

Microelectronics Catalog Quick Reference Guide

Extended Temperature Plastics – Memories

DDR3 SDRAM MCPs

| Size | Organization | Part Number | Data Rate (Mb/s) | Voltage (V) | Package | Dimensions | Temperature |
|------|---------------|---------------------------------|------------------|-------------|---------|------------|-------------|
| 1GB | 256M x 32 | W3J256M32G-XNBX ^(f) | 800-1066 | 1.5 | PBGA | TBD | C, I, M |
| 1GB | 128M x 64 | W3J128M64G-XNBX ^(f) | 800-1066 | 1.5 | PBGA | TBD | C, I, M |
| 1GB | 128M x 72 | W3J128M72G-XNBX ^(f) | 800-1066 | 1.5 | PBGA | TBD | C, I, M |
| 1GB | 2 x 256M x 16 | W3J2256M16G-XNBX ^(f) | 800-1066 | 1.5 | PBGA | TBD | C, I, M |

DDR2 SDRAM MCPs

| Size | Organization | Part Number | Data Rate (Mb/s) | Voltage (V) | Package | Dimensions | Temperature |
|-------|--------------|-----------------|------------------|-------------|----------|-------------|-------------|
| 256MB | 32M x 64 | W3H32M64E-XSBX | 400-667 | 1.8 | 208 PBGA | 16mm x 20mm | C, I, M |
| 256MB | 32M x 72 | W3H32M72E-XSB2X | 400-667 | 1.8 | 208 PBGA | 16mm x 20mm | C, I, M |
| 512MB | 64M x 64 | W3H64M64E-XSBX | 400-667 | 1.8 | 208 PBGA | 16mm x 22mm | C, I, M |
| 512MB | 64M x 72 | W3H64M72E-XSBX | 400-667 | 1.8 | 208 PBGA | 16mm x 22mm | C, I, M |
| 1GB | 128M x 72 | W3H128M72E-XSBX | 400-667 | 1.8 | 208 PBGA | 16mm x 22mm | C, I, M |
| 1GB | 128M x 64 | W3H128M64E-XSBX | 400-667 | 1.8 | 208 PBGA | 16mm x 22mm | C, I, M |

Registered DDR2 SDRAM MCPs

| Size | Organization | Part Number | Data Rate (Mb/s) | Voltage (V) | Package | Dimensions | Temperature |
|------|--------------|---------------------------------|------------------|-------------|----------|-------------|-------------|
| 1GB | 128M x 72 | W3H128M72ER-XNBX ^(f) | 400-667 | 1.8 | 255 PBGA | 22mm x 26mm | C, I, M |

DDR SDRAM MCPs

| Size | Organization | Part Number | Data Rate (Mb/s) | Voltage (V) | Package | Dimensions | Temperature |
|-------|--------------|----------------|------------------|-------------|----------|---------------|-------------|
| 128MB | 64M x 16 | W3E64M16S-XSBX | 200-333 | 2.5 | 60 PBGA | 10mm x 12.5mm | C, I, M |
| 128MB | 64M x 16 | W3E64M16S-XNBX | 200-333 | 2.5 | 60 PBGA | 10mm x 12.5mm | C, I, M |
| 128MB | 16M x 64 | W3E16M64S-XBX | 200-266 | 2.5 | 219 PBGA | 21mm x 25mm | C, I, M |
| 128MB | 16M x 72 | W3E16M72S-XBX | 200-333 | 2.5 | 219 PBGA | 32mm x 25mm | C, I, M |
| 256MB | 32M x 64 | W3E32M64S-XBX | 200-333 | 2.5 | 219 PBGA | 25mm x 25mm | C, I, M |
| 256MB | 32M x 64 | W3E32M64SA-XBX | 200-333 | 2.5 | 219 PBGA | 25mm x 25mm | C, I, M |
| 256MB | 32M x 64 | W3E32M64S-XSBX | 200-333 | 2.5 | 208 PBGA | 13mm x 22mm | C, I, M |
| 256MB | 32M x 72 | W3E32M72S-XBX | 200-333 | 2.5 | 219 PBGA | 25mm x 32mm | C, I, M |
| 256MB | 32M x 72 | W3E32M72S-XSBX | 200-333 | 2.5 | 208 PBGA | 16mm x 22mm | C, I, M |
| 512MB | 64M x 72 | W3E64M72S-XSBX | 200-266 | 2.5 | 219 PBGA | 32mm x 25mm | C, I, M |

Registered DDR SDRAM MCPs

| Size | Organization | Part Number | Speed (MHz) | Voltage (V) | Package | Dimensions | Temperature |
|-------|--------------|-----------------|-------------|-------------|----------|-------------|-------------|
| 128MB | 16M x 72 | W3E16M72SR-XBX | 200-250 | 2.5 | 219 PBGA | 32mm x 25mm | C, I, M |
| 256MB | 32M x 72 | W3E32M72SR-XSBX | 200-266 | 2.5 | 208 PBGA | 16mm x 25mm | C, I, M |

SDRAM MCPs

| Size | Organization | Part Number | Speed (MHz) | Voltage (V) | Package | Dimensions | Temperature |
|-------|--------------|------------------|-------------|-------------|----------|-------------|-------------|
| 32MB | 4M x 64 | WEDPN4M64V-XBX | 100-133 | 3.3 | 219 PBGA | 21mm x 21mm | C, I, M |
| 32MB | 4M x 72 | WEDPN4M72V-XB2X | 100-133 | 3.3 | 219 PBGA | 21mm x 21mm | C, I, M |
| 64MB | 8M x 64 | WEDPN8M64V-XB2X | 100-133 | 3.3 | 219 PBGA | 21mm x 21mm | C, I, M |
| 64MB | 8M x 72 | WEDPN8M72V-XB2X | 100-133 | 3.3 | 219 PBGA | 21mm x 25mm | C, I, M |
| 128MB | 16M x 64 | WEDPN16M64V-XB2X | 100-133 | 3.3 | 219 PBGA | 21mm x 21mm | C, I, M |
| 128MB | 16M x 72 | WEDPN16M72V-XB2X | 100-133 | 3.3 | 219 PBGA | 21mm x 25mm | C, I, M |
| 256MB | 32M x 64 | W332M64V-XBX | 100-133 | 3.3 | 219 PBGA | 25mm x 25mm | C, I, M |
| 256MB | 32M x 64 | W332M64V-XSBX | 100-133 | 3.3 | 208 PBGA | 13mm x 22mm | C, I, M |
| 256MB | 32M x 72 | W332M72V-XBX | 100-133 | 3.3 | 219 PBGA | 32mm x 25mm | C, I, M |
| 256MB | 32M x 72 | W332M72V-XSBX | 100-133 | 3.3 | 208 PBGA | 16mm x 22mm | C, I, M |
| 512MB | 64M x 72 | W364M72V-XSBX | 100-133 | 3.3 | 219 PBGA | 32mm x 25mm | C, I, M |

Registered SDRAM MCPs

| Size | Organization | Part Number | Speed (MHz) | Voltage (V) | Package | Dimensions | Temperature |
|-------|--------------|-------------------|-------------|-------------|----------|-------------|-------------|
| 128MB | 16M x 64 | WEDPN16M64VR-XB2X | 100-133 | 3.3 | 219 PBGA | 25mm x 25mm | C, I, M |
| 128MB | 16M x 72 | WEDPN16M72VR-XB2X | 100-133 | 3.3 | 219 PBGA | 25mm x 25mm | C, I, M |

NOR Flash MCPs

| Size | Organization | Part Number | Speed (ns) | Voltage (V) | Package | Dimensions | Temperature |
|---------------------|--------------|---------------|------------|-------------|----------|-------------|-------------|
| Conventional | | | | | | | |
| 16MB | 2M x 64 | W72M64V-XBX | 90-150 | 3.3 | 159 PBGA | 13mm x 22mm | C, I, M |
| Page Mode | | | | | | | |
| 32MB | 8M x 32 | W78M32VP-XBX | 110, 120 | 3.3 | 159 PBGA | 13mm x 22mm | C, I, M |
| 64MB | 8M x 64 | W78M64VP-XSBX | 110, 120 | 3.3 | 159 PBGA | 13mm x 22mm | C, I, M |
| 256MB | 64M x 32 | W764M32V-XSBX | 100, 120 | 3.3 | 107 PBGA | 14mm x 17mm | C, I, M |

(f) Preliminary product. This product is developmental, is not fully characterized or qualified and is subject to change without notice. Check with factory for availability.

* Advanced product. This product is developmental, is not qualified and is subject to change or cancellation without notice.



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Extended Temperature Plastics — Memories (continued)

SSRAM MCPs

| Size | Organization | Part Number | Speed (MHz) | Voltage (V) | Package | Dimensions | Temperature |
|------|---------------|------------------|-------------|-------------|----------|-------------|-------------|
| 2MB | 512K x 32 | WED2DL32512V-XBX | 133-200 | 3.3 | 119 PBGA | 14mm x 17mm | C, I, M |
| 2MB | 256K x 72 | WEDPY256K72V-XBX | 100-200 | 3.3 | 159 PBGA | 14mm x 22mm | C, I, M |
| 4MB | 512K x 72 NBL | WEDPZ512K72V-XBX | 100-150 | 3.3 | 152 PBGA | 17mm x 23mm | C, I, M |
| 4MB | 512K x 72 NBL | WEDPZ512K72S-XBX | 100-150 | 2.5 | 152 PBGA | 17mm x 23mm | C, I, M |

Embedded Flash — SLC NAND

SLC NAND SSD BGA

| Size | Interface | Part Number | Max Speed (Read/Write) | Voltage (V) | Package | Dimensions | Temperature |
|------|-----------|----------------------------|------------------------|-------------|----------|-------------|-------------|
| 1GB | PATA | W7N512M16VHxxBI | 45MB/s / 30MB/s | 3.3 | 224 PBGA | 27mm x 22mm | C, I |
| 2GB | PATA | W7N1G16VHxxBI | 45MB/s / 30MB/s | 3.3 | 224 PBGA | 27mm x 22mm | C, I |
| 4GB | PATA | W7N2G16VHxxBI | 45MB/s / 30MB/s | 3.3 | 224 PBGA | 27mm x 22mm | C, I |
| 8GB | PATA | W7N4G16VHxxBI ^f | 45MB/s / 30MB/s | 3.3 | 224 PBGA | 27mm x 22mm | C, I |
| 16GB | PATA | W7N8G16VHxxBI ^f | 45MB/s / 30MB/s | 3.3 | 224 PBGA | 27mm x 22mm | C, I |

Secure SLC NAND SSD BGA

| Size | Interface | Part Number | Max Speed (Read/Write) | Voltage (V) | Package | Dimensions | Temperature |
|------|-----------|-----------------------------|------------------------|-------------|----------|-------------|-------------|
| 4GB | PATA | W7N2G16VHxxBIS ^f | 45MB/s / 30MB/s | 3.3 | 224 PBGA | 27mm x 22mm | C, I |

^f Preliminary product. This product is developmental, is not fully characterized or qualified and is subject to change without notice. Check with factory for availability.
 * Advanced product. This product is developmental, is not qualified and is subject to change or cancellation without notice.

Ceramics

SRAM • Flash • EEPROM • Mixed Memory MCPs • Hermetic • Mil-PRF • QML

- Multiple organizations of flash, SRAM and EE in various hermetic sealed ceramic packages including 32 CSOJ, 32 CerDIP, 56 CSOP, 68 CQFP, 66 PGA, CBGA. These are standard hermetic products available as Class H or K compliant.
- WEDC ceramic products are available in industrial, military temperatures and as SMD-5962 qualified component

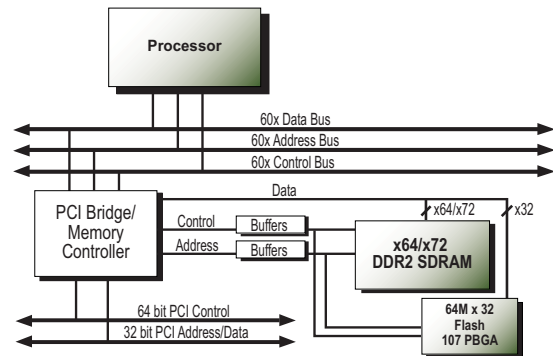
DDR2 SDRAM PBGAs — Typical Application

128M x 64 DDR2 SDRAM
 208 PBGA, 1.8V
 16mm x 22mm
 W3H128M64E-XSBX
 C, I, M

128M x 72 DDR2 SDRAM
 208 PBGA, 1.8V
 16mm x 22mm
 W3H128M72E-XSBX
 C, I, M

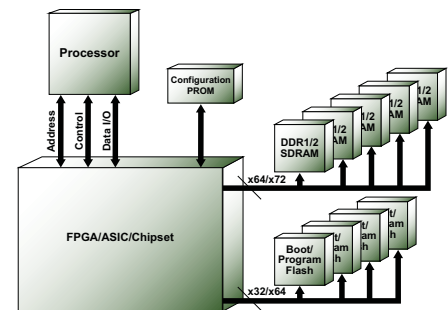
56%
Space
Savings

50%
I/O
Savings



SiP Capabilities and Typical Applications

- Plastic encapsulation or hermetic sealing; laminate or ceramic based packages. QFP, BGA or customer specified packages.
- Complete turnkey assembly; wire bond, flip chip attach, and specialized die processing including redistribution, wafer dicing and die stacking techniques.
- Spice (HSpice), ELDO, EBD and IBIS modeling.
- Environmental and electrical testing: 100% military, industrial or customer defined temperature ranges.
- White Electronic Designs' high reliability products are manufactured and tested in accordance with MIL-PRF-38534 (Class H and K) and MIL-PRF-38535 (Class Q) Certified.
- Anti-tamper
- Circuit card integration



White Electronic Designs (NASDAQ: WEDC) delivers sophisticated multi-chip semiconductor packages, high-efficiency memory devices and build-to-print electromechanical assemblies for defense and aerospace applications. The ability to address the unique size, performance and quality requirements for technology creators in the defense market has established White Electronic Designs as the industry's customer-focused solutions provider. Capabilities include: turn-key design through production; manufacturing and obsolescence management for advanced embedded solutions; test qualification; miniaturization of existing designs; combining RF and digital onto one board; die stacking and information assurance technologies. Headquartered in Phoenix, Arizona, White Electronic Designs operates world-class development and production centers in Arizona and Indiana.



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