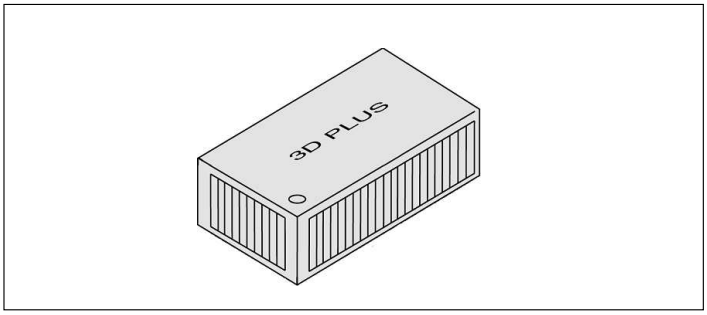
a HEICO company

# MEMORY MODULE
# FLASH Nor 4Mx64-BGA

# Flash Memory MODULE

## 3D FO256M64VB4131

**256Mbit CMOS FLASH Memory organized as 4Mx64, based on 4Mx16**




## Features

- Stack of four 256Mbit CMOS Flash.
- Organized as 4Mx64-bit.
- Single +3.3V ±0.3V power supply.
- High performance : Access time as fast as 70ns.
- Ultra Low Power consumption (typical value).
  - 8mA typical active read current at 1MHz.
  - 40mA typical active read current at 5MHz.
  - 800nA typical standby or automatic sleep mode.
- Simultaneous Read/Write operations.
  - Data can be continously read from one bank while executing erase/program funstions in other bank.
  - Zero latency between read and write operation.
- Fast access time.
  - Access time as fast 70ns
  - Program time : 7ms/word typical utilizing Accelerate function.
- 1.000.000 write cycle guaranteed per sector.
- Minimum 1.000.000 write cycle guarantee by sector.
- 20-years data retention.
- Four independent Chip Enable (#CE1~#CE4 and write Enable (#WE1~#WE4).
- Available Temperature Range :
  0°C to +70°C
  -40°C to +85°C
- Available with screening option for high reliability application (Space, etc...).

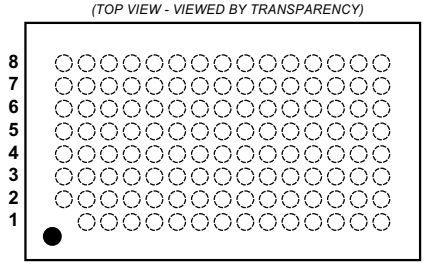
## General description

The 3D FO256M64VB4131 is a 268.435.456-bit high high density non-volatile CMOS FLASH module organized as 4Mx64.
Using high-performance and high reliability CMOS technology die from AMD stacking with well-known 3D-Plus MCM-V technology, this FLASH memory module provides a cost effective solution for low power and high capacity non-volatile memory data storage needs, such as solid-state file storage, voice recording, image file memory for still camera.
Each device of module is a 64Mbit (67.108.864) bit Flash, organised as four fully independent banks, and can be accessed by activating the associated control signals (#CE1~#CE4, #WE1~#WE4). Each device is configured for 16-bit wide data interface, the #Byte selection input is internally connected to VCC.
Organised as 23 sectors in the first bank, and 48 sectors in the second bank for each device, the module provides flexibilly for different applications such as using one bank for application code storage, and the otherone for application data storage.
The 3D FO256M64VB4131 is packaged in a 119 ball BGA.

### Pin Assignment (Top View)

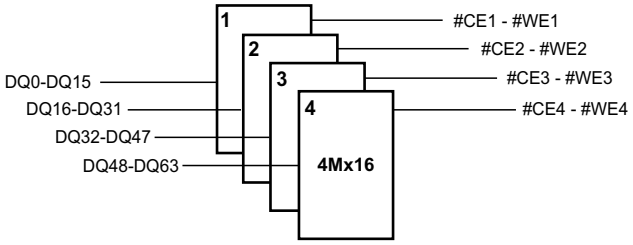
BGA 119 - ( 8x15 - Pitch : 1.27mm)

*(TOP VIEW - VIEWED BY TRANSPARENCY)*




| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| A | NC | A05 | A18 | A21/NC | A19 | A11 | A12 | A14 |
| B | A02 | A04 | A17 | #RESET | A20 | A10 | A15 | #WE3 |
| C | A01 | A03 | A07 | #WE1 | A08 | A13 | #WE2 | DQ58 |
| D | DQ57 | DQ50 | A06 | RY/#BY | A09 | #WE4 | DQ51 | DQ59 |
| E | DQ48 | DQ56 | DQ49 | #WP/AC | DQ61 | DQ53 | DQ52 | DQ60 |
| F | DQ35 | DQ43 | VCC | VCC | VSS | VSS | DQ62 | DQ54 |
| G | DQ34 | DQ42 | VCC | VCC | VSS | VSS | DQ63 | DQ55 |
| H | DQ40 | DQ41 | VCC | VCC | VSS | VSS | DQ44 | DQ36 |
| J | DQ32 | DQ33 | VCC | VCC | VSS | VSS | DQ37 | DQ45 |
| K | DQ19 | DQ27 | VCC | VCC | VSS | VSS | DQ38 | DQ46 |
| L | DQ18 | DQ26 | DQ25 | DQ09 | DQ47 | DQ39 | DQ20 | DQ28 |
| M | DQ24 | DQ17 | DQ26 | DQ02 | DQ12 | DQ21 | DQ29 | DQ22 |
| N | #CE4 | #CE3 | DQ00 | DQ10 | DQ05 | DQ30 | DQ23 | DQ31 |
| P | #CE2 | #CE1 | DQ08 | DQ03 | DQ13 | DQ14 | DQ15 | A16 |
| R | A00 | #OE | DQ01 | DQ11 | DQ04 | DQ06 | DQ17 | NC |

### FUNCTIONAL BLOCK DIAGRAM




*(All other signals are common to the four memories)*

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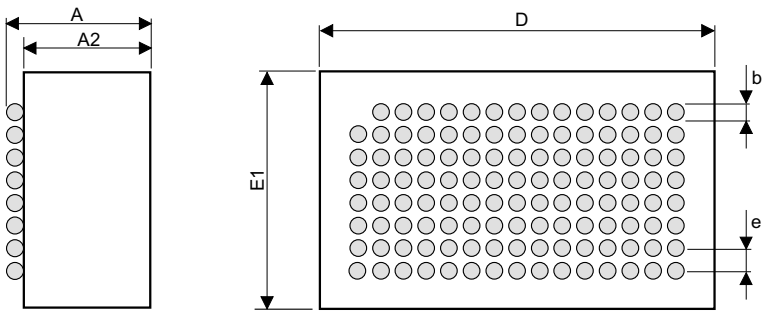
### Mechanical Drawing




| | Min | Max |
|---|---|---|
| A | 7.25 | 7.85 |
| A2 | 6.65 | 7.25 |
| D | 25.80 | 26.20 |
| E1 | 15.80 | 16.20 |
| b | 0.76 | |
| e | 1.27 | |
| Dimensions (mm) | | |

**Max. weight : 4.15 gr.**

### Test Tools

| | | |
|---|---|---|
| 3D FO256M64VB4131 | ENPLAS OTB-676-1.27 | Modified by 3D PLUS |

### DC Operating conditions and characteristics

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Supply voltage | $V_{CC}$ | 3.0 | 3.3 | 4.0 | V |
| Input logic high voltage | $V_{IH}$ | 2.0 | 3.0 | $V_{CC}$+0.3 | V |
| Input logic low voltage | $V_{IL}$ | -0.3 | - | 0.8 | V |
| Output logic high Voltage | $V_{OH}$ | 0.85x$V_{CC}$ | - | - | V |
| Output logic low voltage | $V_{OL}$ | 8.5 | - | 0.45 | V |

### Absolute maximum ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Voltage on any pin relative to VSS | $V_{IN}$, $V_{OUT}$ | -1.0 ~ 4.6 | V |
| Storage temperature | $T_{STG}$ | -65 ~ +150 | °C |
| Power dissipation | $P_D$ | 1 | W |
| Short circuit current | $I_{OS}$ | 50 | mA |

### DC Characteristics

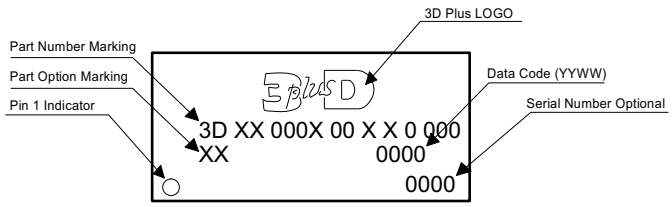
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Operating current (One bank active) | $I_{CCOP}$ | TBD | mA |
| TTL Standby Current | $I_{CCSB}$ | TBD | mA |
| CMOS Stanby Current | $I_{CCSB1}$ | TBD | mA |

**3D FO256M64VB4131** **X X**

Temperature Range
- **C =** (0°C to + 70°C)
- **I =** (-40°C to + 85°C)
- **M =** (-55°C to +125°C)
- **S =** Specific

Quality Level
- **N =** Commercial Grade
- **B =** Industrial Grade
- **S =** Space Grade
- **C =** Custom

**MODULE MARKING**

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