8/H9/K0/MA	256M x 4	1.5V	78 ball FBGA	Now	
		K4B1G0846G	BCF8/H9/K0/MA	128M x 8				
		K4B1G0446G	BYF8/H9/K0	256M x 4	1.35V			
		K4B1G0846G	BYF8/H9/K0	128M x 8				
2Gb C-die	8Banks	K4B2G0446C	HCF8/H9/K0	512M x 4	1.5V	78 ball FBGA	Now	
		K4B2G0846C	HCF8/H9/K0	256M x 8				
		K4B2G0446C	HYF8/H9	512M x 4	1.35V			
		K4B2G0846C	HYF8/H9	256M x 8				
2Gb D-die	8Banks	K4B2G0446D	HCF8/H9/K0/MA	512M x 4	1.5V	78 ball FBGA	Now	
		K4B2G0846D	HCF8/H9/K0/MA	256M x 8				
		K4B2G0446D	HYF8/H9/K0	512M x 4	1.35V			
		K4B2G0846D	HYF8/H9/K0	256M x 8				
2Gb E-die	8Banks	K4B2G0446E	BCH9/K0/MA	512M x 4	1.5V	78 ball FBGA	Nov'11	
		K4B2G0846E	BCH9/K0/MA	256M x 8				
		K4B2G0446E	BYH9/K0	512M x 4	1.35V			
		K4B2G0846E	BYH9/K0	256M x 8				
4Gb A-die	8Banks	K4B4G0446A	HCF8/H9/K0	1G x 4	1.5V	78 ball FBGA	Now	
		K4B4G0846A	HCF8/H9/K0	512M x 8				
		K4B4G0446A	HYF8/H9/K0	1G x 4	1.35V			
		K4B4G0846A	HYF8/H9/K0	512M x 8				
4Gb B-die	8Banks	K4B4G0446B	HCF8/H9/K0/MA	1G x 4	1.5V	78 ball FBGA	Now	
		K4B4G0846B	HCF8/H9/K0/MA	512M x 8				
		K4B4G0446B	HYF8/H9/K0	1G x 4	1.35V			
		K4B4G0846B	HYF8/H9/K0	512M x 8				
4Gb C-die	8Banks	K4B4G0446C	HCH9/K0/MA	1G x 4	1.5V	78 ball FBGA	Jun'12	
		K4B4G0846C	HCH9/K0/MA	512M x 8				
		K4B4G0446C	HYH9/K0	1G x 4	1.35V			
		K4B4G0846C	HYH9/K0	512M x 8				
DDP 4Gb D-die	8Banks	K4B4G0446D	MCF8/H9	1G x 4	1.5V	78 ball FBGA	Now	
		K4B4G0846D	MCF8/H9	512M x 8				
		K4B4G0446D	MYF8/H9	1G x 4	1.35V			
		K4B4G0846D	MYF8/H9	512M x 8				
DDP 8G B-die	8Banks	K4B8G0446B	MCF8/H9	2G x 4	1.5V	78 ball FBGA	Now	
		K4B8G0846B	MCF8/H9	1G x 8				
		K4B8G0446B	MYF8/H9	2G x 4	1.35V			
		K4B8G0846B	MYF8/H9	1Gx 8				
		K4B8G3346B	MYH9/K0	256M x 32	1.5V	78 ball FBGA	Now	
		K4B8G3346B	MYH9/K0	256M x 32	1.35V			

## \* NOTE

1. 1.35V product is 1.5V operatable.

## 3. DDR3 SDRAM Module Ordering Information



### 1. Memory Module : M

### 2. DIMM Type

- 3 : DIMM
- 4 : SODIMM

### 3. Data Bits

- 71 : x64 204pin Unbuffered SODIMM
- 74 : x72 204pin ECC Unbuffered SODIMM
- 78 : x64 240pin Unbuffered DIMM
- 86 : x72 240pin LR DIMM
- 90 : x72 240pin VLP Unbuffered DIMM
- 91 : x72 240pin ECC Unbuffered DIMM
- 92 : x72 240pin VLP Registered DIMM

### 4. DRAM Component Type

- B : DDR3 SDRAM (1.5V VDD)

### 5. Depth

- 32 : 32M
- 64 : 64M
- 28 : 128M
- 56 : 256M
- 51 : 512M
- 1G : 1G
- 2G : 2G
- 4G : 4G
- 33 : 32M (for 128Mb/512Mb)
- 65 : 64M (for 128Mb/512Mb)
- 29 : 128M (for 128Mb/512Mb)
- 57 : 256M (for 512Mb/2Gb)
- 52 : 512M (for 512Mb/2Gb)
- 1K : 1G (for 2Gb)
- 2K : 2G (for 2Gb)

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

- 7 : 8Banks & SSTL-1.5V

### 7. Bit Organization

- 0 : x 4
- 3 : x 8
- 4 : x 16

### 8. Component Revision

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

### 9. Package

- Z : FBGA(Lead-free)
- H : FBGA(Lead-free & Halogen-free)
- J : FBGA(Lead-free, DDP)
- M : FBGA(Lead-free & Halogen-free, DDP)
- B : FBGA (Halogen-free & Lead-free, Flip Chip)
- E : FBGA(Lead-free & Halogen-free, QDP)

### 10. PCB Revision

- 0 : None
- 2 : 2nd Rev.
- 4 : 4th Rev.
- 1 : 1st Rev.
- 3 : 3rd Rev.
- S : Reduced Layer

### 11. Temp & Power

- C : Commercial Temp.( 0°C ~ 85°C) & Normal Power(1.5V)
- Y : Commercial Temp.( 0°C ~ 85°C) & Low VDD(1.35V)

### 12. Speed<sup>2</sup>

- F7 : DDR3-800 (400MHz @ CL=6, tRCD=6, tRP=6)
- F8 : DDR3-1066 (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)

### 13. Memory Buffer

- 0 : Inphi iMB02-GS02A
- 1 : IDT MB3 B0
- 8 : IDT AI (evergreen)
- 9 : Inphi UVGS02

#### NOTE:

- 1. Only used for LRDIMM
- 2. PC3-6400(DDR3-800),PC3-8500(DDR3-1066), PC3-10600(DDR3-1333), PC3-12800(DDR3-1600) PC3-14900(DDR3-1866)

4. DDR3 SDRAM Module Product Guide

4.1 240Pin DDR3 Unbuffered DIMM (1.5V Product)

240Pin DDR3 Unbuffered DIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
128Mx 64	1GB	M378B2873GB0	CF8/H9/K0/MA	A(1Rx8)	128M x 8 * 8 pcs	1Gb	G-die	8	1	78 ball FBGA	30mm	Now	
128Mx 72	1GB	M391B2873GB0	CF8/H9/K0/MA	D(1Rx8)	128M x 8 * 9 pcs	1Gb	G-die	8	1	78 ball FBGA	30mm	Now	
256Mx 64	2GB	M378B5673GB0	CF8/H9/K0/MA	B(2Rx8)	128M x 8 * 16 pcs	1Gb	G-die	8	2	78 ball FBGA	30mm	Now	
		M378B5773CH0	CF8/H9/K0	A(1Rx8)	256M x 8 * 8 pcs	2Gb	C-die	8	1			Now	
		M378B5773DH0	CF8/H9/K0/MA		256M x 8 * 8 pcs	2Gb	D-die					Now	
256Mx 72	2GB	M391B5673GH0	CF8/H9/K0/MA	E(2Rx8)	128M x 8 * 18 pcs	1Gb	G-die	8	2	78 ball FBGA	30mm	Now	
		M391B5773CH0	CF8/H9/K0	D(1Rx8)	256M x 8 * 9 pcs	2Gb	C-die	8	1			Now	
		M391B5773DH0	CF8/H9/K0/MA		256M x 8 * 9 pcs	2Gb	D-die					Now	
512Mx 64	4GB	M378B5273CH0	CF8/H9/K0	B(2Rx8)	256M x 8 * 16 pcs	2Gb	C-die	8	2	78 ball FBGA	30mm	Now	
		M378B5273DH0	CF8/H9/K0/MA		256M x 8 * 16 pcs	2Gb	D-die					Now	
		M378B5273EB0	CH9/K0		256M x 8 * 16 pcs	2Gb	E-die					Nov'11	
		M378B5173CH0	CH9/K0/MA	D(1Rx8)	512M x 8 * 8 pcs	4Gb	C-die	8	1			Jun'12	
512Mx 72	4GB	M391B5273CH0	CF8/H9/K0	E(2Rx8)	256M x 8 * 18 pcs	2Gb	C-die	8	2	78 ball FBGA	30mm	Now	
		M391B5273DH0	CF8/H9/K0/MA		256M x 8 * 18 pcs	2Gb	D-die					Now	
		M391B5273EB0	CH9		256M x 8 * 18 pcs	2Gb	E-die					Nov'11	
1Gx 64	8GB	M378B1G73AH0	CF8/H9/K0	B(2Rx8)	512M x 8 * 16 pcs	4Gb	A-die	8	2	78 ball FBGA	30mm	EOL Feb'12	
		M378B1G73BH0	CF8/H9/K0/MA		512M x 8 * 16 pcs	4Gb	B-die					Now	
		M378B1G73CH0	CH9/K0/MA		512M x 8 * 16 pcs	4Gb	C-die					Jun'12	
1Gx 72	8GB	M391B1G73AH0	CF8/H9/K0	E(2Rx8)	512M x 8 * 18 pcs	4Gb	A-die	8	2	78 ball FBGA	30mm	EOL Feb'12	
		M391B1G73BH0	CF8/H9/K0/MA		512M x 8 * 18 pcs	4Gb	B-die					Now	
		M391B1G73CH0	CH9/K0/MA		512M x 8 * 18 pcs	4Gb	C-die					Jun'12	

4.2 240Pin DDR3 Unbuffered DIMM (1.35V Product)

240Pin DDR3 Unbuffered DIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
128Mx 72	1GB	M391B2873GB0	YF8/H9/K0	D(1Rx8)	128M x 8 * 9 pcs	1Gb	G-die	8	1	78 ball FBGA	30mm	Now	
256Mx 72	2GB	M391B5673GH0	YF8/H9/K0	E(2Rx8)	128M x 8 * 18 pcs	1Gb	G-die	8	2	78 ball FBGA	30mm	Now	
		M391B5773CH0	YF8/H9	D(1Rx8)	256M x 8 * 9 pcs	2Gb	C-die	8	1			Now	
		M391B5773DH0	YF8/H9/K0		256M x 8 * 9 pcs	2Gb	D-die					Now	
		M391B5773EB0	YH9/K0	256M x 8 * 9 pcs	2Gb	E-die	Nov'11						
512Mx 72	4GB	M391B5273CH0	YF8/H9	E(2Rx8)	256M x 8 * 18 pcs	2Gb	C-die	8	2	78 ball FBGA	30mm	Now	
		M391B5273DH0	YF8/H9/K0		256M x 8 * 18 pcs	2Gb	D-die					Now	
		M391B5273EB0	YH9/K0		256M x 8 * 18 pcs	2Gb	E-die					Nov'11	
		M391B5173CH0	YH9/K0	D(1Rx8)	512M x 8 * 9 pcs	4Gb	C-die	8	1			Jun'12	
1Gx 72	8GB	M391B1G73AH0	YF8/H9	E(2Rx8)	512M x 8 * 18 pcs	4Gb	A-die	8	2	78 ball FBGA	30mm	EOL Feb'12	
		M391B1G73BH0	YF8/H9/K0		512M x 8 * 18 pcs	4Gb	B-die					Now	
		M391B1G73CH0	YH9/K0	E(2Rx8)	512M x 8 * 18 pcs	4Gb	C-die					Jun'12	

\* NOTE : 1.35V product is 1.5V operatable.



## 4.3 240Pin DDR3 VLP Unbuffered DIMM (1.35V Product)

240Pin DDR3 VLP Unbuffered DIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
256Mx 72	2GB	M390B5773DH0	YH9	J(1Rx8)	256M x 8 * 9pcs	2Gb	D-die	8	1	78 ball FBGA	18.75mm	Now	
512Mx 72	4GB	M390B5273DH0	YH9	K(2Rx8)	256M x 8 * 18 pcs	2Gb	D-die	8	2	78 ball FBGA	18.75mm	Now	
		M390B5173BH0	YH9	J(1Rx8)	256M x 8 * 18 pcs	2Gb	B-die	8	1			Now	
1Gx 72	8GB	M390B1G73BH0	YH9	K(2Rx8)	512M x 8 * 18 pcs	4Gb	B-die	8	2	78 ball FBGA	18.75mm	Now	

## 4.4 204Pin DDR3 SoDIMM (1.5V Product)

204Pin DDR3 SODIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
128Mx 64	1GB	M471B2873GB0	CF8/H9/K0/MA	B(1Rx8)	128M x 8 * 8 pcs	1Gb	G-die	8	1	78 ball FBGA	30mm	Now	
256Mx 64	2GB	M471B5673FH0	CF8/H9/K0	F(2Rx8)	128M x 8 * 16 pcs	1Gb	F-die	8	2	78 ball FBGA	30mm	Now	
		M471B5673GB0	CF8/H9/K0/MA		128M x 8 * 16 pcs	1Gb	G-die					Now	
		M471B5773CHS	CF8/H9/K0	B(1Rx8)	256M x 8 * 8 pcs	2Gb	C-die	8	1	78 ball FBGA	30mm	Now	
		M471B5773DH0	CF8/H9/K0/MA		256M x 8 * 8 pcs	2Gb	D-die					Now	
		M471B5773EB0	CH9/K0		256M x 8 * 8 pcs	2Gb	E-die					Feb'12	
512Mx 64	4GB	M471B5273CH0	CF8/H9/K0	F(2Rx8)	256M x 8 * 16 pcs	2Gb	C-die	8	2	78 ball FBGA	30mm	Now	
		M471B5273DH0	CF8/H9/K0/MA		256M x 8 * 16 pcs	2Gb	D-die					Now	
		M471B5273EB0	CH9/K0		256M x 8 * 16 pcs	2Gb	E-die					Feb'12	
1Gx 64	8GB	M471B1G73AH0	CF8/H9	F(2Rx8)	512M x 8 * 16 pcs	4Gb	A-die	8	2	78 ball FBGA	30mm	EOL Feb'12	
		M471B1G73BH0	CF8/H9/K0/MA		512M x 8 * 16 pcs	4Gb	B-die					Now	
		M471B1G73CH0	CH9/K0/MA		512M x 8 * 16 pcs	4Gb	C-die					Jun'12	

## 4.5 204Pin DDR3 SoDIMM (1.35V Product)

204Pin DDR3 SODIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
128Mx 64	1GB	M471B2873GB0	YF8/H9/K0	B(1Rx8)	128M x 8 * 8 pcs	1Gb	G-die	8	1	78 ball FBGA	30mm	Now	
256Mx 64	2GB	M471B5673GB0	YF8/H9/K0	F(2Rx8)	128M x 8 * 16 pcs	1Gb	G-die	8	2	78 ball FBGA	30mm	Now	
		M471B5773CHS	YF8/H9	B(1Rx8)	256M x 8 * 8 pcs	2Gb	C-die	8	1			Now	
		M471B5773DH0	YF8/H9/K0		256M x 8 * 8 pcs	2Gb	D-die					Now	
		M471B5773EB0	YK0		256M x 8 * 8 pcs	2Gb	E-die					Nov'11	
256Mx 72	2GB	M474B5773DH0	YF8/H9		C(1Rx8)	256M x 8 * 9 pcs	2Gb			D-die	8	1	78 ball FBGA
512Mx 64	4GB	M471B5273CH0	YF8/H9	F(2Rx8)	256M x 8 * 16 pcs	2Gb	C-die	8	2	78 ball FBGA	30mm	Now	
		M471B5273DH0	YF8/H9/K0		256M x 8 * 16 pcs	2Gb	D-die					Now	
		M471B5273EB0	YK0		256M x 8 * 16 pcs	2Gb	E-die					Nov'11	
		M471B5173CH0	YH9/K0	B(1Rx8)	512M x 8 * 8 pcs	4Gb	C-die	8	1			Jun'12	
512Mx 72	4GB	M474B5273DH0	YF8/H9	D(2Rx8)	256M x 8 * 18 pcs	2Gb	D-die	8	2	78 ball FBGA	30mm	Now	
		M474B5173BH0	YF8/H9/K0	C(1Rx8)	256M x 8 * 18 pcs	2Gb	B-die	8	1	78 ball FBGA	30mm	Now	
		M474B5173CH0	YH9/K0		512M x 8 * 9 pcs	4Gb	C-die					Jun'12	
1Gx 64	8GB	M471B1G73AH0	YF8/H9	F(2Rx8)	512M x 8 * 16 pcs	4Gb	A-die	8	2	78 ball FBGA	30mm	EOL Feb'12	
		M471B1G73BH0	YF8/H9/K0		512M x 8 * 16 pcs	4Gb	B-die					Now	
		M471B1G73CH0	YH9/K0		512M x 8 * 16 pcs	4Gb	C-die					Jun'12	
1Gx 72	8GB	M474B1G73BH0	YF8/H9/K0	D(2Rx8)	512M x 8 * 18 pcs	4Gb	B-die	8	2	78 ball FBGA	30mm	Now	
		M471B1G73CH0	YH9/K0		512M x 8 * 18 pcs	4Gb	C-die					Jun'12	

\* NOTE : 1.35V product is 1.5V operatable.

## 4.6 240Pin DDR3 Registered DIMM (1.5V Product)

240Pin DDR3 Registered DIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
128Mx 72	1GB	M393B2873GB0	CF8/H9/K0/MA	A(1Rx8)	128M x 8 * 9 pcs	1Gb	G-die	8	1	78 ball FBGA	30mm	Now	
256Mx 72	2GB	M393B5673GB0	CF8/H9/K0/MA	B(2Rx8)	128M x 8 * 18 pcs	1Gb	G-die	8	2	78 ball FBGA	30mm	Now	
		M393B5670GB0	CF8/H9/K0/MA	C(1Rx4)	256M x 4 * 18 pcs	1Gb	G-die	8	1			Now	
		M393B5773CH0	CF8/H9/K0	A(1Rx8)	256M x 8 * 9 pcs	2Gb	C-die	8	1			Now	
		M393B5773DH0	CF8/H9/K0/MA		256M x 8 * 9 pcs	2Gb	D-die					Now	
512Mx 72	4GB	M393B5173GB0	CF8/H9	H(4Rx8)	128M x 8 * 36 pcs	1Gb	G-die	8	4	78 ball FBGA	30mm	Now	
		M393B5170GB0	CF8/H9/K0/MA	E(2Rx4)	256M x 4 * 36 pcs	1Gb	G-die	8	2			Now	
		M393B5273CH0	CF8/H9/K0	B(2Rx8)	256M x 8 * 18 pcs	2Gb	C-die	8	2			Now	
		M393B5273DH0	CF8/H9/K0/MA		256M x 8 * 18 pcs	2Gb	D-die					Now	
		M393B5270CH0	CF8/H9/K0	C(1Rx4)	512M x 4 * 18 pcs	2Gb	C-die	8	1			Now	
		M393B5270DH0	CF8/H9/K0/MA		512M x 4 * 18 pcs	2Gb	D-die					Now	
		M393B5270EB0	CH9		512M x 4 * 18 pcs	2Gb	E-die					Nov'11	
1Gx 72	8GB	M393B1K73CH0	CF8/H9	H(4Rx8)	256M x 8 * 36 pcs	2Gb	C-die	8	4	78 ball FBGA	30mm	Now	
		M393B1K73DH0	CF8/H9		256M x 8 * 36 pcs	2Gb	D-die					Now	
		M393B1K70CH0	CF8/H9/K0	E(2Rx4)	512M x 4 * 36 pcs	2Gb	C-die	8	2			Now	
		M393B1K70DH0	CF8/H9/K0/MA		512M x 4 * 36 pcs	2Gb	D-die					Now	
		M393B1K70EB0	CH9		512M x 4 * 36 pcs	2Gb	E-die					Nov'11	
		M393B1G73AH0	CF8/H9/K0/MA	B(2Rx8)	512M x 8 * 18 pcs	4Gb	A-die	8	1			EOL Feb'12	
		M393B1G73BH0	CF8/H9/K0/MA		512M x 8 * 18 pcs	4Gb	B-die					Now	
		M393B1G73CH0	CMA		512M x 8 * 18 pcs	4Gb	C-die					Jun'12	
		M393B1G70AH0	CF8/H9/K0/MA	C(1Rx4)	1G x 4 * 18 pcs	4Gb	A-die	8	1			EOL Feb'12	
		M393B1G70BH0	CF8/H9/K0/MA		1G x 4 * 18 pcs	4Gb	B-die					Now	
		M393B1G70CH0	CMA		512M x 8 * 18 pcs	4Gb	C-die					Jun'12	
2Gx 72	16GB	M393B2K70DM0	CF8/H9	AB(4Rx4)	DDP 1G x 4 * 36 pcs	2Gb	D-die	8	4	78 ball FBGA	30mm	Now	
		M393B2G70AH0	CF8/H9	E(2Rx4)	1G x 4 * 36 pcs	4Gb	A-die	8	2			Now	
		M393B2G70BH0	CF8/H9		1G x 4 * 36 pcs	4Gb	B-die					Now	
		M393B2G73AH0	CF8/H9	H(4Rx8)	512M x 8 * 36 pcs	4Gb	A-die	8	4			Now	
		M393B2G73BH0	CF8/H9		512M x 8 * 36 pcs	4Gb	B-die					Now	
		M393B2G73CH0	CMA		512M x 8 * 36 pcs	4Gb	C-die					Jun'12	
4Gx 72	32GB	M393B4G70AM0	CF8/H9	AB(4Rx4)	DDP 2G x 4 * 36 pcs	4Gb	A-die	8	4	78 ball FBGA	30mm	Now	
		M393B4G70BM0	CF8/H9		DDP 2G x 4 * 36 pcs	4Gb	B-die					Now	



## 4.7 240Pin DDR3 Registered DIMM (1.35V Product)

240Pin DDR3 Registered DIMM												
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version	Internal Banks	Rank	PKG	Height	Avail.	NOTE
128Mx 72	1GB	M393B2873GB0	YF8/H9/K0	A(1Rx8)	128M x 8 * 9 pcs	1Gb G-die	8	1	78 ball FBGA	30mm	Now	
256Mx 72	2GB	M393B5673GB0	YF8/H9/K0	B(2Rx8)	128M x 8 * 18 pcs	1Gb G-die	8	2	78 ball FBGA	30mm	Now	
		M393B5670GB0	YF8/H9/K0	C(1Rx4)	256M x 4 * 18 pcs	1Gb G-die	8	1			Now	
		M393B5773CH0	YF8/H9	A(1Rx8)	256M x 8 * 9 pcs	2Gb C-die	8	1			Now	
		M393B5773DH0	YF8/H9/K0		256M x 8 * 9 pcs	2Gb D-die					Now	
512Mx 72	4GB	M393B5173GB0	YF8/H9	H(4Rx8)	128M x 8 * 36 pcs	1Gb G-die	8	4	78 ball FBGA	30mm	Now	
		M393B5170GB0	YF8/H9/K0	E(2Rx4)	256M x 4 * 36 pcs	1Gb G-die	8	2			Now	
		M393B5273CH0	YF8/H9	B(2Rx8)	256M x 8 * 18 pcs	2Gb C-die	8	2			Now	
		M393B5273DH0	YF8/H9/K0		256M x 8 * 18 pcs	2Gb D-die					Now	
		M393B5273EB0	YH9/K0		256M x 8 * 18 pcs	2Gb E-die					Nov'11	
		M393B5270CH0	YF8/H9	C(1Rx4)	512M x 4 * 18 pcs	2Gb C-die	8	1			Now	
		M393B5270DH0	YF8/H9/K0		512M x 4 * 18 pcs	2Gb D-die					Now	
		M393B5270EB0	YH9/K0		512M x 4 * 18 pcs	2Gb E-die					Nov'11	
M393B5173CH0	YH9/K0	A(1Rx8)	512M x 8 * 9 pcs		4Gb C-die	8			1	Jun'12		
1Gx 72	8GB	M393B1K73CH0	YF8/H9	H(4Rx8)	256M x 8 * 36 pcs	2Gb C-die	8	4	78 ball FBGA	30mm	Now	
		M393B1K73DH0	YF8/H9		256M x 8 * 36 pcs	2Gb D-die					Now	
		M393B1K73EB0	YH9		256M x 8 * 36 pcs	2Gb E-die					Nov'11	
		M393B1K70CH0	YF8/H9	E(2Rx4)	512M x 4 * 36 pcs	2Gb C-die	8	2			Now	
		M393B1K70DH0	YF8/H9/K0		512M x 4 * 36 pcs	2Gb D-die					Now	
		M393B1K70EB0	YH9/K0		512M x 4 * 36 pcs	2Gb E-die					Nov'11	
		M393B1G73AH0	YF8/H9	B(2Rx8)	512M x 8 * 18 pcs	4Gb A-die	8	2			Now	
		M393B1G73BH0	YF8/H9/K0		512M x 8 * 18 pcs	4Gb B-die					Now	
		M393B1G73CH0	YH9/K0		512M x 8 * 18 pcs	4Gb C-die					Jun'12	
		M393B1G70AH0	YF8/H9	C(1Rx4)	1G x 4 * 18 pcs	4Gb A-die	8	1			EOL Feb'12	
		M393B1G70BH0	YF8/H9/K0		1G x 4 * 18 pcs	4Gb B-die					Now	
		M393B1G70CH0	YH9/K0		1G x 4 * 18 pcs	4Gb C-die					Jun'12	
					EOL Feb'12							
2Gx 72	16GB	M393B2K70DM0	YF8/H9	AB(4Rx4)	DDP 1G x 4 * 36 pcs	2Gb D-die	8	4	78 ball FBGA	30mm	Now	
		M393B2G70AH0	YF8/H9	E(2Rx4)	1G x 4 * 36 pcs	4Gb A-die	8	2			EOL Feb'12	
		M393B2G70BH0	YF8/H9/K0		1G x 4 * 36 pcs	4Gb B-die					Now	
		M393B2G70CH0	YH9/K0		1G x 4 * 36 pcs	4Gb C-die					Jun'12	
		M393B2G73AH0	YF8/H9	H(4Rx8)	512M x 8 * 36 pcs	4Gb A-die	8	4			EOL Feb'12	
		M393B2G73BH0	YF8/H9		512M x 8 * 36 pcs	4Gb B-die					Now	
		M393B2G73CH0	YH9/K0		512M x 8 * 36 pcs	4Gb C-die					Jun'12	
4Gx 72	32GB	M393B4G70AM0	YF8/H9	AB(4Rx4)	DDP 2G x 4 * 36 pcs	4Gb A-die	8	4	78 ball FBGA	30mm	Now	
		M393B4G70BM0	YF8/H9	AB(4Rx4)	DDP 2G x 4 * 36 pcs	4Gb B-die					Now	

\* NOTE : 1.35V product is 1.5V operatable.

## 4.8 240Pin DDR3 VLP Registered DIMM (1.5V Product)

240Pin DDR3 VLP Registered DIMM																	
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE				
128Mx 72	1GB	M392B2873GB0	CF8/H9/K0/MA	K(1Rx8)	128M x 8 * 9 pcs	1Gb	G-die	8	1	78 ball FBGA	18.75mm	Now					
256Mx 72	2GB	M392B5673GB0	CF8/H9/K0/MA	L(2Rx8)	128M x 8 * 18 pcs	1Gb	G-die	8	1	78 ball FBGA	18.75mm	Now					
		M392B5670GB0	CF8/H9/K0/MA	M(1Rx4)	256M x 4 * 18 pcs	1Gb	G-die					Now					
		M392B5773CH0	CF8/H9/K0	K(1Rx8)	256M x 8 * 9 pcs	2Gb	C-die					Now					
		M392B5773DH0	CF8/H9/K0/MA		256M x 8 * 9 pcs	2Gb	D-die					Now					
512Mx 72	4GB	M392B5273CH0	CF8/H9/K0	L(2Rx8)	256M x 8 * 18 pcs	2Gb	C-die	8	2	78 ball FBGA	18.75mm	Now					
		M392B5273DH0	CF8/H9/K0/MA		256M x 8 * 18 pcs	2Gb	D-die					Now					
		M392B5270CH0	CF8/H9/K0	M(1Rx4)	512M x 4 * 18 pcs	2Gb	C-die					8	1	Now			
		M392B5270DH0	CF8/H9/K0/MA		512M x 4 * 18 pcs	2Gb	D-die							Now			
1Gx 72	8GB	M392B1K73CM0	CF8/H9	V(4Rx8)	DDP 512M x 8 * 18 pcs	2Gb	C-die	8	4	78 ball FBGA	18.75mm			Now			
		M392B1K73DM0	CF8/H9		DDP 512M x 8 * 18 pcs	2Gb	D-die							Now			
		M392B1K70CM0	CF8/H9/K0	N(2Rx4)	DDP 1G x 4 * 18 pcs	2Gb	C-die					8	2	Now			
		M392B1K70DM0	CF8/H9/K0/MA		DDP 1G x 4 * 18 pcs	2Gb	D-die							Now			
		M392B1G73AH0	CF8/H9/K0	L(2Rx8)	512M x 8 * 18 pcs	4Gb	A-die							EOL Feb'12			
		M392B1G73BH0	CF8/H9/K0/MA		512M x 8 * 18 pcs	4Gb	B-die							Now			
		M392B1G73CH0	CH9/K0/MA		512M x 8 * 18 pcs	4Gb	C-die							Jun'12			
		M392B1G70AH0	CF8/H9/K0	M(1Rx4)	1G x 4 * 18 pcs	4Gb	A-die							8	1	EOL Feb'12	
		M392B1G70BH0	CF8/H9/K0/MA		1G x 4 * 18 pcs	4Gb	B-die									Now	
		M392B1G70CH0	CH9/K0/MA		512M x 8 * 18 pcs	4Gb	C-die									Jun'12	
2Gx 72	16GB	M392B2G70AM0	CF8/H9	N(2Rx4)	DDP 2G x 4 * 18 pcs	4Gb	A-die	8	2	78 ball FBGA	18.75mm					Now	
		M392B2G70BM0	CF8/H9/K0/MA		DDP 2G x 4 * 18 pcs	4Gb	B-die					Now					
		M392B2G73AM0	CF8/H9	V(4Rx8)	DDP 1G x 8 * 18 pcs	4Gb	A-die					8	4			Now	
		M392B2G73BM0	CF8/H9		DDP 1G x 8 * 18 pcs	4Gb	B-die									Now	
4Gx 72	32GB	M392B4G70AE0	CF8/H9	N(2Rx4)	QDP 4G x 4 * 18 pcs	4Gb	A-die	8	2	78 ball FBGA	18.75mm					Now	
		M392B4G70BE0	CF8/H9		QDP 4G x 4 * 18 pcs	4Gb	B-die									Now	

4.9 240Pin DDR3 VLP Registered DIMM (1.35V Product)

240Pin DDR3 VLP Registered DIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
128Mx 72	1GB	M392B2873GB0	YF8/H9/K0	K(1Rx8)	128M x 8 * 9 pcs	1Gb	G-die	8	1	78 ball FBGA	18.75mm	Now	
256Mx 72	2GB	M392B5673GB0	YF8/H9/K0	L(2Rx8)	128M x 8 * 18 pcs	1Gb	G-die	8	2	78 ball FBGA	18.75mm	Now	
		M392B5670GB0	YF8/H9/K0	M(1Rx4)	256M x 4 * 18 pcs	1Gb	G-die	8	1			Now	
		M392B5773CH0	YF8/H9	K(1Rx8)	512M x 4 * 9 pcs	2Gb	C-die	8	1			Now	
		M392B5773DH0	YF8/H9/K0		512M x 4 * 9 pcs	2Gb	D-die					Now	
512Mx 72	4GB	M392B5273CH0	YF8/H9	L(2Rx8)	256M x 8 * 18 pcs	2Gb	C-die	8	2	78 ball FBGA	18.75mm	Now	
		M392B5273DH0	YF8/H9/K0		256M x 8 * 18 pcs	2Gb	D-die					Now	
		M392B5270CH0	YF8/H9	M(1Rx4)	512M x 4 * 18 pcs	2Gb	C-die	8	1			Now	
		M392B5270DH0	YF8/H9/K0		512M x 4 * 18 pcs	2Gb	D-die					Now	
		M392B5173CH0	YH9/K0	K(1Rx8)	512M x 8 * 9 pcs	4Gb	C-die					Jun'12	
1Gx 72	8GB	M392B1K73CM0	YF8/H9	V(4Rx8)	DDP 512M x 8 * 18 pcs	2Gb	C-die	8	4	78 ball FBGA	18.75mm	Now	
		M392B1K73DM0	YF8/H9		DDP 512M x 8 * 18 pcs	2Gb	D-die					Now	
		M392B1K70CM0	YF8/H9	N(2Rx4)	DDP 1G x 4 * 18 pcs	2Gb	C-die	8	2			Now	
		M392B1K70DM0	YF8/H9/K0		DDP 1G x 4 * 18 pcs	2Gb	D-die					Now	
		M392B1G73AH0	YF8/H9/K0	L(2Rx8)	512M x 8 * 18 pcs	4Gb	A-die	8	2			EOL Feb'12	
		M392B1G73BH0	YF8/H9/K0		512M x 8 * 18 pcs	4Gb	B-die					Now	
		M392B1G73CH0	YH9/K0		512M x 8 * 18 pcs	4Gb	C-die					Jun'12	
		M392B1G70AH0	YF8/H9/K0	M(1Rx4)	1G x 4 * 18 pcs	4Gb	A-die	8	1			EOL Feb'12	
		M392B1G70BH0	YF8/H9/K0		1G x 4 * 18 pcs	4Gb	B-die					Now	
		M392B1G70CH0	YH9/K0		1G x 4 * 18 pcs	4Gb	C-die					Jun'12	
2Gx 72	16GB	M392B2G70AM0	YF8/H9	N(2Rx4)	DDP 2G x 4 * 18 pcs	4Gb	A-die	8	2	78 ball FBGA	18.75mm	EOL Feb'12	
		M392B2G70BM0	YF8/H9/K0		DDP 2G x 4 * 18 pcs	4Gb	B-die					Now	
		M392B2G73AM0	YF8/H9	V(4Rx8)	DDP 1G x 8 * 18 pcs	4Gb	A-die	8	4			EOL Feb'12	
		M392B2G73BM0	YF8/H9		DDP 1G x 8 * 18 pcs	4Gb	B-die					Now	
4Gx 72	32GB	M392B4G70AE0	YF8/H9	N(2Rx4)	QDP 4G x 4 * 18 pcs	4Gb	A-die	8	2	78 ball FBGA	18.75mm	Now	
		M392B4G70BE0	YF8/H9		QDP 4G x 4 * 18 pcs	4Gb	B-die					Now	

\* NOTE : 1.35V product is 1.5V operatable.

4.10 240Pin DDR3 LRDIMM (1.35V Product)

240Pin DDR3 LRDIMM													
Org.	Density	Part Number	Speed	Raw Card	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	NOTE
2G x 72	16GB	M386B2G70DM0	YH9/K0	C(4Rx4)	DDP 1G x 4 * 36 pcs	2Gb	D-die	8	4	78 ball FBGA	30mm	Now	1)
4G x 72	32GB	M386B4G70BM0	YH9		DDP 2G x 4 * 36 pcs	4Gb	B-die	8				Now	

\* NOTE

1) LRDIMM Part Number includes memory buffer digit, which is 13th.  
For more information, please refer to 12page.



### 5. RDIMM RCD Information

#### 5.1 RCD Identification in JEDEC Description in Module Label

#### 5.2 Label Example



#### 5.3 RCD Information

- Example

PKG	RCD Vendor	RCD Version(Rev.)	JEDEC Description (Example - 4GB 2Rx8 PC3(L) <sup>1</sup> - 12800R - 11 - 11 - B1 - XX)
1Gb F-die	IDT	HLB(B0)	D2
2Gb C-die			
4Gb A-die	Inphi	GS04(1.5V)/LV-GS02(1.35V)	P1
1Gb G-die	IDT	A1(evergreen)	D3
2Gb D-die			
4Gb B-die	Inphi	UV-GS02	P2

**\* NOTE**

1) PC3L is used for 1.35V

2)RCD information is subject to change.

### 6. LRDIMM Memory Buffer Information

#### 6.1 Label Example



#### 6.2 Memory Buffer Information

- Example

Voltage	Vendor	Revision	Module P/N	JEDEC Description On Label
1.35V	Inphi	iMB02-GS02A	M386B2K70DM0-YH90 <sup>1</sup>	16GB 4Rx4 PC3L-10600L-09-11-C0
	IDT	MB3 B0	M386B2K70DM0-YH91 <sup>1</sup>	16GB 4Rx4 PC3L-10600L-09-11-C0

**\* NOTE**

1) The 16th digit refers memory buffer vendor and revision.

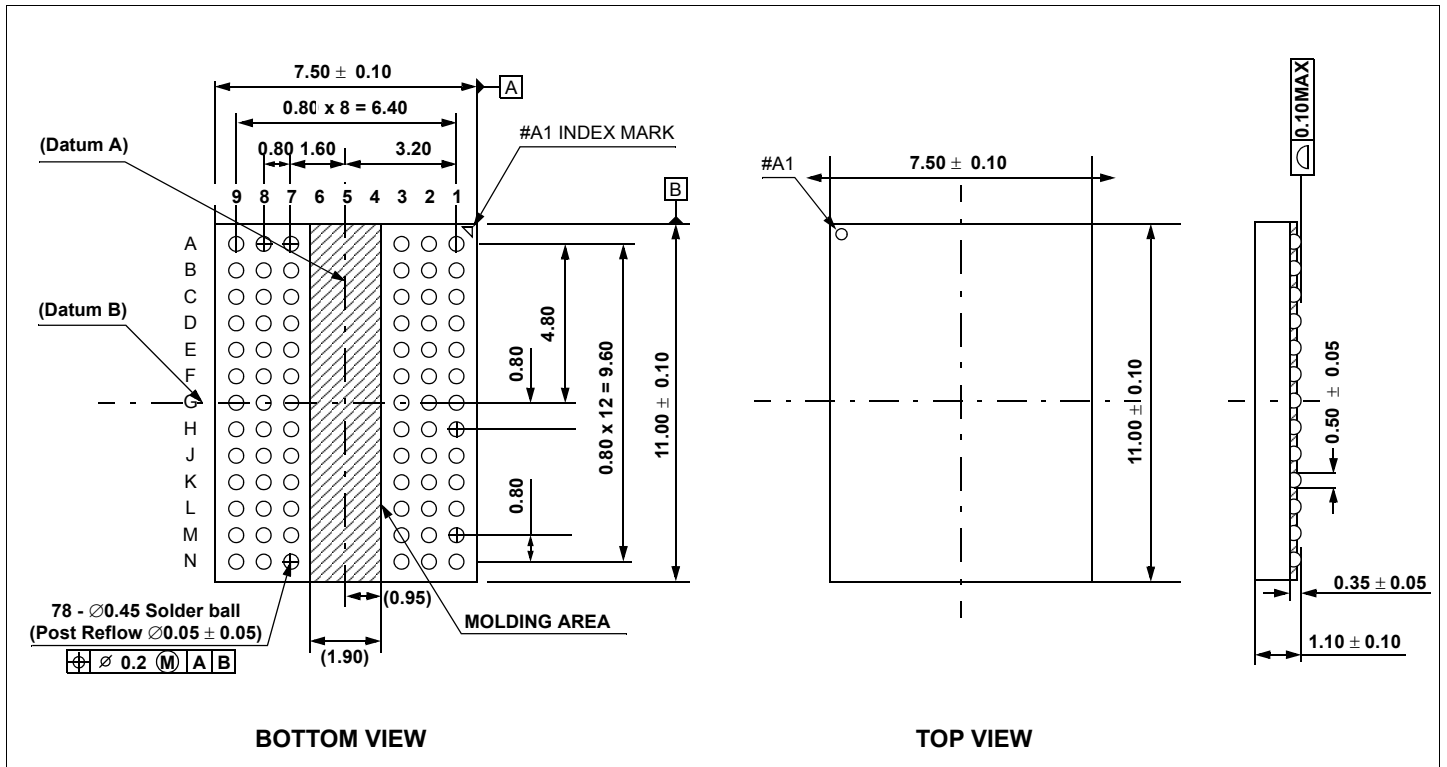
0: Inphi iMB02-GS02A

1: IDT MB3 B0

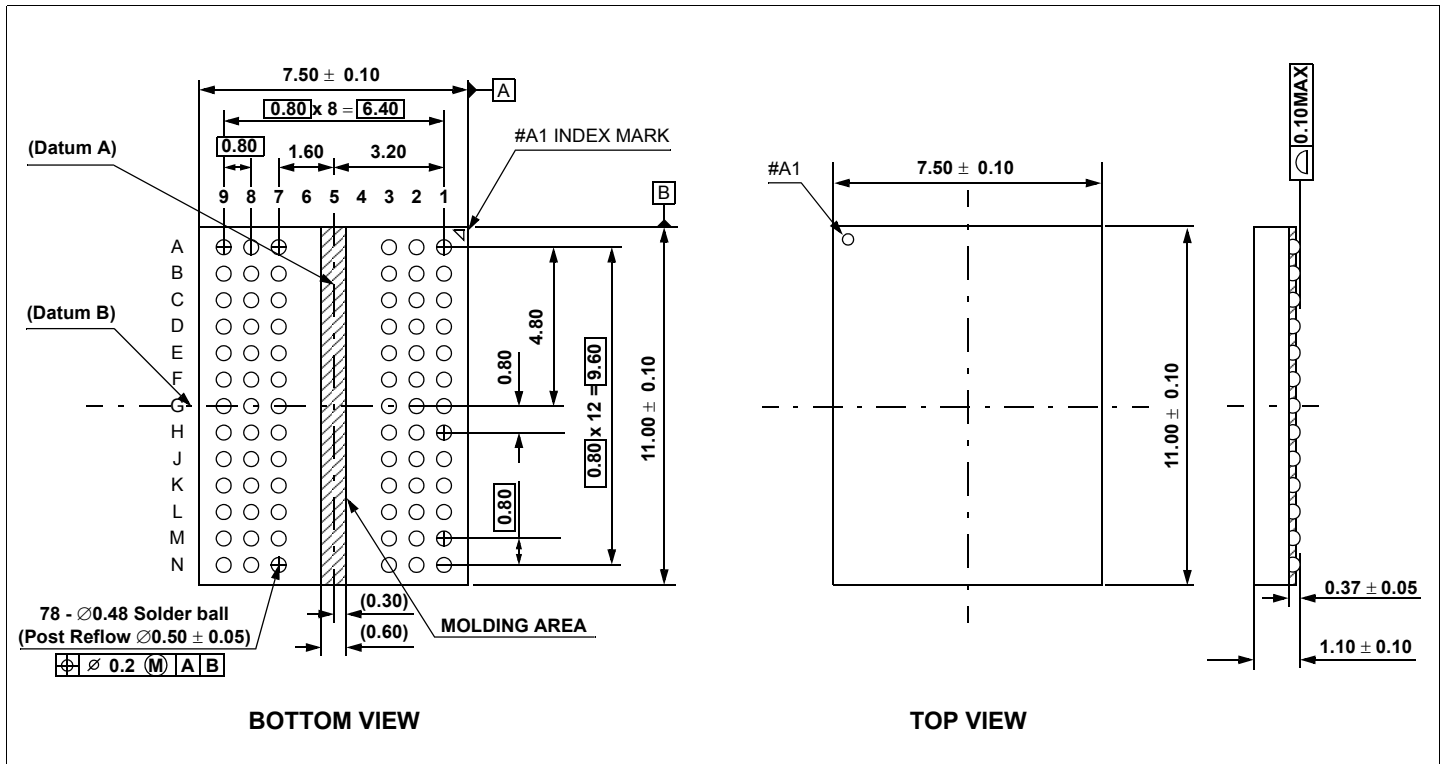
2) Memory buffer information is subject to change.

## 7. Package Dimension

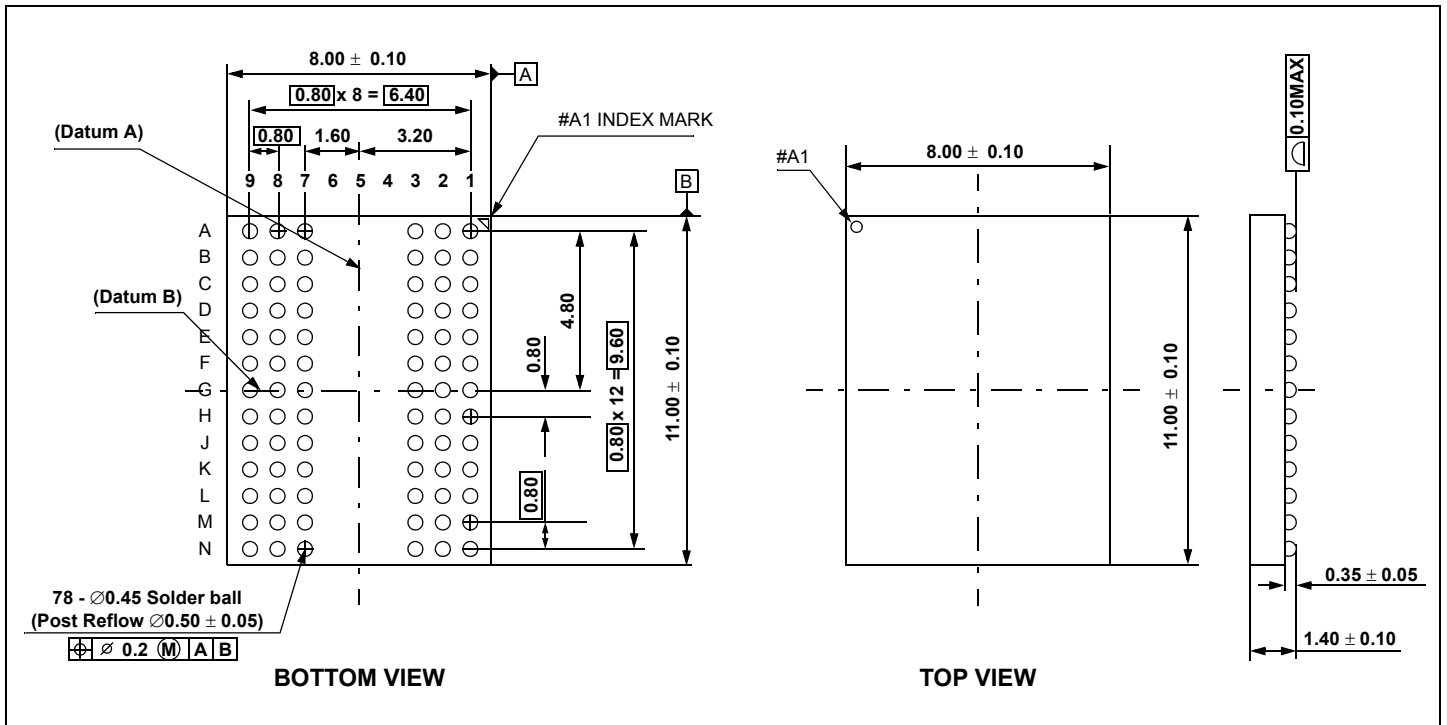
### 78Ball FBGA for 2Gb C-die (x4/x8) / 2Gb D-die (x4/x8)



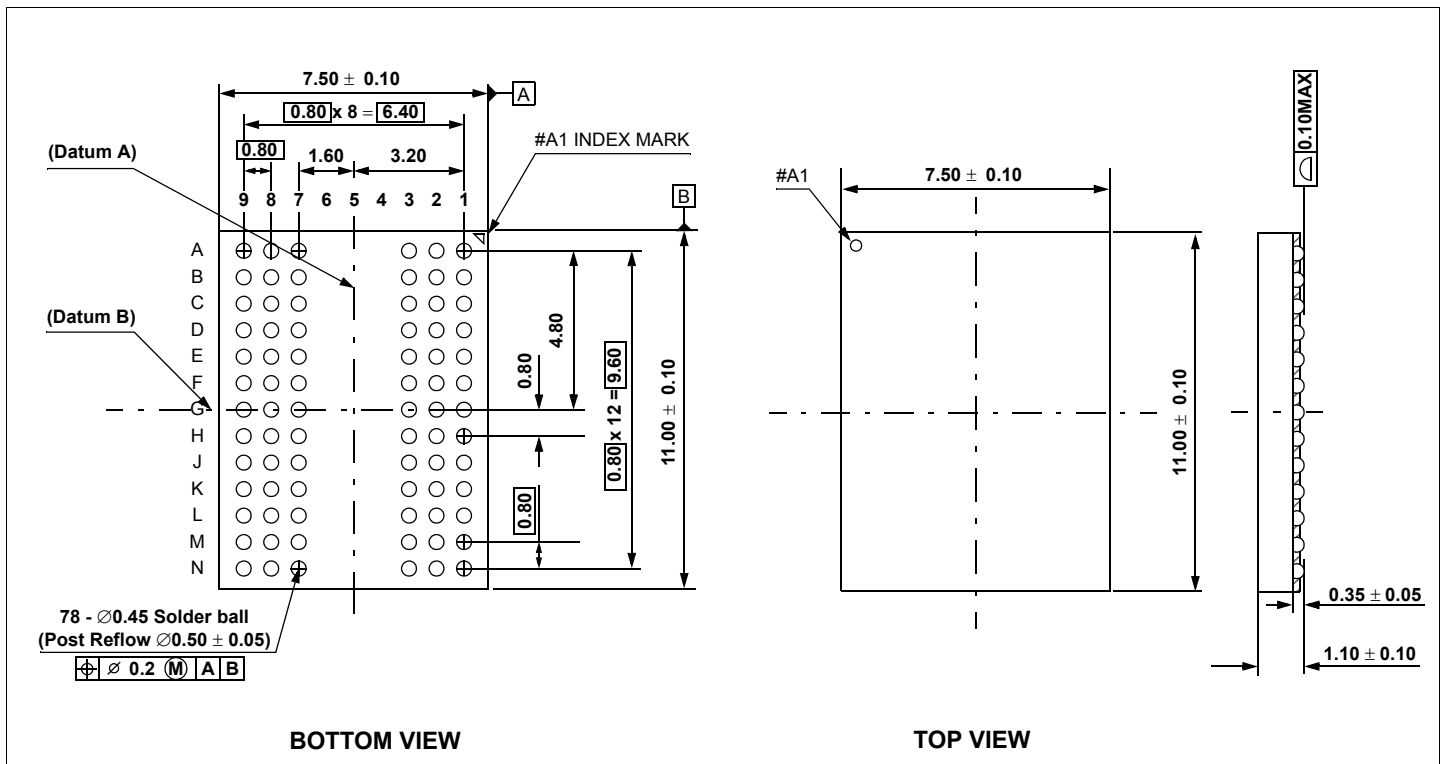
### 78Ball FBGA for 2Gb E-die (x4/x8)



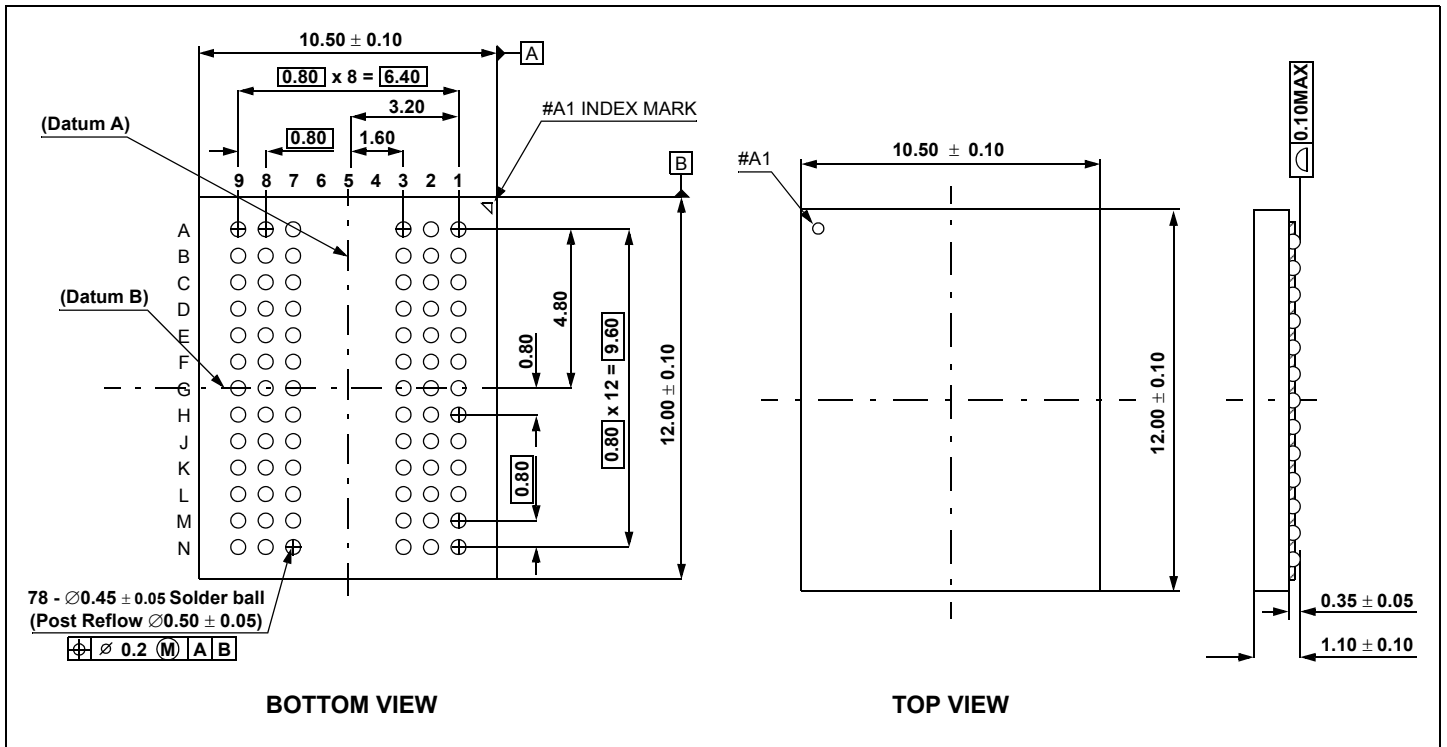
## 78Ball DDP for 2Gb C-die (x4/x8)



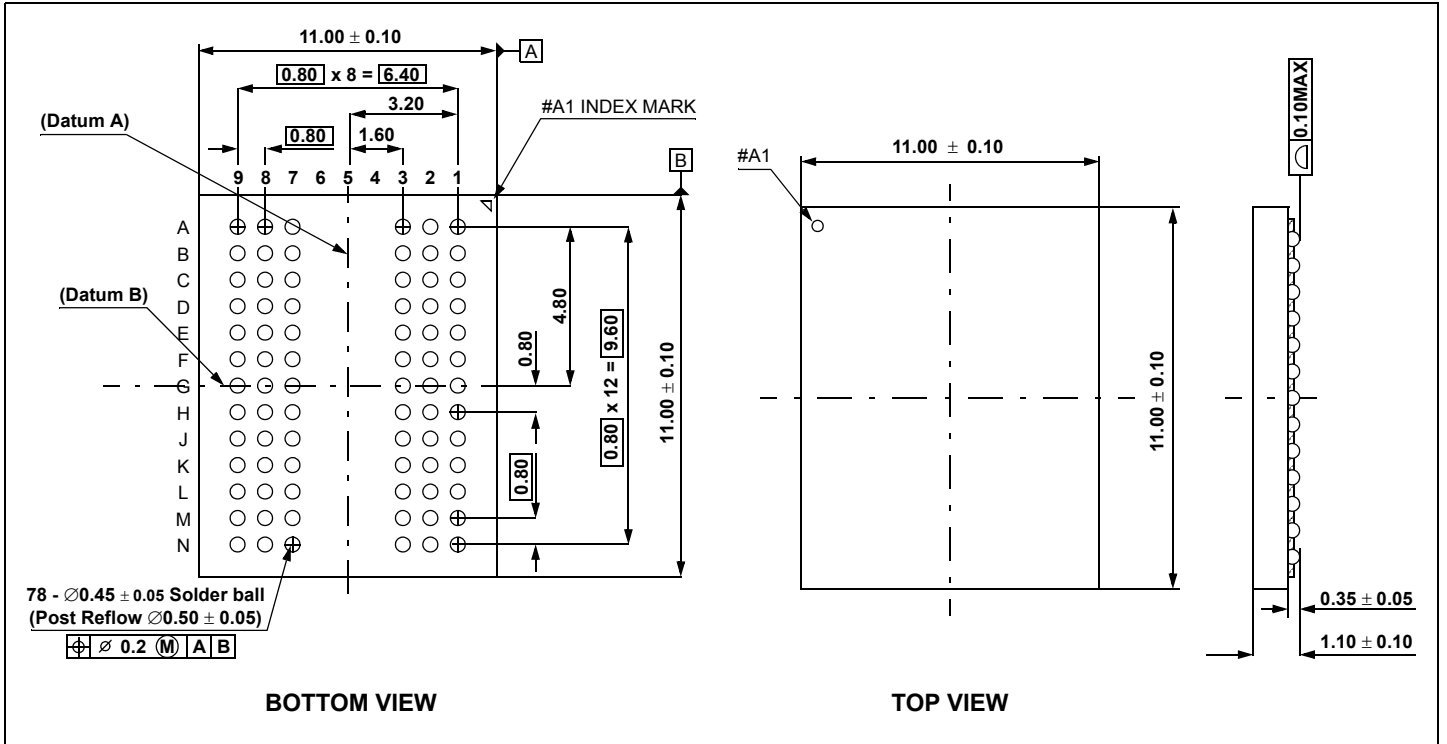
## 78Ball DDP for 2Gb D-die (x4/x8)



## 78Ball DDP for 4Gb A-die (x4/x8)

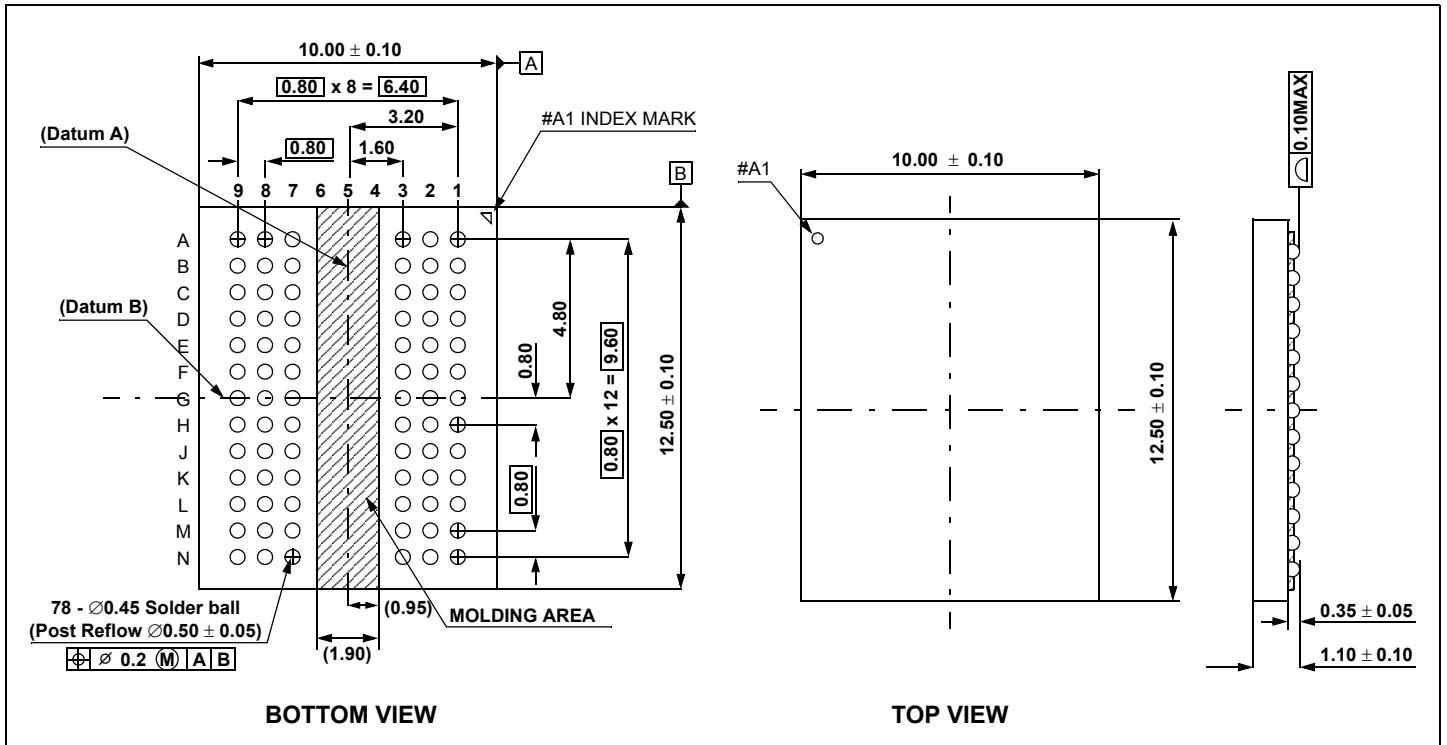


## 78Ball DDP for 4Gb B-die (x4/x8)

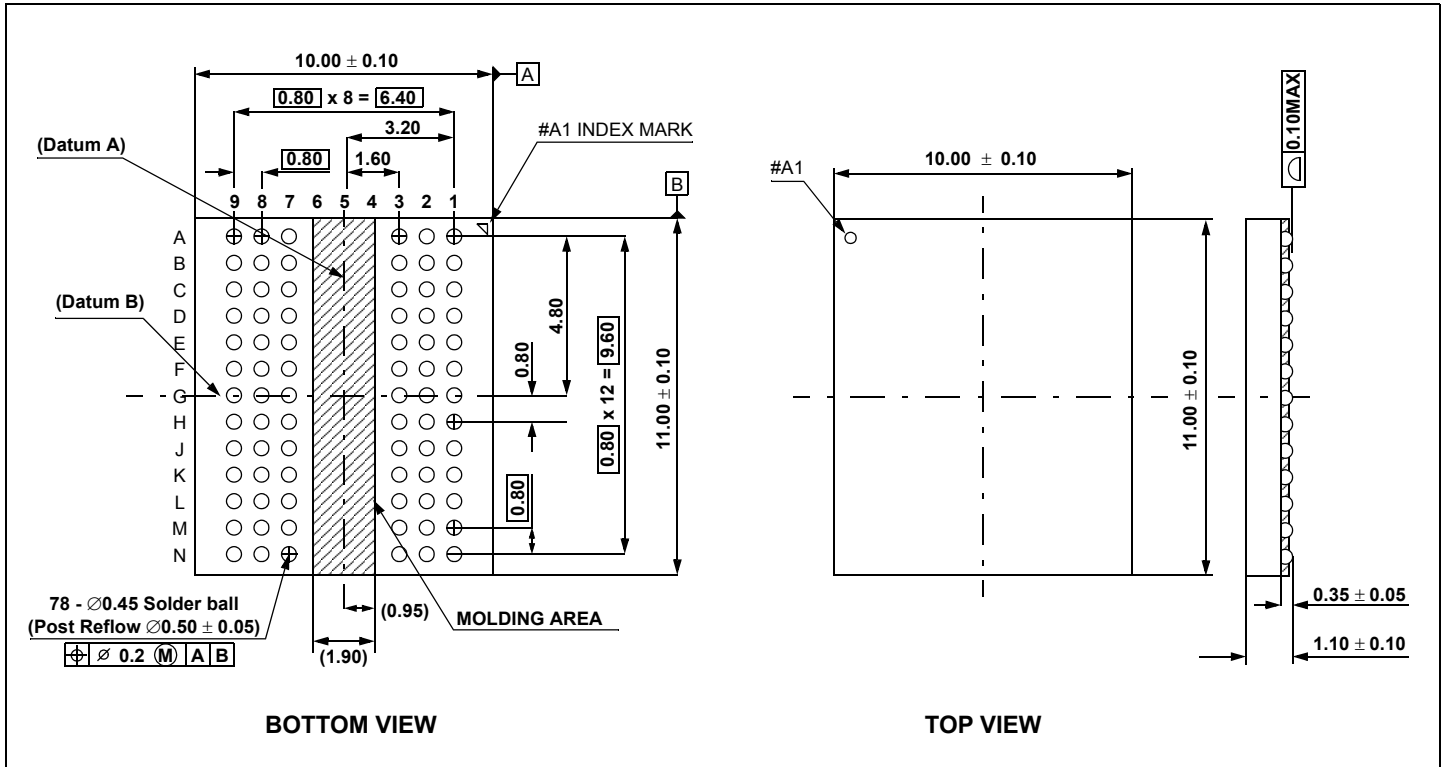




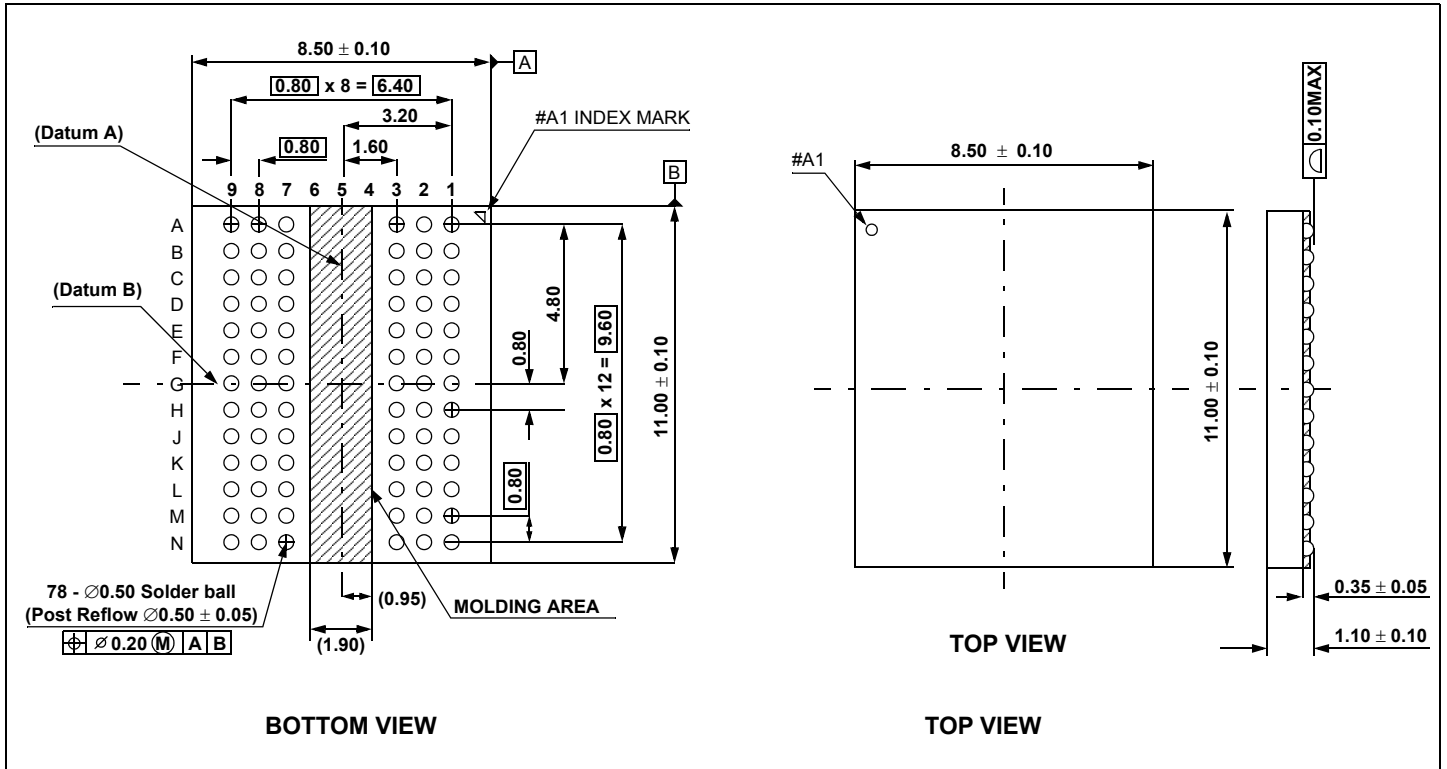
## 78Ball FBGA for 4Gb A-die (x4/x8)



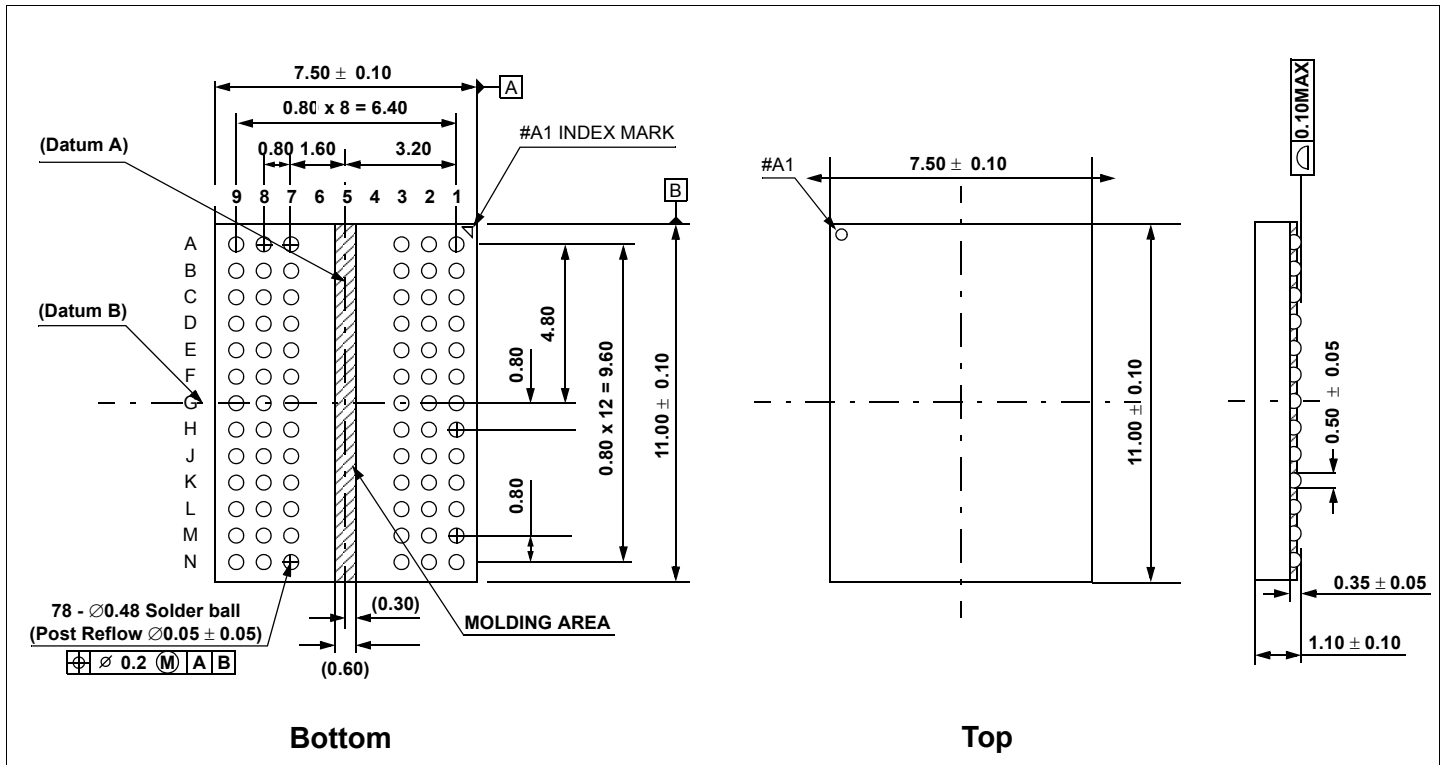
## 78Ball FBGA for 4Gb B-die (x4/x8)



## 78Ball FBGA for 4Gb C-die (x4/x8)



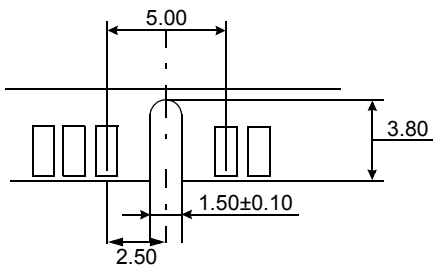
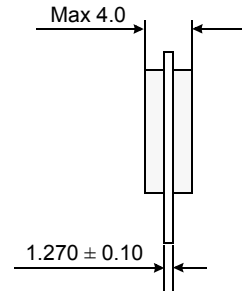
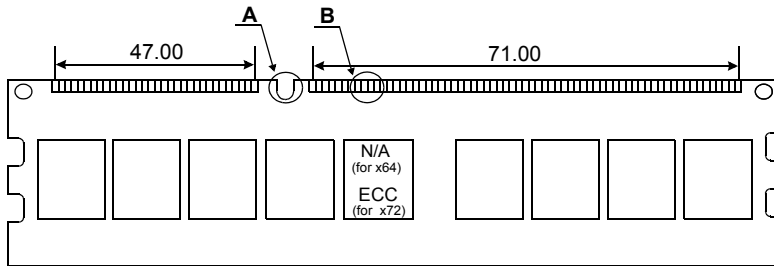
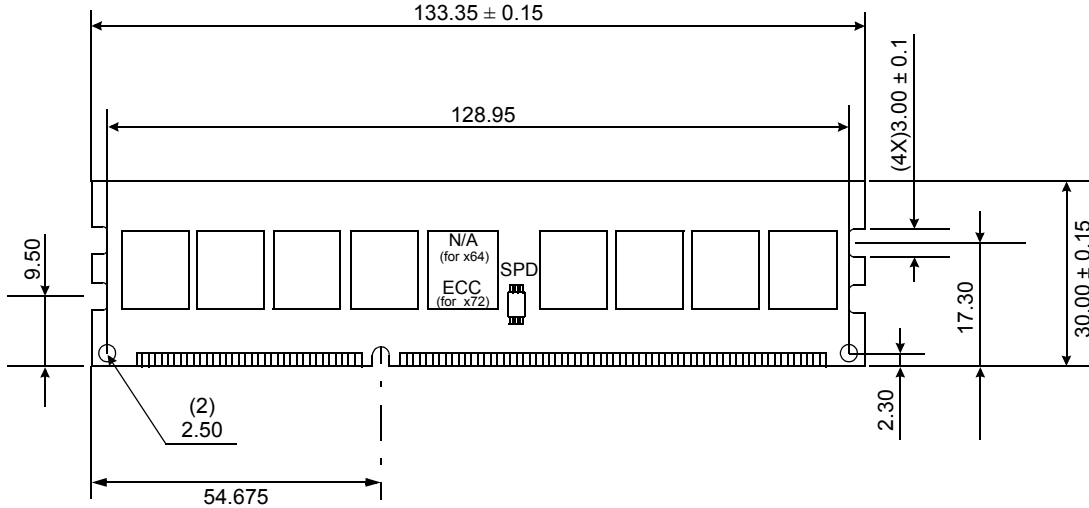
## 78Ball FBGA Flip chip for 1Gb G-die (x4/x8)



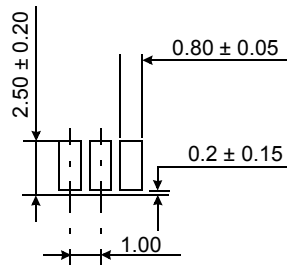
## 8. Module Dimension

### x64/x72 240pin DDR3 SDRAM Unbuffered DIMM

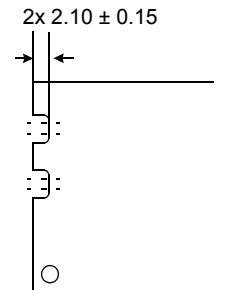
Units : Millimeters



Detail A

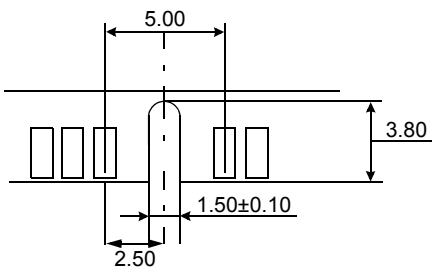
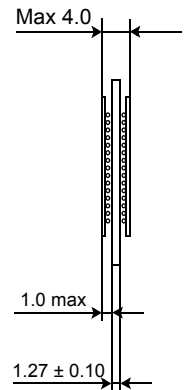
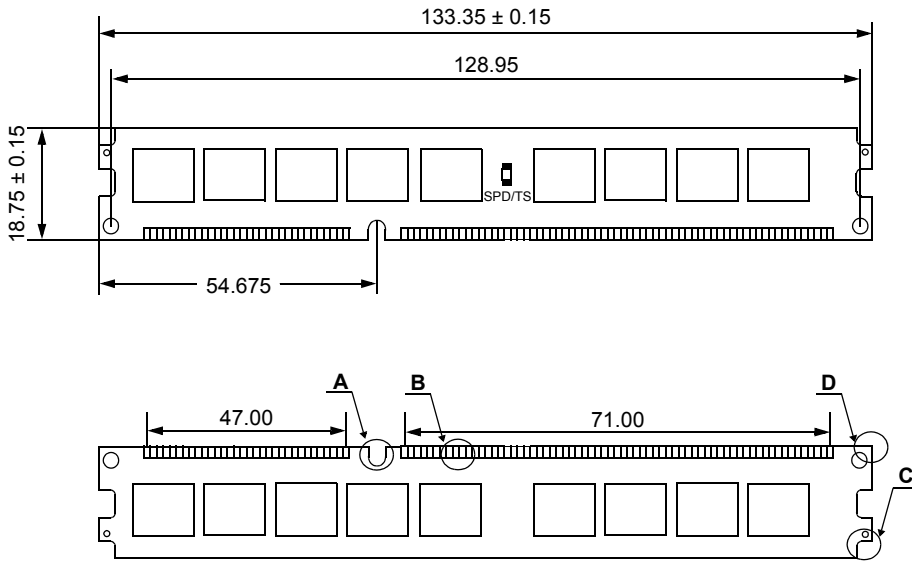


Detail B

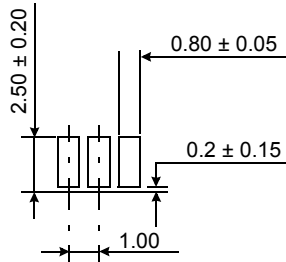


## x72 240pin DDR3 SDRAM ECC VLP UDIMM

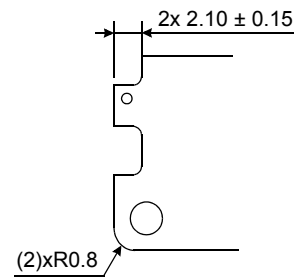
Units : Millimeters



Detail A



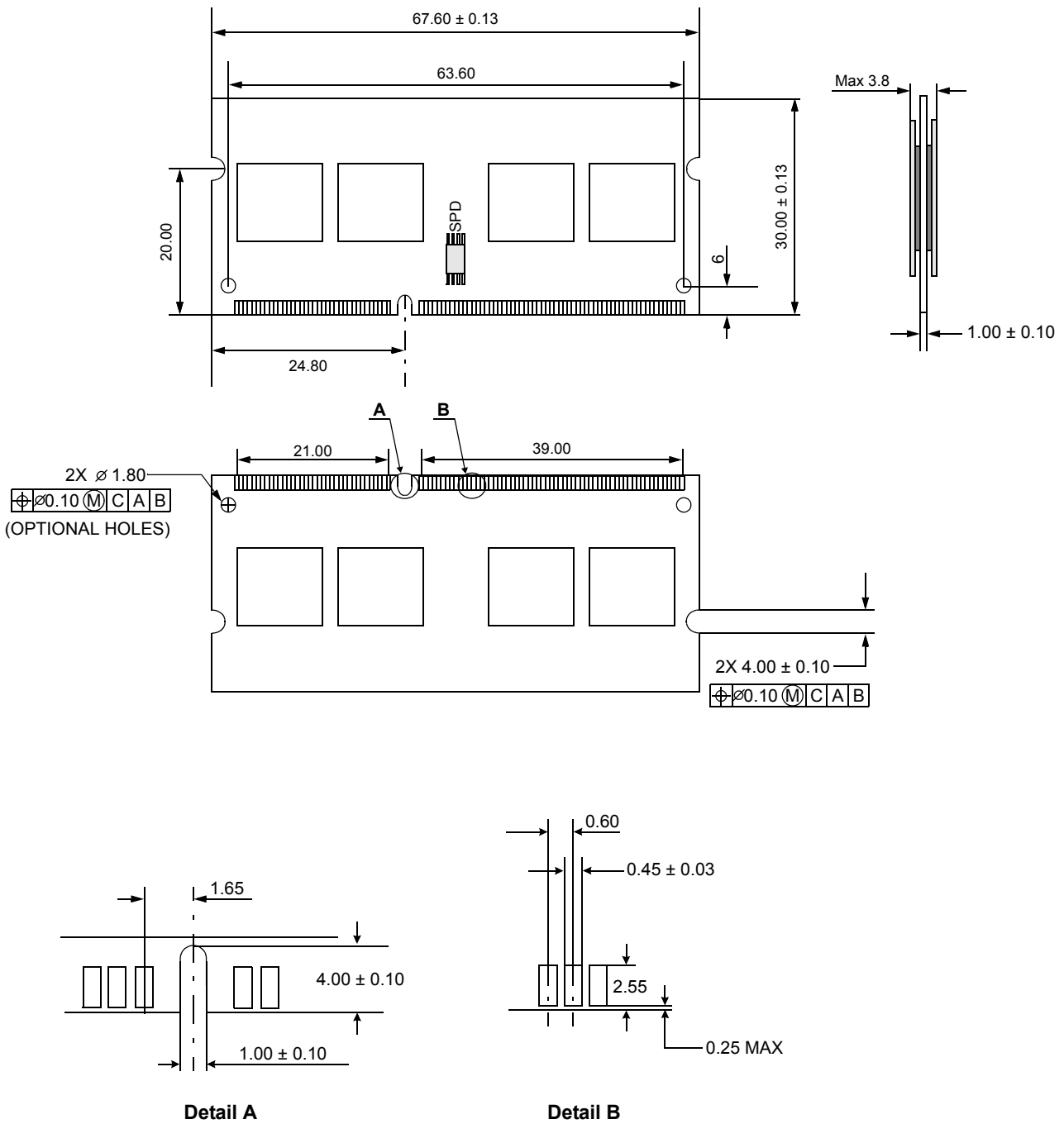
Detail B



Detail C & D

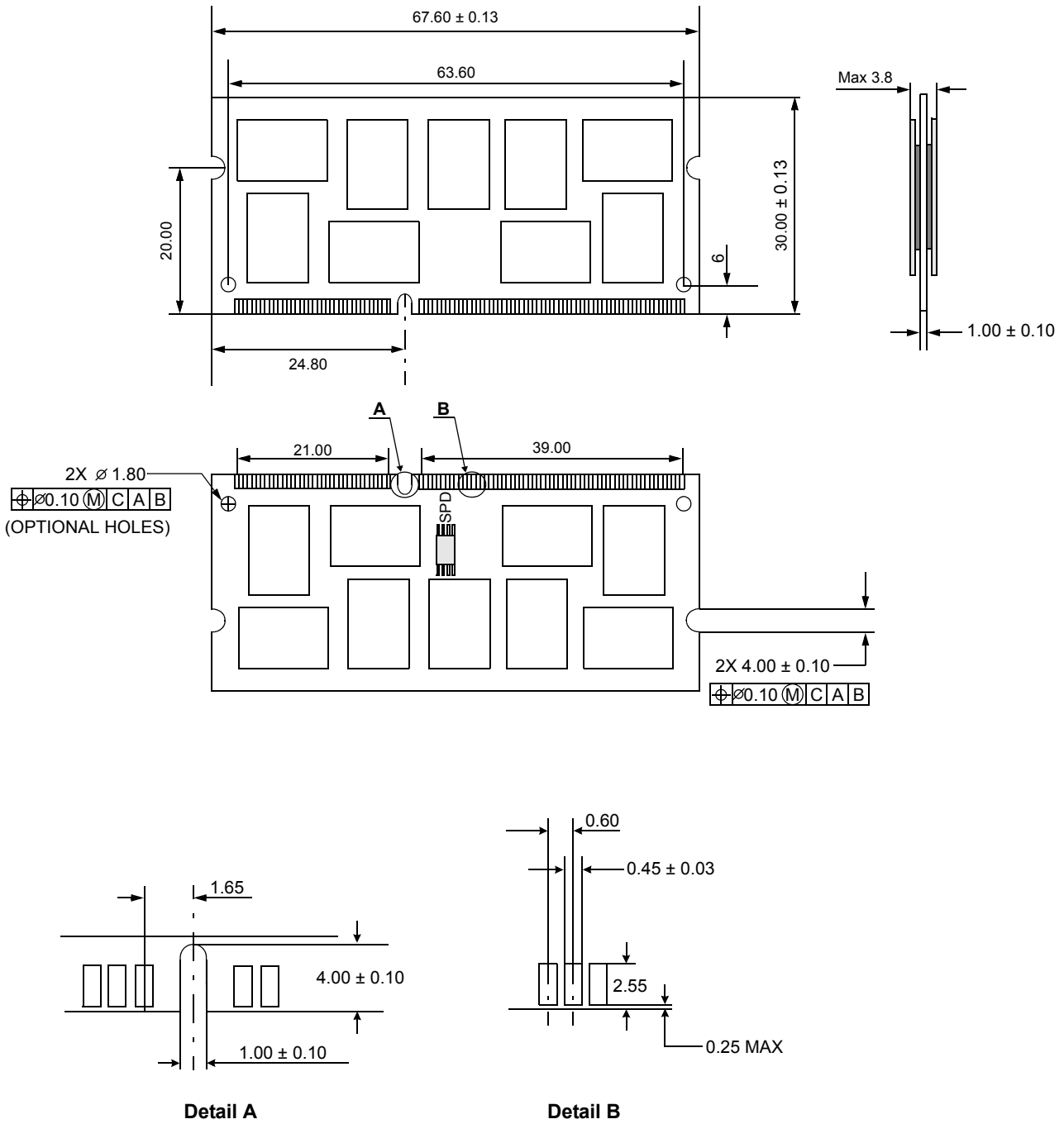
### x64 204pin DDR3 SDRAM Unbuffered SODIMM

Units : Millimeters



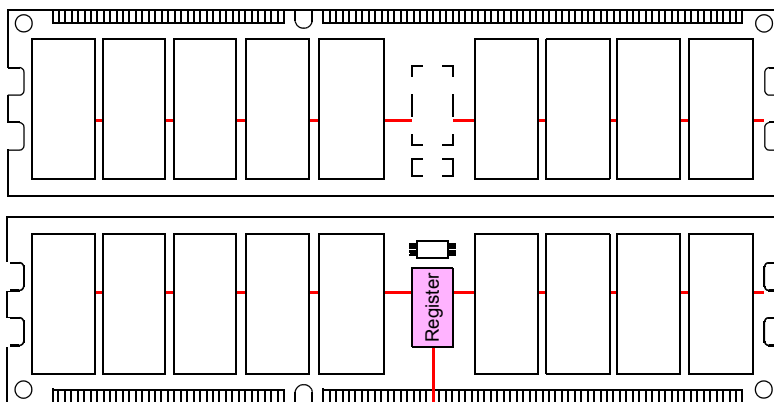
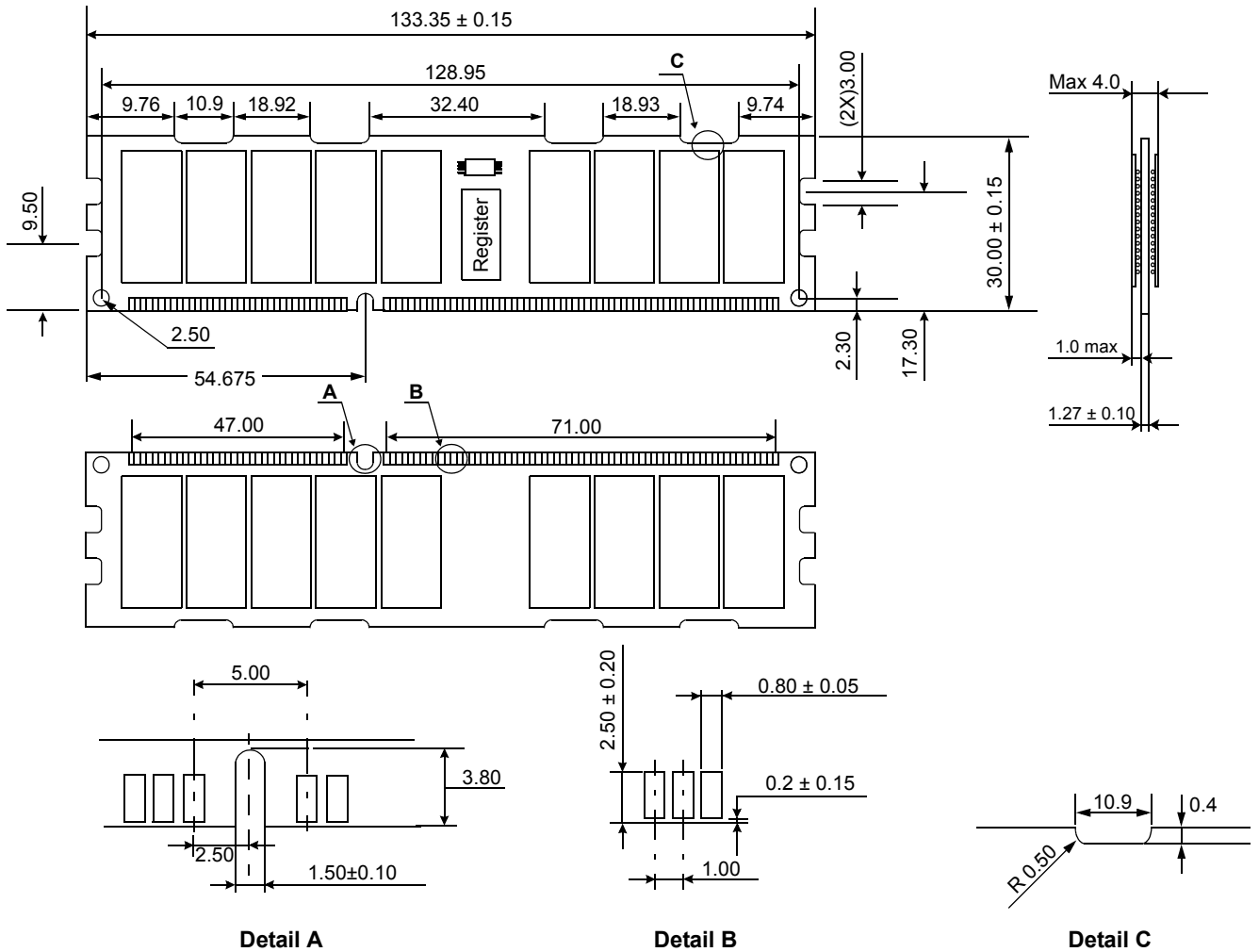
### x72 204 pin DDR3 SDRAM ECC Unbuffered SODIMM

Units : Millimeters

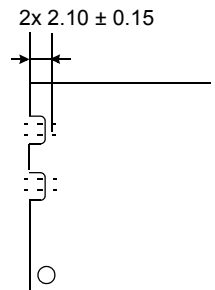


## x72 240pin DDR3 SDRAM Registered DIMM

Units : Millimeters

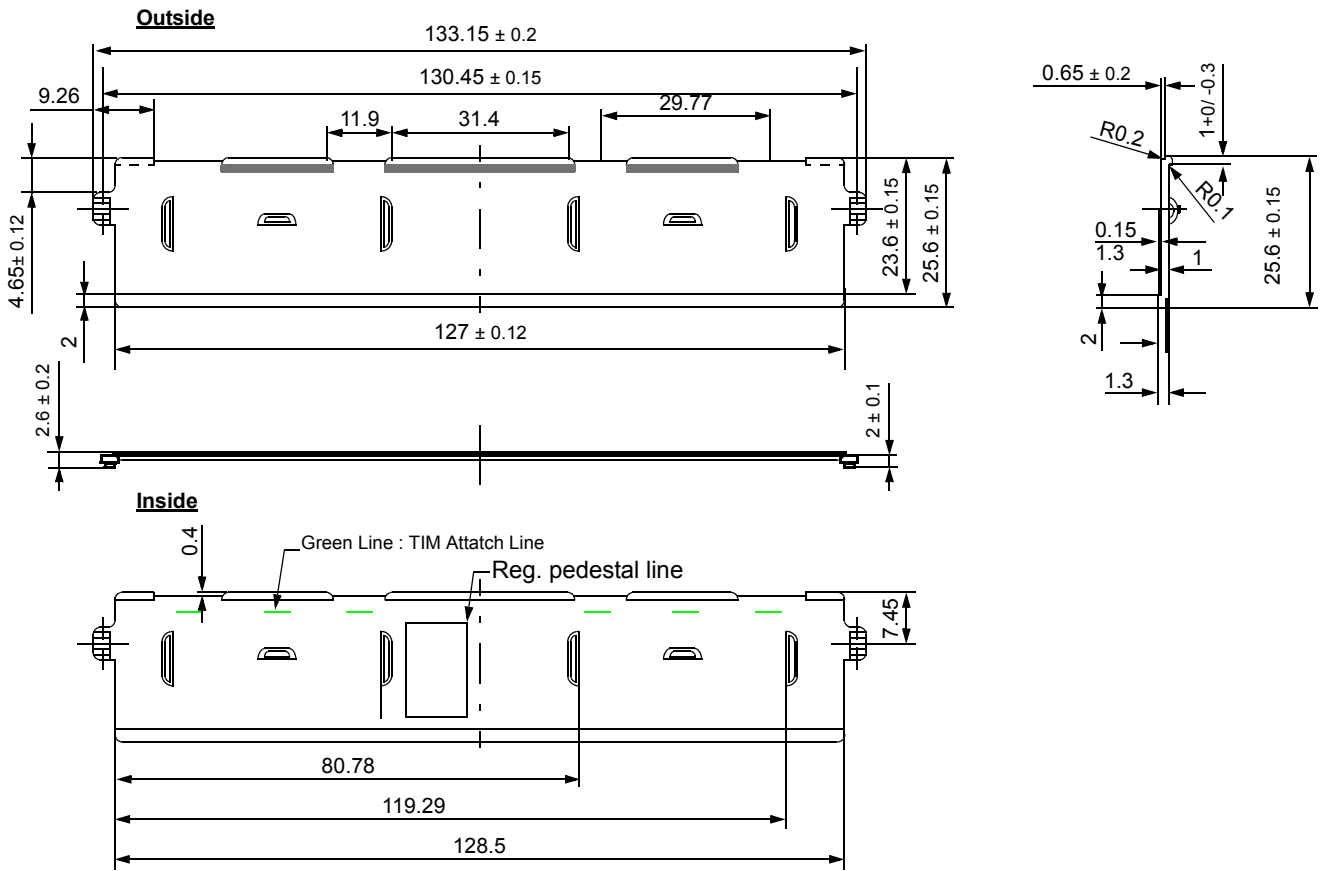


— Address, Command and Control lines

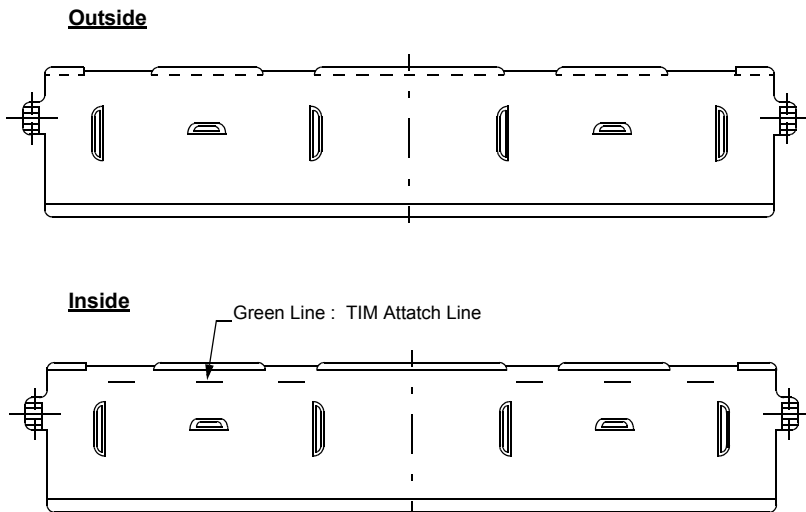


### Registered DIMM Heat Spreader Design

#### 1. FRONT PART

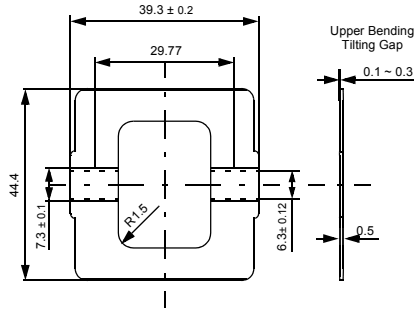


#### 2. BACK PART



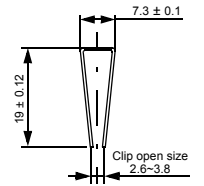
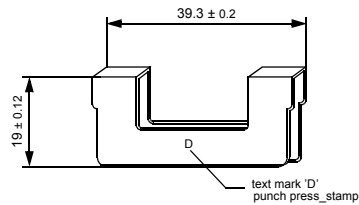
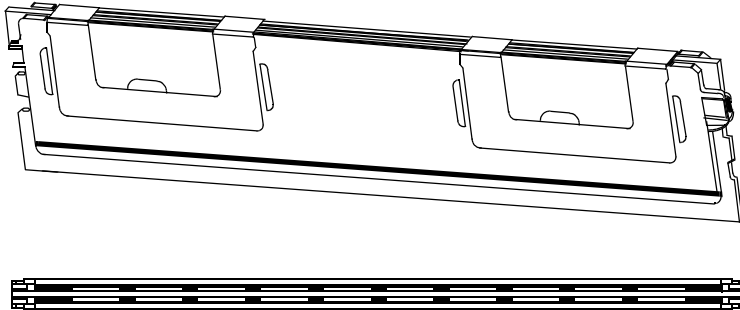
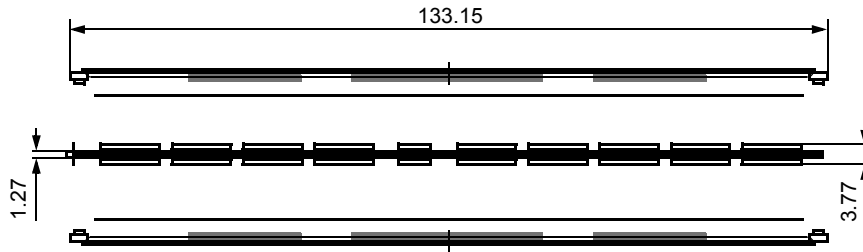


### 3. CLIP PART



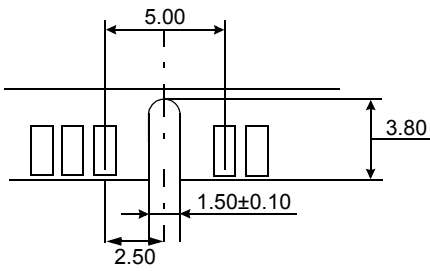
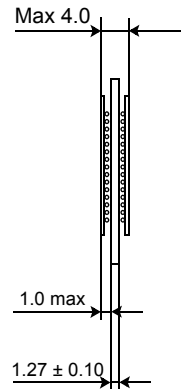
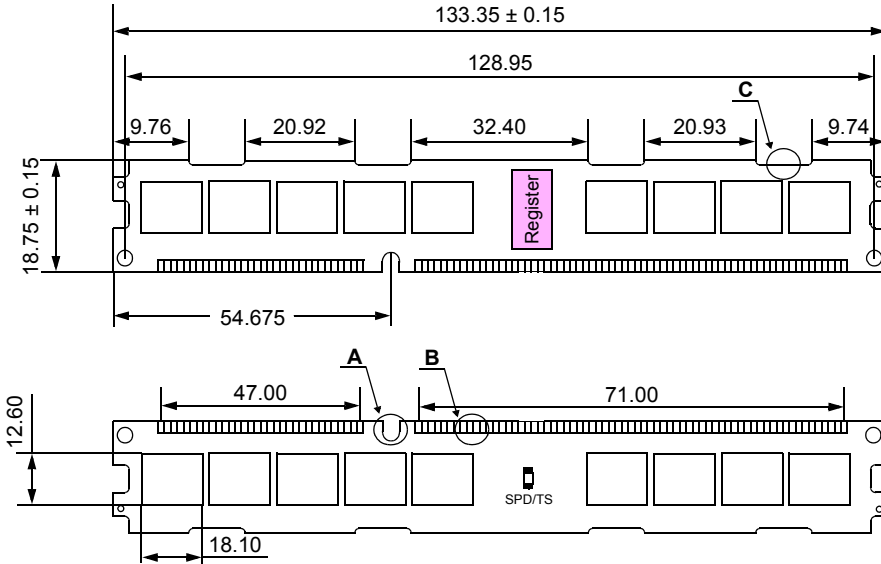
### 4. DDR3 RDIMM ASS'Y View

Reference thickness total (Maximum) : 7.55mm (With Clip thickness)

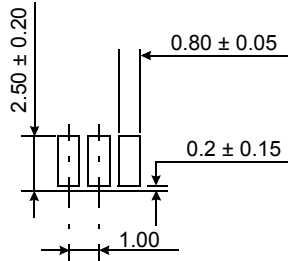


### x72 240pin DDR3 SDRAM VLP Registered DIMM

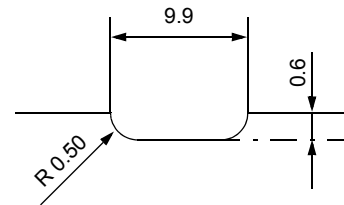
Units : Millimeters



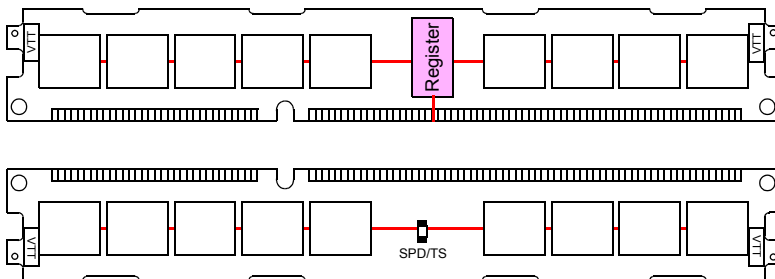
Detail A



Detail B



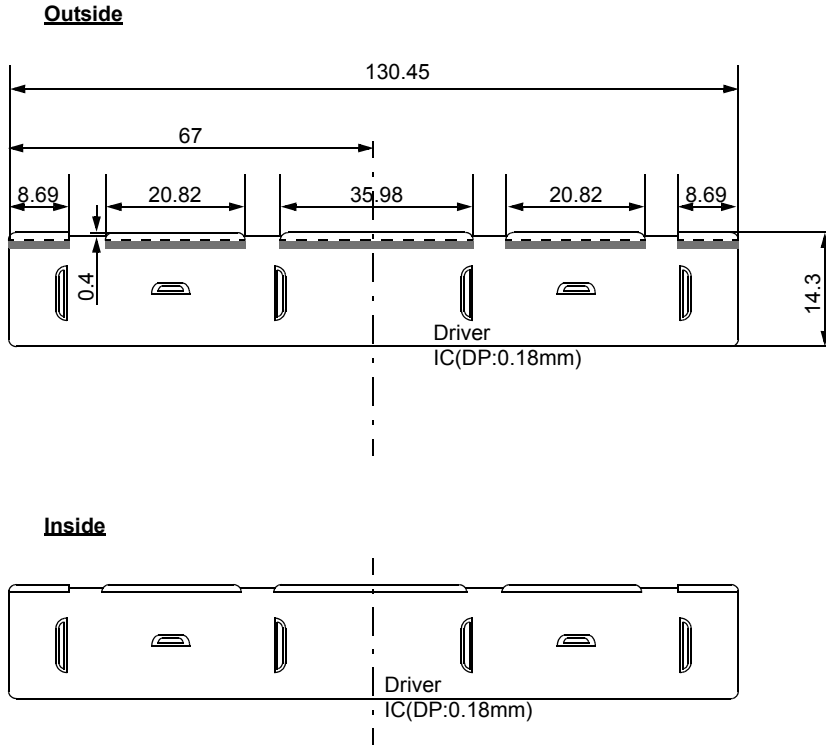
Detail C



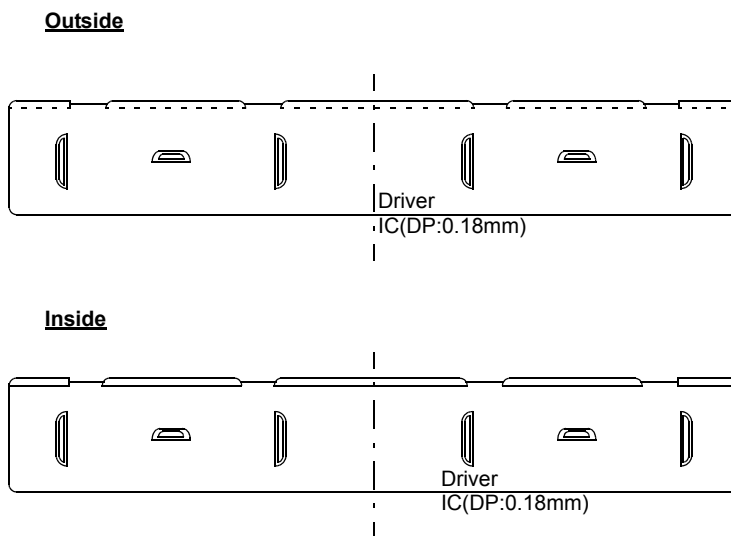
— Address, Command and Control lines

## VLP Registered DIMM Heat Spreader Design (DDP)

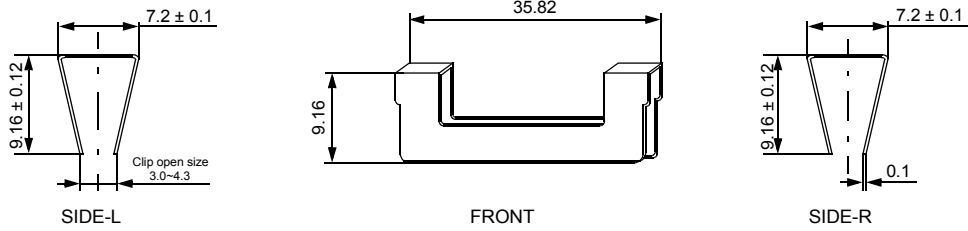
### 1. FRONT PART



### 2. BACK PART

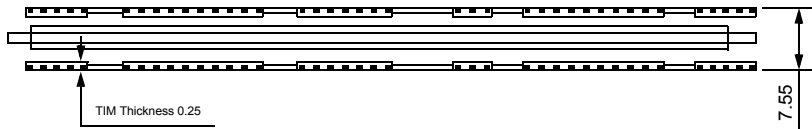


### 3. CLIP PART



### 4. ASS'Y VIEW

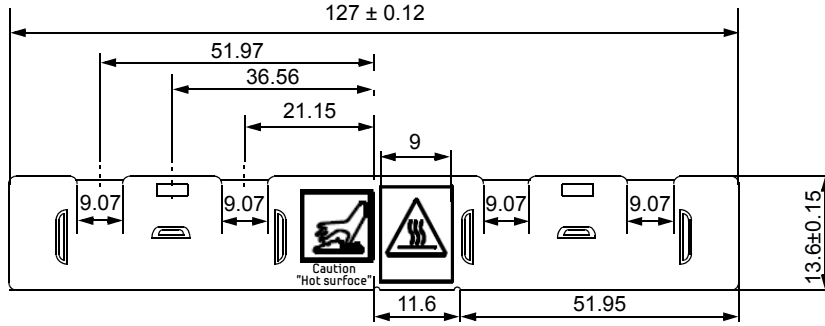
Reference thickness total (Maximum) : 7.55 (With Clip thickness)



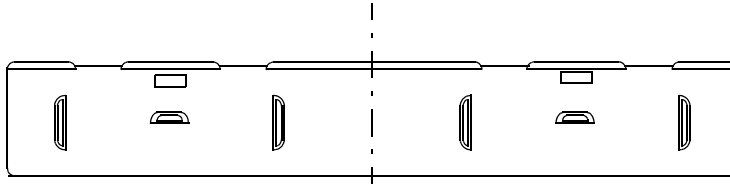
## VLP Registered DIMM Heat Spreader Design (QDP)

### 1. FRONT PART

Outside

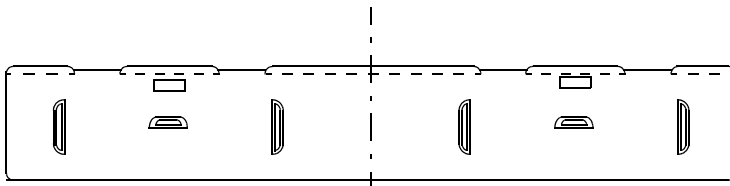


Inside

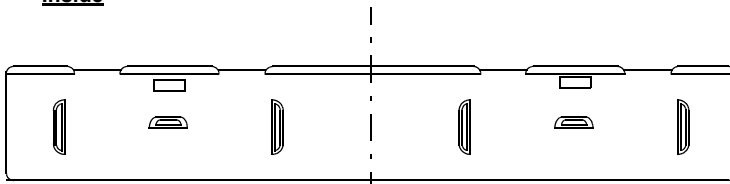


### 2. BACK PART

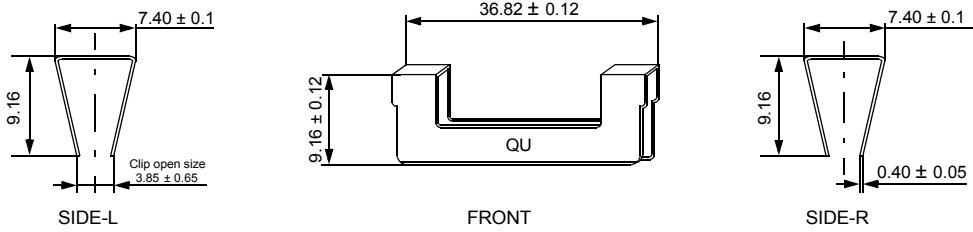
Outside



Inside



### 3. CLIP PART



### 4. ASS'Y VIEW

Reference thickness total (Maximum) : 8 (With Clip thickness)

