



		GOWIN <i>FPGA</i> Family Devices		Product Series	Density (LUTs)	LittleBee	Arora
		 Flash-Based FPGA GW1N* 1-10K Logic Element Density	 SRAM-Based FPGA GW2A* 20-55K Logic Element Density				
Product Features	Ultra-Low Power SPMI Power Management	*Z		GW1N	1.5K, 2K, 4K, 9K	Flash-Based FPGA	N/A
	Hard MCU ARM Cortex-M3 ARC EM4	*S	*SR	GW1NZ	1K, 2K	Ultra-Low Power	
				GW1NR	1K, 2K, 4K, 9K	Extended Memory	
	Extended Memory On-Chip SRAM	*R	*R	GW1NS	4K	Embedded Hardcore MCU	
	Security SRAM PUF Root-of-Trust	*SE *SER		GW1NSR	4K	MCU + Memory	
	Bluetooth 5.0 Low Energy RF Transceiver	*RF		GW1NSE	4K	MCU + Security	
				GW1NSER	4K	MCU + Security + Memory	
	Arora plus Flash		*N	GW1NRF	4K	MCU + Security + Bluetooth 5.0 LE	
Arora plus SRAM & Flash		*NR	GW2A	20K, 55K	N/A	RAM-Based FPGA	
			GW2AR	20K		On-Chip Memory	
			GW2AN	20K, 55K		On-Chip NOR Flash	
			GW2ANR	20K		On-Chip Memory Plus, NOR Flash	

Arora V Family Tables – Arora V SRAM Based FPGAs



Available Now!

Coming Soon!

Feature	Arora V Series					Arora V with High-Speed Transceivers				
	GW5A			GW5AR	GW5AS	GW5AT				GW5AST
	GW5A-25	GW5A-45	GW5A-138	GW5AR-25	GW5AS-138	GW5AT-15	GW5AT-60	GW5AT-75	GW5AT-138	GW5AST-138
LUT4 Flip-Flops	23,040	44,928	138,240	23,040	138,240	15,120	59,904	86,688	138,240	138,240
Shadow SRAM (Kbits)	180	351	1,080	180	1,080	118.125	468	677	1,080	1,080
Block BSRAM (Kbits)	1,008	2,106	6,120	1,008	6,120	630	2,070	4,608	6,120	6,120
BSRAM Blocks	56	117	340	56	340	35	118	256	340	340
DSP Blocks	28	81	298	28	298	34	118	213	298	298
PLLs	6	4	12	6	12	2	8	12	12	12
Global Clocks	32	16	32	32	32	16	32	16	32	32
High Speed Transceivers	-	-	-	-	-	Up to 4	Up to 4	Up to 8	Up to 8	Up to 8
PCIe Hardcore	-	-	-	-	-	1 (x1, x2, x4)	1 (x1, x2, x4)	1 (x1, x2, x4)	1 (x1, x2, x4, x8)	1 (x1, x2, x4, x8)
ADC	1	2	2	1	2	1	1	2	2	2
LVDS Rate (per lane)	1.25 Gbps	1.25 Gbps	1.25 Gbps	1.25 Gbps	1.25 Gbps	1.25 Gbps	1.25 Gbps	1.25 Gbps	1.25 Gbps	1.25 Gbps
DDR3 Bandwidth	1,066 Mbps	1,333 Mbps	1,333 Mbps	1,066 Mbps	1,333 Mbps	1,333 Mbps	1,333 Mbps	1,333 Mbps	1,333 Mbps	1,333 Mbps
MIPI D-PHY Hardcore	2.5Gbps/lane RX 3.0Gbps/lane TX 4 data, 1 clock	2.5Gbps/lane RX/TX 4 data, 1 clock	2.5Gbps/lane RX 8 data, 2 clock	2.5Gbps/lane RX 3.0Gbps/lane TX 4 data, 1 clock	2.5Gbps/lane RX 8 data, 2 clock	2.5Gbps/lane RX/TX 4 data, 1 clock	2.5Gbps/lane RX/TX (4 data, 1 clock) x2	2.5Gbps/lane RX 8 data, 2 clock	2.5Gbps/lane RX 8 data, 2 clock	2.5Gbps/lane RX 8 data, 2 clock
MIPI C-PHY Hardcore	-	-	-	-	-	2.5Gsps/trio (5.7Gbps) RX/TX 3-trios data lanes	2.5Gsps/trio (5.7Gbps) RX/TX 3-trios data lanes	-	-	-
Embedded 64Mb PSRAM	-	-	-	2	-	-	-	-	-	-
RISC-V AE350 Hardcore	-	-	-	-	1	-	-	-	-	1
IO Banks	8	6	6	8	6	4	5	6	6	6
Core Voltage Option	0.9V / 1.0V / 1.2V	0.9V / 1.0V	0.9V / 1.0V	0.9V / 1.0V	0.9V / 1.0V	0.9V / 1.0V	0.9V / 1.0V / 1.2V	0.9V / 1.0V	0.9V / 1.0V	0.9V / 1.0V

New Package Options Coming Soon!

Package	Pitch (mm)	Size (mm)	Arora V Series					High-Speed Transceivers					Compatible Devices	Compatible Packages
			GW5A			GW5AR	GW5AS	GW5AT			GW5AST			
			GW5A-25	GW5A-45	GW5A-138	GW5AR-25	GW5AS-138	GW5AT-15	GW5AT-60	GW5AT-75	GW5AT-138	GW5AST-138		
LQ100	0.5	14 x 14	-	Q2 2024	-	-	-	-	-	-	-	-	-	-
MG121N	0.5	6 x 6	86 (38)	Q2 2024	-	-	-	-	-	-	-	-	Lattice CrossLink-NX LIFCL-17/40	MG121
MG196S	0.5	8 x 8	114 (53)	Q2 2024	-	-	-	-	-	-	-	-	Xilinx Spartan6 LX16	CPG196
UG225S	0.8	13 x 13	168 (80)	Q2 2024	-	-	-	-	-	-	-	-	Xilinx Spartan6 LX16	CSG225
PG256C	1	17 x 17	191 (90)	Q2 2024	-	-	-	-	-	-	-	-	Intel Cyclone IV EP4CE22/15	F256
PG256S	1	17 x 17	194 (93)	Q2 2024	-	-	-	-	-	-	-	-	Xilinx Spartan6 LX16	FG256
UG256C	0.8	14 x 14	191 (90)	Q2 2024	-	-	-	-	-	-	-	-	Intel Cyclone IV EP4CE22/15	U256
UG256P	0.8	14 x 14	-	-	-	195 (94)	-	-	-	-	-	-	-	-
UG324	0.8	15 x 15	222 (104)	Q2 2024	Q1 2024	-	-	-	-	-	-	-	-	-
UG324C	0.8	15 x 15	222 (104)	Q2 2024	-	-	-	Q1 2024	-	-	-	-	-	-
UG324S	0.8	15 x 15	239 (116)	Q2 2024	-	-	-	Q1 2024	-	-	-	-	Xilinx Spartan6 LX16/LX25/LX45/LX45T	CSG324
UG324A	0.8	15 x 15	-	-	-	-	222 (106)	-	-	-	222 (106)	-	Auto Grade Option & Xilinx Artix7 100T	CSG324
UG381	0.8	17 x 17	-	-	-	-	-	Q1 2024	-	-	-	-	-	-
UG318E	0.8	17 x 17	-	-	-	-	-	-	-	-	-	-	Lattice ECP5-LEF5U-45F / LEF5UM5G-45F	BG381
PG484	1	23 x 23	-	-	-	-	-	-	-	-	277 (133)	-	-	-
PG484C	1.0	23 x 23	-	-	-	-	-	Q1 2024	-	-	-	-	Intel Cyclone IV EP4CGX50	F484
PG484S	0.8	19 x 19	-	Q2 2024	-	-	-	Q1 2024	-	-	222 (106)	-	Xilinx Artix7 50T Xilinx Spartan6 LX45T	FGG484
PG484A	1	23 x 23	-	-	-	-	-	Q1 2024	-	-	297 (143)	297 (143)	Auto Grade Option & Xilinx Artix7 100T	FGG484
UG484S	0.8	15 x 15	-	Q2 2024	-	-	-	Q1 2024	-	-	-	-	Xilinx Spartan6 LX45T	CSG484
PG676A	1	27 x 27	-	-	-	-	-	-	-	-	312 (150)	312 (150)	Xilinx Artix7 100T	FGG676
FPG676A	1	27 x 27	-	-	-	-	-	-	-	-	312 (150)	312 (150)	Xilinx Artix7 100T	FGG676

Mfr.	Series	Package (mm)		
		Type	Size	Pitch
Lattice	XO2	CSBGA132	8 x 8	0.5
	XO2	TQFP100	14 x 14	0.5
	XO2	TQFP144	20 x 20	0.5
	XO2	FTBGA256	17 x 17	1.0
	XO2	CABGA256	14 x 14	0.8
	XO2	CABGA332	17 x 17	0.8
	XO2	FPBGA484	19 x 19	0.8
	XO3	CABGA256	14 x 14	0.8
	XO3	CABGA400	17 x 17	0.8
	XO3	CABGA484	17 x 17	0.8
	ECP3	FTBGA256	17 x 17	1.0

Mfr.	Series	Package (mm)		
		Type	Size	Pitch
Intel (Altera)	MAX II	FBGA256	17 x 17	1.0
	MAX 10	V81WLCSP	4.1 x 4.1	0.4
	MAX 10	UBGA169	11 x 11	0.8
	Cyclone IV	FBGA256	17 x 17	1.0
	Cyclone IV	FBGA484	23 x 23	1.0

Mfr.	Series	Package (mm)		
		Type	Size	Pitch
AMD (Xilinx)	Spartan-6	CPG196	8 x 8	0.5
	Spartan-6	FTG256	17 x 17	1.0
	Spartan-6	CSG324	15 x 15	0.8
	Spartan-6	UG484S	19 x 19	0.8
	Artix-7	FBG676	27 x 27	1.0

GOWIN FPGAs offer pin-for-pin compatibility with similar size devices from Lattice, Intel (Altera), and AMD (Xilinx)

Future GW5A Pin Replacements

60K:
 BGA484 – Artix-7, Spartan-6, Cyclone 4/5
 BGA324 – ECP5

25K:
 BGA324 – Spartan-6
 BGA256 – Spartan-6, Cyclone 4
 BGA121 – Cross Link NX

GOWIN FPGA Embedded Microcontroller Options					
Core	Instruction Set	IP Resources (LUTs)	DMIPS/MHz	CoreMark®/MHz	Device Family / CLK Freq (MHz)
PicoRV32	RISC-V	Softcore 2K	0.516	-	GW2A*: 50 GW1N* : 50
Andes N25	RISC-V AndeStar™ V5	Softcore 10K	GW2A18: 1.94 GW2A55: 2.29	-	GW2A*: 50
Cortex M1	ARM Thumb, Thumb-2	Softcore (5K to 21K)	0.8	1.85	GW2A*: 75 GW1N9: 40
Cortex M3	ARM Thumb, Thumb-2	Softcore (18K to 37K)	1.25 to 1.89	3.34	GW2A55: 25
Cortex M3	ARM Thumb, Thumb-2	Hardcore N/A	1.25 to 1.89	3.34	GW1NS*-4C: 100
ARC EM4	Synopsys ARCV2	Hardcore N/A	1.77	3.41	GW1NRF: 24

