



Welcome to [E-XFL.COM](#)

Understanding [Embedded - FPGAs \(Field Programmable Gate Array\)](#)

Embedded - FPGAs, or Field Programmable Gate Arrays, are advanced integrated circuits that offer unparalleled flexibility and performance for digital systems. Unlike traditional fixed-function logic devices, FPGAs can be programmed and reprogrammed to execute a wide array of logical operations, enabling customized functionality tailored to specific applications. This reprogrammability allows developers to iterate designs quickly and implement complex functions without the need for custom hardware.

Applications of Embedded - FPGAs

The versatility of Embedded - FPGAs makes them indispensable in numerous fields. In telecommunications.

Details

Product Status	Obsolete
Number of LABs/CLBs	-
Number of Logic Elements/Cells	9216
Total RAM Bits	55296
Number of I/O	194
Number of Gates	400000
Voltage - Supply	1.14V ~ 1.575V
Mounting Type	Surface Mount
Operating Temperature	-40°C ~ 85°C (TA)
Package / Case	484-BGA
Supplier Device Package	484-FPBGA (23x23)
Purchase URL	https://www.e-xfl.com/product-detail/microsemi/agl400v2-fgg484i

IGLOO Device Family Overview

General Description	1-1
---------------------------	-----

IGLOO DC and Switching Characteristics

General Specifications	2-1
Calculating Power Dissipation	2-7
Power Calculation Methodology	2-17
User I/O Characteristics	2-20
VersaTile Characteristics	2-100
Global Resource Characteristics	2-106
Clock Conditioning Circuits	2-115
Embedded SRAM and FIFO Characteristics	2-118
Embedded FlashROM Characteristics	2-132
JTAG 1532 Characteristics	2-133

Pin Descriptions

Supply Pins	3-1
User Pins	3-2
JTAG Pins	3-4
Special Function Pins	3-5
Packaging	3-5
Related Documents	3-5

Package Pin Assignments

UC81	4-1
CS81	4-3
CS121	4-6
CS196	4-9
CS281	4-16
QN48	4-23
QN68	4-25
QN132	4-28
VQ100	4-37
FG144	4-42
FG256	4-53
FG484	4-63

Datasheet Information

List of Changes	5-1
Datasheet Categories	5-13
Safety Critical, Life Support, and High-Reliability Applications Policy	5-13

Table 2-20 • Different Components Contributing to the Static Power Consumption in IGLOO Devices
 For IGLOO V2 or V5 Devices, 1.5 V DC Core Supply Voltage

Parameter	Definition	Device-Specific Static Power (mW)							
		AGL1000	AGL600	AGL400	AGL250	AGL125	AGL060	AGL030	AGL015
PDC1	Array static power in Active mode	See Table 2-12 on page 2-9 .							
PDC2	Array static power in Static (Idle) mode	See Table 2-11 on page 2-8 .							
PDC3	Array static power in Flash*Freeze mode	See Table 2-9 on page 2-7 .							
PDC4	Static PLL contribution	1.84							
PDC5	Bank quiescent power (V_{CC1} -dependent)	See Table 2-12 on page 2-9 .							
PDC6	I/O input pin static power (standard-dependent)	See Table 2-13 on page 2-10 through Table 2-15 on page 2-11 .							
PDC7	I/O output pin static power (standard-dependent)	See Table 2-16 on page 2-11 through Table 2-18 on page 2-12 .							

Note: *For a different output load, drive strength, or slew rate, Microsemi recommends using the Microsemi power spreadsheet calculator or SmartPower tool in Libero SoC.

User I/O Characteristics

Timing Model

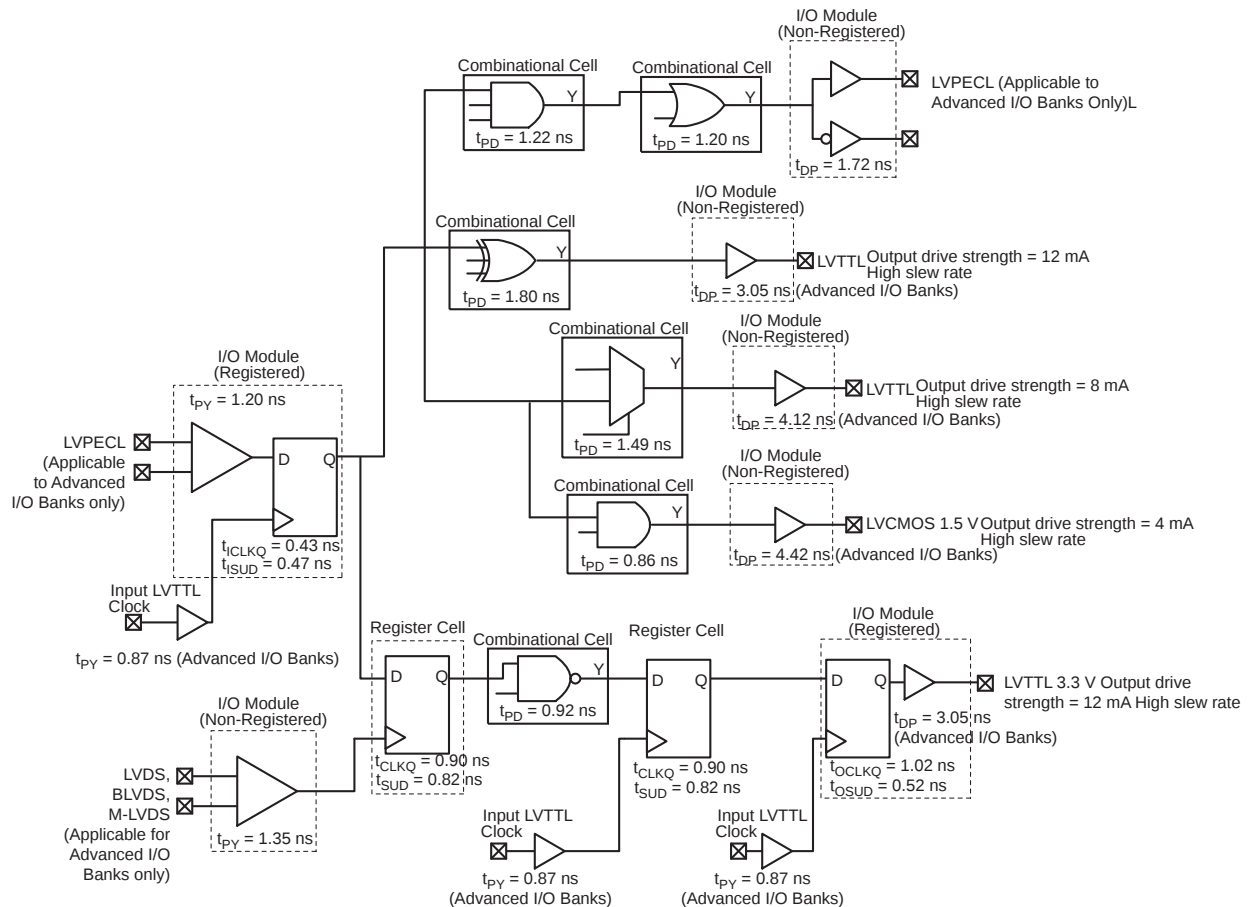


Figure 2-3 • Timing Model

Operating Conditions: Std. Speed, Commercial Temperature Range ($T_J = 70^\circ\text{C}$), Worst-Case $V_{CC} = 1.425$ V, for DC 1.5 V Core Voltage, Applicable to V2 and V5 Devices

Table 2-35 • Summary of I/O Timing Characteristics—Software Default Settings, Std. Speed Grade, Commercial-Case
Conditions: $T_J = 70^\circ\text{C}$, Worst-Case $V_{CC} = 1.14\text{ V}$, Worst-Case V_{CCI} (per standard)
Applicable to Standard Plus I/O Banks

I/O Standard	Drive Strength	Equivalent Software Default Drive Strength Option ¹ (mA)	Slew Rate	Capacitive Load (pF)	External Resistor (Ω)	t_{BOUT} (ns)	t_{BP} (ns)	t_{BIN} (ns)	t_{PY} (ns)	t_{EOUT} (ns)	t_{ZL} (ns)	t_{ZH} (ns)	t_{LZ} (ns)	t_{HZ} (ns)	t_{ZLS} (ns)	t_{ZHS} (ns)	Units
3.3 V LVTTTL / 3.3 V LVCMOS	12 mA	12	High	5	–	1.55	2.31	0.26	0.97	1.10	2.34	1.86	2.93	3.64	8.12	7.65	ns
3.3 V LVCMOS Wide Range ²	100 μA	12	High	5	–	1.55	3.20	0.26	1.32	1.10	3.20	2.52	4.01	4.97	8.99	8.31	ns
2.5 V LVCMOS	12 mA	12	High	5	–	1.55	2.29	0.26	1.19	1.10	2.32	1.94	2.94	3.52	8.10	7.73	ns
1.8 V LVCMOS	8 mA	8	High	5	–	1.55	2.43	0.26	1.11	1.10	2.47	2.16	2.99	3.39	8.25	7.94	ns
1.5 V LVCMOS	4 mA	4	High	5	–	1.55	2.68	0.26	1.27	1.10	2.72	2.39	3.07	3.37	8.50	8.18	ns
1.2 V LVCMOS	2 mA	2	High	5	–	1.55	3.22	0.26	1.59	1.10	3.11	2.78	3.29	3.48	8.90	8.57	ns
1.2 V LVCMOS Wide Range ³	100 μA	2	High	5	–	1.55	3.22	0.26	1.59	1.10	3.11	2.78	3.29	3.48	8.90	8.57	ns
3.3 V PCI	Per PCI spec	–	High	10	25 ²	1.55	2.53	0.26	0.84	1.10	2.57	1.98	2.93	3.64	8.35	7.76	ns
3.3 V PCI-X	Per PCI-X spec	–	High	10	25 ²	1.55	2.53	0.25	0.85	1.10	2.57	1.98	2.93	3.64	8.35	7.76	ns

Notes:

1. The minimum drive strength for any LVCMOS 1.2 V or LVCMOS 3.3 V software configuration when run in wide range is $\pm 100\text{ }\mu\text{A}$. Drive strength displayed in the software is supported for normal range only. For a detailed I/V curve, refer to the IBIS models.
2. All LVCMOS 3.3 V software macros support LVCMOS 3.3 V wide range as specified in the JESD-8B specification.
3. All LVCMOS 1.2 V software macros support LVCMOS 1.2 V wide range as specified in the JESD8-12 specification
4. Resistance is used to measure I/O propagation delays as defined in PCI specifications. See [Figure 2-12 on page 2-79](#) for connectivity. This resistor is not required during normal operation.
5. For specific junction temperature and voltage supply levels, refer to [Table 2-6 on page 2-7](#) for derating values.

Table 2-49 • Minimum and Maximum DC Input and Output Levels
 Applicable to Standard I/O Banks

3.3 V LVTTTL / 3.3 V LVCMOS	VIL		VIH		VOL	VOH	IOL	IOH	IOSL	IOSH	IIL ¹	IIH ²
Drive Strength	Min. V	Max. V	Min. V	Max. V	Max. V	Min. V	mA	mA	Max. mA ³	Max. mA ³	μA ⁴	μA ⁴
2 mA	-0.3	0.8	2	3.6	0.4	2.4	2	2	25	27	10	10
4 mA	-0.3	0.8	2	3.6	0.4	2.4	4	4	25	27	10	10
6 mA	-0.3	0.8	2	3.6	0.4	2.4	6	6	51	54	10	10
8 mA	-0.3	0.8	2	3.6	0.4	2.4	8	8	51	54	10	10

Notes:

1. IIL is the input leakage current per I/O pin over recommended operation conditions where $-0.3\text{ V} < V_{IN} < V_{IL}$.
2. IIH is the input leakage current per I/O pin over recommended operating conditions $V_{IH} < V_{IN} < V_{CCI}$. Input current is larger when operating outside recommended ranges
3. Currents are measured at 100°C junction temperature and maximum voltage.
4. Currents are measured at 85°C junction temperature.
5. Software default selection highlighted in gray.

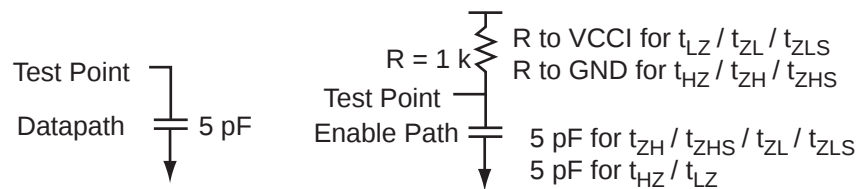


Figure 2-7 • AC Loading

Table 2-50 • AC Waveforms, Measuring Points, and Capacitive Loads

Input Low (V)	Input High (V)	Measuring Point* (V)	C _{LOAD} (pF)
0	3.3	1.4	5

Note: *Measuring point = Vtrip. See Table 2-29 on page 2-28 for a complete table of trip points.

Timing Characteristics

Applies to 1.5 V DC Core Voltage

Table 2-83 • 2.5 V LVC MOS Low Slew – Applies to 1.5 V DC Core Voltage
Commercial-Case Conditions: $T_J = 70^\circ\text{C}$, Worst-Case VCC = 1.425 V, Worst-Case VCCI = 2.3 V
Applicable to Advanced I/O Banks

Drive Strength	Speed Grade	t_{DOUT}	t_{DP}	t_{DIN}	t_{PY}	t_{EOUT}	t_{ZL}	t_{ZH}	t_{LZ}	t_{HZ}	t_{ZLS}	t_{ZHS}	Units
2 mA	Std.	0.97	4.96	0.18	1.08	0.66	5.06	4.59	2.26	2.00	8.66	8.19	ns
4 mA	Std.	0.97	4.96	0.18	1.08	0.66	5.06	4.59	2.26	2.00	8.66	8.19	ns
6 mA	Std.	0.97	4.15	0.18	1.08	0.66	4.24	3.94	2.54	2.51	7.83	7.53	ns
8 mA	Std.	0.97	4.15	0.18	1.08	0.66	4.24	3.94	2.54	2.51	7.83	7.53	ns
12 mA	Std.	0.97	3.57	0.18	1.08	0.66	3.65	3.47	2.73	2.84	7.24	7.06	ns
16 mA	Std.	0.97	3.39	0.18	1.08	0.66	3.46	3.36	2.78	2.92	7.06	6.95	ns
24 mA	Std.	0.97	3.38	0.18	1.08	0.66	3.38	3.38	2.83	3.25	6.98	6.98	ns

Note: For specific junction temperature and voltage supply levels, refer to [Table 2-6 on page 2-7](#) for derating values.

Table 2-84 • 2.5 V LVC MOS High Slew – Applies to 1.5 V DC Core Voltage
Commercial-Case Conditions: $T_J = 70^\circ\text{C}$, Worst-Case VCC = 1.425 V, Worst-Case VCCI = 2.3 V
Applicable to Advanced I/O Banks

Drive Strength	Speed Grade	t_{DOUT}	t_{DP}	t_{DIN}	t_{PY}	t_{EOUT}	t_{ZL}	t_{ZH}	t_{LZ}	t_{HZ}	t_{ZLS}	t_{ZHS}	Units
2 mA	Std.	0.97	2.77	0.18	1.08	0.66	2.83	2.60	2.26	2.08	6.42	6.19	ns
4 mA	Std.	0.97	2.77	0.18	1.08	0.66	2.83	2.60	2.26	2.08	6.42	6.19	ns
6 mA	Std.	0.97	2.34	0.18	1.08	0.66	2.39	2.08	2.54	2.60	5.99	5.68	ns
8 mA	Std.	0.97	2.34	0.18	1.08	0.66	2.39	2.08	2.54	2.60	5.99	5.68	ns
12 mA	Std.	0.97	2.09	0.18	1.08	0.66	2.14	1.83	2.73	2.93	5.73	5.43	ns
16 mA	Std.	0.97	2.05	0.18	1.08	0.66	2.09	1.78	2.78	3.02	5.69	5.38	ns
24 mA	Std.	0.97	2.06	0.18	1.08	0.66	2.10	1.72	2.83	3.35	5.70	5.32	ns

Notes:

1. Software default selection highlighted in gray.
2. For specific junction temperature and voltage supply levels, refer to [Table 2-6 on page 2-7](#) for derating values.

Table 2-85 • 2.5 V LVC MOS Low Slew – Applies to 1.5 V DC Core Voltage
Commercial-Case Conditions: $T_J = 70^\circ\text{C}$, Worst-Case VCC = 1.425 V, Worst-Case VCCI = 2.3 V
Applicable to Standard Plus Banks

Drive Strength	Speed Grade	t_{DOUT}	t_{DP}	t_{DIN}	t_{PY}	t_{EOUT}	t_{ZL}	t_{ZH}	t_{LZ}	t_{HZ}	t_{ZLS}	t_{ZHS}	Units
2 mA	Std.	0.97	4.42	0.18	1.08	0.66	4.51	4.10	1.96	1.85	8.10	7.69	ns
4 mA	Std.	0.97	4.42	0.18	1.08	0.66	4.51	4.10	1.96	1.85	8.10	7.69	ns
6 mA	Std.	0.97	3.62	0.18	1.08	0.66	3.70	3.52	2.21	2.32	7.29	7.11	ns
8 mA	Std.	0.97	3.62	0.18	1.08	0.66	3.70	3.52	2.21	2.32	7.29	7.11	ns
12 mA	Std.	0.97	3.09	0.18	1.08	0.66	3.15	3.09	2.39	2.61	6.74	6.68	ns

Note: For specific junction temperature and voltage supply levels, refer to [Table 2-6 on page 2-7](#) for derating values.

1.8 V LVCMOS

Low-voltage CMOS for 1.8 V is an extension of the LVCMOS standard (JESD8-5) used for general-purpose 1.8 V applications. It uses a 1.8 V input buffer and a push-pull output buffer.

Table 2-95 • Minimum and Maximum DC Input and Output Levels
Applicable to Advanced I/O Banks

1.8 V LVCMOS	VIL		VIH		VOL	VOH	IOL	IOH	IOSH	IOSL	IIL ¹	IIH ²
Drive Strength	Min. V	Max. V	Min. V	Max. V	Max. V	Min. V	mA	mA	Max. mA ³	Max. mA ³	μA ⁴	μA ⁴
2 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	2	2	9	11	10	10
4 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	4	4	17	22	10	10
6 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	6	6	35	44	10	10
8 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	8	8	45	51	10	10
12 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	12	12	91	74	10	10
16 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	16	16	91	74	10	10

Notes:

1. IIL is the input leakage current per I/O pin over recommended operation conditions where $-0.3\text{ V} < V_{IN} < V_{IL}$.
2. IIH is the input leakage current per I/O pin over recommended operating conditions $V_{IH} < V_{IN} < V_{CCI}$. Input current is larger when operating outside recommended ranges
3. Currents are measured at 100°C junction temperature and maximum voltage.
4. Currents are measured at 85°C junction temperature.
5. Software default selection highlighted in gray.

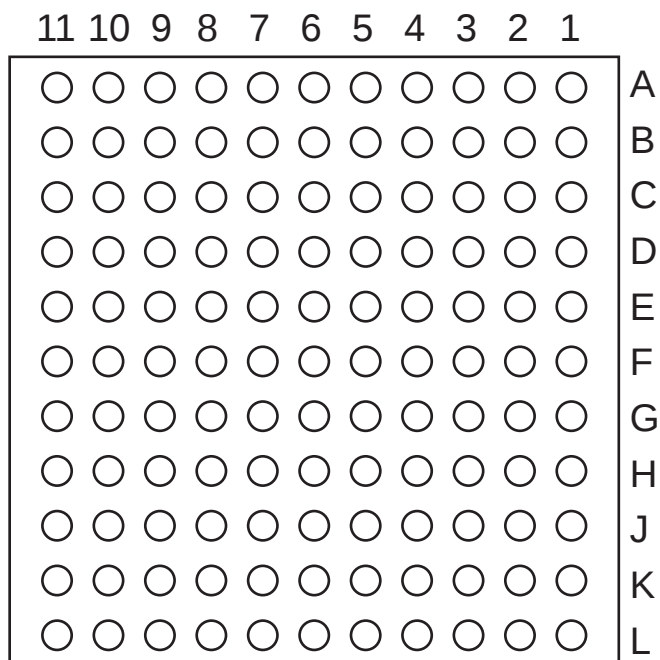
Table 2-96 • Minimum and Maximum DC Input and Output Levels
Applicable to Standard Plus I/O Banks

1.8 V LVCMOS	VIL		VIH		VOL	VOH	IOL	IOH	IOSH	IOSL	IIL ¹	IIH ²
Drive Strength	Min. V	Max. V	Min. V	Max. V	Max. V	Min. V	mA	mA	Max. mA ³	Max. mA ³	μA ⁴	μA ⁴
2 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	2	2	9	11	10	10
4 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	4	4	17	22	10	10
6 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	6	6	35	44	10	10
8 mA	−0.3	0.35 * VCCI	0.65 * VCCI	1.9	0.45	VCCI − 0.45	8	8	35	44	10	10

Notes:

1. IIL is the input leakage current per I/O pin over recommended operation conditions where $-0.3\text{ V} < V_{IN} < V_{IL}$.
2. IIH is the input leakage current per I/O pin over recommended operating conditions $V_{IH} < V_{IN} < V_{CCI}$. Input current is larger when operating outside recommended ranges
3. Currents are measured at 100°C junction temperature and maximum voltage.
4. Currents are measured at 85°C junction temperature.
5. Software default selection highlighted in gray.

CS121



Note: This is the bottom view of the package.

Note

For more information on package drawings, see [PD3068: Package Mechanical Drawings](#).

QN132	
Pin Number	AGL030 Function
C17	IO47RSB1
C18	NC
C19	TCK
C20	NC
C21	VPUMP
C22	VJTAG
C23	NC
C24	NC
C25	NC
C26	GDB0/IO34RSB0
C27	NC
C28	VCCIB0
C29	IO28RSB0
C30	IO25RSB0
C31	IO24RSB0
C32	IO21RSB0
C33	NC
C34	NC
C35	VCCIB0
C36	IO13RSB0
C37	IO10RSB0
C38	IO07RSB0
C39	IO03RSB0
C40	IO00RSB0
D1	GND
D2	GND
D3	GND
D4	GND

FG144	
Pin Number	AGL600 Function
A1	GNDQ
A2	VMV0
A3	GAB0/IO02RSB0
A4	GAB1/IO03RSB0
A5	IO10RSB0
A6	GND
A7	IO34RSB0
A8	VCC
A9	IO50RSB0
A10	GBA0/IO58RSB0
A11	GBA1/IO59RSB0
A12	GNDQ
B1	GAB2/IO173PDB3
B2	GND
B3	GAA0/IO00RSB0
B4	GAA1/IO01RSB0
B5	IO13RSB0
B6	IO19RSB0
B7	IO31RSB0
B8	IO39RSB0
B9	GBB0/IO56RSB0
B10	GBB1/IO57RSB0
B11	GND
B12	VMV1
C1	IO173NDB3
C2	GFA2/IO161PPB3
C3	GAC2/IO172PDB3
C4	VCC
C5	IO16RSB0
C6	IO25RSB0
C7	IO28RSB0
C8	IO42RSB0
C9	IO45RSB0
C10	GBA2/IO60PDB1
C11	IO60NDB1
C12	GBC2/IO62PPB1

FG144	
Pin Number	AGL600 Function
D1	IO169PDB3
D2	IO169NDB3
D3	IO172NDB3
D4	GAA2/IO174PPB3
D5	GAC0/IO04RSB0
D6	GAC1/IO05RSB0
D7	GBC0/IO54RSB0
D8	GBC1/IO55RSB0
D9	GBB2/IO61PDB1
D10	IO61NDB1
D11	IO62NPB1
D12	GCB1/IO70PPB1
E1	VCC
E2	GFC0/IO164NDB3
E3	GFC1/IO164PDB3
E4	VCCIB3
E5	IO174NPB3
E6	VCCIB0
E7	VCCIB0
E8	GCC1/IO69PDB1
E9	VCCIB1
E10	VCC
E11	GCA0/IO71NDB1
E12	IO72NDB1
F1	GFB0/IO163NPB3
F2	VCOMPLF
F3	GFB1/IO163PPB3
F4	IO161NPB3
F5	GND
F6	GND
F7	GND
F8	GCC0/IO69NDB1
F9	GCB0/IO70NPB1
F10	GND
F11	GCA1/IO71PDB1
F12	GCA2/IO72PDB1

FG144	
Pin Number	AGL600 Function
G1	GFA1/IO162PPB3
G2	GND
G3	VCCPLF
G4	GFA0/IO162NPB3
G5	GND
G6	GND
G7	GND
G8	GDC1/IO86PPB1
G9	IO74NDB1
G10	GCC2/IO74PDB1
G11	IO73NDB1
G12	GCB2/IO73PDB1
H1	VCC
H2	GFB2/IO160PDB3
H3	GFC2/IO159PSB3
H4	GEC1/IO146PDB3
H5	VCC
H6	IO80PDB1
H7	IO80NDB1
H8	GDB2/IO90RSB2
H9	GDC0/IO86NPB1
H10	VCCIB1
H11	IO84PSB1
H12	VCC
J1	GEB1/IO145PDB3
J2	IO160NDB3
J3	VCCIB3
J4	GEC0/IO146NDB3
J5	IO129RSB2
J6	IO131RSB2
J7	VCC
J8	TCK
J9	GDA2/IO89RSB2
J10	TDO
J11	GDA1/IO88PDB1
J12	GDB1/IO87PDB1

FG144	
Pin Number	AGL600 Function
K1	GEB0/IO145NDB3
K2	GEA1/IO144PDB3
K3	GEA0/IO144NDB3
K4	GEA2/IO143RSB2
K5	IO119RSB2
K6	IO111RSB2
K7	GND
K8	IO94RSB2
K9	GDC2/IO91RSB2
K10	GND
K11	GDA0/IO88NDB1
K12	GDB0/IO87NDB1
L1	GND
L2	VMV3
L3	FF/GEB2/IO142RSB2
L4	IO136RSB2
L5	VCCIB2
L6	IO115RSB2
L7	IO103RSB2
L8	IO97RSB2
L9	TMS
L10	VJTAG
L11	VMV2
L12	TRST
M1	GNDQ
M2	GEC2/IO141RSB2
M3	IO138RSB2
M4	IO123RSB2
M5	IO126RSB2
M6	IO134RSB2
M7	IO108RSB2
M8	IO99RSB2
M9	TDI
M10	VCCIB2
M11	VPUMP
M12	GNDQ

FG144	
Pin Number	AGL1000 Function
A1	GNDQ
A2	VMV0
A3	GAB0/IO02RSB0
A4	GAB1/IO03RSB0
A5	IO10RSB0
A6	GND
A7	IO44RSB0
A8	VCC
A9	IO69RSB0
A10	GBA0/IO76RSB0
A11	GBA1/IO77RSB0
A12	GNDQ
B1	GAB2/IO224PDB3
B2	GND
B3	GAA0/IO00RSB0
B4	GAA1/IO01RSB0
B5	IO13RSB0
B6	IO26RSB0
B7	IO35RSB0
B8	IO60RSB0
B9	GBB0/IO74RSB0
B10	GBB1/IO75RSB0
B11	GND
B12	VMV1
C1	IO224NDB3
C2	GFA2/IO206PPB3
C3	GAC2/IO223PDB3
C4	VCC
C5	IO16RSB0
C6	IO29RSB0
C7	IO32RSB0
C8	IO63RSB0
C9	IO66RSB0
C10	GBA2/IO78PDB1
C11	IO78NDB1
C12	GBC2/IO80PPB1

FG144	
Pin Number	AGL1000 Function
D1	IO213PDB3
D2	IO213NDB3
D3	IO223NDB3
D4	GAA2/IO225PPB3
D5	GAC0/IO04RSB0
D6	GAC1/IO05RSB0
D7	GBC0/IO72RSB0
D8	GBC1/IO73RSB0
D9	GBB2/IO79PDB1
D10	IO79NDB1
D11	IO80NPB1
D12	GCB1/IO92PPB1
E1	VCC
E2	GFC0/IO209NDB3
E3	GFC1/IO209PDB3
E4	VCCIB3
E5	IO225NPB3
E6	VCCIB0
E7	VCCIB0
E8	GCC1/IO91PDB1
E9	VCCIB1
E10	VCC
E11	GCA0/IO93NDB1
E12	IO94NDB1
F1	GFB0/IO208NPB3
F2	VCOMPLF
F3	GFB1/IO208PPB3
F4	IO206NPB3
F5	GND
F6	GND
F7	GND
F8	GCC0/IO91NDB1
F9	GCB0/IO92NPB1
F10	GND
F11	GCA1/IO93PDB1
F12	GCA2/IO94PDB1

FG144	
Pin Number	AGL1000 Function
G1	GFA1/IO207PPB3
G2	GND
G3	VCCPLF
G4	GFA0/IO207NPB3
G5	GND
G6	GND
G7	GND
G8	GDC1/IO111PPB1
G9	IO96NDB1
G10	GCC2/IO96PDB1
G11	IO95NDB1
G12	GCB2/IO95PDB1
H1	VCC
H2	GFB2/IO205PDB3
H3	GFC2/IO204PSB3
H4	GEC1/IO190PDB3
H5	VCC
H6	IO105PDB1
H7	IO105NDB1
H8	GDB2/IO115RSB2
H9	GDC0/IO111NPB1
H10	VCCIB1
H11	IO101PSB1
H12	VCC
J1	GEB1/IO189PDB3
J2	IO205NDB3
J3	VCCIB3
J4	GEC0/IO190NDB3
J5	IO160RSB2
J6	IO157RSB2
J7	VCC
J8	TCK
J9	GDA2/IO114RSB2
J10	TDO
J11	GDA1/IO113PDB1
J12	GDB1/IO112PDB1

FG256	
Pin Number	AGL1000 Function
A1	GND
A2	GAA0/IO00RSB0
A3	GAA1/IO01RSB0
A4	GAB0/IO02RSB0
A5	IO16RSB0
A6	IO22RSB0
A7	IO28RSB0
A8	IO35RSB0
A9	IO45RSB0
A10	IO50RSB0
A11	IO55RSB0
A12	IO61RSB0
A13	GBB1/IO75RSB0
A14	GBA0/IO76RSB0
A15	GBA1/IO77RSB0
A16	GND
B1	GAB2/IO224PDB3
B2	GAA2/IO225PDB3
B3	GNDQ
B4	GAB1/IO03RSB0
B5	IO17RSB0
B6	IO21RSB0
B7	IO27RSB0
B8	IO34RSB0
B9	IO44RSB0
B10	IO51RSB0
B11	IO57RSB0
B12	GBC1/IO73RSB0
B13	GBB0/IO74RSB0
B14	IO71RSB0
B15	GBA2/IO78PDB1
B16	IO81PDB1
C1	IO224NDB3
C2	IO225NDB3
C3	VMV3
C4	IO11RSB0
C5	GAC0/IO04RSB0
C6	GAC1/IO05RSB0

FG256	
Pin Number	AGL1000 Function
C7	IO25RSB0
C8	IO36RSB0
C9	IO42RSB0
C10	IO49RSB0
C11	IO56RSB0
C12	GBC0/IO72RSB0
C13	IO62RSB0
C14	VMV0
C15	IO78NDB1
C16	IO81NDB1
D1	IO222NDB3
D2	IO222PDB3
D3	GAC2/IO223PDB3
D4	IO223NDB3
D5	GNDQ
D6	IO23RSB0
D7	IO29RSB0
D8	IO33RSB0
D9	IO46RSB0
D10	IO52RSB0
D11	IO60RSB0
D12	GNDQ
D13	IO80NDB1
D14	GBB2/IO79PDB1
D15	IO79NDB1
D16	IO82NSB1
E1	IO217PDB3
E2	IO218PDB3
E3	IO221NDB3
E4	IO221PDB3
E5	VMV0
E6	VCCIB0
E7	VCCIB0
E8	IO38RSB0
E9	IO47RSB0
E10	VCCIB0
E11	VCCIB0
E12	VMV1

FG256	
Pin Number	AGL1000 Function
E13	GBC2/IO80PDB1
E14	IO83PPB1
E15	IO86PPB1
E16	IO87PDB1
F1	IO217NDB3
F2	IO218NDB3
F3	IO216PDB3
F4	IO216NDB3
F5	VCCIB3
F6	GND
F7	VCC
F8	VCC
F9	VCC
F10	VCC
F11	GND
F12	VCCIB1
F13	IO83NPB1
F14	IO86NPB1
F15	IO90PPB1
F16	IO87NDB1
G1	IO210PSB3
G2	IO213NDB3
G3	IO213PDB3
G4	GFC1/IO209PPB3
G5	VCCIB3
G6	VCC
G7	GND
G8	GND
G9	GND
G10	GND
G11	VCC
G12	VCCIB1
G13	GCC1/IO91PPB1
G14	IO90NPB1
G15	IO88PDB1
G16	IO88NDB1
H1	GFB0/IO208NPB3
H2	GFA0/IO207NDB3

FG484	
Pin Number	AGL400 Function
N17	IO74RSB1
N18	IO72NPB1
N19	IO70NDB1
N20	NC
N21	NC
N22	NC
P1	NC
P2	NC
P3	NC
P4	IO142NDB3
P5	IO141NPB3
P6	IO125RSB2
P7	IO139RSB3
P8	VCCIB3
P9	GND
P10	VCC
P11	VCC
P12	VCC
P13	VCC
P14	GND
P15	VCCIB1
P16	GDB0/IO78VPB1
P17	IO76VDB1
P18	IO76UDB1
P19	IO75PDB1
P20	NC
P21	NC
P22	NC
R1	NC
R2	NC
R3	VCC
R4	IO140PDB3
R5	IO130RSB2
R6	IO138NPB3
R7	GEC0/IO137NPB3
R8	VMV3

FG484	
Pin Number	AGL400 Function
U1	NC
U2	NC
U3	NC
U4	GEB1/IO136PDB3
U5	GEB0/IO136NDB3
U6	VMV2
U7	IO129RSB2
U8	IO128RSB2
U9	IO122RSB2
U10	IO115RSB2
U11	IO110RSB2
U12	IO98RSB2
U13	IO95RSB2
U14	IO88RSB2
U15	IO84RSB2
U16	TCK
U17	VPUMP
U18	TRST
U19	GDA0/IO79VDB1
U20	NC
U21	NC
U22	NC
V1	NC
V2	NC
V3	GND
V4	GEA1/IO135PDB3
V5	GEA0/IO135NDB3
V6	IO127RSB2
V7	GEC2/IO132RSB2
V8	IO123RSB2
V9	IO118RSB2
V10	IO112RSB2
V11	IO106RSB2
V12	IO100RSB2
V13	IO96RSB2
V14	IO89RSB2

FG484	
Pin Number	AGL600 Function
A1	GND
A2	GND
A3	VCCIB0
A4	NC
A5	NC
A6	IO09RSB0
A7	IO15RSB0
A8	NC
A9	NC
A10	IO22RSB0
A11	IO23RSB0
A12	IO29RSB0
A13	IO35RSB0
A14	NC
A15	NC
A16	IO46RSB0
A17	IO48RSB0
A18	NC
A19	NC
A20	VCCIB0
A21	GND
A22	GND
AA1	GND
AA2	VCCIB3
AA3	NC
AA4	NC
AA5	NC
AA6	IO135RSB2
AA7	IO133RSB2
AA8	NC
AA9	NC
AA10	NC
AA11	NC
AA12	NC
AA13	NC
AA14	NC

FG484	
Pin Number	AGL600 Function
AA15	NC
AA16	IO101RSB2
AA17	NC
AA18	NC
AA19	NC
AA20	NC
AA21	VCCIB1
AA22	GND
AB1	GND
AB2	GND
AB3	VCCIB2
AB4	NC
AB5	NC
AB6	IO130RSB2
AB7	IO128RSB2
AB8	IO122RSB2
AB9	IO116RSB2
AB10	NC
AB11	NC
AB12	IO113RSB2
AB13	IO112RSB2
AB14	NC
AB15	NC
AB16	IO100RSB2
AB17	IO95RSB2
AB18	NC
AB19	NC
AB20	VCCIB2
AB21	GND
AB22	GND
B1	GND
B2	VCCIB3
B3	NC
B4	NC
B5	NC
B6	IO08RSB0

FG484	
Pin Number	AGL600 Function
B7	IO12RSB0
B8	NC
B9	NC
B10	IO17RSB0
B11	NC
B12	NC
B13	IO36RSB0
B14	NC
B15	NC
B16	IO47RSB0
B17	IO49RSB0
B18	NC
B19	NC
B20	NC
B21	VCCIB1
B22	GND
C1	VCCIB3
C2	NC
C3	NC
C4	NC
C5	GND
C6	NC
C7	NC
C8	VCC
C9	VCC
C10	NC
C11	NC
C12	NC
C13	NC
C14	VCC
C15	VCC
C16	NC
C17	NC
C18	GND
C19	NC
C20	NC

FG484	
Pin Number	AGL600 Function
N17	IO80NPB1
N18	IO74NPB1
N19	IO72NDB1
N20	NC
N21	IO79NPB1
N22	NC
P1	NC
P2	IO153PDB3
P3	IO153NDB3
P4	IO159NDB3
P5	IO156NPB3
P6	IO151PPB3
P7	IO158PPB3
P8	VCCIB3
P9	GND
P10	VCC
P11	VCC
P12	VCC
P13	VCC
P14	GND
P15	VCCIB1
P16	GDB0/IO87NPB1
P17	IO85NDB1
P18	IO85PDB1
P19	IO84PDB1
P20	NC
P21	IO81PDB1
P22	NC
R1	NC
R2	NC
R3	VCC
R4	IO150PDB3
R5	IO151NPB3
R6	IO147NPB3
R7	GEC0/IO146NPB3
R8	VMV3

FG484	
Pin Number	AGL600 Function
U1	IO149PDB3
U2	IO149NDB3
U3	NC
U4	GEB1/IO145PDB3
U5	GEB0/IO145NDB3
U6	VMV2
U7	IO138RSB2
U8	IO136RSB2
U9	IO131RSB2
U10	IO124RSB2
U11	IO119RSB2
U12	IO107RSB2
U13	IO104RSB2
U14	IO97RSB2
U15	VMV1
U16	TCK
U17	VPUMP
U18	TRST
U19	GDA0/IO88NDB1
U20	NC
U21	IO83NDB1
U22	NC
V1	NC
V2	NC
V3	GND
V4	GEA1/IO144PDB3
V5	GEA0/IO144NDB3
V6	IO139RSB2
V7	GEC2/IO141RSB2
V8	IO132RSB2
V9	IO127RSB2
V10	IO121RSB2
V11	IO114RSB2
V12	IO109RSB2
V13	IO105RSB2
V14	IO98RSB2

FG484	
Pin Number	AGL1000 Function
B7	IO15RSB0
B8	IO19RSB0
B9	IO24RSB0
B10	IO31RSB0
B11	IO39RSB0
B12	IO48RSB0
B13	IO54RSB0
B14	IO58RSB0
B15	IO63RSB0
B16	IO66RSB0
B17	IO68RSB0
B18	IO70RSB0
B19	NC
B20	NC
B21	VCCIB1
B22	GND
C1	VCCIB3
C2	IO220PDB3
C3	NC
C4	NC
C5	GND
C6	IO10RSB0
C7	IO14RSB0
C8	VCC
C9	VCC
C10	IO30RSB0
C11	IO37RSB0
C12	IO43RSB0
C13	NC
C14	VCC
C15	VCC
C16	NC
C17	NC
C18	GND
C19	NC
C20	NC

FG484	
Pin Number	AGL1000 Function
V15	IO125RSB2
V16	GDB2/IO115RSB2
V17	TDI
V18	GNDQ
V19	TDO
V20	GND
V21	NC
V22	IO109NDB1
W1	NC
W2	IO191PDB3
W3	NC
W4	GND
W5	IO183RSB2
W6	FF/GEB2/IO186RSB2
W7	IO172RSB2
W8	IO170RSB2
W9	IO164RSB2
W10	IO158RSB2
W11	IO153RSB2
W12	IO142RSB2
W13	IO135RSB2
W14	IO130RSB2
W15	GDC2/IO116RSB2
W16	IO120RSB2
W17	GDA2/IO114RSB2
W18	TMS
W19	GND
W20	NC
W21	NC
W22	NC
Y1	VCCIB3
Y2	IO191NDB3
Y3	NC
Y4	IO182RSB2
Y5	GND
Y6	IO177RSB2