| Date | Version | Description |
|------|---------|-------------|
| 04/16/2020 | 1.0E | Initial version published.QN88, QN88P, MG100P, LQ144P packages supported. |
| 05/14/2020 | 1.1E | MG100PF package added. |
| 06/11/2020 | 1.2E | The pin description of GCLKC_[x] modified.<br>GW1NR-9C corrected to GW1NR-9. |
| 07/28/2020 | 1.3E | MG100PD package added. |
| 09/21/2020 | 1.4E | MG100PA, MG100PT, MG100PS packages added.<br>MG100PD package removed. |
| 08/12/2021 | 1.5E | Recommended operating conditions updated. |
| 10/29/2021 | 1.6E | The pin location of A6,A7 in MG100PA package modified.<br>Pin definitions updated. |

| Pin Name | I/O | Description |
|---|---|---|
| **User I/O** | | |
| IO[End][Row/Column Number][A/B] | I/O | [End] indicates the pin location, including L(left), R(right), B(bottom), and T(top). |
| | | [Row/Column Number] indicates the pin row/column number. If [End] is T(top) or B(bottom), the pin indicates the column number of the corresponding CFU. If [End] is L(left) or R(right), the pin indicates the row number of the corresponding CFU. |
| | | [A/B] indicates differential signal pair information. |
| **Multi-Function Pins** | | |
| IO [End][Row/Column Number][A/B]/MMM | | /MMM represents one or more of the other functions in addition to being general purpose user I/O. When these functions are not in use, these pins can be used as user I/O. |
| D0 | I/O | Data port D0 in CPU mode |
| D1 | I/O | Data port D1 in CPU mode |
| D2 | I/O | Data port D2 in CPU mode |
| D3 | I/O | Data port D3 in CPU mode |
| D4 | I/O | Data port D4 in CPU mode |
| D5 | I/O | Data port D5 in CPU mode |
| D6 | I/O | Data port D6 in CPU mode |
| D7 | I/O | Data port D7 in CPU mode |
| WE_N | I | Select data input/output of D[7:0] in CPU mode.0: Write;1: Read. |
| DOUT | O | Data output in SERIAL mode |
| DIN | I, internal weak pull-up | Data input in SERIAL mode |
| TMS | I, internal weak pull-up | Serial mode input in JTAG mode |
| TCK | I | Serial clock input in JTAG mode |
| TDO | O | Serial data output in JTAG mode |
| TDI | I, internal weak pull-up | Serial data input in JTAG mode |
| JTAGSEL_N | I, internal weak pull-up | Reconfigure JTAG download function signal |
| RECONFIG_N | I | Global reset GowinCONFIG logic signal, active low |
| FASTRD_N | I | Access SPI FLASH to select signal. Low, Fast Read mode; High, Read mode. |
| DONE[1] | O | High, the programming configuration has been completed successfully; Low, the programming configuration has not been completed or failed. |
| | I | When the DONE signal is low, delay the chip to activate. Activate the chip until the DONE signal is high. |
| READY[1] | I/O | High, the device can be programmed and configured currently; Low, the device cannot be programmed and configured currently. |
| MI | O | MI in MSPI mode |

| Pin Name | I/O | Description |
|---|---|---|
| MO | I | MO in MSPI mode |
| MCS_N | O | Enable signal MCS_N in MSPI mode, active-low |
| MCLK | O | Clock output MCLK in MSPI mode, with default frequency of 2.5Mhz |
| SCLK | I | Clock input in SSPI, SERIAL, and CPU modes |
| SO | O | SO in SSPI mode |
| SI | I/O | SI in SSPI mode |
| SSPI_CS_N | I/O | Enable signal SSPI_CS_N in SSPI mode, active-low, and internal weak pull-up |
| CLKHOLD_N | I, internal weak pull-up | High, the operation is efficient in SSPI mode or CPU mode;<br>Low, the operation is inefficient in SSPI mode or CPU mode. |
| GCLKC_[x] | I | Differential input pin of GCLKT_[x], C(Comp), [x]: global clock No.[2] |
| GCLKT_[x] | I | Global clock input pin, T(True), [x]: global clock No. |
| LPLL_C_fb/RPLL_C_fb | I | Left/Right PLL feedback input pin, C(Comp) |
| LPLL_T_fb/RPLL_T_fb | I | Left/Right PLL feedback input pin, T(True) |
| LPLL_C_in/RPLL_C_in | I | Left/Right PLL clock input pin, C(Comp) |
| LPLL_T_in/RPLL_T_in | I | Left/Right PLL clock input pin, T(True) |
| MODE2 | I, internal weak pull-up | Selection signal port in GowinCONFIG mode<br>If this pin is not bonded, it's internally grounded. |
| MODE1 | I, internal weak pull-up | Selection signal port in GowinCONFIG mode<br>If this pin is not bonded, it's internally grounded. |
| MODE0 | I, internal weak pull-up | Selection signal port in GowinCONFIG mode<br>If this pin is not bonded, it's internally grounded. |
| **Other Pins** | | |
| NC | NA | Reserved |
| VSS | NA | Ground |
| VCC | NA | Power supply pin of core voltage |
| VCCO# | NA | Power supply pin of I/O voltage for I/O BANK# |
| VCCX | NA | Power supply pin of auxiliary voltage |

**Note!**
[1] Ready and Done can not be driven to low before and during configuration.
[2] When the input is single-ended, GCLKC_[x] pin is not a global clock pin.
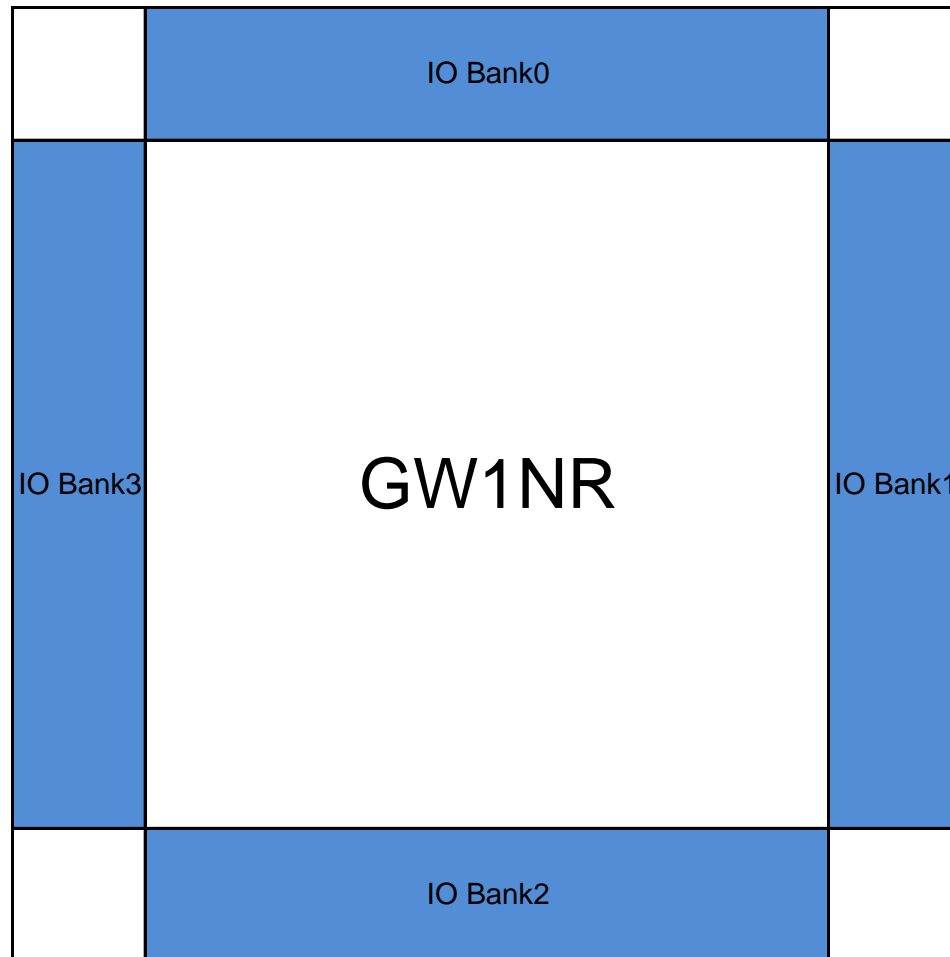
**Note!**

[1] Each Bank has independent reference voltage (VREF);

[2] You can select to use IOB internal VREF (equals to 0.5 X VCCO);

[3] You can also select to use external VREF input (use any IO pins as external VREF input).

| Note! |
|---|
| [1] SDRAM embedded |
| [2] PSRAM embedded |

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IOB10A | I/O | 2 | | True_of_IOB10B | NONE | NONE | | | | | | | | |
| IOB10B | I/O | 2 | | Comp_of_IOB10A | NONE | NONE | | | | | | | | |
| IOB11A | I/O | 2 | | True_of_IOB11B | TRUE | x16 | 27 | 27 | J3 | J3 | 42 | J3 | J3 | J3 |
| IOB11B | I/O | 2 | | Comp_of_IOB11A | TRUE | NONE | 28 | 28 | H3 | H3 | 43 | H3 | H3 | H3 |
| IOB12A | I/O | 2 | | True_of_IOB12B | NONE | NONE | | | | | 44 | | | |
| IOB12B | I/O | 2 | | Comp_of_IOB12A | NONE | NONE | | | | | 45 | | | |
| IOB13A | I/O | 2 | | True_of_IOB13B | TRUE | x16 | 29 | 29 | E4 | E4 | 46 | E4 | E4 | E4 |
| IOB13B | I/O | 2 | | Comp_of_IOB13A | TRUE | NONE | 30 | 30 | F4 | F4 | 47 | F4 | F4 | F4 |
| IOB14A | I/O | 2 | | True_of_IOB14B | NONE | NONE | | | | | | | | |
| IOB14B | I/O | 2 | | Comp_of_IOB14A | NONE | NONE | | | | | | | | |
| IOB15A | I/O | 2 | | True_of_IOB15B | TRUE | x16 | 31 | 31 | K3 | K3 | 48 | K3 | K3 | K3 |
| IOB15B | I/O | 2 | | Comp_of_IOB15A | TRUE | NONE | 32 | 32 | K4 | K4 | 49 | K4 | K4 | K4 |
| IOB16A | I/O | 2 | | True_of_IOB16B | NONE | NONE | | | | | | | | |
| IOB16B | I/O | 2 | | Comp_of_IOB16A | NONE | NONE | | | | | | | | |
| IOB17A | I/O | 2 | | True_of_IOB17B | TRUE | x16 | | | J4 | J4 | 50 | J4 | J4 | J4 |
| IOB17B | I/O | 2 | | Comp_of_IOB17A | TRUE | NONE | | | H4 | H4 | 51 | H4 | H4 | H4 |
| IOB18A | I/O | 2 | | True_of_IOB18B | NONE | NONE | | | | | | | | |
| IOB18B | I/O | 2 | | Comp_of_IOB18A | NONE | NONE | | | | | | | | |
| IOB19A | I/O | 2 | | True_of_IOB19B | NONE | NONE | | | | | | | | |
| IOB19B | I/O | 2 | | Comp_of_IOB19A | NONE | NONE | | | | | | | | |
| IOB20A | I/O | 2 | | True_of_IOB20B | NONE | NONE | | | | | | | | |
| IOB20B | I/O | 2 | | Comp_of_IOB20A | NONE | NONE | | | | | | | | |
| IOB21A | I/O | 2 | | True_of_IOB21B | TRUE | x16 | | | K5 | K5 | | K5 | K5 | K5 |
| IOB21B | I/O | 2 | | Comp_of_IOB21A | TRUE | NONE | | | K6 | K6 | | K6 | K6 | K6 |
| IOB22A | I/O | 2 | | True_of_IOB22B | NONE | NONE | | | | | | | | |
| IOB22B | I/O | 2 | | Comp_of_IOB22A | NONE | NONE | | | | | | | | |
| IOB23A | I/O | 2 | | True_of_IOB23B | TRUE | x16 | 33 | 33 | H5 | H5 | 52 | H5 | H5 | H5 |
| IOB23B | I/O | 2 | | Comp_of_IOB23A | TRUE | NONE | 34 | 34 | G5 | G5 | 54 | G5 | G5 | G5 |
| IOB24A | I/O | 2 | | True_of_IOB24B | NONE | NONE | | | | | | | | |
| IOB24B | I/O | 2 | | Comp_of_IOB24A | NONE | NONE | | | | | | | | |
| IOB25A | I/O | 2 | | True_of_IOB25B | TRUE | x16 | | | | | | | | |
| IOB25B | I/O | 2 | | Comp_of_IOB25A | TRUE | NONE | | | | | | | | |
| IOB26A | I/O | 2 | | True_of_IOB26B | NONE | NONE | | | | | | | | |
| IOB26B | I/O | 2 | | Comp_of_IOB26A | NONE | NONE | | | | | | | | |
| IOB27A | I/O | 2 | | True_of_IOB27B | TRUE | x16 | | | | | | | | |
| IOB27B | I/O | 2 | | Comp_of_IOB27A | TRUE | NONE | | | | | | | | |
| IOB28A/GCLKT_5 | I/O | 2 | GCLKT_5 | True_of_IOB28B | NONE | NONE | | | F5 | F5 | 56 | F5 | F5 | F5 |
| IOB28B/GCLKC_5 | I/O | 2 | GCLKC_5 | Comp_of_IOB28A | NONE | NONE | | | E5 | E5 | 57 | E5 | E5 | E5 |
| IOB29A/GCLKT_4 | I/O | 2 | GCLKT_4 | True_of_IOB29B | TRUE | x16 | 35 | 35 | J6 | J6 | 58 | J6 | J6 | J6 |
| IOB29B/GCLKC_4 | I/O | 2 | GCLKC_4 | Comp_of_IOB29A | TRUE | NONE | 36 | 36 | H6 | H6 | 59 | H6 | H6 | H6 |
| IOB2A | I/O | 2 | | True_of_IOB2B | TRUE | x16 | 17 | 17 | | | | | | |
| IOB2B | I/O | 2 | | Comp_of_IOB2A | TRUE | NONE | 18 | 18 | | | | | | |
| IOB30A | I/O | 2 | | True_of_IOB30B | NONE | NONE | | | | | 60 | | | |
| IOB30B | I/O | 2 | | Comp_of_IOB30A | NONE | NONE | | | | | 61 | | | |

**Note!**
[1] SDRAM embedded
[2] PSRAM embedded

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IOB31A | I/O | 2 | | True_of_IOB31B | TRUE | x16 | 37 | 37 | K7 | K7 | 62 | K7 | K7 | K7 |
| IOB31B | I/O | 2 | | Comp_of_IOB31A | TRUE | NONE | 38 | 38 | K8 | K8 | 63 | K8 | K8 | K8 |
| IOB32A | I/O | 2 | | True_of_IOB32B | NONE | NONE | | | | | | | | |
| IOB32B | I/O | 2 | | Comp_of_IOB32A | NONE | NONE | | | | | | | | |
| IOB33A | I/O | 2 | | True_of_IOB33B | TRUE | x16 | 39 | 39 | J7 | J7 | 64 | J7 | J7 | J7 |
| IOB33B | I/O | 2 | | Comp_of_IOB33A | TRUE | NONE | 40 | 40 | H7 | H7 | 65 | H7 | H7 | H7 |
| IOB34A | I/O | 2 | | True_of_IOB34B | NONE | NONE | | | | | | | | |
| IOB34B | I/O | 2 | | Comp_of_IOB34A | NONE | NONE | | | | | | | | |
| IOB35A | I/O | 2 | | True_of_IOB35B | TRUE | x16 | | | F6 | F6 | 66 | F6 | F6 | F6 |
| IOB35B | I/O | 2 | | Comp_of_IOB35A | TRUE | NONE | | | G6 | G6 | 67 | G6 | G6 | G6 |
| IOB36A | I/O | 2 | | True_of_IOB36B | NONE | NONE | | | | | | | | |
| IOB36B | I/O | 2 | | Comp_of_IOB36A | NONE | NONE | | | | | | | | |
| IOB37A | I/O | 2 | | True_of_IOB37B | NONE | NONE | | | | | 68 | | | |
| IOB37B | I/O | 2 | | Comp_of_IOB37A | NONE | NONE | | | | | 69 | | | |
| IOB38A | I/O | 2 | | True_of_IOB38B | NONE | NONE | | | | | | | | |
| IOB38B | I/O | 2 | | Comp_of_IOB38A | NONE | NONE | | | | | | | | |
| IOB39A | I/O | 2 | | True_of_IOB39B | TRUE | x16 | | | F7 | F7 | 70 | F7 | F7 | F7 |
| IOB39B | I/O | 2 | | Comp_of_IOB39A | TRUE | NONE | | | G7 | G7 | 71 | G7 | G7 | G7 |
| IOB3A | I/O | 2 | | True_of_IOB3B | NONE | NONE | | | | | | | | |
| IOB3B | I/O | 2 | | Comp_of_IOB3A | NONE | NONE | | | H1 | H1 | | H1 | H1 | H1 |
| IOB40A | I/O | 2 | | True_of_IOB40B | NONE | NONE | | | | | | | | |
| IOB40B | I/O | 2 | | Comp_of_IOB40A | NONE | NONE | | | | | | | | |
| IOB41A | I/O | 2 | | True_of_IOB41B | TRUE | x16 | 41 | 41 | K10 | K10 | 72 | K10 | K10 | K10 |
| IOB41B | I/O | 2 | | Comp_of_IOB41A | TRUE | NONE | 42 | 42 | K9 | K9 | | K9 | K9 | K9 |
| IOB42A | I/O | 2 | | True_of_IOB42B | NONE | NONE | | | | | | | | |
| IOB42B | I/O | 2 | | Comp_of_IOB42A | NONE | NONE | | | | | 75 | | | |
| IOB43A | I/O | 2 | | True_of_IOB43B | TRUE | x16 | | | J10 | J10 | 78 | J10 | J10 | J10 |
| IOB43B | I/O | 2 | | Comp_of_IOB43A | TRUE | NONE | 47 | 47 | | | 76 | | | |
| IOB44A | I/O | 2 | | True_of_IOB44B | NONE | NONE | | | | | | | | |
| IOB44B | I/O | 2 | | Comp_of_IOB44A | NONE | NONE | | | | | | | | |
| IOB45A | I/O | 2 | | True_of_IOB45B | TRUE | x16 | | | | | | | | |
| IOB45B | I/O | 2 | | Comp_of_IOB45A | TRUE | NONE | | | | | | | | |
| IOB46A | I/O | 2 | | True_of_IOB46B | NONE | NONE | | | | | | | | |
| IOB46B | I/O | 2 | | Comp_of_IOB46A | NONE | NONE | | | | | | | | |
| IOB4A | I/O | 2 | | True_of_IOB4B | TRUE | x16 | 19 | 19 | K1 | K1 | 29 | K1 | K1 | K1 |
| IOB4B | I/O | 2 | | Comp_of_IOB4A | TRUE | NONE | 20 | 20 | K2 | K2 | 30 | K2 | K2 | K2 |
| IOB5A | I/O | 2 | | True_of_IOB5B | NONE | NONE | | | | | | | | |
| IOB5B | I/O | 2 | | Comp_of_IOB5A | NONE | NONE | | | | | | | | |
| IOB6A | I/O | 2 | | True_of_IOB6B | TRUE | x16 | | | | | 32 | | | |
| IOB6B | I/O | 2 | | Comp_of_IOB6A | TRUE | NONE | | | | | 34 | | | |
| IOB7A | I/O | 2 | | True_of_IOB7B | NONE | NONE | | | | | | | | |
| IOB7B | I/O | 2 | | Comp_of_IOB7A | NONE | NONE | | | | | | | | |
| IOB8A | I/O | 2 | | True_of_IOB8B | TRUE | x16 | 25 | 25 | G4 | G4 | 38 | G4 | G4 | G4 |
| IOB8B | I/O | 2 | | Comp_of_IOB8A | TRUE | NONE | 26 | 26 | G3 | G3 | 39 | G3 | G3 | G3 |

**Note!**
[1] SDRAM embedded
[2] PSRAM embedded

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IOB9A | I/O | 2 | | True_of_IOB9B | NONE | NONE | | | | | 40 | | | |
| IOB9B | I/O | 2 | | Comp_of_IOB9A | NONE | NONE | | | | | 41 | | | |
| IOL11A/TMS | I/O | 3 | TMS | True_of_IOL11B | TRUE | NONE | 5 | 5 | E2 | E2 | 13 | E2 | E2 | E2 |
| IOL11B/TCK | I/O | 3 | TCK | Comp_of_IOL11A | TRUE | NONE | 6 | 6 | E3 | E3 | 14 | E3 | E3 | E3 |
| IOL12A/SCLK | I/O | 3 | SCLK | True_of_IOL12B | NONE | NONE | | | | | 15 | | | |
| IOL12B/TDI | I/O | 3 | TDI | Comp_of_IOL12A | NONE | NONE | 7 | 7 | F3 | F3 | 16 | F3 | F3 | F3 |
| IOL13A/TDO | I/O | 3 | TDO | True_of_IOL13B | TRUE | NONE | 8 | 8 | F2 | F2 | 18 | F2 | F2 | F2 |
| IOL13B/RECONFIG_N | I/O | 3 | RECONFIG_N | Comp_of_IOL13A | TRUE | NONE | 9 | 9 | D3 | D3 | 20 | D3 | D3 | D3 |
| IOL14A/DONE | I/O | 3 | DONE | True_of_IOL14B | NONE | NONE | 10 | | | | 21 | | | |
| IOL14B/READY | I/O | 3 | READY | Comp_of_IOL14A | NONE | NONE | | | D1 | D1 | 22 | D1 | D1 | D1 |
| IOL15A/GCLKT_6 | I/O | 3 | GCLKT_6 | True_of_IOL15B | TRUE | NONE | 11 | 10 | | | | | | |
| IOL15B/GCLKC_6 | I/O | 3 | GCLKC_6 | Comp_of_IOL15A | TRUE | NONE | | | F1 | | 23 | | F1 | |
| IOL16A | I/O | 3 | | True_of_IOL16B | NONE | NONE | | | | | | | | |
| IOL16B | I/O | 3 | | Comp_of_IOL16A | NONE | NONE | | 11 | D2 | | 24 | | D2 | |
| IOL17A | I/O | 3 | | True_of_IOL17B | TRUE | NONE | | | | | | | | |
| IOL17B | I/O | 3 | | Comp_of_IOL17A | TRUE | NONE | | | | | | | | |
| IOL18A | I/O | 3 | | True_of_IOL18B | NONE | NONE | | | F1 | | | F1 | | F1 |
| IOL18B | I/O | 3 | | Comp_of_IOL18A | NONE | NONE | | | D2 | | | D2 | | D2 |
| IOL20A | I/O | 3 | | True_of_IOL20B | TRUE | NONE | | | | | | | | |
| IOL20B | I/O | 3 | | Comp_of_IOL20A | TRUE | NONE | | | | | | | | |
| IOL21A | I/O | 3 | | True_of_IOL21B | NONE | NONE | | | | | | | | |
| IOL21B | I/O | 3 | | Comp_of_IOL21A | NONE | NONE | | 13 | G2 | G2 | 25 | G2 | G2 | G2 |
| IOL22A | I/O | 3 | | True_of_IOL22B | TRUE | NONE | 13 | | | | | | | |
| IOL22B | I/O | 3 | | Comp_of_IOL22A | TRUE | NONE | 14 | 14 | G1 | G1 | 26 | G1 | G1 | G1 |
| IOL23A | I/O | 3 | | True_of_IOL23B | NONE | NONE | | | | | | | | |
| IOL23B | I/O | 3 | | Comp_of_IOL23A | NONE | NONE | | | | | | | | |
| IOL24A | I/O | 3 | | True_of_IOL24B | TRUE | NONE | | | | | | | | |
| IOL24B | I/O | 3 | | Comp_of_IOL24A | TRUE | NONE | | | | | 27 | | | |
| IOL25A | I/O | 3 | | True_of_IOL25B | NONE | NONE | | | | | | | | |
| IOL25B | I/O | 3 | | Comp_of_IOL25A | NONE | NONE | | 15 | H2 | H2 | 28 | H2 | H2 | H2 |
| IOL26A | I/O | 3 | | True_of_IOL26B | TRUE | NONE | 15 | | | | | | | |
| IOL26B | I/O | 3 | | Comp_of_IOL26A | TRUE | NONE | 16 | 16 | | | | | | |
| IOL27A | I/O | 3 | | True_of_IOL27B | NONE | NONE | | | | | | | | |
| IOL27B | I/O | 3 | | Comp_of_IOL27A | NONE | NONE | | | | | | | | |
| IOL2A | I/O | 3 | | True_of_IOL2B | TRUE | NONE | 3 | | | | | | | |
| IOL2B | I/O | 3 | | Comp_of_IOL2A | TRUE | NONE | | | | | | | | |
| IOL3A | I/O | 3 | | True_of_IOL3B | NONE | NONE | | | | | | | | |
| IOL3B | I/O | 3 | | Comp_of_IOL3A | NONE | NONE | | | | | 5 | | | |
| IOL4A | I/O | 3 | | True_of_IOL4B | TRUE | NONE | | | | | | | | |
| IOL4B | I/O | 3 | | Comp_of_IOL4A | TRUE | NONE | | | B2 | B2 | 6 | B2 | B2 | B2 |
| IOL5A/JTAGSEL_N/LPLL_T_in | I/O | 3 | JTAGSEL_N/LPLL_T_in | True_of_IOL5B | NONE | NONE | 4 | 4 | B1 | B1 | 7 | B1 | B1 | B1 |
| IOL5B/LPLL_C_in | I/O | 3 | LPLL_C_in | Comp_of_IOL5A | NONE | NONE | | | B3 | B3 | 8 | B3 | B3 | B3 |
| IOL6A/LPLL_T_fb | I/O | 3 | LPLL_T_fb | True_of_IOL6B | TRUE | NONE | | | | | | | | |

**Note!**
[1] SDRAM embedded
[2] PSRAM embedded

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IOL6B/LPLL_C_fb | I/O | 3 | LPLL_C_fb | Comp_of_IOL6A | TRUE | NONE | | | | | | | | |
| IOL7A | I/O | 3 | | True_of_IOL7B | NONE | NONE | | | | | | | | |
| IOL7B | I/O | 3 | | Comp_of_IOL7A | NONE | NONE | | | C1 | | 10 | | C1 | |
| IOL8A | I/O | 3 | | True_of_IOL8A | TRUE | NONE | | | | | | | | |
| IOL8B | I/O | 3 | | Comp_of_IOL8A | TRUE | NONE | | | C2 | C1 | 11 | C1 | C2 | C1 |
| IOL9A/GCLKT_7 | I/O | 3 | GCLKT_7 | True_of_IOL9B | NONE | NONE | | | | C2 | | C2 | C2 | C2 |
| IOL9B/GCLKC_7 | I/O | 3 | GCLKC_7 | Comp_of_IOL9A | NONE | NONE | | | C3 | C3 | 12 | C3 | C3 | C3 |
| IOR11A/MI/D7 | I/O | 1 | MI/D7 | True_of_IOR11B | TRUE | NONE | 62 | 62 | | | 96 | | | |
| IOR11B/MO/D6 | I/O | 1 | MO/D6 | Comp_of_IOR11A | TRUE | NONE | 61 | 61 | F9 | | 95 | | F9 | |
| IOR12A/MCS_N/D5 | I/O | 1 | MCS_N/D5 | True_of_IOR12B | NONE | NONE | 60 | 60 | | | 94 | | | |
| IOR12B/MCLK/D4 | I/O | 1 | MCLK/D4 | Comp_of_IOR12A | NONE | NONE | 59 | 59 | E10 | E10 | 93 | E10 | E10 | E10 |
| IOR13A/FASTRD_N/D3 | I/O | 1 | FASTRD_N /D3 | True_of_IOR13B | TRUE | NONE | 57 | 57 | | | 92 | | | |
| IOR13B/SI/D2 | I/O | 1 | SI/D2 | Comp_of_IOR13A | TRUE | NONE | | | | | 90 | | | |
| IOR14A/SO/D1 | I/O | 1 | SO/D1 | True_of_IOR14B | NONE | NONE | 56 | 56 | | | 88 | | | |
| IOR14B/SSPI_CS_N/D0 | I/O | 1 | SSPI_CS_N/D0 | Comp_of_IOR14A | NONE | NONE | 55 | 55 | G9 | G9 | 87 | G9 | G9 | G9 |
| IOR15A/DIN/CLKHOLD_N | I/O | 1 | DIN/CLKHOLD_N | True_of_IOR15B | TRUE | NONE | 54 | 54 | | | 86 | | | |
| IOR15B/DOUT/WE_N | I/O | 1 | DOUT/WE_N | Comp_of_IOR15A | TRUE | NONE | 53 | 53 | | | 85 | | | |
| IOR16A | I/O | 1 | | True_of_IOR16B | NONE | NONE | | | | | | | | |
| IOR16B | I/O | 1 | | Comp_of_IOR16A | NONE | NONE | | | F10 | F10 | 84 | F10 | F10 | F10 |
| IOR17A/GCLKT_3 | I/O | 1 | GCLKT_3 | True_of_IOR17B | TRUE | NONE | 52 | 52 | F8 | F8 | | F8 | F8 | F8 |
| IOR17B/GCLKC_3 | I/O | 1 | GCLKC_3 | Comp_of_IOR17A | TRUE | NONE | 51 | 51 | G8 | G8 | 83 | G8 | G8 | G8 |
| IOR18A | I/O | 1 | | True_of_IOR18B | NONE | NONE | | | | | | | | |
| IOR18B | I/O | 1 | | Comp_of_IOR18A | NONE | NONE | | | H8 | H8 | | H8 | H8 | H8 |
| IOR20A | I/O | 1 | | True_of_IOR20B | TRUE | NONE | | | | | | | | |
| IOR20B | I/O | 1 | | Comp_of_IOR20A | TRUE | NONE | | | | | | | | |
| IOR21A | I/O | 1 | | True_of_IOR21B | NONE | NONE | | | | | | | | |
| IOR21B | I/O | 1 | | Comp_of_IOR21A | NONE | NONE | | | G10 | G10 | 82 | G10 | G10 | G10 |
| IOR22A | I/O | 1 | | True_of_IOR22B | TRUE | NONE | | | | | | | | |
| IOR22B | I/O | 1 | | Comp_of_IOR22A | TRUE | NONE | 50 | 50 | | | 81 | | | |
| IOR23A | I/O | 1 | | True_of_IOR23B | NONE | NONE | | | | | | | | |
| IOR23B | I/O | 1 | | Comp_of_IOR23A | NONE | NONE | | | | | 80 | | | |
| IOR24A | I/O | 1 | | True_of_IOR24B | TRUE | NONE | 49 | 49 | | | | | | |
| IOR24B | I/O | 1 | | Comp_of_IOR24A | TRUE | NONE | 48 | 48 | H9 | H9 | 79 | H9 | H9 | H9 |
| IOR25A | I/O | 1 | | True_of_IOR25B | NONE | NONE | | | | | | | | |
| IOR25B | I/O | 1 | | Comp_of_IOR25A | NONE | NONE | | | H10 | H10 | | H10 | H10 | H10 |
| IOR26A | I/O | 1 | | True_of_IOR26B | TRUE | NONE | | | | | | | | |
| IOR26B | I/O | 1 | | Comp_of_IOR26A | TRUE | NONE | | | | | | | | |
| IOR27A | I/O | 1 | | True_of_IOR27B | NONE | NONE | | | | | | | | |
| IOR27B | I/O | 1 | | Comp_of_IOR27A | NONE | NONE | | | | | | | | |
| IOR2A | I/O | 1 | | True_of_IOR2B | TRUE | NONE | | | | | | | | |
| IOR2B | I/O | 1 | | Comp_of_IOR2A | TRUE | NONE | | | C10 | C10 | | C10 | C10 | C10 |
| IOR3A | I/O | 1 | | True_of_IOR3B | NONE | NONE | | | | | | | | |
| IOR3B | I/O | 1 | | Comp_of_IOR3A | NONE | NONE | | | B10 | B10 | | B10 | B10 | B10 |
| IOR4A | I/O | 1 | | True_of_IOR4B | TRUE | NONE | | | | | | | | |

**Note!**
[1] SDRAM embedded
[2] PSRAM embedded

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IOR4B | I/O | 1 | | Comp_of_IOR4A | TRUE | NONE | | | | | | | | |
| IOR5A/RPLL_T_in | I/O | 1 | RPLL_T_in | True_of_IOR5B | NONE | NONE | 63 | 63 | C9 | C9 | 106 | C9 | C9 | C9 |
| IOR5B/RPLL_C_in | I/O | 1 | RPLL_C_in | Comp_of_IOR5A | NONE | NONE | | | D9 | D9 | 104 | D9 | D9 | D9 |
| IOR6A/RPLL_T_fb | I/O | 1 | RPLL_T_fb | True_of_IOR6B | TRUE | NONE | | | | | 102 | | | |
| IOR6B/RPLL_C_fb | I/O | 1 | RPLL_C_fb | Comp_of_IOR6A | TRUE | NONE | | | | | 101 | | | |
| IOR7A | I/O | 1 | | True_of_IOR7B | NONE | NONE | | | | | | | | |
| IOR7B | I/O | 1 | | Comp_of_IOR7A | NONE | NONE | | | D10 | D10 | 100 | D10 | D10 | D10 |
| IOR8A | I/O | 1 | | True_of_IOR8B | TRUE | NONE | | | | | | | | |
| IOR8B | I/O | 1 | | Comp_of_IOR8A | TRUE | NONE | | | | | 99 | | | |
| IOR9A/GCLKT_2 | I/O | 1 | GCLKT_2 | True_of_IOR9B | NONE | NONE | | | E8 | E8 | 98 | E8 | E8 | E8 |
| IOR9B/GCLKC_2 | I/O | 1 | GCLKC_2 | Comp_of_IOR9A | NONE | NONE | | | | F9 | 97 | F9 | | F9 |
| IOT10A | I/O | 3 | | True_of_IOT10B | NONE | NONE | 84 | 84 | | | 140 | | | |
| IOT10B | I/O | 3 | | Comp_of_IOT10A | NONE | NONE | 83 | 83 | | | 139 | | | |
| IOT11A | I/O | 3 | | True_of_IOT11B | NONE | x16 | 82 | 82 | C4 | C4 | | C4 | C4 | C4 |
| IOT11B | I/O | 3 | | Comp_of_IOT11A | NONE | NONE | 81 | 81 | B4 | B4 | | B4 | B4 | B4 |
| IOT12A | I/O | 3 | | True_of_IOT12B | NONE | NONE | 80 | 80 | | | 138 | | | |
| IOT12B | I/O | 3 | | Comp_of_IOT12A | NONE | NONE | 79 | 79 | | | 137 | | | |
| IOT13A | I/O | 0 | | True_of_IOT13B | NONE | x16 | | | D5 | D5 | | D5 | D5 | D5 |
| IOT13B | I/O | 0 | | Comp_of_IOT13A | NONE | NONE | | | D6 | D6 | | D6 | D6 | D6 |
| IOT14A | I/O | 0 | | True_of_IOT14B | NONE | NONE | | | | | | | | |
| IOT14B | I/O | 0 | | Comp_of_IOT14A | NONE | NONE | | | | | | | | |
| IOT15A | I/O | 0 | | True_of_IOT15B | NONE | x16 | | | | | 136 | | | |
| IOT15B | I/O | 0 | | Comp_of_IOT15A | NONE | NONE | | | | | 135 | | | |
| IOT16A | I/O | 0 | | True_of_IOT16B | NONE | NONE | | | | | | | | |
| IOT16B | I/O | 0 | | Comp_of_IOT16A | NONE | NONE | | | | | | | | |
| IOT17A | I/O | 0 | | True_of_IOT17B | NONE | x16 | | | C5 | C5 | 134 | C5 | C5 | C5 |
| IOT17B | I/O | 0 | | Comp_of_IOT17A | NONE | NONE | | | B5 | B5 | 133 | B5 | B5 | B5 |
| IOT18A | I/O | 0 | | True_of_IOT18B | NONE | NONE | | | | | | | | |
| IOT18B | I/O | 0 | | Comp_of_IOT18A | NONE | NONE | | | | | | | | |
| IOT19A | I/O | 0 | | True_of_IOT19B | NONE | NONE | | | | | | | | |
| IOT19B | I/O | 0 | | Comp_of_IOT19A | NONE | NONE | | | | | | | | |
| IOT20A | I/O | 0 | | True_of_IOT20B | NONE | NONE | | | | | 132 | | | |
| IOT20B | I/O | 0 | | Comp_of_IOT20A | NONE | NONE | | | | | 131 | | | |
| IOT21A | I/O | 0 | | True_of_IOT21B | NONE | x16 | | | C6 | C6 | | C6 | C6 | C6 |
| IOT21B | I/O | 0 | | Comp_of_IOT21A | NONE | NONE | | | B6 | B6 | | B6 | B6 | B6 |
| IOT22A | I/O | 0 | | True_of_IOT22B | NONE | NONE | | | | | 130 | | | |
| IOT22B | I/O | 0 | | Comp_of_IOT22A | NONE | NONE | | | | | 129 | | | |
| IOT23A | I/O | 0 | | True_of_IOT23B | NONE | x16 | | | | | | | | |
| IOT23B | I/O | 0 | | Comp_of_IOT23A | NONE | NONE | | | | | | | | |
| IOT24A | I/O | 0 | | True_of_IOT24B | NONE | NONE | | | | | 128 | | | |
| IOT24B | I/O | 0 | | Comp_of_IOT24A | NONE | NONE | | | | | 126 | | | |
| IOT25A | I/O | 0 | | True_of_IOT25B | NONE | x16 | | | | | | | | |
| IOT25B | I/O | 0 | | Comp_of_IOT25A | NONE | NONE | | | | | | | | |
| IOT26A | I/O | 0 | | True_of_IOT26B | NONE | NONE | | | | | | | | |

**Note!**
[1] SDRAM embedded
[2] PSRAM embedded

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IOT26B | I/O | 0 | | Comp_of_IOT26A | NONE | NONE | | | | | | | | |
| IOT27A | I/O | 0 | | True_of_IOT27B | NONE | x16 | | | A6 | | 125 | | A6 | |
| IOT27B | I/O | 0 | | Comp_of_IOT27A | NONE | NONE | | | A7 | | 124 | | A7 | |
| IOT28A/GCLKT_0 | I/O | 0 | GCLKT_0 | True_of_IOT28B | NONE | NONE | | | | A6 | | A6 | | A6 |
| IOT28B/GCLKC_0 | I/O | 0 | GCLKC_0 | Comp_of_IOT28A | NONE | NONE | | | | A7 | | A7 | | A7 |
| IOT29A/GCLKT_1 | I/O | 0 | GCLKT_1 | True_of_IOT29B | NONE | x16 | | | E6 | E6 | 123 | E6 | E6 | E6 |
| IOT29B/GCLKC_1 | I/O | 0 | GCLKC_1 | Comp_of_IOT29A | NONE | NONE | | | E7 | E7 | 122 | E7 | E7 | E7 |
| IOT2A | I/O | 3 | | True_of_IOT2B | NONE | x16 | | 3 | | | 3 | | | |
| IOT2B | I/O | 3 | | Comp_of_IOT2A | NONE | NONE | | | | | 4 | | | |
| IOT30A | I/O | 0 | | True_of_IOT30B | NONE | NONE | | | | | | | | |
| IOT30B | I/O | 0 | | Comp_of_IOT30A | NONE | NONE | | | | | | | | |
| IOT31A | I/O | 0 | | True_of_IOT31B | NONE | x16 | | | | | | | | |
| IOT31B | I/O | 0 | | Comp_of_IOT31A | NONE | NONE | | | | | | | | |
| IOT32A | I/O | 0 | | True_of_IOT32B | NONE | NONE | | | | | 121 | | | |
| IOT32B | I/O | 0 | | Comp_of_IOT32A | NONE | NONE | | | | | 120 | | | |
| IOT33A | I/O | 0 | | True_of_IOT33B | NONE | x16 | | | C7 | C7 | | C7 | C7 | C7 |
| IOT33B | I/O | 0 | | Comp_of_IOT33A | NONE | NONE | | | B7 | B7 | | B7 | B7 | B7 |
| IOT34A | I/O | 0 | | True_of_IOT34B | NONE | NONE | | | | | 119 | | | |
| IOT34B | I/O | 0 | | Comp_of_IOT34A | NONE | NONE | | | | | 118 | | | |
| IOT35A | I/O | 0 | | True_of_IOT35B | NONE | x16 | | | | | | | | |
| IOT35B | I/O | 0 | | Comp_of_IOT35A | NONE | NONE | | | | | | | | |
| IOT36A | I/O | 1 | | True_of_IOT36B | NONE | NONE | | | | | | | | |
| IOT36B | I/O | 1 | | Comp_of_IOT36A | NONE | NONE | | | | | | | | |
| IOT37A | I/O | 1 | | True_of_IOT37B | NONE | NONE | 77 | 77 | | | 117 | | | |
| IOT37B | I/O | 1 | | Comp_of_IOT37A | NONE | NONE | 76 | 76 | | | 116 | | | |
| IOT38A | I/O | 1 | | True_of_IOT38B | NONE | NONE | 75 | 75 | | | | | | |
| IOT38B | I/O | 1 | | Comp_of_IOT38A | NONE | NONE | 74 | 74 | | | | | | |
| IOT39A | I/O | 1 | | True_of_IOT39B | NONE | x16 | 73 | 73 | B8 | B8 | 115 | B8 | B8 | B8 |
| IOT39B | I/O | 1 | | Comp_of_IOT39A | NONE | NONE | 72 | 72 | C8 | C8 | 114 | C8 | C8 | C8 |
| IOT3A | I/O | 3 | | True_of_IOT3B | NONE | NONE | | | | | | | | |
| IOT3B | I/O | 3 | | Comp_of_IOT3A | NONE | NONE | | | | | | | | |
| IOT40A | I/O | 1 | | True_of_IOT40B | NONE | NONE | | | | | | | | |
| IOT40B | I/O | 1 | | Comp_of_IOT40A | NONE | NONE | | | | | | | | |
| IOT41A | I/O | 1 | | True_of_IOT41B | NONE | x16 | 71 | 71 | D7 | D7 | 113 | D7 | D7 | D7 |
| IOT41B | I/O | 1 | | Comp_of_IOT41A | NONE | NONE | 70 | 70 | D8 | D8 | 112 | D8 | D8 | D8 |
| IOT42A | I/O | 1 | | True_of_IOT42B | NONE | NONE | 69 | 69 | | | 111 | | | |
| IOT42B | I/O | 1 | | Comp_of_IOT42A | NONE | NONE | 68 | 68 | | | 110 | | | |
| IOT43A | I/O | 1 | | True_of_IOT43B | NONE | x16 | | | | | | | | |
| IOT43B | I/O | 1 | | Comp_of_IOT43A | NONE | NONE | | | | | | | | |
| IOT44A | I/O | 1 | | True_of_IOT44B | NONE | NONE | | | | | | | | |
| IOT44B | I/O | 1 | | Comp_of_IOT44A | NONE | NONE | | | | | | | | |
| IOT45A | I/O | 1 | | True_of_IOT45B | NONE | x16 | | | B9 | B9 | | B9 | B9 | B9 |
| IOT45B | I/O | 1 | | Comp_of_IOT45A | NONE | NONE | | | A10 | A10 | | A10 | A10 | A10 |
| IOT46A | I/O | 1 | | True_of_IOT46B | NONE | NONE | | | | | | | | |

**Note!**
[1] SDRAM embedded
[2] PSRAM embedded

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|----------|----------|------|------------------------|-------------------|------|-----|---------|----------|-----------|------------|-----------|------------|------------|------------|
| IOT46B | I/O | 1 | | Comp_of_IOT46A | NONE | NONE | | | | | | | | |
| IOT4A | I/O | 3 | | True_of_IOT4B | NONE | x16 | | | | | | | | |
| IOT4B | I/O | 3 | | Comp_of_IOT4A | NONE | NONE | | | | | | | | |
| IOT5A/MODE0 | I/O | 3 | MODE0 | True_of_IOT5B | NONE | NONE | 88 | 88 | | | 144 | | | |
| IOT5B/MODE2 | I/O | 3 | MODE2 | Comp_of_IOT5A | NONE | NONE | | | | | | | | |
| IOT6A | I/O | 3 | | True_of_IOT6B | NONE | x16 | | | | | | | | |
| IOT6B/MODE1 | I/O | 3 | MODE1 | Comp_of_IOT6A | NONE | NONE | 87 | 87 | D4 | D4 | 143 | D4 | D4 | D4 |
| IOT7A | I/O | 3 | | True_of_IOT7B | NONE | NONE | | | | | | | | |
| IOT7B | I/O | 3 | | Comp_of_IOT7A | NONE | NONE | | | | | | | | |
| IOT8A | I/O | 3 | | True_of_IOT8B | NONE | x16 | 86 | 86 | A3 | A3 | 142 | A3 | A3 | A3 |
| IOT8B | I/O | 3 | | Comp_of_IOT8A | NONE | NONE | 85 | 85 | A4 | A4 | 141 | A4 | A4 | A4 |
| IOT9A | I/O | 3 | | True_of_IOT9B | NONE | NONE | | | | | | | | |
| IOT9B | I/O | 3 | | Comp_of_IOT9A | NONE | NONE | | | | | | | | |
| VCC | Power | N/A | | | | NONE | 1 | 1 | A2 | J2 | 1 | A2 | A2 | A2 |
| VCC | Power | N/A | | | | NONE | 22 | 22 | J2 | A8 | 36 | J2 | J2 | J2 |
| VCC | Power | N/A | | | | NONE | 45 | 45 | | A2 | 73 | | | |
| VCC | Power | N/A | | | | NONE | 66 | 66 | A8 | | 108 | A8 | A8 | A8 |
| VCCO0 | Power | N/A | | | | NONE | | | A5 | A5 | 109 | A5 | A5 | A5 |
| VCCO0 | Power | N/A | | | | NONE | | | | | 127 | | | |
| VCCO1 | Power | N/A | | | | NONE | 58 | 58 | | E9 | 91 | | | |
| VCCO1 | Power | N/A | | | | NONE | | | E9 | | | E9 | E9 | E9 |
| VCCO1 | Power | N/A | | | | NONE | | | | | 103 | | | |
| VCCO2 | Power | N/A | | | | NONE | 23 | 23 | J5 | J5 | 37 | J5 | J5 | J5 |
| VCCO2 | Power | N/A | | | | NONE | 44 | 44 | | | | | | |
| VCCO2 | Power | N/A | | | | NONE | | | | | 55 | | | |
| VCCO3 | Power | N/A | | | | NONE | 12 | 12 | | | | | | |
| VCCO3 | Power | N/A | | | | NONE | | | E1 | E1 | 19 | E1 | E1 | E1 |
| VCCO3 | Power | N/A | | | | NONE | | | | | 9 | | | |
| VCCX | Power | N/A | | | | NONE | | | J8 | J8 | | J8 | J8 | J8 |
| VCCX | Power | N/A | | | | NONE | | | | | 31 | | | |
| VCCX | Power | N/A | | | | NONE | | | | | 77 | | | |
| VCCX/VCCO0 | Power | N/A | | | | NONE | 64 | 64 | | | | | | |
| VCCX/VCCO0 | Power | N/A | | | | NONE | 67 | 67 | | | | | | |
| VCCX/VCCO0 | Power | N/A | | | | NONE | 78 | 78 | | | | | | |
| VSS | Ground | N/A | | | | NONE | 2 | 2 | | | | | | |
| VSS | Ground | N/A | | | | NONE | 21 | 21 | | | 33 | | | |
| VSS | Ground | N/A | | | | NONE | 24 | 24 | | | | | | |
| VSS | Ground | N/A | | | | NONE | 43 | 43 | | | | | | |
| VSS | Ground | N/A | | | | NONE | 46 | 46 | | | 74 | | | |
| VSS | Ground | N/A | | | | NONE | 65 | 65 | | | | | | |
| VSS | Ground | N/A | | | | NONE | | | A1 | A1 | 2 | A1 | A1 | A1 |
| VSS | Ground | N/A | | | | NONE | | | A9 | A9 | 17 | A9 | A9 | A9 |
| VSS | Ground | N/A | | | | NONE | | | J1 | J1 | 107 | J1 | J1 | J1 |
| VSS | Ground | N/A | | | | NONE | | | J9 | J9 | | J9 | J9 | J9 |

| Note! |
| --- |
| [1] SDRAM embedded |
| [2] PSRAM embedded |

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| VSS | Ground | N/A | | | | NONE | | | | | 35 | | | |
| VSS | Ground | N/A | | | | NONE | | | | | 53 | | | |
| VSS | Ground | N/A | | | | NONE | | | | | 89 | | | |
| VSS | Ground | N/A | | | | NONE | | | | | 105 | | | |

| Note! |
| --- |
| [1] SDRAM embedded |
| [2] PSRAM embedded |

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BANK3 True LVDS Pair** | | | | | | | | | | | | | | |
| IOL11A/TMS | I/O | 3 | TMS | True_of_IOL11B | TRUE | NONE | 5 | 5 | E2 | E2 | 13 | E2 | E2 | E2 |
| IOL11B/TCK | I/O | 3 | TCK | Comp_of_IOL11A | TRUE | NONE | 6 | 6 | E3 | E3 | 14 | E3 | E3 | E3 |
| IOL13A/TDO | I/O | 3 | TDO | True_of_IOL13B | TRUE | NONE | 8 | 8 | F2 | F2 | 18 | F2 | F2 | F2 |
| IOL13B/RECONFIG_N | I/O | 3 | RECONFIG_N | Comp_of_IOL13A | TRUE | NONE | 9 | 9 | D3 | D3 | 20 | D3 | D3 | D3 |
| IOL15A/GCLKT_6 | I/O | 3 | GCLKT_6 | True_of_IOL15B | TRUE | NONE | | | | | | | | |
| IOL15B/GCLKC_6 | I/O | 3 | GCLKC_6 | Comp_of_IOL15A | TRUE | NONE | | | | | | | | |
| IOL17A | I/O | 3 | | True_of_IOL17B | TRUE | NONE | | | | | | | | |
| IOL17B | I/O | 3 | | Comp_of_IOL17A | TRUE | NONE | | | | | | | | |
| IOL20A | I/O | 3 | | True_of_IOL20B | TRUE | NONE | | | | | | | | |
| IOL20B | I/O | 3 | | Comp_of_IOL20A | TRUE | NONE | | | | | | | | |
| IOL22A | I/O | 3 | | True_of_IOL22B | TRUE | NONE | 13 | | | | | | | |
| IOL22B | I/O | 3 | | Comp_of_IOL22A | TRUE | NONE | 14 | | | | | | | |
| IOL24A | I/O | 3 | | True_of_IOL24B | TRUE | NONE | | | | | | | | |
| IOL24B | I/O | 3 | | Comp_of_IOL24A | TRUE | NONE | | | | | | | | |
| IOL26A | I/O | 3 | | True_of_IOL26B | TRUE | NONE | 15 | | | | | | | |
| IOL26B | I/O | 3 | | Comp_of_IOL26A | TRUE | NONE | 16 | | | | | | | |
| IOL2A | I/O | 3 | | True_of_IOL2B | TRUE | NONE | | | | | | | | |
| IOL2B | I/O | 3 | | Comp_of_IOL2A | TRUE | NONE | | | | | | | | |
| IOL4A | I/O | 3 | | True_of_IOL4B | TRUE | NONE | | | | | | | | |
| IOL4B | I/O | 3 | | Comp_of_IOL4A | TRUE | NONE | | | | | | | | |
| IOL6A/LPLL_T_fb | I/O | 3 | LPLL_T_fb | True_of_IOL6B | TRUE | NONE | | | | | | | | |
| IOL6B/LPLL_C_fb | I/O | 3 | LPLL_C_fb | Comp_of_IOL6A | TRUE | NONE | | | | | | | | |
| IOL8A | I/O | 3 | | True_of_IOL8B | TRUE | NONE | | | | | | | | |
| IOL8B | I/O | 3 | | Comp_of_IOL8A | TRUE | NONE | | | | | | | | |
| **BANK2 True LVDS Pair** | | | | | | | | | | | | | | |
| IOB11A | I/O | 2 | | True_of_IOB11B | TRUE | x16 | 27 | 27 | J3 | J3 | 42 | J3 | J3 | J3 |
| IOB11B | I/O | 2 | | Comp_of_IOB11A | TRUE | NONE | 28 | 28 | H3 | H3 | 43 | H3 | H3 | H3 |
| IOB13A | I/O | 2 | | True_of_IOB13B | TRUE | x16 | 29 | 29 | E4 | E4 | 46 | E4 | E4 | E4 |
| IOB13B | I/O | 2 | | Comp_of_IOB13A | TRUE | NONE | 30 | 30 | F4 | F4 | 47 | F4 | F4 | F4 |
| IOB15A | I/O | 2 | | True_of_IOB15B | TRUE | x16 | 31 | 31 | K3 | K3 | 48 | K3 | K3 | K3 |
| IOB15B | I/O | 2 | | Comp_of_IOB15A | TRUE | NONE | 32 | 32 | K4 | K4 | 49 | K4 | K4 | K4 |
| IOB17A | I/O | 2 | | True_of_IOB17B | TRUE | x16 | | | J4 | J4 | 50 | J4 | J4 | J4 |
| IOB17B | I/O | 2 | | Comp_of_IOB17A | TRUE | NONE | | | H4 | H4 | 51 | H4 | H4 | H4 |
| IOB21A | I/O | 2 | | True_of_IOB21B | TRUE | x16 | | | K5 | K5 | | K5 | K5 | K5 |
| IOB21B | I/O | 2 | | Comp_of_IOB21A | TRUE | NONE | | | K6 | K6 | | K6 | K6 | K6 |
| IOB23A | I/O | 2 | | True_of_IOB23B | TRUE | x16 | 33 | 33 | H5 | H5 | 52 | H5 | H5 | H5 |
| IOB23B | I/O | 2 | | Comp_of_IOB23A | TRUE | NONE | 34 | 34 | G5 | G5 | 54 | G5 | G5 | G5 |
| IOB25A | I/O | 2 | | True_of_IOB25B | TRUE | x16 | | | | | | | | |
| IOB25B | I/O | 2 | | Comp_of_IOB25A | TRUE | NONE | | | | | | | | |
| IOB27A | I/O | 2 | | True_of_IOB27B | TRUE | x16 | | | | | | | | |
| IOB27B | I/O | 2 | | Comp_of_IOB27A | TRUE | NONE | | | | | | | | |

**Note!**
[1] SDRAM embedded
[2] PSRAM embedded

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IOB29A/GCLKT_4 | I/O | 2 | GCLKT_4 | True_of_IOB29B | TRUE | x16 | 35 | 35 | J6 | J6 | 58 | J6 | J6 | J6 |
| IOB29B/GCLKC_4 | I/O | 2 | GCLKC_4 | Comp_of_IOB29A | TRUE | NONE | 36 | 36 | H6 | H6 | 59 | H6 | H6 | H6 |
| IOB2A | I/O | 2 | | True_of_IOB2B | TRUE | x16 | 17 | 17 | | | | | | |
| IOB2B | I/O | 2 | | Comp_of_IOB2A | TRUE | NONE | 18 | 18 | | | | | | |
| IOB31A | I/O | 2 | | True_of_IOB31B | TRUE | x16 | 37 | 37 | K7 | K7 | 62 | K7 | K7 | K7 |
| IOB31B | I/O | 2 | | Comp_of_IOB31A | TRUE | NONE | 38 | 38 | K8 | K8 | 63 | K8 | K8 | K8 |
| IOB33A | I/O | 2 | | True_of_IOB33B | TRUE | x16 | 39 | 39 | J7 | J7 | 64 | J7 | J7 | J7 |
| IOB33B | I/O | 2 | | Comp_of_IOB33A | TRUE | NONE | 40 | 40 | H7 | H7 | 65 | H7 | H7 | H7 |
| IOB35A | I/O | 2 | | True_of_IOB35B | TRUE | x16 | | | F6 | F6 | 66 | F6 | F6 | F6 |
| IOB35B | I/O | 2 | | Comp_of_IOB35A | TRUE | NONE | | | G6 | G6 | 67 | G6 | G6 | G6 |
| IOB39A | I/O | 2 | | True_of_IOB39B | TRUE | x16 | | | F7 | F7 | 70 | F7 | F7 | F7 |
| IOB39B | I/O | 2 | | Comp_of_IOB39A | TRUE | NONE | | | G7 | G7 | 71 | G7 | G7 | G7 |
| IOB41A | I/O | 2 | | True_of_IOB41B | TRUE | x16 | 41 | 41 | K10 | K10 | | K10 | K10 | K10 |
| IOB41B | I/O | 2 | | Comp_of_IOB41A | TRUE | NONE | 42 | 42 | K9 | K9 | | K9 | K9 | K9 |
| IOB43A | I/O | 2 | | True_of_IOB43B | TRUE | x16 | | | | | 78 | | | |
| IOB43B | I/O | 2 | | Comp_of_IOB43A | TRUE | NONE | | | | | 76 | | | |
| IOB45A | I/O | 2 | | True_of_IOB45B | TRUE | x16 | | | | | | | | |
| IOB45B | I/O | 2 | | Comp_of_IOB45A | TRUE | NONE | | | | | | | | |
| IOB4A | I/O | 2 | | True_of_IOB4B | TRUE | x16 | 19 | 19 | K1 | K1 | 29 | K1 | K1 | K1 |
| IOB4B | I/O | 2 | | Comp_of_IOB4A | TRUE | NONE | 20 | 20 | K2 | K2 | 30 | K2 | K2 | K2 |
| IOB6A | I/O | 2 | | True_of_IOB6B | TRUE | x16 | | | | | 32 | | | |
| IOB6B | I/O | 2 | | Comp_of_IOB6A | TRUE | NONE | | | | | 34 | | | |
| IOB8A | I/O | 2 | | True_of_IOB8B | TRUE | x16 | 25 | 25 | G4 | G4 | 38 | G4 | G4 | G4 |
| IOB8B | I/O | 2 | | Comp_of_IOB8A | TRUE | NONE | 26 | 26 | G3 | G3 | 39 | G3 | G3 | G3 |
| **BANK1 True LVDS Pair** | | | | | | | | | | | | | | |
| IOR11A/MI/D7 | I/O | 1 | MI/D7 | True_of_IOR11B | TRUE | NONE | 62 | 62 | | | 96 | | | |
| IOR11B/MO/D6 | I/O | 1 | MO/D6 | Comp_of_IOR11A | TRUE | NONE | 61 | 61 | | | 95 | | | |
| IOR13A/FASTRD_N/D3 | I/O | 1 | FASTRD_N /D3 | True_of_IOR13B | TRUE | NONE | | | | | 92 | | | |
| IOR13B/SI/D2 | I/O | 1 | SI/D2 | Comp_of_IOR13A | TRUE | NONE | | | | | 90 | | | |
| IOR15A/DIN/CLKHOLD_N | I/O | 1 | DIN/CLKHOLD_N | True_of_IOR15B | TRUE | NONE | 54 | 54 | | | 86 | | | |
| IOR15B/DOUT/WE_N | I/O | 1 | DOUT/WE_N | Comp_of_IOR15A | TRUE | NONE | 53 | 53 | | | 85 | | | |
| IOR17A/GCLKT_3 | I/O | 1 | GCLKT_3 | True_of_IOR17B | TRUE | NONE | 52 | 52 | F8 | F8 | | F8 | F8 | F8 |
| IOR17B/GCLKC_3 | I/O | 1 | GCLKC_3 | Comp_of_IOR17A | TRUE | NONE | 51 | 51 | G8 | G8 | | G8 | G8 | G8 |
| IOR20A | I/O | 1 | | True_of_IOR20B | TRUE | NONE | | | | | | | | |
| IOR20B | I/O | 1 | | Comp_of_IOR20A | TRUE | NONE | | | | | | | | |
| IOR22A | I/O | 1 | | True_of_IOR22B | TRUE | NONE | | | | | | | | |
| IOR22B | I/O | 1 | | Comp_of_IOR22A | TRUE | NONE | | | | | | | | |
| IOR24A | I/O | 1 | | True_of_IOR24B | TRUE | NONE | 49 | 49 | | | | | | |
| IOR24B | I/O | 1 | | Comp_of_IOR24A | TRUE | NONE | 48 | 48 | | | | | | |
| IOR26A | I/O | 1 | | True_of_IOR26B | TRUE | NONE | | | | | | | | |
| IOR26B | I/O | 1 | | Comp_of_IOR26A | TRUE | NONE | | | | | | | | |

| Note! | | | | | | | | | | | | | | |
|-------|-|-|-|-|-|-|-|-|-|-|-|-|-|-|
| [1] SDRAM embedded | | | | | | | | | | | | | | |
| [2] PSRAM embedded | | | | | | | | | | | | | | |

| Pin Name | Function | BANK | Configuration Function | Differential Pair | LVDS | X16 | QN88[1] | QN88P[2] | MG100P[2] | MG100PF[2] | LQ144P[2] | MG100PA[2] | MG100PT[2] | MG100PS[2] |
|----------|----------|------|------------------------|-------------------|------|-----|---------|----------|-----------|------------|-----------|------------|------------|------------|
| IOR2A | I/O | 1 | | True_of_IOR2B | TRUE | NONE | | | | | | | | |
| IOR2B | I/O | 1 | | Comp_of_IOR2A | TRUE | NONE | | | | | | | | |
| IOR4A | I/O | 1 | | True_of_IOR4B | TRUE | NONE | | | | | | | | |
| IOR4B | I/O | 1 | | Comp_of_IOR4A | TRUE | NONE | | | | | | | | |
| IOR6A/RPLL_T_fb | I/O | 1 | RPLL_T_fb | True_of_IOR6B | TRUE | NONE | | | | | 102 | | | |
| IOR6B/RPLL_C_fb | I/O | 1 | RPLL_C_fb | Comp_of_IOR6A | TRUE | NONE | | | | | 101 | | | |
| IOR8A | I/O | 1 | | True_of_IOR8B | TRUE | NONE | | | | | | | | |
| IOR8B | I/O | 1 | | Comp_of_IOR8A | TRUE | NONE | | | | | | | | |

| Note! |
| :--- |
| It is recommended to connect VCCX to the VCCO with the Max. voltage. |

| Recommended Operating Conditions of QN88 Package Embedded with SDR SDRMA in GW1NR-9 | | | |
| :--- | :--- | :--- | :--- |
| **Name** | **Description** | **Min.** | **Max.** |
| VCC | LV: Core voltage | 1.14V | 1.26V |
| | UV: Core voltage | 3.135V | 3.6V |
| VCCO1, VCCO3 | I/O Bank power supply voltage | 1.14V | 3.6V |
| VCCO2 | I/O Bank power supply voltage, VCCO2 provides SDR SDRAM voltage. | 3.135V | 3.6V |
| VCCX/VCCO0 | VCCX and VCCO0 are internally connected; VCCO0 provides SDR SDRAM voltage. | 3.135V | 3.6V |

| Recommended Operating Conditions of MG100P Package Embedded with PSRAM in GW1NR-9 | | | |
| :--- | :--- | :--- | :--- |
| **Name** | **Description** | **Min.** | **Max.** |
| VCC | LV: Core voltage | 1.14V | 1.26V |
| | UV: Core voltage | 1.71V | 3.6V |
| VCCO0, VCCO2 | I/O Bank power supply voltage | 1.14V | 3.6V |
| VCCO1, VCCO3 | I/O Bank power supply voltage, connected to PSRAM and provides power for PSRAM | 1.71V | 1.89V |
| VCCX | Auxiliary voltage | 2.375V | 3.6V |

| Recommended Operating Conditions of QN88P Package Embedded with PSRAM in GW1NR-9 | | | |
| :--- | :--- | :--- | :--- |
| **Name** | **Description** | **Min.** | **Max.** |
| VCC | LV: Core voltage | 1.14V | 1.26V |
| | UV: Core voltage | 1.71V | 3.6V |
| VCCO1, VCCO2 | I/O Bank power supply voltage | 1.14V | 3.6V |
| VCCO3 | I/O Bank power supply voltage, connected to PSRAM and provides power for PSRAM | 1.71V | 1.89V |
| VCCX/VCCO0 | Auxiliary voltage and VCCX/VCCO0 voltage are internally connected. | 2.375V | 3.6V |

| Recommended Operating Conditions of LQ144P Package Embedded with PSRAM in GW1NR-9 | | | |
| :--- | :--- | :--- | :--- |
| **Name** | **Description** | **Min.** | **Max.** |
| VCC | LV: Core voltage | 1.14V | 1.26V |
| | UV: Core voltage | 1.71V | 3.6V |
| VCCO0, VCCO1, VCCO2 | I/O Bank power supply voltage | 1.14V | 3.6V |
| VCCO3 | I/O Bank power supply voltage, connected to PSRAM and provides power for PSRAM | 1.71V | 1.89V |
| VCCX | Auxiliary voltage | 2.375V | 3.6V |

**Note!**
It is recommended to connect VCCX to the VCCO with the Max. voltage.

| Name | Description | Min. | Max. |
|------|-------------|------|------|
| Recommended Operating Conditions of GW1NR-9 MG100PF/MG100PA/MG100PT/MG100PS Packages Embedded with PSRAM in GW1NR-9 | | | |
| VCC | Core voltage | 1.14V | 1.26V |
| VCCO0, VCCO2 | I/O Bank power supply voltage | 1.14V | 3.6V |
| VCCO1, VCCO3 | I/O Bank power supply voltage, connected to PSRAM and provides power for PSRAM | 1.71V | 1.89V |
| VCCX | Auxiliary voltage | 2.375V | 3.6V |