



32M x 64 DDR2 SDRAM 208 PBGA Multi-Chip Package

FEATURES

- Data rate = 667*, 533, 400
- Package:
 - 208 Plastic Ball Grid Array (PBGA), 16 x 20mm
 - 1.0mm pitch
- DDR2 Data Rate = 667*, 533, 400
- Supply Voltage = 1.8V ± 0.1V
- Differential data strobe (DQS, DQS#) per byte
- Internal, pipelined, double data rate architecture
- 4-bit prefetch architecture
- DLL for alignment of DQ and DQS transitions with clock signal
- Four internal banks for concurrent operation (Per DDR2 SDRAM Die)
- Programmable Burst lengths: 4 or 8
- Auto Refresh and Self Refresh Modes
- On Die Termination (ODT)
- Adjustable data – output drive strength
- Programmable CAS latency: 3, 4 or 5
- Posted CAS additive latency: 0, 1, 2, 3 or 4

- Write latency = Read latency - 1* tCK
- Commercial, Industrial and Military Temperature Ranges
- Organized as 32M x 64, user configurable as 2 x 32M x 32
- Weight: W3H32M64E-XSBX - 2.5 grams typical

BENEFITS

- 62% SPACE SAVINGS vs. FPBGA
- Reduced part count
- 42% I/O reduction vs FPBGA
- Reduced trace lengths for lower parasitic capacitance
- Suitable for hi-reliability applications
- Upgradeable to 64M x 64 density (contact factory for information)

* This product is under development, is not qualified or characterized and is subject to change or cancellation without notice.

FIGURE 1 – DENSITY COMPARISONS

	CSP Approach (mm)	Actual Size W3H32M64E-XSBX	S A V I N G S
Area	4 x 209mm² = 836mm²	320mm²	62%
I/O Count	4 x 90 balls = 360 balls	208 Balls	42%



FIGURE 2 – FUNCTIONAL BLOCK DIAGRAM

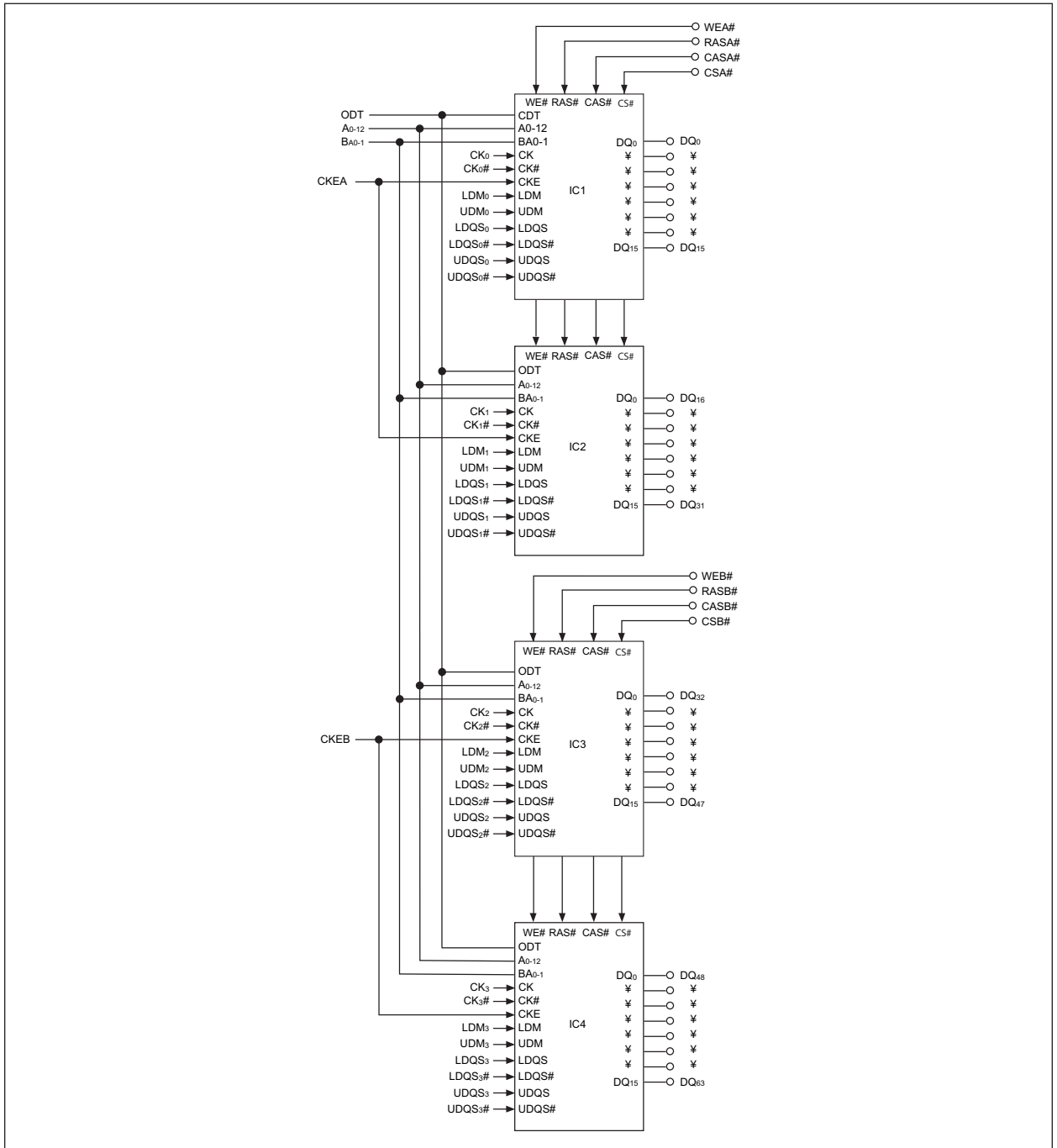
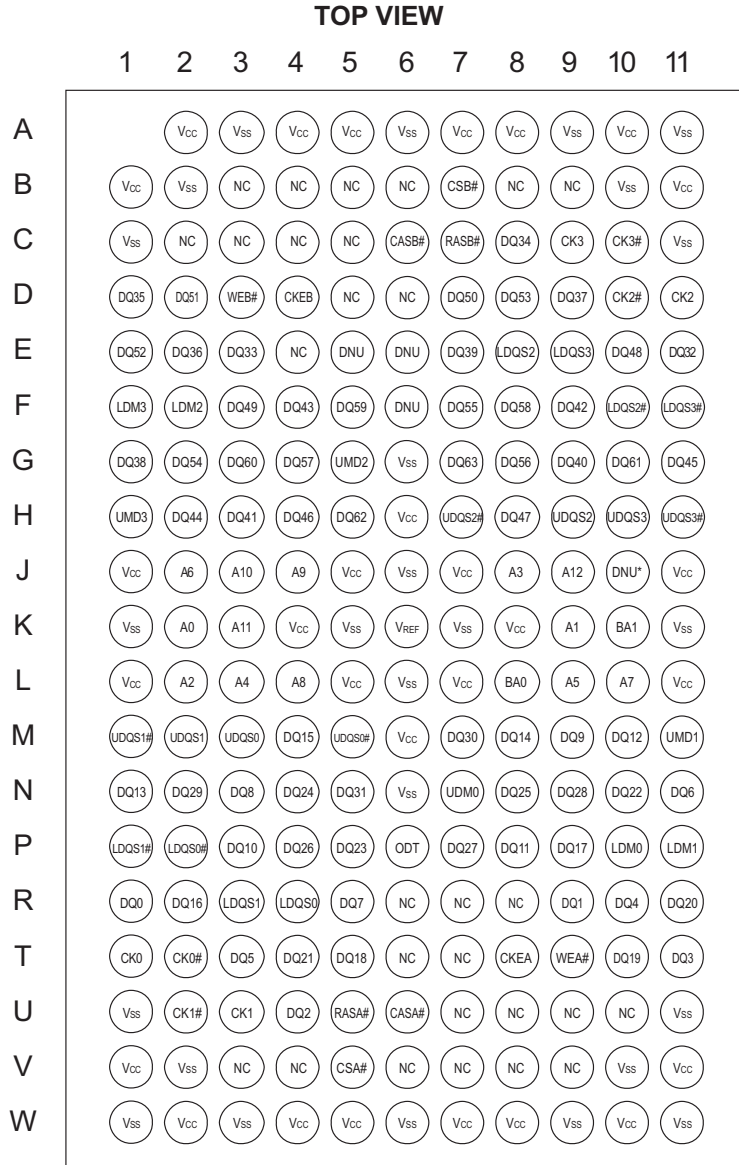
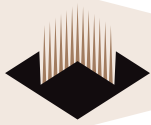




FIGURE 1 - PIN CONFIGURATION

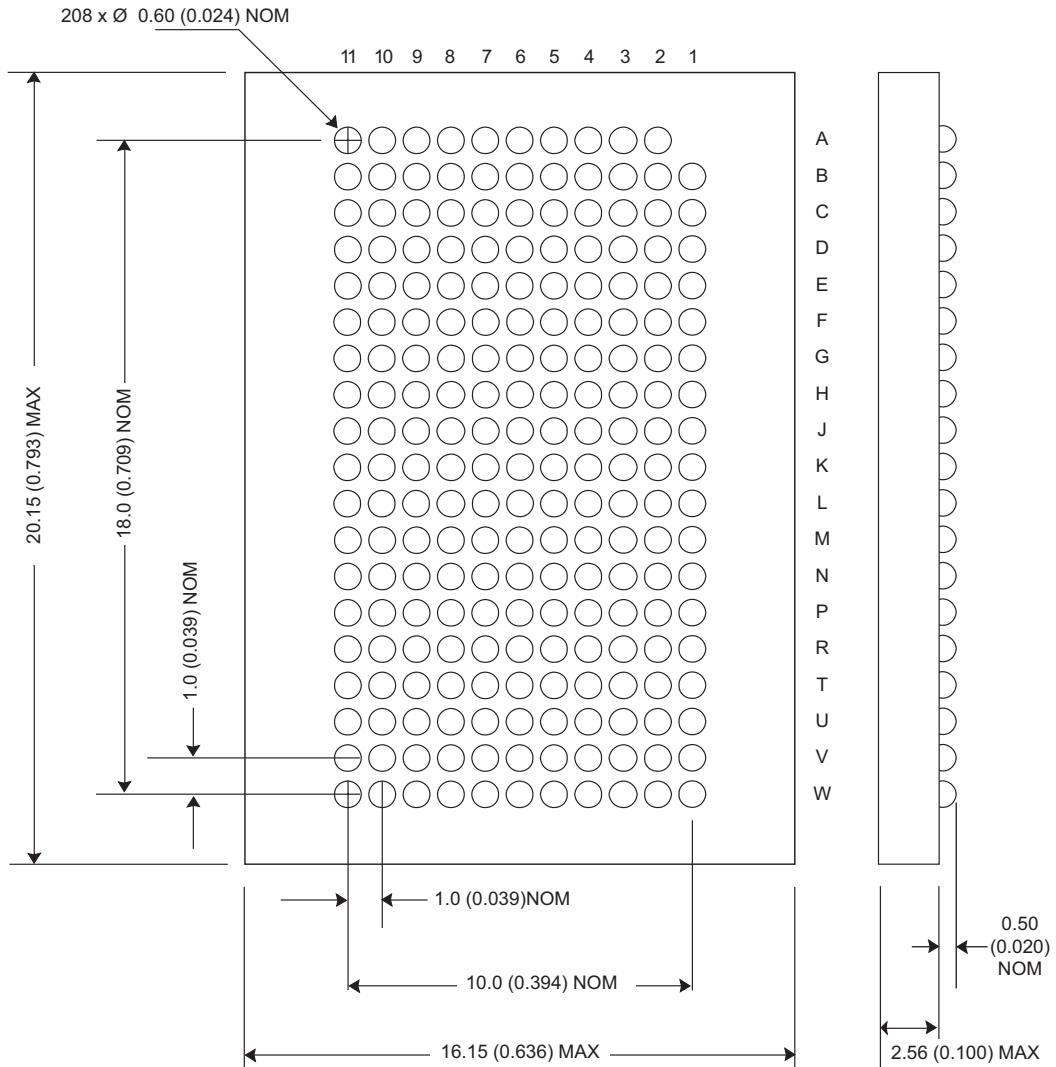


* Pin J10 is reserved for signal A13 on future upgrades.

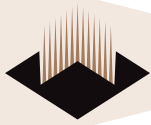


PACKAGE DIMENSION: 208 PLASTIC BALL GRID ARRAY (PBGA)

BOTTOM VIEW



All linear dimensions are millimeters and parenthetically in inches



ORDERING INFORMATION

W 3H 32M 64 E - XXX SB X

WHITE ELECTRONIC DESIGNS CORP. _____

DDR2 SDRAM _____

CONFIGURATION, 32M x 64 _____

1.8V Power Supply _____

DATA RATE (Mbs) _____

400 = 400Mbs

533 = 533Mbs

667 = 667Mbs

Blank = No datarate specified for ES product ⁽¹⁾

PACKAGE: _____

ES = Non Qualified Product ⁽¹⁾

SB = 208 Plastic Ball Grid Array (PBGA)

DEVICE GRADE: _____

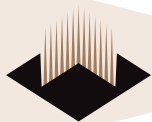
M = Military -55°C to +125°C

I = Industrial -40°C to +85°C

C = Commercial 0°C to +70°C

Blank = No temperature specified for ES product ⁽¹⁾

Note 1: W3H32M64E-ESSB is the only available product until completion of qualification.

**Document Title**

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Revision History

Rev #	History	Release Date	Status
Rev 0	Initial Release	June 2005	Advanced
Rev 1	Changes (Pg. 1, 3, 5) 1.1 Change max package width to 16mm	August 2005	Advanced
Rev 2	Changes (pg. 1, 3, 6) 2.1 Pinout added	October 2005	Advanced
Rev 3	Changes (Pg. 1, 3, 6) 3.1 Change all V _{CCQ} to V _{CC}	October 2005	Advanced